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EMPIRICAL INVESTIGATION OF THE ELEMENTS OF COMPOSITION IN PAINTINGS

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Abstract

A visual art form such as a painting is built up of three types or levels of perceptual organization. At the lowest level are the fundamental or first-order pictorial elements including line, color, shape, etc. These pictorial primitives are synthesized at the next higher level of structural organization into holistic perceptual qualities such as symmetry, balance, perspective, and depicted motion. At the highest level, pictorial elements are organized by the artist into a composition that conveys the semantic meaning of the work. The fusion of visual information among levels of organization in a painting makes it difficult to isolate compositional elements and themes for investigation. Nevertheless, researchers working in the field of experimental aesthetics have devised a wide range of methodologies to study the contributions of individual compositional features in paintings to aesthetic perception and pleasure. This address will present an overview of the diversity of research techniques and procedures employed in recent years to understand and explain the elements of composition in paintings – to a painting as stimulus.

An observer's aesthetic experience with a painting and his or her resulting emotional and evaluative reactions to it depend on a complex dynamic interaction among characteristics of the painting, the observer, and the physical, social and historical contexts in which the experience takes place (see Jacobsen, 2006; Locher, 2012). This presentation focuses exclusively on the first of these contributing factors, namely, on a painting's visual features and pictorial composition as the physical input to the processes which underlie an aesthetic experience. As the artist Wassily Kandinsky (1979) pointed out, when one is going to scientifically dissect art, "The first unavoidable question is, naturally, the question of the art elements, which are the building materials of works of art..." (p. 20). Furthermore, he believes that "...the analysis of art elements forms a bridge to the inner pulsation of a work of art" (p. 17). I will present an overview of the findings of fairly recent empirical studies designed to identify what counts as the salient features of paintings and the contribution of these perceivable artistic qualities to an aesthetic experience. Additionally, this review discusses factors that are not part of an artwork's composition per se but have been shown to influence an observer's perception of them. These include a painting's title, its format, and frame. An additional goal of my talk is to describe the diversity of recent research techniques and procedures employed in the field of experimental aesthetics to understand a painting as stimulus.

The paintings used as stimuli in the studies described are drawn from the Western canon and cover a wide range of artistic styles and pictorial content. Because a comprehensive review of the research findings available for each painting element described is not possible given the allotted time for the presentation, the findings to be described for a given pictorial element should not be taken as either exhaustive or definitive. Furthermore, to maximize the credibility and persuasiveness of the findings included in this review only studies that used real paintings or their reproductions as stimuli are included to the exclusion of aesthetic science research that employed non-art or art-like stimuli such as randomly generated polygons, dot patterns, and single-feature displays. There is, however, a potential down-side to this approach voiced by some aesthetic science researchers that must be acknowledged. For example, Palmer, Schloss, and Sammartino (2012) take the view that because the compositions of actual paintings differ in very many ways, using them as stimuli

makes it almost impossible to determine which factors are responsible for observed aesthetic responses to them in a research study. In a similar vein, Arnheim (1966) warns that, “measurement dismembers any pattern, and therefore must be handled with caution when it is used to analyze the spatial structure of the whole” (p. 104-105). It is my view that the researchers whose work will be presented have taken Arnheim’s advice.

The composition of a painting is built up of three types or levels of image content and organization. At the lowest level of stimulation are the individual first-order pictorial elements of painting such as line, color, texture, and shape. These elements are combined at the next higher level of organization into holistic second-order properties such as symmetry, balance, complexity, perspective, and depicted motion. At the highest level of organization pictorial attributes are organized by the artist into a composition which conveys through its content and artistic style the conceptual and semantic meaning of the work. Tinio and Leder (2009) have proposed a taxonomy of image manipulation procedures for use in aesthetics research that corresponds to these three levels of pictorial composition, namely surface-level manipulations, composition-level manipulations and semantic-level manipulations. It will be shown that manipulation of art stimuli for use in aesthetics research can be made at any one of these levels of pictorial composition. It must be kept in mind; however, that fusion of visual information within a painting makes it difficult to isolate individual pictorial elements and themes, and that bottom-up and top-down processes are in constant play throughout an aesthetic experience with a painting.

As mentioned, my presentation will present an overview of the findings of fairly recent empirical studies designed to identify what counts as the salient features of paintings. The sources of the research findings to be incorporated in this overview include the following:

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Contributions of cognitive and perceptual facilitation to aesthetic experience. *Brain and Cognition, 70*, 84-91.

Firstov, V., Firstov, V., Voloshinov, A., & Locher, P. (2007). The colorimetric barycenter of paintings. *Empirical Studies of the Arts, 25*, 209-217.

- Forsythe, A., Nadal, M., Sheehy, N., Cela-Conde, C., & Sawey, M. (2011). Predicting beauty: Fractal dimension and visual complexity in art. *British Journal of Psychology*, *102*, 49-70.
- Johnson, M., Muday, J., & Schirillo, J. (2010). When viewing variations in paintings by Mondrian, aesthetic preferences correlate with pupil size. *Psychology of Aesthetics, Creativity, and the Arts*, *4*, 161-167.
- Kapoula, Z., Adenis, M. S., Lê, T. T., Yang, Q., & Lipede, G. (2011). Pictorial depth increases body sway. *Psychology of Aesthetics, Creativity, and the Arts*, *5*, 186-193.
- Kuchinke, L., Trapp, S., Jacobs, A., & Leder, H. (2009). Pupillary responses in art appreciation: Effects of aesthetic emotions. *Psychology of Aesthetics, Creativity, and the Arts*, *3*, 151-163.
- Latto, R., Brian, D., & Kelly, B. (2000). An oblique effect in aesthetics: Homage to Mondrian (1872-1944). *Perception*, *29*, 981-987.
- Latto, R., & Russell-Duff, K. (2002). An oblique effect in the selection of line orientation by twentieth century painters. *Empirical Studies of the Arts*, *20*, 49-60.
- Locher, P. (2003). An empirical investigation of the visual rightness theory of picture perception. *Acta Psychologica*, *114*, 147-164.
- Locher P., & Dolese, M. (2004). A comparison of the perceived pictorial and aesthetic qualities of original paintings and their postcard images. *Empirical Studies of the Arts*, *22*, 129-142.
- Locher, P., Overbeeke, K., & Stappers, P. (2005). Spatial balance of color triads in the abstract art of Piet Mondrian. *Perception*, *34*, 169-189.
- Locher, P., Smith, J., & Smith, L. (2001). The influence of presentation format and viewer training in the visual arts on the perception of pictorial and aesthetic qualities of paintings. *Perception*, *30*, 449-465.

- McManus, I., Stover, K., & Kim, D. (2011). Arnheim's Gestalt theory of visual balance: Examining the compositional structure of art photographs and abstract images. *I-Perception, 2*, 615-647.
- Nadal, M., Munar, E., Marty, G., & Cela-Conde, C. (2010). Visual complexity and beauty appreciation: Explaining the divergence of results. *Empirical Studies of the Arts, 28*, 173-191.
- Nodine, C., Locher, P., & Krupinski, E. (1993). The role of formal art training on the perception and aesthetic judgment of art compositions. *Leonardo, 26*, 219-227.
- Pinto, P., Linhares, J., Carvalhal, J., & Nascimento, S. (2006). Psychophysical estimation of the best illumination for appreciation of Renaissance paintings. *Visual Neuroscience, 23*, 669-674.
- Plumhoff, J., & Schrillo, J. (2009). Mondrian, eye-movements, and the oblique effect. *Perception, 38*, 719-732.
- Polzella, D., Hammar, S., & Hinkle, C. (2005). The effects of color on viewers' ratings of paintings. *Empirical Studies of the Arts, 23*, 153-163.
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- Vartanian, O., Martindale, C., Podsiadlo, J., Overbay, S., & Borkum, J. (2005). *British Journal of Psychology, 96*, 493-503.
- Watanabe, S. (2001). Van Gogh, Chagall and pigeons: Picture discrimination in pigeons and humans. *Animal Cognition, 4*, 147-151.
- Watanabe, S., Sakamoto, J., & Wakita, M. (1995). Pigeon's discrimination of paintings by Monet and Picasso. *Journal of Experimental Analysis of Behavior, 63*, 165-174.
- Wiesmann, M., & Ishai, A. (2010). Training facilitates object recognition in cubist paintings. *Frontiers in Human Science*. Published online: 02 March 2010.
- Wilner, E. (2000). *The gilded edge*. San Francisco, CA: Chronicle Books.

Wright-Smith, R. (1980). *Picture framing*. New York: Van Nostrand Reinhold Company.

References

Arnheim, R (1966). *Toward a psychology of art*. Berkeley, CA: University of California Press.

Jacobsen, T. (2006). Bridging the arts and sciences: A framework for the psychology of aesthetics. *Leonardo*, 39, 155-162.

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ABSTRACT
KEYNOTE

P9 ~ P27

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Abstract

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- Arnheim, R (1966). *Toward a psychology of art*. Berkeley, CA: University of California Press.
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APPLYING ART CRITICISM METHODS TO THE TEACHING OF ADVERTISING INTERPRETATION

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Abstract

The twenty-first century is an era dominated by the media. Every day, we are exposed to vast quantities of advertising images, too vast for us to ignore. Giving students the skills they need to interpret advertising is an important responsibility for teachers. The present study seeks to apply the methods of art criticism to the teaching of advertising interpretation, for the future reference of teachers. The study employs a review of the literature and action research (including observation, interviews, documentary analysis, and questionnaires) to collect the materials needed for the research. The research results show that art criticism methods can help students to understand the advertising images. Comparing advertisements with students' own experience of life can provide a foundation for critiquing the ideologies that advertising texts embody, and for understanding the real meaning behind the ads. At the same time, the use of art criticism methods can also help students to learn how to create their own advertisements. The utilization of the question discussion method in the teaching process can help clarify value schemes; the research results showed that a group of two or three students is the ideal size for such a discussion group.

Keywords: Art Criticism, Appreciation Teaching, Advertising Interpretation

I Introduction

People in the 21st century have their existence in a living environment dominated by media culture and consumer culture. Television, advertising, the Internet, films, etc. integrate images, music and text in a wide range of different modes, and in doing so create a society based on symbolic systems (Duncum, 2001). The symbols and messages presented by the mass media are standardized and mass-produced, and can be "re-used"; from the point of view of consumers, these

media messages have practical utility, and can even serve as a form of commodity (McQuail, 2010). Within the mass media, advertisements constitute one of the most widely used forms of transmission. Every day, we are exposed to huge quantities of advertising images; advertising has developed incredible reach, to the extent that we can no longer ignore its existence. Pearse (1997) suggests that, in the post-modern era of today, with the revolution that has taken place in media technology and in consumerism, the ever-presence of the media has put us in a situation where we are no longer clear about what is real. How are students expected to deal with this complex, constantly-changing environment? Do they possess the capabilities needed to interpret advertising images? How can we, as visual arts teachers, go about guiding students so that they are able to identify the right ways of interpreting messages? This is a serious responsibility. The problem is that most attempts to teach advertising interpretation have focused on using semiotics-based approaches to explore the internal meaning of the advertisements; students tend to find this very dry and boring, and difficult to understand. At the same time, many students are interested in learning about how the directors of advertising films make use of particular filming and camera techniques, and particular compositional and editing methods, to produce their advertisements. The present study employs methods from art criticism to teach students how to interpret advertisements. The study seeks to determine how effective these methods are in enabling students to interpret advertisements, and to identify techniques that teachers can make use of in their own teaching in this area. It is anticipated that the results obtained in this study can serve as a useful development model for the teaching of advertising interpretation in the future, and that they will be of benefit to the development of advertising and media education, while also providing a useful reference for practitioners.

II Review of the Literature

1. The Methods of Art Criticism

Within the world of art education, the teaching of art criticism has been commonplace for many years, with Feldman's four stages of art criticism – description, analysis, interpretation, and judgment – being seen as a model for art

criticism teaching (Prater, 2002). Feldman (1985) suggested that art criticism comprised description (giving a detailed listing of the visual features of the work, and providing an analytical or narrative description), analysis (describing the symbolic relationship between the items listed in the first stage, to provide a basis for analyzing the relationship between individual elements, forms and objects, so as to be able to explore the visual concepts and related artistic lexicon), interpretation (using the collated information obtained in the first two stages to identify and create meaning in the work, and to try to understand the ideas, moods or feelings being expressed in this meaning) and judgment (comparing the work with other artworks on the same level to decide to what extent the work can be considered a superior one). However, this four-stage framework for art criticism was developed mainly with fine art in mind. For this reason, some changes and adjustments are made to the framework in the present study.

2. Building a Model for Applying the Methods of Art Criticism to the Teaching of Advertising Films

Learning how to analyze an advertising film is different from learning how to analyze a work of fine art. The researcher therefore began by analyzing the component elements of advertising film production, in order to identify the key aspects of advertising interpretation. Most advertisements are transmitted via the mass media in order to market a specific concept, product or service. The biggest advantage which advertising films offer compared with other media is the ability to integrate dynamic visual images with sound to attract the interest of viewers.

The first stage in the analysis of an advertising film will therefore focus on description of the text (i.e. the film content), including the plot, products, scenes and advertising slogans. The fact that advertising film is a dynamic, moving medium means that it cannot be described simply based on the impression it makes on the senses in the way that a two-dimensional work can; it is only after the whole film has been viewed that an outline description can be given of the content. The second stage in the analysis relates mainly to the filming techniques and methods employed in the film, because these techniques affect the overall feel of the work. The third stage involves interpretation of the meaning of the advertising film, including the themes addressed, the purpose of the film, and the strategies employed. This

interpretation aspect is more readily apparent to the viewer than the stylistic forms used to create the work, so in the present study interpretation of meaning is addressed first, before going on to implement analysis of forms, etc. Finally, in the judgment stage, an evaluation of the overall value of the work is made based on the description, interpretation and formal analysis that have been performed already. This method for interpreting an advertising film is summarized in the table below.

Table 1 Interpretation of an Advertising film – Methods, and Key Points to Note

The Four Stages of Art Criticism	Key Aspects	Categories
Description	Advertising content	plot, products, scenes, slogans
Interpretation	Meaning of advertising video	themes, objectives, strategies
Analysis	Method	Rational emphasis on the product's inherent value, or emotive creation of a particular mood or feeling to influence the viewer, etc.
	Picture arrangement	Lighting: high key or low key
		Color: color harmonization, symbolic meaning, fashion
		Shots: long shots, medium shots, close shots
		Camera angle: eye-level, high-angle, low-angle
Editing: fade in / fade out, straight cuts, dissolving, wipes		
Sound	Voiceover, sound effects, music	
Judgment	Making a reasoned appraisal of the advertisement's value, and explaining the grounds for this assessment	

III Research Methodology

The material used in the present study was derived mainly from a review of the literature and action research. For the action research, observation, interviews, documentary analysis and questionnaire surveys were used for the purpose of data collection and analysis.

IV Analysis of Results, and Reflections

1. Art criticism theory can help students to interpret advertisements

Examination of students' performance in class and of their learning sheets showed that, before students were shown how to utilize the methods of art criticism, the content of their writing at the four stages of description, analysis, interpretation and judgment tended to focus on description of the characters in the advertisement and of the products (for example, the self-confidence and happiness exuded by a female character shopping with a credit card); they were not capable of discussing the ideology behind the advertisement, or the filming and visual techniques used, etc. Once the students had been shown how to make use of art criticism methods, they were able to perform detailed description of advertising film plot, products, scenes, and slogans at the description stage, undertake formal analysis (covering processing methods, lighting, color, camera angle, shot types, editing and sound) at the analysis stage, and explain the advertising film's themes, goals and strategies and comprehend the film's hidden connotations at the interpretation stage; at the judgment stage, they were able to make connections between advertising films and their own life experience, and could express their own feelings, views and appraisal with respect to the films, as well as making their own value judgments.

2. Students were able to move up from "micro-level" analysis based on the individual or the symbolic, in which advertisement content is "read" and understood by making comparisons with students' own personal experience, to "macro-level" appraisal in which the significance and connotations of the advertisement are interpreted in light of the overall structure of society

It was apparent from students' performance in class and from their learning sheets that, when students first start to interpret advertising films, they tend to focus on the disparities between the advertisement content and their own life experience. Students were able to move on from this stage to develop an understanding of the ideological underpinnings of the advertising film. For example, they realized that the aim of the advertisement was to get consumers to apply for a credit card by creating an image of an independent woman who is able to overcome the pressure imposed on her by her weight, her boss, and her marriage. The offer of a zero interest rate could be seen to constitute "bait," intended to mislead consumers who are not familiar with how credit cards work; there is thus a risk that people who follow the ad's advice and apply for a credit card could end up laboring under a severe problem

with credit card debt.

3. Learning to interpret advertising films can help students to develop a comprehensive understanding of advertising, and the knowledge can also be applied in students' own creative work

When designing the curriculum, the researcher's aim was to begin by having the curriculum give students a general, overall picture of advertising films, before gradually moving on to cover the four stages of advertising interpretation: description, analysis, interpretation and judgment. When seeking to interpret an advertisement, a continuous process of dialog, discussion, thought and comparison is needed in order to gain a real understanding of the techniques used in making the advertisement, and of the advertisement's hidden meaning and connotations (as well as the ways in which the ad is connected to the life of the person interpreting it), and in order to be able to clarify one's own values with respect to the ad; students felt that they had benefited considerably from the utilization of this gradual progression from the establishment of basic concepts to the practical application of these concepts. The students felt that the filming techniques used to make the advertising films, and the analysis of the film's aesthetic content, would be of considerable benefit to them when creating their own film works in the future. In other words, having the ability to interpret advertising films should help the students to make their own films.

4. Incorporating discussion of questions related to students' own life experience can help students to clarify their own value schemes

Besides helping to enhance students' sensitivity to images and cultivate their ability to evaluate advertising films, another goal in the implementation of advertising interpretation teaching was to get students to move on from interpreting texts to being able to perform similar interpretation with respect to human social life, since this is the material realm within which students can actualize their new awareness. During the course of teaching, the researcher encouraged the students to think about and discuss the relationship between the advertising film content, advertising design and their own life experience. For example, students were asked to ponder the following questions: (1) Do you feel that advertisements are truly

representative of how the majority of women think, of their lifestyles, and of their appearance? Why? (2) What differences can you detect between the attitude towards life displayed by the woman in the advertisement and your own outlook on life? (3) Would you want to marry a rich wife or rich husband, if you knew that doing so could save you from 20 years of hard work and struggle? Why? The students were encouraged to think about female consciousness and the image of women, and to examine themselves to see if they themselves hold any preconceptions in this regard, and what their own attitudes are towards marrying for money. It was anticipated that this would help students to clarify their own values, and to be able to entertain a wider range of (more positive) viewpoints.

5. Having a “division of labor” between students in the discussion process should be avoided; small groups of two or three students appeared to be the ideal number for group discussion

When undertaking learning through group discussion, it is important that every member of the group should participate, in order to realize the overall learning goals. The researcher found that having too many students in a discussion group led to a situation where individual students did not have the opportunity to express their views fully; smaller groups of two to three students were found to be the ideal size for effective discussion. The researcher also noted that, when group discussion was underway, some groups adopted a “division of labor” approach. Although on the surface this might seem a fair and equitable way of going about it, organizing the discussion in this way reduces the learning benefits that students can gain from the discussion process. The researcher therefore kept an eye on the discussions, providing guidance when needed as to how the students should go about participating in the discussions, and discouraging them from adopting a “division of labor” approach that could prevent a full exchange of views.

V Conclusions

Eisner (1972) noted that artistic ability is something one learns, not something one is born with, and that carefully planned, systematic art education is necessary in order to make progress in the arts. This view is fully supported by the results obtained in the present study through the application of art criticism methods to the

teaching of advertising interpretation. The four-step strategy for art criticism – description, analysis, interpretation and judgment – can help students to become more perceptive with respect to what advertising can do. Students were able to move up from “micro-level” analysis based on the individual or the symbolic, in which advertisement content is “read” and understood by making comparisons with students’ own personal experience, to “macro-level” appraisal in which the significance and connotations of the advertisement are interpreted in light of the overall structure of society; at the same time, the utilization of art criticism methods in this way also helped to stimulate students’ interest in creating advertising-type films and their ability to do so. The integrating discussion of issues relating to students’ own life experience into the teaching process can help students to clarify their own value schemes. A further point is that small groups of two or three students were found to constitute the ideal size for group discussion; additionally, discussion groups need to be discouraged from engaging in an informal “division of labor” within the group if maximum learning benefits are to be achieved.

Reference

- Duncum, P. (2001). Visual culture: Developments, definitions, and directions for art education. *Studies in Art Education*, 42(2), 101-112.
- Eisner, E. W. (1972). *Education Artistic Vision*. New York: Macmillan Publishing.
- Feldman, E. (1985). *Varieties of visual experience*. Englewood Cliffs: Prentice-Hall.
- McQuai, D. (2010). *McQuail's Mass Communication Theory. 6th Edition*. Dutch: University of Amsterdam.
- Pearse, A. (1997). Crime and the Media: A Post-modern Spectacle [Book Review]. *Media International Australia*, 85(3), 130.
- Prater, M. (2002). Art criticism : Modifying the formalist approach. *Art Education*, 55(2), 12-17.

AESTHETICS VALUES AND EXPLANATION OF COGNITIVE SCIENCE EXPERIENCE

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Abstract

What is the core problem of aesthetics? Why is something beautiful? Where do beautiful things come from?

Recent achievements of cognitive science can be applied to aesthetics research to form a new demonstrative explanation. When people feel something, stimuli formed through information on internal characteristics, as well as exterior appearance, can cause synchronous oscillation of different brain parts and can form stable nerve relations at a biological level. This phenomenon can induce people to associate the appearance of a thing with its internal characteristics. The appearance of the thing is described by the perceptual structure of the brain, which forms corresponding perceptual patterns.

Once the requirements are met, the intrinsic value of a thing can form favorable impressions. Therefore, perceptual patterns formed in the brain that are associated with the appearance of a thing can build favorable impressions. The perceptual patterns then form a connection loop, which can be described as thing form > cognition (perceptual pattern of form) > emotional response. Based on this premise, emotions can be produced even based on intuition, such as when people see things that match with or are similar to existing perceptual patterns of form. People give strong attention to things and their cognition and emotional experiences are remarkable when they are in a formidable state. By contrast, people cannot give sufficient attention when they are in a non-formidable state.

Favorable impressions formed by the potential effect of perceptual patterns of form can be considered aesthetic perception. The term "beauty" is ascribed to an object that causes aesthetic perception.

Based on this principle, robots meant for aesthetic appreciation can be developed.

Greater aesthetic significance is achieved by combining neuroscience experiments with aesthetic theory. Based on neuroscience research, we approach the

issue of aesthetic value from the viewpoint of aesthetic theory and propose new insights on the core issues of aesthetics.

1. How do general things become beautiful things?

Neuroscience research found synchronous oscillation of the different parts of the brain. Accordingly, we assume that:

All beautiful things are general things. A beautiful flower is the flower of a general plant, and a beautiful person is generally a natural person. All things are the unity of their nature and shape, and all things have a certain interest value that corresponds to the needs of people. The shape of things is the mark or signal that corresponds to perception. People can grasp the interest value and shape of things. For example, when eating an apple, the interest value of the apple meets the physical needs of a person and creates a positive impression. The shape of the apple is captured through visual perception, forming visual memory. The stimulation caused by the internal and external features of the apple leads to synchronous oscillations of the different brain regions. The stimulation is then perceived as the same event, forming specific neural activity in the brain.

The shape of things seemingly “portrays” perception, causing specific “perceptual pattern.” Through the perceptual pattern, the shape of things can establish a corresponding relationship with the feelings and perception of people. Once people see that things can match their perceptual pattern, they will intuitively form a good impression, that is, the “shape of things”–“perception” (perceptual pattern) –“beauty” Connection loop. Things that exude beauty are called “beautiful things,” which is also referred to as “beauty.”

Therefore, harmful things that cause negative emotions are not beautiful; only favorable things can cause a positive sense of beauty. For example, wolves have been known to be harmful to humans, making them an unappreciated species. Today, wolves are perceived as less harmful to humans, and they are considered to play a very important role in the ecological environment. As wolves have become “favorable things,” the image of a wolf can now be appreciated.

2. How is an aesthetic state formed? Is there an aesthetic central in the brain?

Aesthetic studies recognize that only in the aesthetic state can people see things beautifully; the aesthetic state is uninterested. Therefore, is there an uninterested aesthetic central in the human body? According to existing literature, no specialized aesthetic central exists in the brain. However, two different central categories are part of the cognitive structure of the brain. One is the interest central, which absorbs information with interest value, and the other is the shape central, which absorbs the external manifestations of information. The activities of these two centrals determine whether people are in the aesthetic state.

Some experiments report that a monkey's brain houses neurons that can respond to shapes and features (such as food appearance or taste) of special things. The spontaneous reaction and behavior reaction of monkeys to the appearance and smell of food are closely related to the activities of these neurons. The reaction to the shape of some neurons depends on the motivational state of the animal; only when monkeys are hungry can their neurons react to the appearance and taste of the food. If the experiment allows monkeys to eat and the orbital frontal cortex is prevented from reacting to the appearance and smell of food, nervous reactions decline, and monkeys no longer pay attention to the food. However, a number of other neurons maintain a constant reaction to the food's appearance, that is, to encode the sensory quality that responds to the food's appearance instead of the emotional quality. This finding shows that emotional stimulation (enjoyment of eating) and sensory stimulation can be differentiated.

For experimental monkeys, the shape and smell of food characterize the interest value of food and have a value equivalent to the interest value of things. Therefore, only when monkeys have needs of interest can the shape information be noticed. When the monkeys are full, the needs of interest immediately disappear, and the characterization role of the food's shape and smell in the interest value disappears; the interest central no longer reacts. However, in terms of the shape central, the monkeys' feelings toward the shape and smell of food remain, thereby allowing them to process the perceived nature of the shape. However, these two centrals cannot be completely and abstractly separated in a monkey's brain. Therefore, monkeys do not have aesthetic ability.

When people have needs of interest, the perception toward the shape of things will connect with the interest central, and brain activity will perform the manner of

interest. When no interest need is present, the perception toward the shape of things will not connect with the interest central, and brain activity will not perform the manner of interest. The psychological manifestation in this state is the aesthetic state.

3. What is the difference between aesthetics and pleasure?

At present, the difference between aesthetics and pleasure can only be felt and expressed through psychological experience. Consider the particularity of the emotion generation pathway and nerve contact mode resulting in different emotional experiences. The fundamental difference between aesthetics and pleasure is whether the body's internal emotional experience is connected to the interest central.

Related research shows that a stimulus can lead to a basic evaluation, and the results of this evaluation determine whether the individual chooses to approach or avoid the stimulus and leads to physiological changes in people. This change and the feeling generated by the organs will become parallel, the result of which will then be transmitted to the brain. People can further process the changes of the body organs and eventually form a specific emotional experience.

Numerous channels or nerve modes possibly result in emotion, and each channel or nerve mode has its own characteristics. That is, each state in the body can send specific information to the brain's central control; different body states and feelings will result in different emotional experiences. A variety of characteristics blend to form complex emotions with complex features based on the basic emotions.

Interest central and shape central each have unique transmission channels and neural models; they can release their own information and generate different feelings and experiences. When people establish a cognitive relationship with things, they perceive not only the forms of such things but their interest values as well. Interest factors and form factors of things can stimulate the cerebral cortex via their channels and pathways. Different channels will convey different information, feelings, and experiences. When people have needs of interest, survival interest will be of paramount importance, information of interest will become the primary information, and other information is covered and masked; people can only feel the emotion of interest. When people do not have needs of interest, the body will be in a state of no interest. In such a case, the effect of masking the information of interest never exists, and the perception channels and the information can be demonstrated, thereby forming the aesthetic experience.

4. Is it possible to create aesthetic robots?

The mechanism of aesthetic activities is the same for everyone, which means that people's aesthetic appreciation basically follows the same procedure. Entering different data results in different computational results for the same procedure. People's living environment and life experiences are not identical, which then results in different perceptions and ideas, thereby forming specific data on everyone for the process of aesthetic appreciation. People tend to enter their own data under common aesthetic procedures; by computing aesthetic procedures, the unique aesthetic experience is formed. In roughly the same living environment, people can roughly form the same perceptual experience, which means that they have substantially the same aesthetic data expressed as "common beauty." Different living environments and individual and unique experiences form the special data, which result in dissimilar aesthetic experiences expressed as "different beauty."

An aesthetic robot can be designed starting from the aesthetic principle and by making use of the understanding of aesthetic procedures. The robot may have a human-like perceptual mechanism and emotional response program. By simply entering the relevant data, people can simulate the aesthetic state and the aesthetic appreciation results.

References:

- 1、 M. S. Gazzaniga: The Cognitive Neuroscience,Originally published by MA MIT Press,1995;Simplified Chinese characters edition published by Shanghai Education Publishing House arranged by The MIT Press through Big Apple Tuttle Mori Agency,Inc.
- 2、 Eysenck:Psychology:An Integrated Approach,Addison Wesley Longman Limited,1998. Simplified Chinese characters edition published by East China Normal University,2001.
- 3、 K.T. Strongman: Phychology of Emotion:From Everyday Life to Theory(the fifth Edition), John Wiley & Sons Ltd,2003, Simplified Chinese characters edition published by China Light Industy Press,2006.



ABSTRACT

SPOKEN PAPER

P29 ~ P623

CALCULATION OF STORY BY ANALYSIS OF JAPANESE FOLK TALES

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Abstract

The purpose of this research is to examine whether a new story can be created by analyzing the legend. The tool of folklore like the tale type and the motif indexes (Aarne, 1964, Ikeda, 1971, Inada, 1988, Seki, 1950-58, Seki, 1978-80, Thompson, 1955) are used for the analysis. The result of analysis is structured by the technique of the natural language processing like the story grammar and the discourse analysis. And, the computation model of the story is assumed to be a hypothesis and the possibility of the text generation is examined. I clarified the following two points by this research. 1) Various social factors transformed the story. 2) If an existing motif is calculated, it becomes possible to generate a new story.

Calculation of story by analysis of Japanese folk tales

The feature of my empirical literary research is to consider not only the text of the legend but also the relation between the text and the society. The title of material for this research is "Momotaro" (Peach Boy).

Method

"Momotaro" (Peach Boy) is the most famous folk literature in Japan. However, all "Momotaro" is not necessarily the same. More than 680 kinds of varieties circulate this story in Japan. 63 are compared among these according to my original scale.

This story was a rejuvenation type until Edo period (16-19C). I examine the factor converted from the rejuvenation type to the abnormal birth type from the outside of the text (social factor). The factor is the following four points. 1) Prosperity of popular literature. 2) Enactment of elementary school textbook by nation and leveling of story. 3) Diversion of folklore to nationalism. 4) Fight uplift animation in World War II made from Momotaro

I reflect my original scale and show the structure of the story from the following points. { Feature }, { hero's name }, { attendant }, { motivation }, { act }, and { return } (see Table 1). And, I brought the structure of this story together from the viewpoint "Subtraction of the story" and "Addition of the story". "Subtraction of the story" is to be subtracted some motifs from the story. "Addition of the story" is to be added another motif to the story. It is two kinds of motifs that subtracted from "Momotaro" in Edo period. "Motif at rejuvenation" of birth from aged woman. And, "Motif of the bride removing" of having brought the bride from demon's island. "Motif at rejuvenation" and "Motif of the bride removing" are in the co-occurrence relation. On the other hand, the motivation "Why do you go demon extermination?" being talked in "Momotaro" is rare. Most cases are based on tacit consent "Because it is a bad demon, the demon is punished". The Japanese animation in World War II avoided clarifying the motivation and the reason for the invasion. Here, "Momotaro punishes the demon without the motivation" becomes the same motif.

Results

As a result, it becomes possible for the speaker and the receiver to supplement the motivation and the reason even if it misses in the main body of the story. Generally, attendants with whom Momotaro connects the relation of master and servant on the way arrive at demon's island are set as the dog, the monkey, and the pheasant. However, there is a case where the attendant doesn't appear in the talk at all.

Moreover, there is a case where the bee, the mortar, and the cow pie, etc. become attendants. It is inoculated as other stories.

Discussion

I clarified how the story "Momotaro" was influenced from the society. Next, I examine whether it becomes possible to generate the text by processing "Momotaro". I compared Japanese 5 great antiquity including "Momotaro" stories by the tale type and the motif (see Table 2). I was able to derive the operation possibilities of the following legends from this comparative study result as a hypothesis.

("Momotaro" + "Fights Between Monkey and Crab") x "Kachi-Kachi Mountain" =
"Tongue-Cut Sparrow" --> "Magic Ashes make a Cherry-Tree Blossom"

References

- Aarne, A. (1964). *The types of the folktale*. Helsinki: Suomalainen Tiedeakatemia.
- Ikeda, H. (1971). *A type and motif index of Japanese folk-literature*. Helsinki: Suomalainen Tiedeakatemia.
- Inada, K. (1988). *Nippon mukashibanashi tsuukan (General survey and analysis of Japanese folktales vol.28)*. Tokyo: Dohosha.
- Morita, H. (2006). *Literary hypertext*. Tokyo: Yushodo.
- Seki, K. (1950-58). *Nippon mukashibanashi shuusei*. Tokyo: Kadokawa Shoten.
- Seki, K. (1978-80). *Nippon mukashibanashi taisei*. Tokyo: Kadokawa Shoten.
- Thompson, S. (1955). *Motif-index of folk-literature*. Bloomington & London: Indiana Univ. Press.
- Yanagida, K.(1933) . *Birth of Momotaro*. Tokyo: Sanseidou.

Table 1: *Structure analysis on “Momotaro”*

	<i>rejuvenation type</i>	<i>abnormal birth type</i>
Circumstances of birth	born from the peach	old woman gave birth.
Who	Momotaro	Momotaro
With whom	dog, monkey, pheasant	crab, mortar, cows pie, rope, others
Purpose	N/A	N/A
What was done	Demon extermination	Demon extermination
Episode of the end	took the treasure home	brought the bride

Table 2: Structural comparisons of Japanese 5 great folktales

<i>Title</i>	<i>Momotaro</i>	<i>Fights between Monkey and Crab</i>	<i>Tongue-Cut Sparrow</i>	<i>Magic Ashes make a Cherry-Tree Blossom</i>	<i>Kachi-Kachi Mountain</i>
Tale Type	Shuusei 187 (Seki, 1950-58)	Shuusei 59	Shuusei 271A	Shuusei 268	Shuusei 78
	Ikeda 302 (Ikeda, 1971)	Ikeda 210	Ikeda 480D	Ikeda 503F	Ikeda 176
	Taisei 143 (Seki, 1978-80)	Taisei 24	Taisei 191	Taisei 190	Taisei 32
	Tsuukan 127 (Inada, 1988)	Tsuukan 522A	Tsuukan 85	Tsuukan 364A	Tsuukan 531
	AT 513A(S) (Aarne, 1964)	AT 9C(S), AT 210(Ts)	AT 480(S), AT 1143A(Ts)	AT 1655A(S)	AT 1087(Ts)
Characters	old man, old woman, Momotaro, dog, monkey, pheasant, demon	monkey, persimmon, crab, chestnut, bee, cow pie, mortar	old woman, old man, sparrow, cattleman, horse rearing	old woman, dog, old man, the next old man, mortar, ash, lord	old man, asian raccoon, old woman, rabbit
Common episode	Old woman obtained the object at the riverside.	N/A	Old woman obtained the object at the riverside.	Old woman obtained the object at the riverside.	N/A
Motif (Thompson, 1955)	B391 B421 B441.1 B469.10 D981.2 F601.7 F611.3.2 G500 H1221 N538.2 T543.3 T550.2 T596 T615 Z293	B296 B481.3 B762 D1273 D2157.2 F1025 F601.7 F811.19 H1228.2 K1161 K170 K171.9 W111	B222 B222 B350 B451.7 C321.2 F127 F127 F379.1 F379.1 F379.2.2 F379.2.2 H1049 H1049 J2411 J2415 L210 N820 N820 Q272 Q285.1.1 Q285.1.1 Q3 Q3 S167 Z293	B153 B182.1 B211.1.7 B335 B421 D1174 D1263 D1561.1 D1561.1 D1571.1 D422.2.1 D866 D931.1.2 D950 E631 F811.19 J2401 J2411 J2411 J2411 J2415 J2415 N511 N550 Q272	B437.4 B511 B512 B857 G61 G85 J1706 J1706 J1706 J2171.1.3 K1014 K1941 K2310 K2310 K2345 K581.1 K735.2 K800 K800 K800 K910 K926 R210

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STATISTICAL ANALYSIS OF CHARACTER SPEECH PARAMETERS IN DRAMATURGY (BASED ON SHAKESPEARE'S PLAYS)

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Abstract

Drama, one of the oldest arts, is least studied by quantitative methods. Even such simple quantitative characteristics as number of the remarks said by the character, and speech volume – the number of the words making remarks, allows to expand our knowledge about internal structure of dramaturgic work and its influence on spectator.

There were three stages of drama speech volume researches. The first stage was the calculation of the remarks said by the character of drama. This approach even a monologue «To be or not to be» considers to be an ordinary remark, therefore it is clear that the speech volume will be more adequate characteristic of the dramaturgic text. Nevertheless, even the statistics of remarks gives substantial results. Ranging of characters was made after counting the absolute number of the remarks said by characters of the play, i.e. each character was given number $x = 1, 2, 3, \dots$ in decreasing order of absolute number of the remarks said by him (her) and then associated with the size $y(x)$ – relative number of the remarks said by the character in percentage.

Shakespeare's tragedies "Hamlet", "Othello", "King Lear" and «Romeo and Juliet» shows that for the received dependences good approximations are exponential $y = ae^{-bx}$ and power $y = cx^{-d}$. The indices of the exponential approximation can form one group including "Hamlet", "Othello" and "King Lear", and the indices of the power approximation – the other which consists of "Othello", "King Lear" and "Romeo and Juliet". The fact that "Hamlet" and «Romeo and Juliet» aren't crossed in the allocated groups, shows that being tragedies, these works are so different in plot that it finds reflection in their quantitative characteristics. An important finding is that power approximation is better for approximation of

protagonists speech volume, and exponential - for other characters speech volume.

The second stage investigated conformity of speech volume of Shakespeare's tragedies characters to Pareto law or to a principle 20/80 which we formulated as: 20% of characters say 80% of remarks (words). As it turned out Pareto law is carried out with high accuracy in Shakespeare's tragedies. 7 protagonists in "Hamlet" (20 % from total number of characters– 35) say 74,6 % of remarks. The speech volume of the given characters (number of the words said by them) gives even more exact result – 80,9%. It is known that Shakespeare often did not specify exact number of supporting characters: knights, officers, messengers, court etc. Pareto law allows the director to solve «inverse problem»: to find optimal number of characters on a stage.

The third stage of researches carried out the comparison of three groups of the remarks said by protagonists of plays: big, average and small. We distinguished the set of the protagonist remarks, then ranged them in decreasing order of speech volume, then the ordered set has been broken into three groups so that numbers of remarks in corresponding groups concern to each other as $1:q:q^2$, where q – a number more than a unit (Bradford coefficient). The received results of the analysis of Shakespeare's plays "Hamlet", "Othello", "King Lear" and "Much ado about nothing" prove basic feasibility of Bradford rule for Shakespeare's dramaturgic texts. Fluctuations in the size of remarks (for example, the size of a small remark is respectively 5, 3, 4, 6) is connected with natural distinction of created scenic images.

Drama, one of the oldest arts, is least studied by quantitative methods. Even such simple quantitative parameters as *speech volume* – number of the words said by the character, and *speech stream* – number of remarks consisted of pronounced words, allows to expand our knowledge about internal structure of dramaturgic work and its influence on spectator.

There were three stages of drama speech parameters researches. The first stage was the calculation of the speech volume and speech stream said by the characters of drama. It is clear that the speech volume is more exact numerical characteristic than the speech stream, for it is in direct proportion to the time which the actor is speaking on a scene. But the speech stream indicates how often the character speaks on a scene (the character can tell few words, but get into conversation frequently, and, on the contrary, during one-two remarks say all words). The ratio of speech volume to a

speech stream gives *average length of character remarks*, i.e. characterizes his "verboseness". Data on the three given quantitative parameters of Shakespeare "Hamlet" are represented in table 1 where ordering of the tragedy characters is made on speech volume decrease.

It's easy to see from table 1 that Hamlet is the true protagonist of the tragedy: his speech volume is 4 times more, and the speech stream is 3 times more than Claudius has – his closed partner on dialogue. Table 1 allocates also 7 protagonists of the tragedy (Hamlet, Claudius, Polonium, Horatio, Laertes, Ophelia, Gertrude) which have the greatest speech volume and speech stream. Then the characters speech stream decreases twice, and it separates protagonists from supporting characters. Similar tables were made for another Shakespeare's tragedies: "Othello", "King Lear" and "Romeo and Juliet". For example, in "Othello" five protagonists are allocated even more sharply on speech parameters: Othello, Iago, Desdemona, Cassio and Emilia after which the speech volume decreases twice, and the speech stream – three times.

Table 1

Speech volume, speech stream and average length of remarks of “Hamlet” characters

No	Characters	Speech volume (number of pronounced words)	Speech stream (number of pronounced remarks)	Average length of remarks (in words)
1	HAMLET, son to the late King, and nephew to the present King	9559	381	25,09
2	CLAUDIUS, King of Denmark	2581	110	23,46
3	POLONIUS, Lord Chamberlain, advisor to Claudius	1989	87	22,86
4	HORATIO, friend of Hamlet	1454	113	12,87
5	LAERTES, son of Polonius	1038	63	16,48
6	OPHELIA, daughter of Polonius	925	57	16,23
7	GERTRUDE, Queen of Denmark, mother of Hamlet	740	69	10,72
8	First gravedigger	615	34	18,09
9	ROSENCRANTZ, courtier	536	47	11,4
10	Ghost of Hamlet's Father	499	14	35,64
11	MARCELLUS, an officer	322	38	8,47
12	OSRIC, courtier	315	24	13,13
13	GUILDENSTERN, courtier	278	32	8,69
14	Actor-King	267	4	66,75
15	First actor	255	8	31,88
16	Actor-Queen	185	5	37
17	BERNARDO, an officer	157	23	6,83
18	FORTINBRAS, Prince of Norway	133	6	22,17
19	VOLTIMAND, courtier	107	2	53,5
20	Second gravedigger	81	12	6,75
21	First Gentleman	69	2	34,5
22	A Priest	63	2	31,5
23	REYNALDO, servant to Polonius	56	13	4,31
24	Courtier	56	3	18,67
25	Second Gentleman	55	1	55
26	A Norwegian Captain	55	8	6,88
27	FRANCISCO, a soldier	39	8	4,88
28	First Sailor	33	2	16,5
29	Messenger	31	2	15,5
30	LUCIANUS	30	1	30
31	English Ambassadors	28	1	28

32	Actor-Prologue	10	1	10
33	Attendant	9	1	9
34	CORNELIUS, courtier	8	1	8
Total:		22578	1175	19,22

As it is clear from table 1, characters ordering on speech volume doesn't mean ordering on the speech stream, however upon transition to ordering on the speech stream the first seven of protagonists remains invariable, though it changes the sequence a little. We can see that Horatio, being true friend, talks with Hamlet more often (he has the second speech stream after Hamlet). However, according to his social status, Horatio is less verbose, than Hamlet, Claudius and Polonium. And real courtier Polonium follows King Claudius in speech volume and in a speech stream. Laertes and Ophelia, Polonium children, have surprisingly close speech parameters, and the average length of their remarks simply coincides.

Let's pass from absolute speech parameters to the relative: we enter *the relative speech volume* as words share said by the character (in percent of total number of words in the play) and *the relative speech stream* as a share of remarks of the character (in percent). Fig. 1 presents the relative speech volume of "Hamlet" characters. The relative speech stream of "Hamlet" characters has the same look, as well as other Shakespeare's tragedies. So, schedules of relative speech parameters are qualitatively identical, so it is possible instead of number of words to use number of remarks that is much simpler. It is clear that the speech stream (absolute number of remarks) in various translations and in the original language will be the same. The speech volume (absolute number of words) in various translations changes slightly, and it doesn't influence on relative parameters.

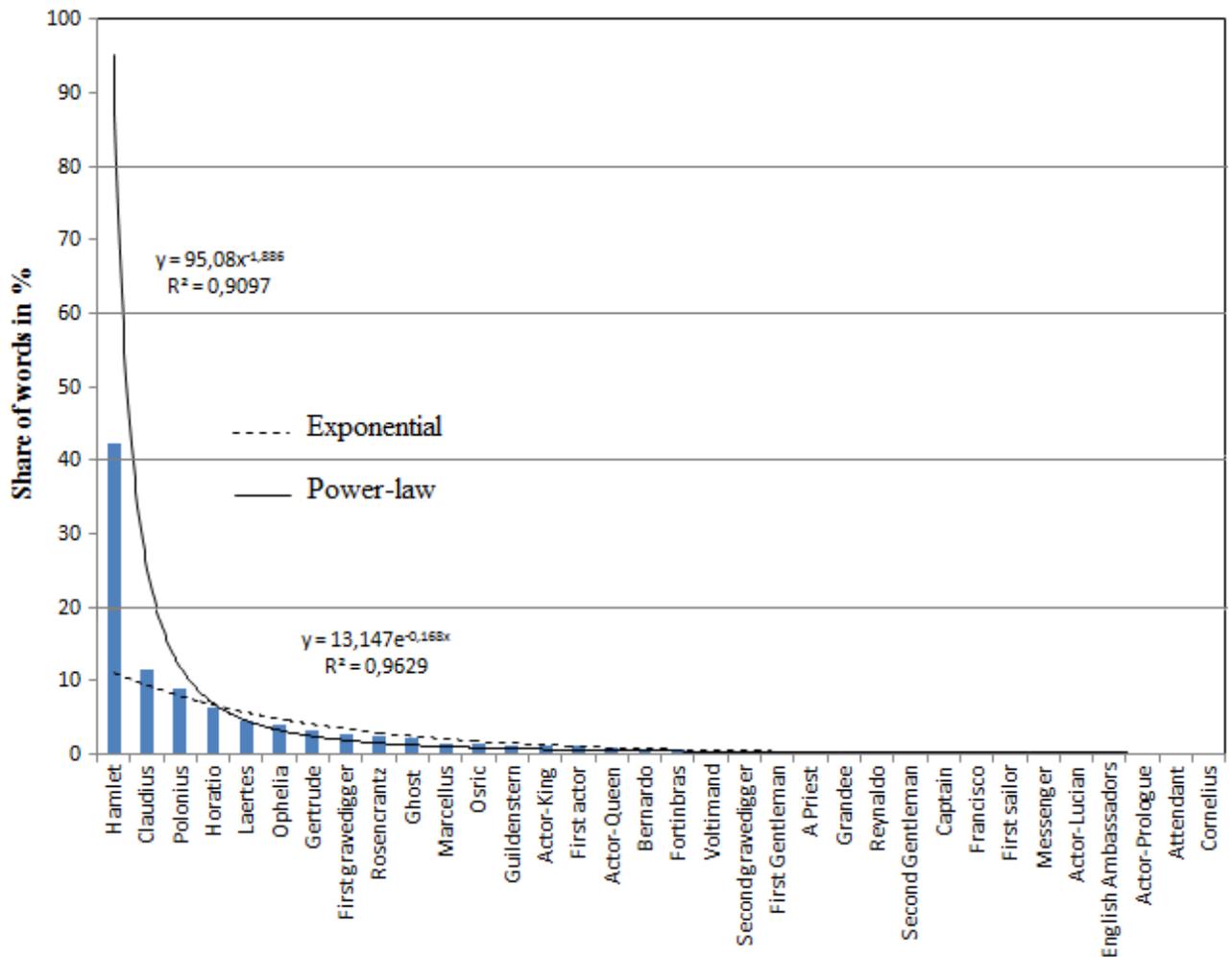


Fig. 1. Relative speech volume of "Hamlet" characters

Let us find analytical approximations of the received empirical dependences. Let x is the number of the play character in decreasing order of the corresponding speech parameter ($x = 1, 2, 3, \dots, 34$), $y(x)$ – is the relative speech parameter (speech volume or speech stream). It is clear that approximations by exponential $y = ae^{-bx}$ or power $y = cx^{-d}$ functions will be the best for our data. The values of approximation constants a, b, c, d , founded by the least-squares method, are given in table 2. Coefficients of approximation validity R^2 calculated for each case are close to 1.

The analysis of table 2 gives the following conclusions. At exponential and power approximations indexes b and d remain almost invariable for words and remarks, which reveals identical "speed of decrease" of key speech parameters. Multiplicative coefficients a and c in exponential approximation differ for 16,0% and in power approximation – for 8,6% (in "Hamlet"); and for 4,7% and 14,3% respectively in "Othello". Thus, "initial points" at exponential and power

approximations of speech volume and a speech stream almost do not differ. It confirms once again our conclusion that it's possible to consider speech stream instead of speech volume, if it is necessary.

Table 2

Approximation constants of “Hamlet” and “Othello” speech parameters

Elements of dramaturgic text	Exponential approximation		Power approximation		Average number per character
	<i>a</i>	<i>B</i>	<i>c</i>	<i>d</i>	
«Hamlet»					
Words	13,15	0,168	95,08	1,886	664,1
Remarks	15,65	0,17	104,04	1,867	34,56
«Othello»					
Words	24,705	0,263	140,13	2,22	763,16
Remarks	23,55	0,245	120,08	2,08	48,44

If we construct charts of average lengths of remarks, keeping order of characters on speech volume, instead of monotonously decreasing function (fig. 1), we will receive very chaotic charts for all Shakespeare's plays. It is unexpected that Shakespeare's tragedy protagonists aren't too verbose in the remarks. Verbosity is the distinctive feature of the supporting characters, who speak seldom, but a lot. In "Hamlet" the most verbose appeared to be the Player-King, who in 4 remarks pronounces 267 words (the average remark length is 66,75). In "Othello" it is Herald (1 remark – 80 words). This proves again how precisely Shakespeare showed the nature of the character through his speech parameters. It is necessary to manage to pronounce in these remarks more words, for spectator can embody character's image. Voltimand's words «In that and all things will we show our duty» are the best possible way to describe this principle.

If we order protagonists of the play on average length of remarks, we shall receive quite regular chart which approximation is linear dependence: $y = -2,53x+28,38$ ($R^2 = 0,9552$) for "Hamlet" and $y = -2,35x+22,15$ ($R^2 = 0,8414$) for "Othello". Rather small angle of inclination of approximating straight lines ($k \approx -2,5$) shows Shakespeare's skill. The playwright makes all protagonists rather equal in rights,

but nevertheless unostentatiously ranges them.

Analyzing the play "Hamlet" we notice, that even in average length of remarks Polonium obsequiously follows Claudius, coming close, but not overtaking the king. Laertes and Ophelia have actually identical average length of remarks. The most laconic among protagonists is the queen Gertrude – in her situation it's really better to keep silent.

The second stage investigated conformity of speech volume of Shakespeare's tragedies characters to Pareto law or to a principle 20/80 which in our context is formulated as: 20% of characters say 80% of remarks (words). There are 34 characters, 20% from this number gives 6,8, i.e. 7 characters. Using table 1 it is easy to count up that these 20% of characters say 75% of remarks. Passing to more exact speech parameter – to speech volume (number of said words) we receive that 20% of characters say 81 % of the words. As we see, the Pareto law is executed with surprising accuracy in "Hamlet".

The same principle works in "Othello" (25 characters, 20% from this number is 5). It is easy to count up that these 20% of characters say 79,0% of remarks. Passing to speech volume we receive that 20% of characters say 81,4% of words. In both plays protagonists make up 20% of all characters, i.e. Shakespeare chose the ratio of total number of characters and protagonists as if he knew Pareto's law!

We have noticed that even such speech parameter as average length of remark allows drawing certain qualitative conclusions on nature of dramaturgic work characters. Duration of remark can serve as more substantial speech parameter: what remarks the character pronounces – small, average or large? The question is what remarks consider to be small, average or large? At the third stage of researches we have tried to solve precisely mathematically a problem of splitting of remark set into three classes, based on the Bradford's law of scattering (Bradford, 1948).

We allocate the set of character's remarks and make ranging the remarks on volume (number of words) in decreasing order. Then, according to the Bradford's law, this ordered set can be broken into three subsets so that quantity of remarks in the corresponding subsets will belong to each other as terms of geometric progression

$$1: q: q^2 \quad (1)$$

where q – is a number bigger than 1 (Bradford multiplier). According to our

calculations, the Bradford multiplier of different characters varies in the range from 1 to 2, and the length of remarks at an average changes in intervals: small remarks – (1, 10), averages – (10, 25), large – more than 25 words.

It is interesting to note the Bradford multiplier q to some extent characterizes character's temperament. At low values q ($q \approx 1$) character's speech stream parameters are almost the same: the character says almost identical number of small, average and large remarks, he is deprived of the rough emotions influencing to duration of his speech. In "Hamlet" the examples are Polonium and Gertrude – the first, being the courtier, watchfully-numbered, the second person is numbed in her incestuous sin. On the contrary, at high values q ($q \approx 2$) the character says a few large and a lot of small remarks. The character is impulsive, he often has short dialogues. Examples are Claudius, Laertes and Horatio that corresponds to their nature and their role in the tragedy: Claudius fights for himself and at the same time against his own conscience, Laertes – for the lost sister, Horatio – for the humiliated friend. Hamlet and Ophelia takes intermediate place.

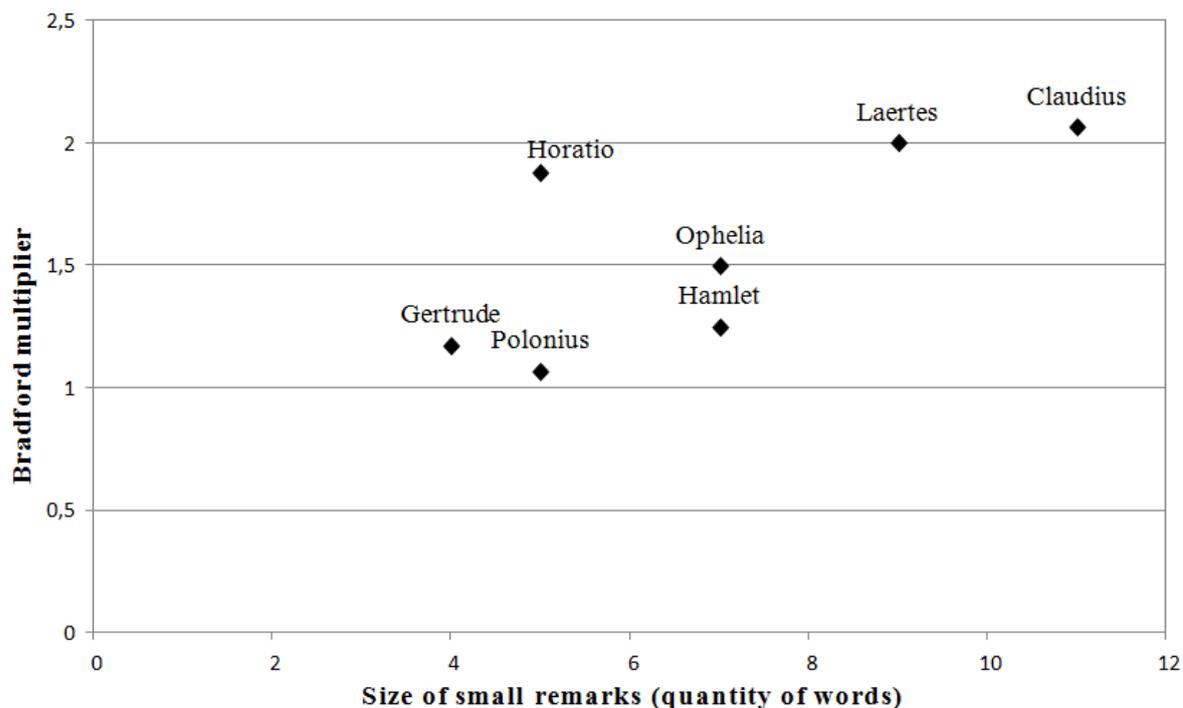


Fig. 2. "Hamlet" protagonists parameters on the basis of small remarks and Bradford multiplier

Fig. 2 submits data, relating to small remarks of "Hamlet" protagonists in coordinates: X – the maximum size of a small remark (in words), Y – Bradford coefficient q . Each character in these coordinates has the particular location.

Fig. 2 data can be interpreted as follows:

- A loving couple Hamlet and Ophelia are close to each other in the center of events.
- On the contrary, the king and the queen are distant from Hamlet as in the tragedy – his own mother and the step-father became strangers for Hamlet.
- At the same time Claudius and Gertrude appear to be distant from each other as in their internal drama: though Gertrude has become Claudius's wife, but they are far away from each other in their sin.
- Polonium appears to be the closest to Gertrude: false situation has brought them together.
- Horatio and Laertes are equidistant from Hamlet and Ophelia, but at insignificant distance.
- At last, Claudius is at the maximum distance from all characters – he is really lonely in his secret crime.

The offered approach allows to carry out an assessment of characters on the basis of the found dependences, reflecting characters nature and the main plotlines of the dramaturgic works.

References

1. Bradford, S.C. (1948). *Documentation*. – L.: Crosly Lockwood.

HOW DOES THE SCENOGRAPHY CONTRIBUTE TO THE AESTHETIC EXPERIENCE OF THE PERFORMANCES OF DIFFERENT TYPES OF ARTISTIC DANCE?

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Abstract: *This paper explores the aesthetic experience of the performances of different types of artistic dance, along with the matter of how scenography contributes to aesthetic experience of these performances.*

Thirty-three participants assessed the aesthetic experience of dance in three different performances of different types of artistic dance including classical ballet, contemporary dance and folk dance. All performances were completed live on the Jovan Đorđević Stage of the Serbian National Theatre, Novi Sad.

Aesthetic experience of dance was measured by the instrument for measuring the aesthetic experience of dance, constructed in the previous study. The instrument consists of 12 seven-point scales, and each dimension was measured with 4 rating scale: Dynamism (expressive, powerful, strong, exciting), Fascination (eternal, unspeakable, unique, exceptional) and Evaluation (delicately, elegant, seductive, emotionally).

The participants also assessed on seven-point scale the extent to which scenography contributes to their aesthetic experience.

The design was repeated with all the subjects, which means that all participants watched and evaluated all the performances.

The results showed that the aesthetic experience of the performances of various types of dance is different, and that there is no significant difference between ratings of the extent to which scenography contributes to their aesthetic experience.

The results of correlation analysis showed a positive correlation between the dimensions of aesthetic experience and the extent to which scenography contributes to aesthetic experience in performances of classical ballet and folklore. In the performance of classical ballet the more higher assessment of the extent to which scenography contributes to aesthetic experience is, the higher the assessments of dimensions of Dynamism and Evaluation are, while in the performances of folklore,

the more higher assessment of the the extent to which scenography contributes to aesthetic experience is, the higher the assessments of dimensions of Dynamism are.

The different implications of the results of this research about contribution of scenography to aesthetic experience in the field of dance are discussed.

The results of many different studies and research (Arnold, 1995; Calvo-Merino, 2009; Cross, Hamilton, & Grafton, 2006; Hagendoorn, 2003, 2005, 2011; Grove, Stevens, & McKechnie, 2005; Montero, 2006; Stevens, Schubert, Morris, Frear, Chen, Healey, Schoknecht, & Hansen, 2009; Sevdalis & Keller, 2011) have provided numerous interesting answers to the question about the aesthetic experience of dance. As it has been suggested by authors (Grove, Stevens, & McKechnie, 2005; Stevens, McKechnie, Glass, Schubert, & Chen, 2007; Stevens, Schubert et al., 2009; Stevens, Winskel, Howell, Vidal, Milne-Home, & Latimer, 2009) who investigated aesthetic experience of dance from the perspective of cognitive oriented research, there are numerous factors affecting the observers' aesthetic experience of dance. According to Stevens, Winskel et al. (2009) and Glass (2005) these are as follows: visual elements, characteristics of dancers, movement, choreography, interpretation, emotional recognition, novelty, spatial/dynamic, intellectual and emotional stimulation and previous experience of the observer. It can be noticed that among factors influencing aesthetic experience of the observer the largest number includes the factors related to dancer and characteristics of their dance, but there are, on the other hand, the factors characterizing the observer. Likewise it can be assumed that the characteristics of the space itself, lights, décor and style of physical environment affect the aesthetic experience of the observer. In that sense the main interest of this paper is to provide an answer to the question how the scenography contributes to the aesthetic experience of the performances of different types of artistic dance?

According to Scorzin (2011) scenography means structures and settings, lights, projections, sounds, props, costumes in relationship to space, than also, scripts, texts, acting and performing bodies and the audience as well. Howard (2002) includes almost everything as element of scenography: from the space, text, performer to the audience. For Aronson (2005) scenography implies something more than creating scenery and it carries a connotation of all encompassing visual-spatial construct. Concerning the fact that it is about highly interdisciplinary and trans-generic phenomenon (Scorzin, 2011), difficult to define clearly, this paper tends to bring more insights about the relationship between scenography and aesthetic experience of artistic dance.

Since artistic dance, understood in this paper as a system of organized and

formalized movements conveying a meaning which an artist express consciously and transfer to spectator on purpose (cf. Jowitz, 1994; Layson, 1994; Carter, 1998; Bloom & Chaplin, 2000; Grove, Stevens, & McKechnie, 2005; Tufnel & Crickmay, 2006), is closely tied to the presence of spectators and importance of dancing context (Layson, 1994; McFee, 1992), and since scenography is a complex part of dancing context (Howard, 2002), this research aims at investigating the relationship between aesthetic experience of dance performances and the extent to which scenography contributes to aesthetic experience of these performances.

In this research aesthetic experience is understood as a special state of mind that characterized by a focus on certain object which engages and fascinates a subject, whereas all other actions in the environment are excluded from consciousness (Marković, 2007, 2010; Ognjenović, 2003). The results of recent factor analytical study (Polovina & Marković, 2006) indicated that aesthetic experience which was operationalized through descriptors (fascinating, irresistible, unique, eternal, profound, exceptional, universal and unspeakable,) is the unique phenomenon that cannot be separated into independent components. Authors suggested that the essence of the aesthetic experience consists of fascination with extraordinary objects; fascination may appear in situations with different emotional qualities and may relate to both pleasant and unpleasant objects and situations (Marković, 2010). Therefore, as it has been shown (Polovina & Marković, 2006; Marković, 2010), similar characteristics of aesthetic experience, may be empirically specified as well. Based on these findings an instrument for measuring the aesthetic experience of dance performances was constructed (Vukadinović, 2010). The instrument consists of 12 seven-degree rating scales measuring three dimensions of aesthetic experience of dance performances: Dynamism (expressive, powerful, strong, exciting), Fascination (eternal, unspeakable, unique, exceptional) and Evaluation (delicately, elegant, seductive, emotionally).

The objective of this study consisted of exploring the aesthetic experience of the performances of different types of artistic dance, along with the matter of how scenography contributes to aesthetic experience of these performances. In order to determine the differences of participants' aesthetic experience of dance performances and than the differences in the matter of how scenography contributes

to aesthetic experience of these performances, Analysis of variance was conducted. To reveal whether there is relationship between the aesthetic experience of dance performances and the extent to which scenography contributes to aesthetic experience of these performances Correlation analysis was carried out.

Method

This research aimed at investigating the relationship between dimensions of aesthetic experience of performances of different types of artistic dance and the extent to which scenography contributes to aesthetic experience of these performances.

Participants

Thirty-three students from the Faculty of Philosophy, University of Novi Sad.

Stimuli

Three different performances of different types of artistic dance, including classical ballet, contemporary dance and folk dance. Dance performances which were included in the repertoire at the time of this research were selected.

Classical Ballet: The Lady of the Camellias, Giuseppe Verdi, Libretto: Krunislav Simić, Choreographer and director: Krunislav Simić. Performed by the ensemble of The Serbian National Theatre, Novi Sad.

Contemporary dance: Divine Comedy, inspired by Dante Alighieri, Choreographer and director: Staša Zurovac, Jovan Đorđević Stage, Performed by the ensemble of The Serbian National Theatre, Novi Sad.

Folk dance: Vilinska planina, the head of performers, costume designer and screenwriter: Dragan Milivojević, the Annual Concert of KUD "Svetozar Marković". Performed by the ensemble of the KUD "Svetozar Marković".

All performances were completed live on the Jovan Đorđević Stage of The Serbian National Theatre, Novi Sad, in front of the spectators. Dimensions of the theatre stage are: stage space width: 26.5m; stage space depth: 17.5m. Audience space width: 27.00m; audience space depth: 15m. These ratios, i.e. the ratio of the size of stage with the size of the audience space, are quite similar to the one that

Hočevar (2003) regards as ideal.

Instrument

Aesthetic experience of dance was measured by the instrument for measuring the aesthetic experience of dance, constructed in the previous study (Vukadinović, 2010). The instrument consists of 12 seven-point scales, and each dimension was measured with 4 rating scale: Dynamism (expressive, powerful, strong, exciting), Fascination (eternal, unspeakable, unique, exceptional) and Evaluation (delicately, elegant, seductive, emotionally). The participants also assessed on seven-point scale the extent to which scenography contributes to their aesthetic experience.

Procedure

Having observed the dance performance participants assessed on seven-point scales the aesthetic experience of dance along with the matter of how scenography contributes to aesthetic experience of the observed performance.

The design was repeated with all the subjects, which means that all participants watched and evaluated all three performances. The time allotted for the ratings was ten minutes.

Results

The results showed that the effect of the type of artistic dance performance on the assessment of aesthetic experience of dance performances is statistically significant ($F(3, 6) = 1380.245a, p < .000$). Table 1 shows the differences between the observed types of the artistic dance by every dimension of aesthetic experience of dance performances.

Table 1 Participants' assessments of dimensions of aesthetic experience in performances of different types of artistic dance.

PERFORMANCES	AESTHETIC EXPERIENCE OF DANCE					
	Dynamism		Fascination		Evaluation	
	$F(2, 64) = 5.581, p < .006$		$F(2, 64) = 3.648, p < .032$		$F(2, 64) = 38.456, p < .000$	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Performances						
<i>Classical Ballet</i>	5.64	.5689	5.41	.5268	3.51	1.3289
<i>Contemporary dance</i>	6.20	.8255	4.64	1.3618	5.78	.7990
<i>Folk dance</i>	6.14	.9683	4.70	1.6926	5.31	1.0938

The application of LSD post hoc test showed that performance of classical ballet differs statistically significant from performances of contemporary dance and folk dance. Regarding the assessments of dimension of Dynamism in performance of classical ballet, they are significantly lower than the assessments of the performance of contemporary dance ($p < .002$) and folk dance ($p < .011$). In the case of the dimension of Fascination the assessments of the performance of classical ballet are significantly higher comparing them to the assessments of the performance of contemporary dance ($p < .008$) and folk dance ($p < .032$). Concerning the dimension of Evaluation in the performance of classical ballet, the assessments of this dimension are significantly lower than the assessments of performances of contemporary dance ($p < .000$) and folk dance ($p < .000$). Also, the application of LSD post hoc test showed that there are no statistically significant differences between performances of contemporary dance and folk dance in assessments of participants regarding all three dimensions of aesthetic experience.

Concerning the matter of how scenography contributes to aesthetic experience of observed performances the results have shown that there is no

statistically significant difference between observers' ratings of the extent to which scenography contributes to their aesthetic experience.

The results of correlation analysis showed a positive correlation between the dimensions of aesthetic experience and the extent to which scenography contributes to aesthetic experience in performances of classical ballet and folk dance.

In the performance of classical ballet Pearson Correlation Coefficient is statistically significant for correlation between dimension of Dynamism and the extent to which scenography contributes to aesthetic experience ($r = .368$, $p < .05$). Also, Pearson Correlation Coefficient is statistically significant for correlation between dimension of Evaluation and the extent to which scenography contributes to aesthetic experience ($r = .471$, $p < .001$). In both cases the direction of correlation is positive, which means the higher assessment of the extent to which scenography contributes to aesthetic experience is, the higher the assessments of dimensions of Dynamism and Evaluation are.

In the performances of folk dance, results showed a positive correlation between the dimension of Dynamism and the extent to which scenography contributes to aesthetic experience ($r = .420$, $p < .05$), which means the higher assessment of the extent to which scenography contributes to aesthetic experience is, the higher the assessments of dimensions of Dynamism are.

Discussion and conclusion

Research results have shown that among the participants there are differences in the assessments of the aesthetic experience of different types of artistic dance performances. Since the general formal description (by characteristics such as dance technique, dynamics, movement elegance, and complexity of movements) of different types of artistic dance matches the subjective experience of spectators (Vukadinović, 2008), these results were expected. For example, it was to be expected that the performance of classical ballet would have lower assessments regarding dimension Dynamism due to its formal characteristics like insistence on the harmony and symmetry of movements, strict rules of academic dance which include a pointé technique, using space in a straight or diagonal line, etc. (Warren, 1990;

Vaganova, 1969).

Concerning the effect of scenography on the aesthetic experience of different types of artistic dance performances, the research has shown interesting results. It has been revealed that there is no significant difference between observers' assessments of the extent to which scenography contributes to their aesthetic experience. Scenography contributes to the aesthetic experience of each of the three performances to the same extent, and it is most likely that the participants attach a remarkably similar amount of significance to scenography irrespective of the performance, which further shapes their aesthetic experience. On the other hand, beside the extent to which scenography contributes to aesthetic experience of dance performances, the results have shown which dimensions of aesthetic experience can be related to the contribution of scenography.

Additionally, the results of correlation analysis reveal that there is a positive correlation between the dimensions of aesthetic experience and the extent to which scenography contributes to aesthetic experience in performances of classical ballet and folk dance. In a classical ballet performance, the higher the assessment of the extent to which scenography contributes to aesthetic experience is, the higher the assessments of dimensions of Dynamism and Evaluation are. In the performances of folk dance, the higher the assessment of the extent to which scenography contributes to aesthetic experience is, the higher the assessments of dimensions of Dynamism are.

These findings suggest that scenography contributes mainly to the judgments of how expressive, strong, powerful, exciting, elegant, seductive and emotional some types of artistic dance performances seem. Although there is a positive correlation between some dimensions of aesthetic experience of dance performances and the extent to which scenography contributes to the aesthetic experience of these performances, these results should be understood with reserve and in a broader context, especially since the audience tend to register scenography as a multisensory experience (McKinney, 2008). A recent study (McKinney, 2008) about the nature of communication between scenography and its audience has reported that viewers respond to color, texture, spatial relationship between scenographic objects and their compositional relationship. On the basis of the aforementioned study

(McKinney, 2008) these results should be taken with reserve because particular scenographic variables (like lighting, costumes, color or spatial relationships, etc.) have not been empirically tested. Additionally, a small number of different types of stimuli (dance performances) limits our ability to determine with greater precision the types of performance where scenography contributes to certain dimension of aesthetic experience.

Having in mind all the limitations of this paper, it can be concluded that scenography contributes to the aesthetic experience of different types of artistic dance performances, creating a positive relationship between its contribution and different dimensions of aesthetic experience of these performances. It can also be concluded that the findings of this research support the previous finding that scenography is inseparable from the performance event (McKinney, 2008; Howard, 2002; Aronson, 2005; Scorzin, 2011).

References

- Arnold, P. J. (1995). Objectivity, Expression, and Communication in Dance as a Performing Art. *Journal of Aesthetic Education*, 29 (1), 61-68.
- Aronson, A. (2005). *Looking into the Abyss: Essays on Scenography*. University of Michigan: The University of Michigan Press.
- Blom, A., & Chaplin, L. (2000). *The Moment of Movement*. London: Dance books.
- Calvo - Merino, B. (2009). Neural Signatures of the Aesthetic of Dance. In Stoc, C. (Ed.) *Dance Dialogues: Conversations across cultures, artforms and practices*. Australian Dance Council - Ausdance Inc. and Queensland University of Technology, Faculty of Creative Industries.
- Carter, A. (1998). *Dance Studies Reader*. London & New York: Routledge.
- Cross, E. S., Hamilton, A.F., & Grafton, S. T. (2006). Building a motor simulation de novo: observation of dance by dancers. *Neuroimage*, 31 (3), 1257 – 1267.
- Glass, R. 2005. Observer Response to Contemporary Dance. In: Grove, R., Stevens, C. & McKechnie, S. (Eds). *Thinking in Four Dimensions. Creativity and Cognition in Contemporary Dance*, (pp. 107-121). Melbourne University Press.
- Grove, R., Stevens, C. & McKechnie, S. (2005). *Thinking in Four Dimensions. Creativity*

- and Cognition in Contemporary Dance*. Melbourne University Press.
- Hagendoorn, I. (2003). The Dancing Brain. *Cerebrum*, 5 (2), 19 – 34.
- Hagendoorn, I. (2005). Dance Perception and the brain. In Grove, R., Stevens, C. & McKechnie, S. (Eds.). *Thinking in four dimensions*, (pp. 137 – 148). Melbourne: Melburn Universiti publishing.
- Hagendoorn, I. (2011). Dance, Choreography and the Brain. In Melcher, D. & Bacci F. (Eds.) *Art and the Senses*, (pp.499 – 514).Oxford: Oxford University Press.
- Howard, P. (2002). *What is Scenography?* London: Routledge.
- Hočevar, M. (2003). *Prostor igre*. [Dance space]. Beograd: Jugoslovensko dramsko pozorište.
- Jowitt, D. (1994). Expression and expressionism in American modern dance. In Adshead – Lansdale, J. & Layson J. (Eds.). *Dance history an introduction*, (pp.169-181). London & New York: Routledge.
- Layson, J. (1994). Historical perspectives in the study of dance. In Adshead – Lansdale, J. & Layson, J. (Eds.). *Dance history an introduction*, (pp. 4-17). London & New York: Routledge.
- Marković, S. (2007). *Opažanje dobre forme*. [Perception of figural goodness]. Belgrade: Belgrade University.
- Marković, S. (2010). Aesthetic Experience and the Emotional Content of Paintings. *Psihologija*, 43 (1), 47-64
- McFee, G. (1992). *Understanding Dance*. London & New York: Routledge.
- McKinney, J. (2008). *The nature of communication between scenography and its audience*. PhD Thesis, University of Leeds.
- Montero, B. (2006). Proprioception as an Aesthetic Sense. *The Journal of Aesthetics and Art Criticism*, 64 (2), 231-242.
- Ognjenović, P. (2003). *Psihološka teorija umetnosti*. [The Psychological Theory of Art]. Belgrade: Gutenbergova galaksija.
- Polovina, M., & Marković, S. (2006). Estetski doživljaj umetničkih slika. [Structure of aesthetic experience]. *Psihologija*, 39 (1), 39-55.
- Scorzin, P. (2011). Metascenography: On the Metareferential Turn in Scenography. In Warner Wolf (Ed.). *The Metareferential Turn in Contemporary Arts and Media: Forms, Functions, Attempts at Exploring*, (pp. 259-279). Amsterdam – New

York: Rodopy B.V.

- Sevdalis, V. & Keller, P.E. (2011). Captured by motion: Dance, action understanding and social cognition. *Brain and Cognition*, 77, 231-236.
- Stevens, K., McKechnie, S., Glass, R., Scuhubert, E. & Chen, J. (2007). Methods for Measuring Audience Reaction. Sydney: *The Inaugural International Conference on Music Communication Science*. December, 155-158.
- Stevens, C. J., Schubert, E., Morris, R.H., Frear, M., Chen, J., Healey, S., Schoknecht, C. & Hansen, S. (2009). Cognition and the temporal arts: investigating audience response to dance using PDAs that record continuous data during live performance. *International Journal of Human-Computer Studies*, 67, 800-813.
- Stevens, C., Winskel, H., Howell, C., Vidal, L., Milne-Home, J. & Latimer, C. (2009). Direct and Indirect Methods for Measuring Audience Reactions to Contemporary Dance. Available at: <http://www.ausdance.org.au/resources/publications/dance-dialogues/papers/measuring-audience-reactions-to-contemporary-dance.pdf> [Accessed: 15 November 2011].
- Tufnel, M., & Crickmay, C. (2006). *Body, Space, Image*. London: Dance Books.
- Vaganova, A. (1969). *Basic Principles of Classical Ballet. Russian Ballet Technique*. Courier Dover Publications.
- Vukadinović, M. (2008). *Subjektivni doživljaj različitih tipova umetničke igre*. [Subjective Experience of different types of artistic dance]. Unpublished Master's Thesis, Belgrade University.
- Vukadinović, M. (2010). *Odnos estetskog doživljaja plesača i estetskog doživljaja publike*. [Relation between aesthetic experience of a dancer and aesthetic experience of audience]. Unpublished PhD Thesis, Belgrade University.
- Warren, G.W. (1990). *Classical Ballet Technique*. University of Southern Florida.

VISUAL ART PERCEPTION AND EVALUATION IN SCHIZOPHRENIA

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Abstract

Brain disorders can affect the perception of art. However, it is less clear if brain disorders also impair the evaluation of art. Assessing the capacity to evaluate art can be problematic because evaluations are inherently subjective and cannot be regarded as accurate or inaccurate. To address this methodological limitation, we adapted the use of the Assessments of Art Attributes (AAA), which has been used to quantify changes in the production or perception of art attributes following neurologic disease. The AAA uses 24 paintings and includes 6 conceptual, 6 perceptual and two evaluative scales. The inherent variability of evaluations (preference and interestingness) by healthy participants makes it difficult to assess deviations in performance with disease. We adapted the AAA to examine the assessment consistency of a conceptual (representational accuracy), a perceptual (color tones) and an evaluative judgment (preference). Twelve of the original 24 paintings in the AAA were used in a forced choice paradigm in which participants saw each possible pairings of painting. For each pair, they judged which of the two would be rated higher on attributes of representational accuracy, color tones, and preference. The logic motivating this design is that even for an inherently subjective judgment like preference, participants should be internally consistent. That is, if A is preferred over B, and B is preferred over C, then A should be preferred over C. Deviations from this transitivity would indicate instability in judgment. The 12 paintings and 3 scales were selected with the following characteristics based on our published normative data. The rank order of the 12 paintings on all 3 scales were not significantly correlated (Spearman correlations: preference and color tone: $r(12) = .455$, $p = .138$; preference and accuracy: $r(12) = -.231$, $p = .471$; accuracy and color tone: $r(12) = -.238$, $p = .457$)

and differences between the pairwise Likert ratings for the 3 scales were not significantly different ($F(2,195) = .870, p = .421$). This adapted version of the AAA was administered to 16 schizophrenia outpatients (mean age: 40.94, range: 24 to 55, sex: 11 males and 5 females) and 7 age and education matched control participants. Participants were also administered two self-report measures of anhedonia: The Temporal Experience of Pleasure Scale (TEPS) and the Physical Anhedonia Scale (PAS). People with schizophrenia were no different than control participants in their consistency of judgments of representational accuracy ($U = 44.0, p = .43$) indicating that they understood the task. However, they were less consistent in their judgments of preference ($U = 25.5, p < .05$) and of color tones ($U = 15.5, p < .01$). The degree of patients' preference inconsistency correlated with their scores on the anticipatory pleasure subscale of the TEPS (Spearman $R = -0.54, p = 0.03$) but not with the consumatory subscale or the PAS. These data suggest that the hedonic experience in schizophrenic patients can fractionate and that their visual art preference judgments may be linked to deficits in anticipatory pleasure.

Introduction

Since the late 19th century, our knowledge of the brain bases of cognitive and affective functions was derived from the effects of brain damage on people's abilities. From clinical observations the basic biology of language, perception, and motor control were discovered. Over the 20th century, cognitive neurology and neuropsychology benefited from the incorporation of methods from experimental psychology. Our understanding of memory, emotional processing, decision-making and virtually every domain of cognition advanced from experimental analysis of patients with brain damage. Despite the recent ascendancy of functional neuroimaging, the inferential power of lesion studies is robust (Chatterjee, 2005; Fellows et al., 2006). Yet, the neuropsychology of art has remained anecdotal in spirit and has not made similar experimental advances.

Many have reported art produced by people with neurologic disease (Bogousslavsky & Boller, 2005; Zaidel, 2005) with the hope of inferring the neural bases for artistic production from its derangement by brain damage (Chatterjee, 2006). Despite the fact that such observations date back at least to the 1940s (Alajouanine, 1948), the field has not matured (Chatterjee, 2009). Inferences are drawn from a collection of anecdotal observations with a few art examples. We are left with a collection of anecdotes that are fascinating by themselves, but do not contribute to a comprehensive understanding of the systems involved, or any formal tests of hypotheses. A critical obstacle to advancing this work has been the lack of quantitative measures. How do we quantify a work of art? Doing so must be critical if we are to measure change. How can we assess change if we do not know what is changing and can reliably measure this change?

To address this issue of how to measure change in artwork, we developed the Assessment of Art Attributes (AAA) (Chatterjee, Widick, Sternschein, Smith II, & Bromberger, 2010). We designed the AAA keeping in mind the need for componential analysis and quantification in the neuropsychology of art. The AAA is based on the widely held assumption that artworks have formal-perceptual qualities and content-conceptual qualities (Russell & George, 1990; Woods, 1991). We selected 6 formal-perceptual attributes and 6 content-conceptual attributes based on a review of

the literature with special consideration to the kinds of attributes thought to have changed in individuals with brain damage. The formal-perceptual attributes correspond to early and intermediate visual processing. They are: Color temperature (warm-cold), Color saturation (calm-vibrant), Stroke style (controlled-loose), Depth (flat-deep), Balance (low-high) and Complexity (simple-complex). The content-conceptual attributes correspond to higher/late visual processing and its contact with other domains, like semantics and emotional systems. They are: Representational accuracy (less-more), Abstractness (less-more), Realism (less-more), Animacy (less-more), Symbolism (less-more) and Emotionality (less-more). We familiarize each participant on each attribute. Their assessments are made using a Likert scale, giving quantitative form to these descriptive attributes. The paintings in the AAA were selected from the Western canon, covering different time periods.

The AAA has been used to assess systematic change in the art produced by people with neurological disease. Using the AAA (Chatterjee, Bromberger, & Smith, 2011), we reported that in patients with left or right focal brain damage, art became more abstract, distorted and less realistic. The paintings were also produced with looser strokes, less depth, and more vibrant colors. Notably, art produced following left brain damage, became more symbolic, a change not seen in right brain damage. By contrast, the paintings of people with Alzheimer's Disease became more abstract and symbolic and less realistic and depictively accurate (van Buren, Bromberger, Potts, Miller, & Chatterjee, In press).

If our understanding of the nature of artistic production following brain damage has been rudimentary, our knowledge of the effects of brain damage on artistic perception is virtually non-existent. Based on extant neuropsychological (Chatterjee, 2004a) and functional neuroimaging (Brown, Gao, Tisdelle, Eickhoff, & Liotti, 2011) observations, it is unlikely that we evolved perceptual and semantic representations and emotional neural systems designed uniquely for aesthetic experiences. Rather, particular combination of regional activations dedicated to general perceptions and emotions give rise to aesthetic experiences. The experience of looking at and appreciating visual art likely relies on a diverse set of perceptual and cognitive processes (Chatterjee, 2004b; Leder, Belke, Oeberst, & Augustin, 2004; Nadal, Munar, Capo, Rosselo, & Cela-Conde, 2008). The question of how to adequately quantify

deviations in perception applies in the same way that it does to deviations in production. The AAA can be used to assess brain-behavior relationships in art perception.

Damage to the right hemisphere affects the perception of selective aspects of art (Bromberger, Sternschein, Widick, Smith, & Chatterjee, 2011). This cohort of patients as a group had impaired performance when judging the content-conceptual attributes of abstractness and depictive accuracy and the formal-perceptual attribute of stroke quality. We also found that damage to lateral frontal-parietal-temporal cortices was associated with deviations in the judgment of 4/6 content-conceptual art attributes: abstractness, symbolism, realism, and animacy. Of the formal-perceptual attributes, only depth was correlated with damage to the inferior prefrontal cortex. Our previous results raise the question of whether brain disorders can influence evaluative judgments. The negative findings also point to a methodological issue when it comes to evaluations. The inherent variability of evaluations (preference and interestingness) by healthy participants makes it difficult to assess deviations in performance with disease. This study is designed to address the methodological issue of assessing impairments in a subjective domain such as art preference, and to test the hypothesis that art preference can dissociate from art perception.

Methods

We adapted the AAA to examine the assessment consistency of a conceptual (representational accuracy), a perceptual (color tones) and an evaluative judgment (preference). Twelve of the original 24 paintings in the AAA were used in a forced choice paradigm in which participants saw each possible pairings of painting. For each pair, they judged which of the two would be rated higher on attributes of representational accuracy, color tones, and preference. The logic motivating this design is that even for an inherently subjective judgment like preference, participants should be internally consistent. That is, if A is preferred over B, and B is preferred over C, then A should be preferred over C. Deviations from this transitivity would indicate instability in judgment. The 12 paintings and 3 scales were selected with the following characteristics based on our published normative data. The rank order of the 12 paintings on all 3 scales were not significantly correlated (Spearman correlations: preference and color tone: $r(12) = .455$, $p = .138$; preference and accuracy: $r(12) =$

-.231, $p = .471$; accuracy and color tone: $r(12) = -.238$, $p = .457$) and differences between the pairwise Likert ratings for the 3 scales were not significantly different ($F(2,195) = .870$, $p = .421$). This adapted version of the AAA was administered to 17 schizophrenia outpatients (mean age: 41.65, range: 24 to 55, sex: 11 males and 6 females) and 16 age and education matched control participants. Participants were also administered two self-report measures of anhedonia: The Temporal Experience of Pleasure Scale (TEPS) and the Physical Anhedonia Scale (PAS).

Results

People with schizophrenia were no different than control participants in their consistency of judgments of representational accuracy ($U = 129.5$, $p = .81$) or of color tones ($U = 95.5$, $p = .13$). However, they were less consistent in their judgments of preference ($U = 68$, $p < .05$). The degree of patients' preference inconsistency correlated with their scores on the anticipatory pleasure subscale of the TEPS (Spearman $R = -0.55$, $p = 0.02$) but not with the consumatory subscale or the PAS.

Discussion

Our study implications for the assessment of subjective evaluations and the biology of evaluation and perception of art. We also offer preliminary conjectures about the hedonic and aesthetic experiences in schizophrenia.

The results demonstrate AAA can be adapted to assess evaluation, despite the inherently subjective nature of evaluation. Using a forced choice paradigm and assessing internal consistency rather than relying on an external measure of accuracy works well in this setting. Our data also demonstrate that we have neural circuitry dedicated to evaluation of art distinct from those dedicated to perception of art. We previously showed that patients with right middle cerebral artery stroke had deficits in various aspects of their ability to judge perceptual qualities of art without alterations in evaluative judgments (Bromberger et al., 2011). The data here demonstrate the opposite dissociation. Finally, we find that the hedonic experience in schizophrenic patients can fractionate. Instability of visual art preference judgments correlate with self-reports of diminished anticipatory pleasure. Anticipatory pleasure is linked to

dysfunction in mesolimbic dopamine systems (Gard, Kring, Gard, Horan, & Green, 2007). We do not know if schizophrenic patients have an intrinsic dysfunction of this neurotransmitter system or if this is a consequence of being medicated with dopamine antagonists. However, abnormalities within the dopamine system are likely to blunt their aesthetic valuations as well as their anticipation of pleasure.

References

- Alajouanine, T. (1948). Aphasia and artistic realization. *Brain*, *71*, 229-241. doi: 10.1093/brain/71.3.229
- Bogousslavsky, J., & Boller, F. (2005). *Neurological Disorders in Famous Artists*. Basel: Karger.
- Bromberger, B., Sternschein, R., Widick, P., Smith, W., & Chatterjee, A. (2011). The Right Hemisphere in Aesthetic Perception. [Original Research]. *Frontiers in Human Neuroscience*, *5*. doi: [10.3389/fnhum.2011.00109](https://doi.org/10.3389/fnhum.2011.00109)
- Brown, S., Gao, X., Tisdelle, L., Eickhoff, S. B., & Liotti, M. (2011). Naturalizing aesthetics: Brain areas for aesthetic appraisal across sensory modalities. *NeuroImage*, *58*(1), 250-258.
- Chatterjee, A. (2004a). The neuropsychology of visual artists. *Neuropsychologia*, *42*, 1568-1583. doi: <http://dx.doi.org/10.1016/j.neuropsychologia.2004.03.011>,
- Chatterjee, A. (2004b). Prospects for a cognitive neuroscience of visual aesthetics. *Bulletin of Psychology and the Arts*, *4*, 55-59.
- Chatterjee, A. (2005). A madness to the methods in cognitive neuroscience? *Journal of Cognitive Neuroscience*, *17*, 847-849.
- Chatterjee, A. (2006). The neuropsychology of visual art: conferring capacity. *International Review of Neurobiology*, *74*, 39-49. doi: [http://dx.doi.org/10.1016/S0074-7742\(06\)74003-X](http://dx.doi.org/10.1016/S0074-7742(06)74003-X)
- Chatterjee, A. (2009). Prospects for a neuropsychology of art. In M. Skov & O. Vartanian (Eds.), *Neuroaesthetics* (pp. 131-143). Amityville, New York: Baywood Publishing Company.
- Chatterjee, A., Bromberger, B., & Smith, W. B. (2011). Artistic Production Following Brain Damage: A Study of Three Artists. *Leonardo*, *44*(5), 405-410. doi: doi:10.1162/LEON_a_00240
- Chatterjee, A., Widick, P., Sternschein, R., Smith II, W. B., & Bromberger, B. (2010).

- The assessment of art attributes. *Empirical Studies of the Arts*, 28(2), 207-222.
doi: doi: 10.2190/EM.28.2.f
- Fellows, L. K., Heberlein, A. S., Morales, D. A., Shivde, G., Waller, S., & Wu, D. H. (2006). Method Matters: An Empirical Study of Impact in Cognitive Neuroscience. *Journal of Cognitive Neuroscience*, 17(6), 850-858.
- Gard, D. E., Kring, A. M., Gard, M. G., Horan, W. P., & Green, M. F. (2007). Anhedonia in schizophrenia: Distinctions between anticipatory and consummatory pleasure. [10.1016/j.schres.2007.03.008]. *Schizophrenia Research*, 93(1-3), 253-260. doi: papers2://publication/doi/10.1016/j.schres.2007.03.008
- Leder, H., Belke, B., Oeberst, A., & Augustin, D. (2004). A model of aesthetic appreciation and aesthetic judgments. *British Journal of Psychology*, 95, 489-508.
- Nadal, M., Munar, E., Capo, M. A., Rosselo, J., & Cela-Conde, C. J. (2008). Towards a framework for the study of the neural correlates of aesthetic preference. *Spat Vis*, 21(3), 379-396.
- Russell, P. A., & George, D. A. (1990). Relationships between aesthetic response scales applied to paintings. *Empirical Studies of the Arts*, 8(1), 15-30.
- van Buren, B., Bromberger, B., Potts, D., Miller, B., & Chatterjee, A. (In press). *Changes in painting styles of three artists with Alzheimer's disease*. Paper presented at the PACA.
- Woods, W. A. (1991). Parameters of aesthetic objects: Applied aesthetics. *Empirical Studies of the Arts*, 9(2), 105-114. doi: doi:10.2190/7D3X-03G1-AGUV-W417
- Zaidel, D. (2005). *Neuropsychology of Art*. New York: Psychology Press.

AN EXPLORATORY PILOT STUDY ON PICTORIAL NARRATIVITY AND EYE SCAN PATTERNS

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Abstract

The philosophical debate on the nature of narrative has been mainly concerned with literary narratives, whereas forms of non-literary and especially pictorial narrativity have been rather neglected. Within traditional art history, however, the narrative potential of the visual arts has usually been taken for granted, though rarely by attempting to elucidate any deeper cognitive, semiotic, and philosophical aspects involved. The question whether narrative should be regarded as an exclusively verbal or verbally based (i.e. necessarily presupposing the receivers' previous knowledge of verbally transmitted plots) phenomenon has of course been discussed within narratological research. Undoubtedly, there might be certain limitations – though perhaps also advantages - to pictorial media compared to verbal ones as to their narrative potential. Discussions on these lines have usually been more or less of a theoretical nature, although sometimes research from cognitive science has been taken into account. Nevertheless, empirical and psychological research may have an important contributing role to play, and it seems that scholars within narratology - compared to other branches of philosophy, most notably perhaps philosophy of mind - are somewhat too reluctant to recognize that role.

In this paper, I intend to outline how empirical studies making use of eye-tracking methods may help to clarify these issues. Numerous studies seem to have corroborated that eye movements are strongly synchronized with and indicative of cognitive processes going on during spoken or written word recognition, sentence processing and picture or visual scene encoding – and mental imagery in general. Now, as to the study of narrativity, which certainly is a quite complex, heterogeneous phenomenon, it would seem fruitful to focus upon some of its constituents which - according to common usage within narratological research - appear to belong to its core structure. We suggest, without any claims of being exhaustive in this respect,

that the following ones fruitfully could be considered within an experimental approach:

- (i) Chronological ordering
- (ii) The establishment of causal agency and effects
- (iii) The establishment of goal-related agency and intended effects
- (iv) The establishment of breaks or deviations from/within canonical scripts or schemas

The purpose of this paper will be to discuss to which extent the comprehension and identification of narrative features as here outlined can be indicated by eye-tracking methods and to which extent there will be differences according to various viewing conditions, with and without the inclusion of explicit and specific verbal texts (rather than any tacit acquaintance with common action scripts, or the like) directing or influencing the narrative structuring of the used pictorial stimulus material. Put in another way, to which extent will there be intersubjective overlaps or regularities concerning the narrative comprehension of pictures? These differences and overlaps could be registered in form of verbal reports made by the beholders. However, it will also be hypothesized that concurrent saccadic movements and fixations, reflecting attention and underlying cognitive processing, might be correlated with the narrative structuring of pictorial stimuli. Preliminary results from a pilot study, making use of eye-tracking laboratory at Lund University, will be presented.

1. Introduction

The philosophical debate on the nature of narrative has been mainly concerned with literary narratives, whereas forms of non-literary, especially pictorial narrativity have been rather neglected. Within traditional art history, however, the narrative potential of the visual arts has usually been taken for granted, though rarely by attempting to elucidate any deeper cognitive, semiotic, and philosophical aspects involved. Undoubtedly, there might be certain limitations to pictorial media compared to verbal ones as to their narrative potential. Discussions on these lines have usually been more or less of a theoretical nature, although sometimes having taken research from cognitive science into consideration. Still, outspoken empirical and psychological research may have an important contributing role to play, although it seems that scholars within narratology are sometimes tend to neglect that role.

2. On Narrativity

The exact nature of what constitutes narratives has been and still is a matter of standing dispute within contemporary research. A minimal requirement for something being a narrative has, for example by Prince, been claimed to be “the representation of at least two real or fictive events or situations in a time sequence, neither of which presupposes or entails the other” (Prince 1982: 4). No particular requirement thus seems to be imposed on the expression side, which opens up for the possibility of narrative being enacted in media other than language. Quite frequently, narrativity has been regarded in a relatively descriptive, extensional, and quite fixed sense, delineated from nonnarrative texts (e.g. arguments, explanations, or chronicles) by a set of defining criteria, such as temporal sequentiality, emplotment, eventfulness, causality or causal agency, particularity (vs. generality), teleological, intentional, or goal-related event structures, and so forth. Some scholars have apart from proposing more or less extensional definitions also adhered to more scalar senses of narrativity, i.e. degrees of “narrativeness” of narratives. A frequently proposed, contributing candidate in this respect is the “tellability” of a story, i. e. what makes it worth telling at all, or its “noteworthiness”. Originating from analyses of conversational storytelling, e.g. by William Labov, this concept has come to be applied to numerous other kinds of narratives (cf. Labov 1972, Bruner 1991).

Presuppositions for or conceptually interrelated to the tellability of a narrative are especially features such as eventfulness, or changes of state, and the deviation of event or action sequences from pre-established expectations (alternative notions would e.g. be suspense, curiosity, and surprise, unusualness, switches and contrasts, breaks with canonical scripts or schemas, sudden plot switches; see e.g. Herman 2002, Ryan 1991, Bruner 1991, Suter & Hettling 2001, Sternberg 2001)

At first glance, narratives are indeed primarily manifested by "genuine" temporal arts, such as poetry, drama, literature in general, motion pictures, and the like which "by nature" have a sequential structure. Pictures, on the other hand, are "by nature" static, only capable of representing timeless situations or single, momentary instants (cf. Lessing 1766/1957). It may be argued, though, that the representation/perception of actions in pictures is thus not impossible per se, but it demands more effort, it is less 'convenient' compared to poetry. Actually, the difference between painting and poetry is rather a matter of degree than a matter of kind: poetry represents actions directly, painting only indirectly. And pictorial media seem indeed to lack narrative precision compared to verbal ones, e.g. concerning the representation of internal states and motivations. Moreover, static pictures seem rather to suggest changes which the viewer has to infer, rather than explicitly representing actual changes. It could also be argued that pictorial media only to a very limited extent can represent disnarrated elements, i.e. detailed alternative courses of action or characters' unfulfilled intentions (Wolf 2005). In general, it seems, pictorial media appear to require recipients which are more cognitively active in the reconstruction of narratives compared to verbal texts. On the other hand, also literary works consist of ellipses, unstated facts or assumptions, causal relations, gaps, points of indeterminacy, and so on, which require mental acts on part of the reader of filling in or completing the perceived patterns. In this respect, then, the narrative indeterminacy between texts and pictures seems rather to be a matter of degree rather than kind.

Static pictures may more or less have a rather illustrative function, sometimes having (external or internal) textual descriptions, comments, or the like as complements; in other cases the direction of a narrative interpretation is at least suggested by a verbal title (cf. Ryan 2011, sect. 3.4.1). In many cases, though,

pictorial stimuli are narratively quite indeterminate or polysemic, permitting multiple interpretative paths and fixations. Still, that does not necessarily mean that ‘anything goes’ or that a certain, even considerable, lack of narrative explicitness completely disqualifies the stimulus in question qua narrative. It seems far from controversial to assume that the production as well as the reception of narratives in general presupposes significant and necessary background knowledge of various kinds (e.g. lifeworld, discourse or genre knowledge). Both storyteller and recipient share numerous unstated assumptions concerning causal relationships between events, concepts of class, gender, age, social roles, etc., cultural knowledge, various action scripts, and so on.

3. A Pilot Study: Pictorial Narrativity, Picture Titles, and Eye Scan Patterns

The question whether narrative should be regarded as an exclusively verbal or verbally based (i.e. presupposing the receivers’ previous knowledge of verbally transmitted plots) phenomenon has of course been discussed within narratological research (e.g. by Kafalenos 2005, Ryan 2011, Ranta 2011, Steiner 2004). Still, these approaches have usually been more or less on a theoretical level. As to studies on language, cognition, and mental imagery, since the 1990’s something like a boom of empirical and neurological research has emerged, making use of e.g. neuroimaging technologies such as PET or fMRI. Similar approaches could as well afford deeper insights into the nature of narrativity, which would undoubtedly could give additional support to (or put into question) suggestions made within traditional narratology. On the other hand, we must of course be prepared to admit that empirical inquiries presuppose some kind of theoretical/conceptual framework, and there are surely numerous fundamental issues which demand theoretical consideration. Thus, with regard to the former, we need some preliminary hypotheses as to which objects, which properties, and which effects empirical studies should focus upon. Traditional methods of narratological analysis may detect ambiguities and inconsistencies, they may make explicit concealed premises and assumptions, and they may of course help to clarify relevant concepts. Nevertheless, empirical and psychological research may shed some light on these issues, and it seems that narratologists - compared to other branches of philosophy, most notably perhaps philosophy of mind – have tended to

dismiss such prospects. However, Prince himself, one of the most prominent narratologists, has quite recently pointed to the necessity of empirical studies concerning narrative, but relatively few seem to have been done so far (Prince 1999). This is particularly true for other semiotic resources than verbal language.

As to mental imagery in general, other methodologies apart from those mentioned above have been developed and refined, such as various eye-tracking techniques. It has frequently been hypothesized that the time spent gazing at objects reflects the time of concurrent cognitive processes related to the object in question. Moreover, task goals and the contents of working memory seem to influence eye movements (e.g. Yarbus 1967; Altman 2006; Rayner 2009; Griffin & Davison 2011).

In the light of these considerations, I have set up and carried out a series of exploratory eye-tracking experiments in order to test how pictures might tell stories, that is, empirically investigate the narrative potential in static pictures and picture sequences. Is it possible that pictures are capable of telling stories or of generating narrative (sequential) mental representations comparable to those caused by verbal media (written or oral)? To which extent, if that indeed is the case, does “picture reading” have the same interpersonal determinacy or consistency as “text reading”? And to which extent does the former presuppose acquaintance, directly or indirectly, with the latter, i.e. verbally told stories or other external clues, such as picture titles (which at least sometimes are used to reinforce, disambiguate, or focus upon particular meaning aspects of pictures; cf. Fisher 1984; Levinson 1985)?

Numerous studies seem to have corroborated that eye movements are strongly synchronized with and indicative of cognitive processes going on during spoken or written word recognition, sentence processing and picture or visual scene encoding – and mental imagery in general. Whereas some general studies have been carried out in order to investigate the nature of picture as well as real-world scene perception (cf. Henderson 2003; Laeng & Teodorescu 2002), others have specifically focused upon the relationship between eye movements elicited by pictures and spoken scene descriptions compared to those occurring when visualizing them from memory. Thus, for example, a series of studies carried out by Johansson, Holsanova & Holmqvist (2006) indicate that there is a strong correlation between viewers’ spatial pattern of eye movements and the spatial arrangement of visual stimuli. Thus

eye movements seem to reflect the positions of objects while listening to spoken descriptions or those of previously seen pictures. However, eye-tracking studies explicitly focusing upon the *narrative potential* of pictures vs. verbal media (in contradistinction to *scene or object descriptions*) have to our knowledge rarely been done. Additionally, these differences and overlaps could be registered in form of verbal reports made by the beholders. Basically, it will be hypothesized that simultaneous saccadic movements and fixations, reflecting attention and underlying cognitive processing, might be correlated with the narrative structuring of pictorial stimuli. Now, as to the study of narrativity, which certainly is a quite complex, heterogeneous phenomenon, it would seem fruitful to focus upon some of its constituents which - according to common usage within narratological research - appear to belong to its core structure. I suggest, without any claims of being exhaustive in this respect, that the following ones fruitfully could be considered within an experimental approach:

(i) Chronological ordering

(ii) The establishment of causal agency and effects

(iii) The establishment of goal-related agency and intended effects

(iv) The establishment of breaks or deviations from/within canonical scripts or schemas

In the present tentative exploration, the primary focus has been restricted to study solely the impact of external interpretation clues (in this case *picture titles*) on narrative picture encoding.

4. Method

a) Participants

The participants were 33 students and teachers from Lund University (15 female, 18 male; age range 22 to 60 years; mean age 27 years). Five or six participants were assigned to each of the six task groups described below. All of the participants were native Swedish speakers and were naïve as to the purpose of the experiment. All of the participants had either normal or corrected-to-normal vision.

b) Technical Equipment

The experiment was run on an IBM-compatible desktop computer built by SensoMotoric Instruments (SMI). The stimuli were presented on an LCD monitor and the presentation of stimuli was controlled by Experiment Center (SMI). The viewing distance was approximately 70 cm. The participants' eye movements (fixations and saccades) were recorded by means of a remote eye tracker (SMI iView X RED250, infrared pupil and corneal reflex imaging system, sampling frequency of 250 Hz). The positions of the participants' eyes were established by means of an initial 5-point calibration.

c) Procedure and Material

(i) In the first part of the experiment, a control group was shown six figurative pictures selected for their narrative potential (rather than abstract, non-figurative configurations or those lacking eventfulness, such as portraits or still lifes). Each picture was presented separately for a duration of 7 seconds. During exposure to the pictures, the participants' eye movements (fixations and saccades) were recorded under free viewing conditions.

(ii) In the second part of the experiment, two test groups were shown the same pictorial material, following additional slides with either accurate or non-accurate titles (in Swedish) respectively.

(iii) After the viewing tasks, the participants were asked to fill in a written form (including small reproductions of the pictures) and to answer the following questions: a) "What do you think is happening in the picture?"; b) "What do you think has happened before?"; c) "What do you think will happen afterwards?"; d)

[not the control group] “Do you think that the title corresponds to the picture’s actual content?”

(iv) Stages (i)-(iii) were repeated with each of the previously used pictures mirror-reversed.

d) Analysis

The analysis software BeGaze 3.0 (SMI) was used in order to visualize all trial data as scanpaths (fixations and saccades), heat maps (showing fixation hits using a color scale from blue [= least hits] to red [= most hits]), and gridded AOIs (showing the dwell time within automatically defined, rectangular grids of AOIs overlaid on the stimulus). Individual trial data and visualizations were also, within each group, merged into composite visualizations.



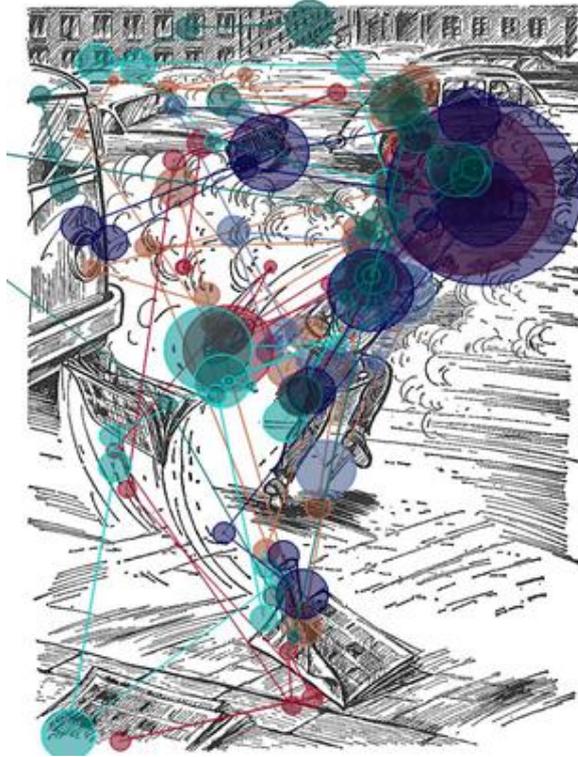


Figure 1: (Free-viewing)
save a cat”

Figure 2: Accurate title: “The boy wants to

e) Preliminary Results

The purpose of this experiment was to explore the inherent narrative potential of individual, static pictures both with and without explicit verbal information (such as picture titles directing narrative interpretations). The results seem to reveal that the influence of various, contradictory titles, compared to free-viewing conditions, on eye scan patterns and verbal picture/action descriptions is greater for pictures showing unidirectional transactions

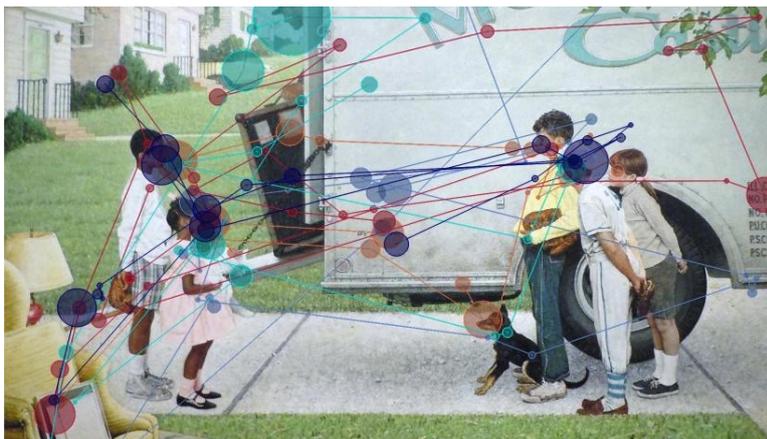
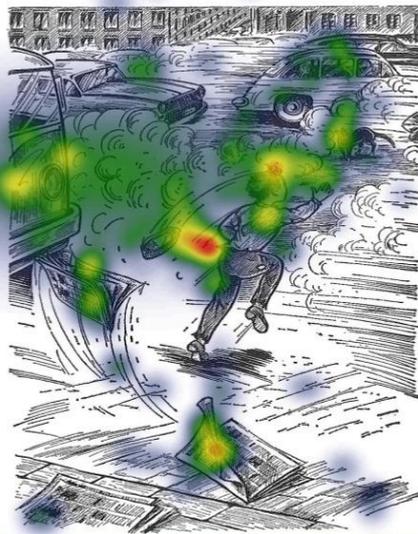


Figure 3: Inaccurate title: “The boy jumps away from the oncoming bus” - Figure 4: Inaccurate title: “Moving abroad” (accurate title: “Newcomers”)

(cf. Kress & van Leeuwen 2006), consisting of an 'Actor' and a 'Goal' (e.g. composite Figures 1-3) than for pictures showing bidirectional or reciprocal transactions, where actors are mutually reacting to each other (e.g. composite Figure 4). The impact of titles appears also to be reliant on compositional aspects (such as horizontal vs. diagonal; symmetrical vs. asymmetrical) or the saliency of pictorial features (such as size or position). Scan patterns during free-viewing conditions and with accurate titles appeared, independently from these transactional features, to a remarkable extent similar. However, in one case (Pieter Bruegel the Elder's "Landscape with the Fall of Icarus"), eye scan patterns were remarkably influenced by a title (composite Figures 5 and 6). Despite its original title, Icarus himself has a clearly insignificant appearance in the right, lower corner of the painting, where just his helplessly thrashing legs can be seen in the water; instead, a plowing peasant dominates the scene. Interestingly, this detail (Figure 7) seems to draw immediate attention, notwithstanding its lack of salience, given an accurate (slightly modified) title, compared to free-viewing conditions.

The comprehension of mirror-reversed pictures, used to explore the impact of Western participants' left-to-right reading habits, show similar results and do not seem to deviate from the correct ones, except to some extent for rather unidirectional pictures. However, the *fixation order* was so far not examined.

Verbal reports, as registered in the written forms filled in by the participants, appear to some extent to be in accordance with these findings.

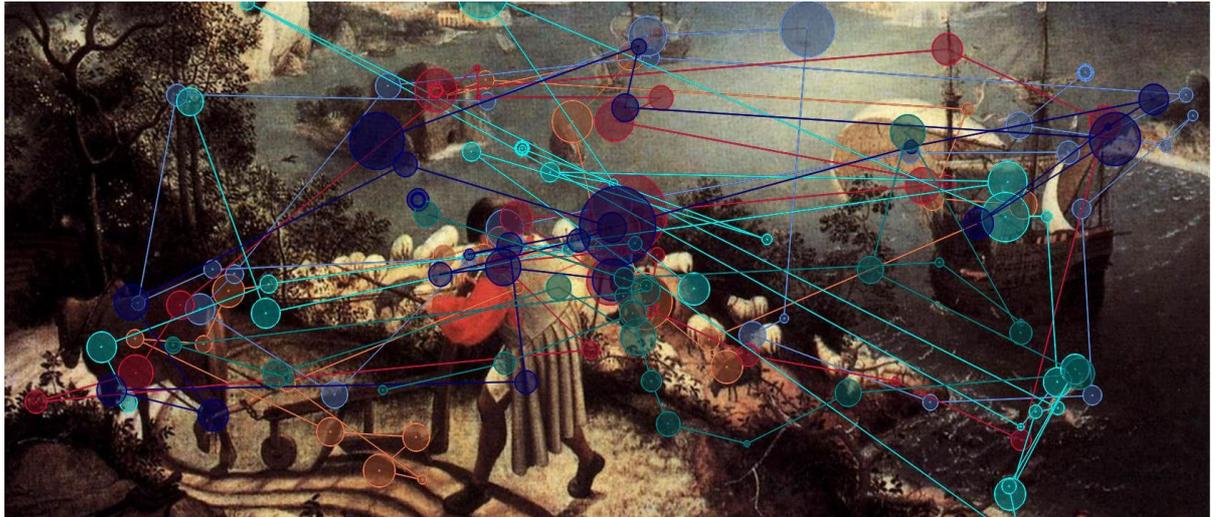


Figure 5: (Free-viewing)

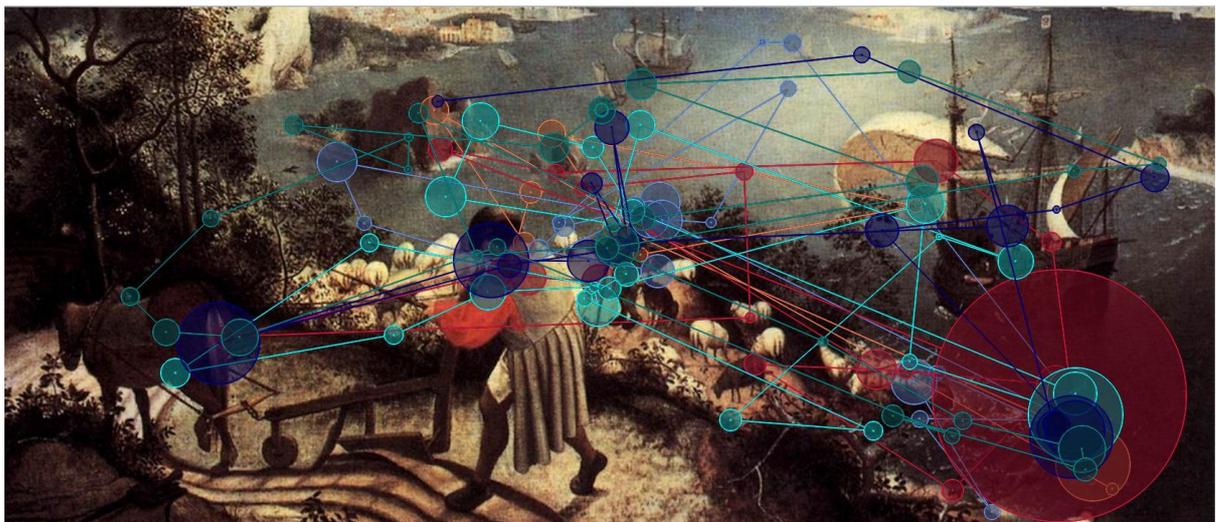


Figure 6: Accurate title: "Icarus has fallen into the sea"



Figure 7: Detail (Icarus' legs)

Tables 1–6 show a preliminary attempt to systematize these reports. On an admittedly somewhat subjective basis, the participants' identification of the pictures' narrative content was judged to be correct, incorrect or – in a few cases – ambiguous (e.g. due to the vagueness of the descriptions). Additionally, as to the groups with picture titles, the participants' estimates of the title correctness were judged in a similar way.

One of the most notable examples, where contradictory titles seem to have had a considerable impact on the registered eye scan patterns as well as the verbal reports, was the asymmetric, transactional, and quite detailed picture, as shown in Figures 1-3.

ORIGINAL VIEW:

*Table 1: Identification of narrative content
(C = correct; I = incorrect; ? =ambiguous)*

Free-viewing	NX-1	NX-2	NX-3	NX-4	NX-5	NX-6		C (total)
Picture 1	C	C	C	C	C	C	6xC	100%
Picture 2 (fig. 1)	C	I	I	C	I	C	3xC	50%
Picture 3	C	C	C	C	C	C	6xC	100%
Picture 4	C	I	C	C	?	C	4xC	≈ 67%
Picture 5	C	C	C	C	C	C	6xC	100%
Picture 6	I	I	I	?	I	I	0xC	0%

*Table 2: Identification of narrative content/Estimated title correctness
(C = correct; I = incorrect; ? =ambiguous)*

Accurate title	NA-1	NA-2	NA-3	NA-4	NA-5		C (total)
Picture 1	C/C	C/C	C/C	C/C	C/C	5xC/5xC	100%/100%
Picture 2 (fig. 2)	C/C	C/C	C/C	C/C	C/C	5xC/5xC	100%/100%
Picture 3	C/C	C/C	C/C	C/C	C/C	5xC/5xC	100%/100%
Picture 4	C/C	C/C	C/C	C/C	C/C	5xC/5xC	100%/100%
Picture 5	C/C	C/C	C/C	C/C	C/C	5xC/5xC	100%/100%
Picture 6	C/C	I/I	C/C	I/I	I/I	2xC/2xC	40%/40%

Table 3: Identification of narrative content/Estimated title correctness
(C = correct; I = incorrect; ? =ambiguous)

<u>Inaccurate title</u>	NB-1	NB-2	NB-3	NB-4	NB-5		C/C (total)
Picture 1	C/I	C/I	C/?	C/I	C/I	5xC/0xC	100%/0%
Picture 2 (fig. 3)	C/I	I/C	C/?	?/I	C/I	3xC/2xC	60%/20%
Picture 3 (fig. 4)	C/I	I/?	C/I	?/?	I/C	2xC/1xC	40%/20%
Picture 4	I/I	I/I	I/C	I/?	I/C	0xC/2xC	0%/40%
Picture 5	I/I	C/?	C/I	?/I	C/I	3xC/0xC	60%/0%
Picture 6	I/I	I/C	I/I	I/?	I/C	0xC/2xC	0%/40%

MIRROR-REVERSED VIEW:

Table 4: Identification of narrative content
(C = correct; I = incorrect; ? =ambiguous)

<u>Free-viewing</u>	N(S)X-1	N(S)X-2	N(S)X-4	N(S)X-5	N(S)X-6	N(S)X-7		C (total)
Picture 1	C	C	C	C	C	C	6xC	100%
Picture 2	I	C	C	C	C	C	5xC	≈83%
Picture 3	C	C	C	C	C	C	6xC	100%
Picture 4	I	C	C	I	C	C	4xC	≈67%
Picture 5	C	C	C	C	C	C	6xC	100%
Picture 6	I	I	I	I	I	I	0xC	0%

Table 5: Identification of narrative content/Estimated title correctness
(C= correct; I= incorrect; ?=ambiguous)

Accurate title	N(S)A-1	N(S)A-2	N(S)A-3	N(S)A-4	N(S)A-5		C/C (total)
Picture 1	C/?	C/C	C/C	C/C	C/C	5xC/4xC	100%/80%
Picture 2	C/C	C/C	C/C	C/C	C/C	5xC/5xC	100%/100%
Picture 3	C/C	C/C	C/C	C/C	C/C	5xC/5xC	100%/100%
Picture 4	C/C	C/C	C/C	C/I	C/C	5xC/4xC	100%/100%
Picture 5	C/C	C/C	C/C	C/C	C/C	5xC/5xC	100%/100%
Picture 6	I/I	C/C	I/I	?/I	I/I	1xC/1xC	20%/20%

Table 6: Identification of narrative content/Estimated title correctness
(C= correct; I= incorrect; ?=ambiguous)

Inaccurate title	N(S)B-1	N(S)B-2	N(S)B-3	N(S)B-4	N(S)B-5	N(S)B-6		C/C (total)
Picture 1	C/I	C/?	C/I	C/I	C/I	C/I	6xC/0xC	100%/0%
Picture 2	C/I	I/I	I/I	I/I	I/?	I/I	1xC/0xC	≈17%/0%
Picture 3	C/I	I/I	I/?	I/?	I/I	C/?	2xC/0xC	≈33%/0%
Picture 4	C/I	C/C	CI/?	I/I	C/?	C/?	5xC/1xC	≈83%/≈17%
Picture 5	C/I	C/?	C/I	C/I	C/I	C/I	6xC/0xC	100%/0%
Picture 6	C/I	I/I	I/I	I/I	I/I	I/?	1xC/0xC	≈17%/0%

5. Further Prospects

So far, this study has chiefly been concerned with a rather qualitative analysis

of the trial data (with to some extent subjective interpretations of scan paths, heat maps, and verbal reports). As a subsequent step, it would be fruitful to move to a more quantitative analysis which would allow tests of statistical significance such as t-tests and ANOVAs to be conducted. In the BeGaze (SMI) program, for example, it is possible to divide each image into areas of interest (AOIs). For our purposes, we could divide the images into relevant foreground and background objects; inevitably, some of these decisions might be somewhat arbitrary. Once this has been done, we might go to Event Statistics/AOI Detailed Statistics and access dependent variables such as First Fixation Duration, Fixation Time, Dwell Time, Net Dwell Time, Glance Duration, Diversion Duration, Fixation Count, and Sequence. So a concrete example would be to draw an AOI around the cat in picture 2 (see Figures 1-3) and to compare the mean Fixation Time on the cat for the title conditions (across subjects) with the mean Fixation Time on the cat for the free viewing condition (across subjects), and to then use a paired sample t-test to see if there is any significant difference between the two. An analysis of the Fixation Count variable could reveal comparable results.

Apart from using ordinary still pictures containing more or less narrative elements, as used in the present study, other kinds of pictorial narratives could of course be investigated, such as pictures containing multiple narrative sequences within one frame (sometimes called "continuous narratives" or "polyphase pictures") as well as serial sequences of pictures (e.g. storyboards or comic strips without verbal ingredients).

Moreover, instead of using prefabricated pictures, one might, as a possible alternative, consider making use of constructed pictorial stimuli which vary systematically on different dimensions corresponding to possible core criteria of narrativity as specified earlier. These aspects may further be studied as to their relative importance for narrative structuring and comprehension. The images would also be segmented into possible areas of interest (AOIs; such as faces, gestures, human figures, inanimate objects, environmental features). For each of the used stimulus sets, a control group could be shown various examples under free-viewing condition (with only temporal constraints).

In contrast, subsequent experimental groups would be given explicit instructions to look for certain narrative structures, chronological orders, and

causal/goal-related agencies. Examples of possible instructions are as follows:

- *What story do you think this picture/film is telling?*
- *What are the main events of this story?*
- *Which main events do you think have happened before the given scene and which main events do you think will happen afterwards?*
- *Who/what is the active agent for causing effects or changes in the scene? What are the goals or intentions underlying the depicted actions and events?*

During the viewing task, the participants of the control group would be told to orally describe what they think the pictures are about, i.e. which stories or event structures might have been expressed by them. Furthermore, another subject task would be to judge the pictures' "eventfulness", that is, experienced changes of state or deviations from (more or less canonical) event or action sequences (or, put in another way, incongruities, point to switches and contrasts, violations of certain orders, sudden plot switches, and so on). Thus the participants will be asked to describe the presented pictures in accordance with the viewing instructions received earlier. Recordings of the subjects' oral descriptions (verbal protocols) will in all cases be correlated with recordings of scanpaths, fixations, and fixation durations, employing a multimodal time-coded score sheet (cf. Holsanova 2011), in which several tiers of temporal data (e.g. fixation dwells and speech units) share a common timeline. Apart from the above suggestions, it might also be fruitful to considerably enlarge the participating groups (and perhaps also take personal characteristics such as age, gender, or education into consideration) in order to permit more well-founded statistical assumptions.

The approach as here outlined seems to be worth considering for basically two reasons. First, as mentioned earlier, narratological research has traditionally been focused upon verbal media and to some extent film. The focus upon pictorial narrativity in the present approach might thus contribute to an enhanced and more comprehensive understanding of narratological issues in general. Its originality resides thus in the attention paid to narratives conveyed by other means than verbal language, in particular pictures. Second, it is also innovative in extending theoretical

concerns with an empirical one, i.e. by employing advanced eye-tracking methodology. As indicated earlier, experimental approaches for investigating narratological issues, not least regarding pictorial material, have rather scarcely been employed, and this applies equally to eye-tracking research done so far. The intersemiotic character of such a project would thus certainly broaden as well as deepen previous research within narratology and perhaps human cognitive processing in general.

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References

- Altman, G. (2006). History of Psycholinguistics. In K. Brown (Ed.). *The Encyclopedia of Language and Linguistics* (pp. 257-265), Amsterdam: Elsevier Ltd.
- Bruner, J. (1991). The Narrative Construction of Reality. *Critical Inquiry*, 18(1), 1-21.
- Fisher, J. (1984). Entitling. *Critical Inquiry*, 11(2), 286-98.
- Griffin, Z. M. & Davison, J. C. (2011). A Technical Introduction to Using Speakers' Eye Movements to Study Language. *The Mental Lexicon*, 6(1), 53-82.
- Henderson, J. M. (2003). Human Gaze Control During Real-World Scene Perception. *Trends in Cognitive Sciences*, 7(11), 498-504.
- Herman, D. (2002). *Story Logic – Problems and Possibilities of Narrative*. Lincoln: University of Nebraska Press.
- Holsanova, J. (2011). How We Focus Attention in Picture Viewing, Picture Description and Mental Imagery. In K. Sachs-Hombach & R. Totzke (Eds.), *Bilder - Sehen - Denken. Zum Verhältnis von begrifflich-philosophischen und empirisch-psychologischen Ansätzen in der bildwissenschaftlichen Forschung* (pp. 291-313). Köln: Herbert von Harlem Verlag.
- Johansson, R., Holsanova, J. & Holmqvist, K. (2006). Pictures and Spoken Descriptions Elicit Similar Eye Movements During Mental Imagery, Both in Light and in Complete Darkness. *Cognitive Science*, 30, 1053-1079.
- Kafalenos, E. (2005). Photographs. In D. Herman, M. Jahn & M.-L. Ryan (Eds.), *Routledge Encyclopedia of Narrative Theory* (pp. 428-30). London: Routledge.
- Kress, G. & van Leeuwen, T. (2006). *Reading Images – The Grammar of Visual Design*. London/New York: Routledge.
- Labov, W. (1972). *Language in the Inner City – Studies in the Black English Vernacular*. Philadelphia: Univ. of Pennsylvania Press.
- Laeng, B. & Teodorescu, D.-S. (2002). Eye Scanpaths during Visual Imagery Reenact Those of Perception of the Same Visual Scene. *Cognitive Science*, 26, 207-231.
- Lessing, G. E. (1766/1957). *Laocoon: An Essay on the Limits of Painting and Poetry* (Ellen Frothingham, Trans.) New York: Noonday Press.
- Levinson, J. (1985). Titles. *The Journal of Aesthetics and Art Criticism*, 44(1), 29-39.
- Prince, G. (1982). *Narratology - The Form and Functioning of Narrative*. Berlin/New

- York/Amsterdam: Mouton Publishers.
- Prince, G. (1999). Revisiting Narrativity. In W. Grünzweig & A. Solbach (Eds.), *Grenzüberschreitungen - Narratologie im Kontext/ Transcending Boundaries – Narratology in Context* (pp. 43-51). Tübingen: Gunter Narr Verlag.
- Ranta, M. (2011). Stories in Pictures (and Non-Pictorial Objects) – A Narratological and Cognitive Psychological Approach. *Contemporary Aesthetics*, 9. Retrieved May 30 2012 from <http://www.contempaesthetics.org/newvolume/pages/article.php?articleID=619>
- Rayner, K. (2009). Eye Movements and Attention in Reading, Scene Perception, and Visual Search. *The Quarterly Journal of Experimental Psychology*, 62(8), 1457-1506.
- Ryan, M.-L. (1991). *Possible Worlds, Artificial Intelligence, and Narrative Theory*. Bloomington: Indiana University Press.
- Ryan, M.-L. (2011). Narration in Various Media. In P. Hühn et al. (Eds.), *The Living Handbook of Narratology*. Hamburg: Hamburg University Press. Retrieved May 17 2011 from http://hup.sub.uni-hamburg.de/lhn/index.php?title=Narration_in_Various_Media&oldid=824
- Steiner, W. (2004). Pictorial Narrativity. In M.-L. Ryan (Ed.), *Narrative Across Media: The Languages of Storytelling* (pp. 145–77). Lincoln: University of Nebraska Press.
- Sternberg, M. (2001). How Narrativity Makes a Difference. *Narrative* (9), 115-22.
- Suter, A. & Hettling, M. (2001). Struktur und Ereignis – Wege zu einer Sozialgeschichte des Ereignisses. In A. Suter & M. Hettling (Eds.), *Struktur und Ereignis. Geschichte und Gesellschaft* (pp. 7-32). Göttingen: Vandenhoeck & Ruprecht.
- Wolf, W. (2005). Pictorial Narrativity. In D. Herman, M. Jahn, M. & M.-L. Ryan (Eds.), *Routledge Encyclopedia of Narrative Theory* (pp. 431-35). London: Routledge, 2005
- Yarbus, A. L. (1967). *Eye Movements and Vision*. New York: Plenum Press.

MUSEUM BOOM AS THE DEMOCRATIC CULTURE PHENOMENON OF DEMOCRATIC CULTURE

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Abstract

Museum -a temple of sciences and arts reaches a bloom in Victorian epoch. However in other era later on the completion of the 2nd World War, surprisingly, a museum survives in mass culture an unprecedented lift. Which processes is connected with this steady tendency?

Genesis: history and theory

Modern museology searches genealogical roots of museum in the antique epoch. However, it is more correctly to track the history of museum from epoch of Renaissance. The transformation of private collections into the public institute takes shape finally in the 19th century. Full bloom a construction of museum had reached at the end of 19th and at the 20th centuries.

Actual museology explains the museum origin by means theory of the "museum need". The author of idea (Stransky) postulated the presence of the certain specific ontological need which characterizes a homo sapiens. The strengthening of this need during the industrial epoch leads to its embodiment in the independent form of the culture institute. However, the presence of museum is the only one proof of the presence of this specific need. Appearance of museum is easily explained in turn by the action of "museum need". The proof method is not logical.

Let us focus attention, museum is legal child of Neo-European culture. However the "museum" theory cannot be considered seriously if it can not explains why museum form did find embodiment to the 20th century only in the western Neo-European culture.

Museum as the phenomenon of the Neo-European culture

It is more fruitfully to look at the indisputable general ontological traits. It is logically to see aspiration to collecting as result of a social competition together with the tendency of intellect toward the classification and the human axiological need. A specificity of Neo-European rational protestant culture (its dynamism, the swift change of surroundings, sacral status of the property and of material value) called into being the institutes of public memory. One of the such institutes is Museum, the memory institute materialized in the natural objects and in artifacts.

Democratic revolution and museum

The 20th century fixed the crushing defeat of the humanism and Enlightenment ideas and the global victory of democracy. Removing class educational hierarchy and censorship, denying inert repressive values, the rationality brings the gigantic positive: the liquidation of illiteracy and hunger, social progress! But the democratic culture finds oneself in the situation of spiritual vacuum as it had asserted the absolute domination of the universal criterion - money.

Museum boom is the reaction of young culture to the crisis. This reaction (as and the most important phenomenon of new reality -Internet) gives possibility to find the tendencies to degradation (cultural amnesia, emotionally atrophy) and tendencies to the culture Renaissance. The concrete sources of museum boom, the versions of the

actual ways of the museum transformation and their possible consequences are considered in the conclusion.

The museum - a symbol of the Victorian epoch - after end of 2-nd World war, to surprise, in the democratic mass world has entered a strip of rise which proceeds till this day. Stability of this tendency during half a century does its by worthy discuss.

Genealogy and genetics

It is more correct to trace the history of a museum from an epoch of the Renaissance, despite of an opportunity to find in it attic influence. Actual museology explains an origin of a museum by means of the theory of "museum need». The author of idea Z. Stransky¹ postulates the presence of a certain special ontological "museum need". The consecutive strengthening of this need from archaic forms of collecting leads to its embodiment in a museum. However the main argument confirming presence of this specific attribute for homo sapiens is existence of museum. After that already presence of "museum need» is considered as the reason of appearance and development of a museum. The logic is not absolutely convincing.

Question of principle -- why the museum is born just and only in the Europe? The theory of "museum need" sees an explanation that the liberally-capitalist society has not arisen independently anywhere outside of the Europe. But then it is necessary to search for those cultural genes, inherited qualities that generate new European outlook and device of the world. The museum is only their consequence.

Protestant ethics and spirit of a museum

Any addition of base needs multiplies superfluous essences and only shades a problem (on such way it is necessary to enter in to use a need of opera, of archive...). It is more fruitfully to address to indisputable ontologic attributes. We can count some those attributes:

the extremely active aspiration of anthropoids is distinguished by group;
propensity of intellect to the classification, amplifying during biogenesis and ontogenesis;
at last, cleanly human aspiration to an establishment of valuable scales, axiological need.

The similar set of needs is sufficient to explain a bent for collecting which characterizes a person everywhere already at the earliest stages of development. The reason, of that general bent for to collecting which comes to the end in formation of museum institute in the western culture, connects, possibly, with Reformation.

In Protestant ethics² the supreme rules are displayed by terrestrial regulating, classification. The Puritan outlook sees in material world the result of human acts for glory of God. The understanding of successful activity as attribute of an elected one by God creates a respect for process and for material subject of work. The knowledge value (scientific, historical, ethnographic ...) for professional success and as a sign on blessing of the God generates heightened interest to a science, technics, art and stimulates attention to natural objects and to household details.

In rational culture the life rate is set by not casual external impulses, but by an amplifying influence of constantly updated environment. The precipitancy of changes in all spheres stimulates a problem of preservation, memory. The culture always is

¹ Stransky Z. Understanding of museology. Museums of the world: Moscow., 1991.

² Weber M. Die protestantische Ethik und der «Geist» des Kapitalismus:, Moscow, 1972.

anxious exclusively by essential problems, but for their decision it addresses to the past. The pressing need of bourgeois-liberal culture in formation of system of values arouses to life the diverse institutes of public memory. A museum is one of institutes of the memory which are embodied in nature and artefacts, reflect creative efforts, display Protestant vision of the dale world as a projection of the supreme world. The most majestic and grandiose temples of the mind century are museums as temples of a science and arts which show all variety of achievements of the human genius and the nature.

Birthmarks of rationalism

The western model which has risen on shoulders of the burghers, «frugal and persistent by the nature, completely devoted to their business, with strictly bourgeois views and principles³», is progressive and inevitable model for evolution. But already Max Weber distinctly saw in its development constantly increasing threat: "As asceticism has started to transform the world, rendering the increasing influence on it, the external earthly pleasures have subordinated to themselves people more and more strongly⁴». System which constantly invests manufacture and its continuous expansion stimulating consumption and stimulated by it, is doomed to degeneration as a result of irreversible "oncological" process.

Religious, ethical and aesthetic values keep a priority in New European time, but they are smoothly and continuously corrected. The material values find unprecedented importance. Rational progress vigorously introduces a universal monetary scale which determines the professional status, prestige, a endowments measure... Inventions, scientific enlightenment, works of art and temples are considered not only as spiritual, symbolical values, but also as rather terrestrial, pragmatic values.

The property influence is especially evident in an art museum. A spiritual role of a museum as storehouses of standards fine, beauty, its cultural-educational functions are amplified, but at the same time the museum is represented now also as assembly of huge material values. The plastic arts take a unique place among other arts, involving the capital more strongly, than petroliferous sites. Not without reason, probably, Soms Forsyte - a proprietor - is the amateur and the owner of painting assembly.

In difference from the traditional, religious temple which concentrates under the arches Heavenly light, in a museum temple the spiritual space is created by the materialized forms of beauty and the blessing, which are signs, marks on a way to eternal for Protestant outlook. But self-confidence of the Puritanism, which confirms the man in his personal searches of true, is fraught with dangers. It is possible to suspect in these forms (that already happened during the iconoclasm epoch) of the idol insidiousness, of hidden the golden calf. Dangers are repeatedly amplified in the modern world concentrated to conveyor creation of idols of different calibres.

Postindustrial museum mutation

The progressive success of the western model (economic integration and involving in a cultural orbit of billions) by virtue of general laws of preservation is possible only due to a cultural reduction (which epidemic development is noted by

³ Weber M. Die protestantische Ethik und der «Geist» des Kapitalismus:, Moscow, 1972, p. 142.

⁴ Weber M. Die protestantische Ethik und der «Geist» des Kapitalismus:, Moscow, 1972, p. 94.

A.Huxley, G. Orwell, A. Moles (a century ago). A process of universal simplification and averaging could not avoid a museum.

General democratization of culture and intensification of the market are initiating after the ending of the Second world war on other bank of Atlantic a museum boom⁵ (avalanche growth of number of museums, of quantities of the visitors, of new museum forms and types). The liberal course to expansion of a mass audience as a leading reference point answers to tolerance of modern culture and promotes` growth of consumption in the global market. The museum strengthens positions on a competitive stage by means of advertising, modernization of known museum brands and creations of new brands. The museum becomes one of the most democratic and mass institutes together with cinema and TV.

The democratic civilization eliminates censorship, rejects depreciated sacral values, not offering instead of new values. In an ideological vacuum the domination of only one monetary universal criterion is amplified and continues a cultural reduction. Problems of the life sense are not eliminated, but they are considered in one line with problems of a disposal of excess weight, a gastronomic need and ethical one become equivalent.

The form and the author completely become emancipated during democratic liberation, rejecting inert "classical" restrictions and connection with ideals. Now they present only of itself. Only one criterion allows to build hierarchy outside of entelechia, of the supreme sense, it is a criterion of market. Mutually convertible advertising reputation (accessory to main-stream⁶) and the works cost of the artist⁷ determine the today's table of ranks. Only one price tool remains for differentiation in mass "art manufacture". For attraction of attention to actual process, to new names the price should increase continuously. Really, surpassing all imaginations, the prices for works of art have grown in many hundreds times for last century.

So, the rational system evolution generates a museum - a temple-palace, treasure-house of the materialized symbols, of masterpieces, of the unique exhibits in which spiritual value is alloyed with material. However in the aggressive dynamical postindustrial environment the mutable museum gene is changed and organically stimulates prompt growth of the museum tourism successfully involving in the orbit of millions.

Evolutionary laws

By means of a similar mutation the civilization adapts traditional institute of memory for service of inquiries of the modern culture. One of this culture characteristics is "neophilia" («For the person with this illness of culture, any thing which belongs him - boot or a suit or a car - very soon loses the appeal» Lorenz K.). Museum boom in various displays (growth of museum variety, updating of expositions, introduction of performances and installations, interactivities and other) is the organic phenomenon of a democratic society adequate to its features: infantilism, a youth as ideal (in style of a life, in ideals, in fashion), a decrease in the educational qualification. These tendencies as well as expansion of representation in a museum of the widest layers of public is the certificate not complications of the values system, but its compression, simplification. Once again the thin structure of the

⁵ Hadson K. Museums of Influence. Novosibirsk, 2001.

⁶ Borovskiy A..*D.department* of the newest currents: history, collections, exhibitions.-SPb., 2004. p.13

⁷Gelman M. Museum of contemporary art. // Russian magazine, 10, 1997, p. 17.

culture, which are grown up by long centuries and the millenia, is exposed to barbarous invasion (this time not hordes of aggressive Scythians, but naively childly ignorant millions of consumers). What does this process signify?

The dominating culture, finding planetary scale, is resolutely transformed, probably, preparing a new phase. Qualitative evolutionary jumps were always begin from the periods of intensive cultural neoteinia (a sharp simplification of civilizations as the result of active display of children's properties for adult individuals). These periods precede in historical cycles to the rise stages and they open opportunities for formation of radical mutations. It is possible to consider a today's obvious infantilism of culture as potential readiness for a cardinal transformations of consciousness .

It is no more productively to resist to a museum tidal wave, than to struggle with movement of the Sun on a sky. In conditions of intensive socially-technological changes the most urgent purpose is to keep variety of cultural riches. A concrete target - to use energy of a tsunami for the good of a unique heritage.

Evolution is inevitably accompanied by losses, but the culture always selected truly valuable, for example, having kept for the man the color eye-sight lost by mammals. Evolution will solve a problem of obviously superfluous hundreds thousand museums, saving up traditional or finding still unknown forms to enrich feeling person (it is the same - after or together with tourists)

EXPANDING THE REGENERATION AND TRANSFORMATION OF LEARNING IN SCHOOL — MUSEUM COLLABORATION

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Abstract

Driven by the pursuit of cultural knowledge and more in-depth learning experiences, the main function of education has increasingly been demonstrated in favor of closing the gap between museums and their audiences, which has also thus become the key factor in re-activating museums. Under this context, museums with the role of delivering culture accordingly transform into a distributed array of teaching resources in schools. Over the past decades, there has always been a transmission relationship in exchanging culture and knowledge between museums and schools. However, the exchanging processes are mostly fixed in the field of museums due to limitations of time and space.

The National Palace Museum in Taiwan is one of world famous museums, and numerous collections leading the Museum to become known as a treasure trove of Chinese culture. With the abundant artifacts and broadening knowledge based on ancient history, the NPM has also developed plenty of education resources and learning programs to refresh their audiences. Undoubtedly, numerous collections, abundant resources and diverse education activities make the Museum an organism that keeps regeneration and transformation itself. The main purpose of this study is to investigate to what extent would the resources in the NPM transform and regenerate some critical catalysts in teaching and learning in schooling fields. In other words, within the exchanging process, this study will put focus on how the inaccessible resources in the Museum are being transformed into another form of resources in coping with school contexts by collaboration between these two institutions, and how these resources are being injected into students' learning by teachers' knowledge system.

In order to understand the contextual and interactive complexities in the school-museum collaboration, six Art and humanistic Curriculum teachers were intentionally chosen to be interviewed because of their frequent collaborations with the NPM in a variety of instructional programs. Additionally, this study is expected to illuminate the interaction between schools and the museum, as well as transformations and regenerations of museum resources in this mutual engagement. Most importantly, it is my understanding that more investigations in school-museum collaboration are necessary in order to improve the joint action and expand more possibilities and new perspectives for these two institutes.

Introduction

Driven by the pursuit of cultural knowledge and more in-depth learning experiences, the main function of education has increasingly been demonstrated in favor of closing the gap between museums and their audiences, which has also thus become the key factor in re-activating museums. Under this context, museums with the role of delivering culture accordingly transform into a distributed array of teaching resources in schools. Collaboration with schools can comprise a powerful strategy for museums to fulfill their education missions (AAM, 1992; CMNC, 1984; Eisner & Dobbs, 1986; Newsom & Silver, 1978).

With the abundant artifacts and broadening knowledge based on ancient history,

the National Palace Museum has also developed plenty of education resources and learning programs to refresh their audiences. Undoubtedly, numerous collections, abundant resources and diverse education activities make the Museum an organism that keeps regeneration and transformation itself. However, sometimes the culture and knowledge exchanging processes are mostly fixed in the museums through a field trip for the teacher and their students. Unfortunately, the reality of many field trips involves teachers who visit with few and often poorly defined objectives, little preparation, and loose connections to the classroom unit or curriculum, primarily because the settings is chosen first rather than the learning topic (Storksdieck, 2006). Additionally, taking students on field trips is very stressful due to the logistics of arranging the visit, the transportation, and, if needed, substitute teachers back at school, gaining permission from school administrator and parents, concern about safety and student behavior in an environment that does not have four walls. It is not surprising that attention to learning processed gets left behind or that teachers “hand over” responsibility for the visit to museum staff, particularly if they are uncertain themselves about the content in the museum (Griffin, 2007). Nevertheless, according to Garoian (1992), the field trip is merely a segment in the school-museum collaborative relationship.

Thus, the main purpose of this study is to investigate to what extent would the resources in the museum transform and regenerate some critical catalysts in teaching and learning in schooling fields. In other words, within the exchanging process, this study will put focus on how the inaccessible resources in the museum are being transformed into another form of resources in coping with school contexts by collaboration between these two institutions, and how these resources are being injected into students’ learning by teachers’ knowledge system. Additionally, this study is expected to illuminate the interaction between schools and the museum, as well as transformations and regenerations of museum resources in this mutual engagement. Most importantly, it is my understanding that more investigations in school-museum collaboration are necessary in order to improve the joint action and expand more possibilities and new perspectives for these two institutes.

Methods of inquiry and data sources

In order to understand the contextual and interactive complexities in the school-museum collaboration, six Art and humanistic Curriculum teachers were

intentionally chosen to be interviewed because of their frequent collaborations with the NPM in a variety of instructional programs. The guideline questions for interviewing these teachers covered the following topics: (1) the process in establishing collaborations with the museum; (2) differences in using resources from museums and schools; (3) teachers' perceptions in interpreting and delivering artifacts to student's learning; (4) reflections in further collaboration with the museum. The length of the interviews ranged from 1 to 1.5 hours, which total 7 hours. All interviews are digitally voice-recorded and transcribed for analysis.

Findings and Discussions

Teachers as the linkage between museum and students' learning

Toward the end of the 20th century, museums further aligned themselves with contemporary educational practices such as comprehensive art education, involving several disciplines in art such as aesthetics and art history, and museums "assumed a more central role in curriculum planning, developing educational materials and providing services to schools" (Williams, 1997, p. 83). It is widely acknowledged that museums have increasingly positioned themselves as educational institutions, in

which forms of exhibition and artifact are considerably developed more student-oriented and web-based in order to diversify the interaction between museums and student's learning. The importance of museum and school partnerships has been emphasized as a good way to encourage effective learning (IMS, 1996). However, as less time spent in museums, a critical question that remains as yet unanswered is 'to what extent did the web-based information, materials and activities transform the interaction between museum and students' learning?'

Being situated between these two objects, Pitman-Gelles (1981) sees the active involvement of teachers as a key component in ensuring a successful museum-school partnership. Schwab (1973) observes: "The curriculum operation will be influenced by the teachers' knowledge, attitudes, feelings, relationships with the milieu and students, as well as their willingness to learn new materials and new ways of teaching" (p. 31). Along with the recognition, my interviewees' collaborative experiences with the NPM demonstrated that due to lacking materials about Chinese culture in school curriculum, most students widely have scattered knowledge in Chinese Art, especially Chinese painting and calligraphy. In fact, some students even exclude Chinese Art because they think some of the paintings are somber in colors with tedium themes, and there seems to be no connections with their everyday life.

However, the teachers also indicated that students' motivation of certain subject, such

as Chinese painting and calligraphy, can be led by teachers' urging:

It's hard to teach the landscape painting of ancient China because the connection with students' life is really shallow. "For what reason should I learn this?" students always ask this. [Weng, 2009/07/02]

The students tend to reject learning Chinese paintings and calligraphy so we have to

ingratiate their learning by interesting websites and entertaining games like a small competition in the class— otherwise they would show lower learning desire. I found it does matter how teachers guide and warm-up students' learning motivation.
[Cheng,
2009/07/07]

Museums are one of the few types of institutions with the potential to compensate for insufficient art education (Johnson, 1990; Muhlberger, 1985; Walsh- piper, 1994; Zeller, 1983). With abundant historical materials and in-depth culture significance attribution, museum resources can enrich teachers' teaching and extend students' learning out of textbooks and school context undoubtedly. But how does a teacher carry out an integrated instruction fitting into the curriculum and combined the educational goals of both institutions? Garoian (1992) presents an ideal art museum-school partnership model in which the classroom teacher plays a leadership role. Garoian's model envisions K-12 teachers using both institutional and human resources to design a series of activities related to museums, including pre-visit, museum-based, and post-visit activities, to enrich students' learning. Thus, even during the visit, the teacher plays an active role, working in cooperation with the docent of the museum to facilitate students' learning.

However, due to the complexity and plurality of educational resources in museums, finding the connections between artifacts and students might be the critical questions for teachers, particularly for those who expect to expand meaningful communication through school-museum collaboration. Moreover, before establishing a partnership within these two institutes, some inherent differences (purpose, function, structure, and ethos) and physical barriers (time and space) would inevitably create some difficulties. Notwithstanding, according to my observation, when proceeding a school-museum collaboration, some psychological factors of school teachers themselves in the relationship are seldom mentioned:

The gaps do exist when first get involved in the collaboration because sometimes teachers know little about the museum's exhibits as students. [Li,
2012/05/14]

When establishing the relationship with museums and launch the collaboration, school teachers must have enough diligence and capability to map out the whole programs (Schwab, 1973). Hence, quality and sustainable school-museum collaboration requires teacher's personal accomplishments, concepts, interests and identification about the museum learning network and of course the great ardor for the cultural pieces:

I keep doing the school-museum collaborative instruction because my personal preference and familiarization to the objects in the NPM, but of course, the experiences accumulated over a long period of time to make proficiency. What's more, I really enjoy the process learning new materials along with my students. [Li,
2012/05/14]

The partnership must include a commitment to administrative support as well as teacher interest, in order to achieve the ultimate aim of establishing museums as integral components in the total educational experience (Sheppard, 1993; Stone, 1993). As a matter of fact, the foregoing interviewee has formed a long-term partnership with the museums for years by her enthusiasm and accumulation of teaching. She is properly an important contributor and also the best promoter injecting her practical experiences as a school-museum collaboration model within schools to push the collaboration forward.

Regeneration and Transformation in School-Museum Collaboration

Museums and schools are natural educational partners (Berry, 1998; Hicks, 1986; IMS, 1996; Saunders, 1991; Sheppard, 1993). They “offer complementary learning experiences, combining two languages of learning—the words of the classroom and the objects of the museum” (Sheppard, 1993, p.2). Furthermore, a number of reports in the literature indicate that an art museum/gallery is a unique and invaluable resource that can complement and enhance art education in elementary schools (Johnson, 1990; NAEP, 1981; Newsom & Silver, 1978; Muhlberger, 1985; Walsh- Piper, 1994; Zeller, 1983). The idea of “lively, integrative, community-based, and lifelong education” is the common goal of both museums and schools. Thus, museum school collaboration is well poised to prosper with wise guidance and creative thinking (Chen, 2007, p.105).

Early and appropriate educational exposure to art in a museum or gallery setting can nurture children's aesthetic development and can promote life-long fondness of and facility in accessing the resources provided by art museums/galleries (Kindler, 1997). Moreover, museum education and school education share the same target group, and museum school collaboration complements each other's focus on education. “Museum educators need contact with school teachers to help integrate students' learning and to promote the quality of collaboration” (Berry, 1998; Chen, 2007, p. 104-105). Speaking about teachers' instruction and in accordance with my interviewees, learning how to appreciate different styles of arts is important especially for the elementary and junior high school students. The art appreciation centers on enlightening the aesthetic feeling or perception and the esthetic sensibilities of students rather than inculcate the professional knowledge and technics. Using means of the “storytelling” and asking the “key questions” can guide students' familiarization and inspiration of the art works step by step:

The narratives in the painting, such as the reason why it was created or the extraordinary story of the painter's, are the keys to interest students. [Hsu, 2009/06/19]

The question raised by teacher must be inspiring and related to students' life and prior knowledge. Most of all, teacher can encourage students to transfer the ancient concepts raised by the artists into modern ideas. [Chang, 2009/06/26]

We can encourage students to find out details that people rarely notice in the paintings to catch their eyes and curiosity. [Fu, 2009/07/09]

As can be seen from the foregoing interview data, it is essential to catch the punctum related to students' life experiences when approaching the museum exhibits and starting an instruction of art works. Some arts instructions in the classroom can be settled precisely step by step with specific goals and fully controlled by teachers. However, it is always impossible to anticipate students' achievements exactly. In the post-visit activities teaching process, it is important to provide an open-minded approach and let students express independent thinking or reveal their authentic feelings about the museum exhibits. Teachers can focus on some general ideas (key questions) and encourage students to share their opinions to create meaningful communication. Most importantly, not every arts course needs to lead visible creation outcomes. On the contrary, each teaching and learning process itself is highly precious and adorable because that's the "real thing" reflects students' innermost feelings. The following instruction case proved that how students' originality exceeded the teacher's expectations and both instructor and learners created a fantastic experience mutually :

After visiting the exhibition "Dynastic Renaissance: Art and Culture of the Southern Song," from the NPM, we've seen lots of landscape, flowers and birds in the paintings. Our students love to go mountain-hiking and bird-watching with their families on the weekend, so they pay close attention to the related theme of paintings. I didn't intend to do anything, and we were having sketch course then, so I just encourage students follow the rational and factual attitudes of Southern Song's painters to sketch birds they've seen. The birds they sketched were so lovely, and I copied the sketches by machine in order to keep the original paintings undamaged. To my surprise, I found the lines and details of birds showed more clearly and brilliantly. After that, I accidentally found a very big board in my classroom, and I asked students try to put their birds on it randomly so we can appreciate the beautiful birds together. When they placing the birds, it's interesting that students created a sense of space and showed the spatial perception of their own. We continued to draw some stones and branches letting the birds stand on them, and follow-up was a big tree crated in order to integrate the appearance of the whole picture. Thus, we created the spiritual landscape of our own [Li, 2012/05/14]

This creative instruction process above is a fruitful school-museum collaboration case contributed by the Taipei Municipal Minzu Elementary School and the National Palace Museum. The teacher said that it's glad the museum devoted every effort providing plenty of educational resources and information. In addition, it also giving logistics supports cordially, such as the arrangement of the field trip and the guided tour in the museum. What's more, the museum set no limitations about the teacher's instruction and give her completely freedom to expand the possibilities of this educational activities. In this case we can find that these two different institutions provide different sort of experiences and "work together to give students an enriching immersion in ideas, discovery, challenge, and enjoyment. This museum-school collaboration is a partnership well worth developing and sustaining" (Sheppard, 1993, p.2). "I believe that the museum is certainly as willing to see the sparkling imaginations with unexpectedness generated by students derived from its

exhibits as I am.” said the teacher in great delights.

Reflection

When establishing the school-museum collaboration, a commitment should be made clearly by these two institutions through effective communications. However, would it be possible that the two institutions carry different expectations to the collaboration and fall short of each other? Although both museum and school share the same purpose of education toward students, but still there are different characteristic and concerns of its inherency. Since the teacher is the linkage between museum and students’ learning, it might be great help if the museum fully believe and support this instruction lead by the professionals in the classroom. Mostly, the museum should not only respect teachers, help teachers eliminate the obstacles (psychological and physical), but also esteem the teaching process in the classroom regardless of the final result is remarkable or not. Maybe the museum might somehow look forward an ideal in the relationship, but it still can’t leave the “reality” happened in the classroom aside. That’s the real thing shaping by the interaction of teachers and students based on certain context. We can’t pursue the perfection but ignore the “reality” in the classroom which is a long-term management and always dynamic and progressive in the collaborative relationship.

References

- American Association of Museum. (1992). *Excellence and equity: Education and the public dimension of museums*. Washington, D.C: The American Association of Museums, AAM.
- Berry. N. (1998). A focus on art museum/school collaboration. *Art Education*, 44, 8-14.
- Chen, H. (2007). Exploration of the development of museum-school collaboration in art education: Prospects and difficulties in a case example. *The International Journal of Arts Education*, 97-118.
- Commission on Museums for aNew Century. (1984). *Museumsfor a new century*. Washington, D. C : The American Association of Museums.
- Eisner, E. W. & Dobbs, S. M. (1986). *The uncertain profession*. Los Angeles, CA: The Getty Center for Education in the Arts.
- Garoian, C. R. (1992). Art history and the museum in the schools: A model for museum- school partnerships. *Visual Arts Research*, 18(2), 62-73.
- Griffin, J. (2007). Students, teachers, and museums: Toward an intertwined learning Circle. In J. H., Falk, L. D. Dierking & S. Foutz (Ed.), *In principle, in practice: Museums as learning institutions* (pp. 31-42). Lanham, New York, Toronto, Plymouth, U.K.: Littlefield Publishers, Inc.
- Hicks, E.C. (1986, September). Museums and schools as partners. *Eric Digest*. (ERIC Document Reproduction Service No. ED278 390)
- Institute of Museum Service, (1996). *True needs true partners: Museums and school transforming education*. Washington, DC. : Institute of Museum Services.
- Johnson, K. (1990). Conferring power: Discipline based art education visits the museum. *The J. Paul Getty TrustBulletin*,5(2), 8-9.

- Kindler, A. M. (1997). Aesthetic development and learning in art museums: A challenge to enjoy. *Journal of Museum Education*, 22(2-3), 36-53.
- Muhlberger, R. (1985). After art history, what? A personal view of the shaping of art museum education. *The Journal of Aesthetic Education*, 19(2), 93-103.
- National Assessment of Educational Profession. (1981). *Art and young American*. Denver, CO: Education Commission of the States.
- Newsom, B. Y., & Silver, A. Z. (Eds.) (1978). *The art museum as educator*. Berkeley: University of California Press.
- Pitman-Gelles, B. (1981). *Museums magic & children: Youth education in museums*. Washington, D.C: the Association of Science-Technology Centers.
- Saunders, V. J. (1991). *Learning together, sharing together: An examination of interactive programs for art museums for art museum settings*. Unpublished master's thesis, University of Oregon.
- Schwab, J. J. (1973). The practical: Translation into curriculum. *School Review*, 81, 501-522.
- Sheppard, B. (Ed.). (1993). *Building museum & school partnerships*. Washington DC: American Association of Museums.
- Stone, D. (1993). The secondary art specialist and the art museum. *Studies in Art Education*, 35(1), 45-54.
- Storksdieck, M. (2006). *Field trips in environmental education*. Berlin, Germany: Berliner Wissenschafts-Verlag.
- Walsh-Piper, K. (1994). Museum education and the aesthetic experience. *Journal of Aesthetic Education*, 28(3), 105-115.
- Williams, B.L. (1997). Recent changes in museum education with a regard to museum-school partnerships and discipline-based art education. *Visual arts research*, 23, 83-88.
- Zeller, T. (1983). Let's reach art with originals. *Art Education*, 36(1), 43-46.

ARCHITECTURAL COMPOSITION OF CONTEMPORARY AND HISTORIC BUILDINGS: AN ANALYSIS THROUGH VISUAL PERCEPTION AND COGNITION

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Abstract

This article examines the architectural composition of historic and contemporary buildings with different levels of order and visual stimuli, through the processes of visual perception and cognition. The level of aesthetic satisfaction with such buildings and the explanations for this is investigated through aesthetic evaluations of architects and non-architects college graduates. It is necessary to deepen the analysis of architectural composition, in order to better understand and thus better support the aesthetic analysis and decisions adopted in architecture. Data was collected through physical measurements with photographic records and questionnaires and interviews carried out with 60 architects and 60 non-architects college graduates, including two A3 sheets, one with three historic buildings and another with three contemporary buildings in Porto Alegre, categorized as: order and visual stimulus; order and little visual stimulus; and disorder. Information obtained through questionnaires were analyzed using nonparametric statistical tests such as Mann-Whitney U and Kendall W. The answers given by those interviewed were analyzed considering their frequency and significance. The results indicate, for example, a clear tendency for buildings with composition characterized by order and stimulus to be perceived positively, and for buildings with composition characterized by disorder to be perceived negatively. This study provides, through the processes of perception and cognition, a better understanding of the attributes of a qualified architectural composition, and stresses the importance of empirical aesthetics to advance research on the aesthetics of architecture.

Keywords: architectural composition, visual perception, cognition, aesthetic

evaluation, empirical aesthetics

1 INTRODUCTION

The architectural composition deals with the characteristics of architectural elements and their relationships in a building, that affect its aesthetic quality and evaluation. The aesthetic evaluation of buildings has been adopted in many cities in the United States, in European countries (i.e., Germany, Spain, France, Britain, Holland, Italy, Sweden) and Japan. Several studies have mentioned the importance of appearance to a satisfactory environment for their users (e.g., Cooper Marcus & Sarkissian, 1986; Kaplan et al. 1998; Reis & Lay, 2003). The importance of the aesthetics of the built environment is also revealed by the fact that its aesthetic quality can also influence, apart from the attitudes and well being of people, their behavior, since they are attracted to go and to go back to aesthetically attractive places and to avoid or refuse to go to unattractive places (Nasar, 1988a, 1998b).

This approach is part of empirical aesthetics that together with philosophical aesthetics constitute the two main aesthetic approaches. The first involves the study of aesthetic philosophies and the creative process and has as an assumption that 'beauty is in the eye of the beholder'. Therefore, this approach indicates that the aesthetic reactions of different people facing the same object would also tend to be different, preventing the possibility of establishing some aesthetic consensus and making some aesthetic evaluation meaningless. On the other hand, without disregarding the differences between people and between their aesthetic evaluations, empirical aesthetics involves the processes of perception and cognition, and assumes that it is possible to evaluate the aesthetic reactions of different people and find similar or identical responses, revealing some aesthetic consensus and allowing the conception of the idea that beauty is more in the perceived object than in the eye of the beholder. The empirical aesthetics encompasses formal aesthetics, which deals with the physical properties of the environment, as well as symbolic aesthetics, which deals with symbolic associations provided by the physical characteristics of the environment, by its use and/or by its history (e.g., Lang 1987).

Although the processes of perception and cognition are part of the same event, functionally, perception occurs before the individual becomes aware of the meaning

and value of an object, that is, before the process of cognition. Therefore, the distinction, between form and meaning is justified based on the distinction between perception and cognition; meaning, unlike form, does not directly result from a pattern of stimulus but from interpretation through which value is assigned based on extramorphic concepts, that is, concepts external to the form (Weber, 1995; Reis & Lay, 2006). Therefore, symbolic aesthetics deals with the aesthetic satisfaction generated by the associations people make with settings and specific features of the environment, therefore, being important to fill the needs of the individual identity (Lang, 1987). The symbolic meanings associated by people on natural and built environments and the values that consciously or unconsciously attribute to them depends on what they are like physiological, psychological and social human beings. Thus, the symbolic meaning of the built environment must be understood within the wide range of people values and the universe a culture is constituted of. Nevertheless, perhaps the most important differences between the perception and appreciation of symbolic meanings emerge from the people's academic training, for example, between architects and laymen (Lang, 1987). For example, some studies (e.g., Fawcett et al, 2008) indicate the existence of significant differences between the aesthetic preferences of architects and lay people regarding buildings facades.

Nonetheless, assuming that an object can be understood in terms of internal and external relations, it is possible to argue that internal relations are more structured and precise, largely based on the object itself, while external relations are primarily based on the associations made with the object. Therefore, it is possible to conceive different levels of aesthetic experience (Reis et al., 2004): a level of aesthetic experience based on visual perception of building aesthetics, and another level based on all the senses and the symbolic associations derived from the process of cognition. The first is a more specific level of aesthetic experience, and basically deals with the architectural composition of buildings, while the second level refers to a broader level of aesthetic experience, dealing with the existence of physical elements in the built environment and their possible meanings.

The aesthetics composition of buildings suggests an idea of order in visual perception. In turn, the perception of order in architecture implies the perception of unity in the

organization of the elements, causing a satisfactory response to the stimulus in individuals in different contexts, as evidenced by Gestalt psychology (e.g., Von Meiss, 1993; Weber, 1995). As already mentioned (Porteous, 1996), humans are continuously looking for order. Moreover, some studies revealed that preference is associated with on site increased perceived order in buildings facades (Oostendorp, in Nasar, 1998), as with the increased perceived order of architecture exteriors in several places through recorded photographs (Oostendorp and Berlyn, in Nasar, 1998; Reis et al., 2004). The perceived order of architectural composition may be manifested through concepts such as: symmetry, asymmetrical balance, hierarchy, rhythm, texture (regularity in the relationship between elements in all directions, resulting in loss of identity of an element in favor of the whole), complexity (large number of different architectural elements and/or ordering principles in a composition), simplicity (small number of heterogeneous elements and ordering principles in the composition) (e.g., Arnheim, 1974; Prak, 1985; Mitchell, 1990; Von Meiss, 1993; Weber, 1995; Kohlsdorf, 1996; Reis, 2002). However, further studies are needed, especially in the case of Brazil, to better understand evaluations of architectural composition of historic and contemporary buildings with different levels of order and visual stimuli, by people with distinct types of academic degree. Therefore, the aim of this paper is to carry out evaluations of architectural composition of historic and contemporary buildings with different levels of order and visual stimuli, by architects and non-architects college graduates, as well as to understand the reasons for their aesthetic evaluations.

2 METHODOLOGY

Data were collected through questionnaires and interviews conducted to 60 architects and 60 non-architects college graduates. The questionnaires, consisting of simple and multiple choice questions, main purpose was to investigate the levels of satisfaction and preferences regarding the appearance of buildings, as well as the reasons for the evaluations. A photographic kit, containing two panels in A3 format (Figures 1 and 2), each with three buildings, was part of the questionnaires. The buildings were arranged as follows: historic buildings (three buildings; Figures 3, 4 and 5) and contemporary buildings (three buildings; Figures 6, 7 and 8), totaling six

buildings. These six buildings represented three categories: order and visual stimuli – buildings with clear organization of its architectural elements and evident focus of attention or visual stimulus (Figure 5 - Building 3; Figure 7 - Building 5); order and low visual stimuli - buildings with clear organization of its architectural elements and low visual stimuli (Figure 4 - Building 2; Figure 8 - Building 6); and disorder - buildings with little or no organization of its architectural elements (Figure 3 - building 1; Figure 6 - Building 4). In order to select and categorize the buildings into these three categories, apart from the three researchers own evaluations, pilot studies were carried out involving undergraduate students from the School of Architecture at the Federal University of Rio Grande do Sul. The historic buildings are those considered of historic and/or artistic value and protected by local, state or federal public institutions in charge of preserving the cultural heritage. The buildings classified as contemporary are commercial establishments built from 1990 onwards. A computer program was used in order to fix distortions in the photographs, to remove street furniture, vegetation and other elements that could interfere in the aesthetic evaluation of the building, as well as some modifications needed to bring the buildings to the categories used. The data collected in the questionnaires were analyzed using nonparametric tests such as Mann-Whitney U and W. Kendall.

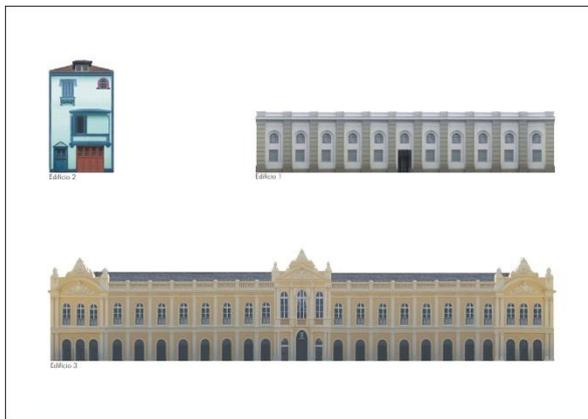


Figure 1 – Panel 1: historic buildings in Porto Alegre



Figure 2 – Panel 2: contemporary buildings in Porto Alegre



Figure 3 – Building 1: historic building with disorder



Figure 4 – Building 2: historic building with order and low stimuli



Figure 5 – Building 3: historic building with order and stimuli



Figure 6 – Building 4: contemporary building with disorder

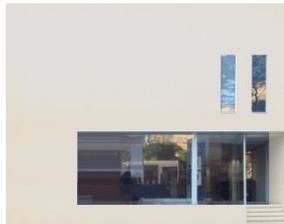


Figure 7 – Building 5: contemporary building with order and stimuli

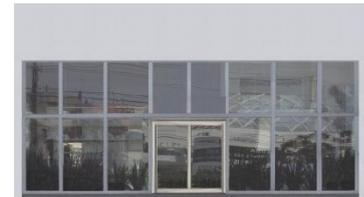


Figure 8 – Building 6: contemporary building with order and low stimuli

3 ANALYSIS OF RESULTS

3.1 Degree of satisfaction with the appearance of buildings

Building 1 (historic building with disorder; Figure 3) was evaluated as aesthetically unsatisfactory by a higher percentage of the 120 respondents than the percentage that evaluated it as satisfactory (Table 1). Nonetheless, a statistically significant difference (Mann-Whitney U, sig = 0.026) was found between the evaluations of architects and non-architects college graduates. While almost half (45%) of the architects negatively evaluated the appearance of building 1, the negative evaluation by non-architects fell to 28.3%, although this is still a considerable percentage of dissatisfied respondents (Table 1). This result suggests that the idea of disorder tends to negatively affect architects evaluation in a higher degree than the evaluations of non-architects college graduates. Building 2 (historic building with

order and low stimuli; Figure 4) was evaluated as aesthetically satisfactory by the majority of the 120 respondents, and by the majority of 60 architects and the 60 non-architects (Table 1), with no statistically significant difference being found between the valuations of these two groups. The positive evaluation of the appearance of the building 2 seems to be related to the idea of order and a level of visual stimuli, which, although low, seems to have been enough to not create a monotonous architectural composition.

Building 3 (historic building with order and stimuli; Figure 5) was evaluated as aesthetically satisfactory by the overwhelming majority of the 120 respondents (95%), of the architects (91.7%) and of non-architects (98.4 %), becoming the most attractive building among the six evaluated (Table 1). The similarity between the aesthetic evaluations by the two groups is supported by the lack of statistically significant difference between such valuations. These expressive positive evaluations can be explained by the existence of a clear organization and visual stimuli in the architectural composition of building 3.

Building 4 (contemporary building with disorder; Figure 6) was predominantly evaluated as aesthetically unsatisfactory by the 120 respondents (47.5%), by the 60 architects (38.3%) and by the 60 non-architects (56.6%), becoming the most aesthetically unsatisfactory building among the six evaluated (Table 1). These evaluations by the two groups were found to be not statistically significantly different. It is possible to justify the rejection of the appearance of the building 4 by the existence of disorder or lack of an organizing principle.

Table 1- Degree of satisfaction with the appearance of buildings

Levels of satisfaction	Building 1	Building 2	Building 3	Building 4	Building 5	Building 6
Total sample - 120 respondents						
very beautiful	13,3%	12,5%	61,7%	5,0%	18,3%	6,7%
beautiful	21,7%	46,7%	33,3%	19,2%	39,2%	22,5%
neither beautiful nor ugly	28,3%	32,5%	3,3%	28,3%	25,0%	43,3%
ugly	22,5%	8,3%	0,8%	36,7%	14,2%	20,8%
very ugly	14,2%	0,0%	0,8%	10,8%	3,3%	6,7%
Kendall mrv	2,91	3,85	5,28	2,43	3,69	2,84
Architects – 60 respondents						
very beautiful	8,3%	13,3%	56,7%	8,3%	28,3%	8,3%
beautiful	20,0%	41,7%	35,0%	20,0%	50,0 %	20,0%
neither beautiful nor ugly	26,7%	35,0%	6,7%	33,3%	20,0%	51,7%

ugly	25,0%	10,0%	1,7%	25,0%	1,7%	11,7%
very ugly	20,0%	0,0%	0,0%	13,3%	0,0%	8,3%
Kendall mrv	2,47	3,66	5,13	2,55	4,36	2,83
M-W mrv	53,62	58,41	56,92	65,03	76,04	63,08
Non-architects college graduates – 60 respondents						
very beautiful	18,3%	11,7%	66,7%	1,7%	8,3%	5,0%
beautiful	23,3%	51,7%	31,7%	18,3%	28,3%	25,0%
neither beautiful nor ugly	30,0%	30,0%	0,0%	23,3%	30,0%	35,0%
ugly	20,0%	6,7%	0,0%	48,3%	26,7%	30,0%
very ugly	8,3%	0,0%	1,7%	8,3%	6,7%	5,0%
Kendall mrv	3,35	4,03	5,43	2,32	3,02	2,84
M-W mrv	67,38	62,59	64,08	55,97	44,96	57,93

Note: mrv Kendall mrv = mean rank values obtained through the Kendall W test; the comparison among Kendall mean rank values is done horizontally, between the six buildings; M-W mrv = mean rank values obtained through the Mann-Whitney U test; comparison between M-W mean rank values is done vertically, between the group of the architects and the non-architects college graduates.

Building 5 (contemporary building with order and stimuli; Figure 7) was predominantly evaluated as aesthetically satisfactory by the 120 respondents (Table 1). However, a statistically significant difference (Mann-Whitney U, sig = 0.000) was found between the two groups. While the clear majority of architects (78.3%) considered building 5 as aesthetically satisfactory (Table 1), the percentages of non-architects college graduates that positively evaluated (36, 6%) and that negatively evaluated (33.4%) building 5 were similar. While it is clear the positive impact of the idea of order and visual stimuli for architects, it seems that a significant percentage of non-architects was negatively affected by the simplicity of composition, characterized by a small amount of different elements.

Building 6 (contemporary building with order and low stimuli; Figure 8) was predominantly (43.3%) evaluated as neither beautiful nor ugly by the 120 respondents (Table 1), although the percentage of negative evaluations cannot be disregarded (27.5%). There was no statistically significant difference between the evaluations of architects and non-architects college graduates. However, while for architects, positive evaluations were slightly higher than the negative, the opposite occurred for non-architects (Table 1). Thus it appears that the level of visual stimuli in building 6 was not enough to generate a more positive aesthetic evaluation.

3.2 Identification of the most satisfactory and unsatisfactory buildings

A statistically significant difference was found in the evaluations of buildings appearance, made by the total sample of 120 respondents (Kendall W, $\chi^2 = 212.602$, sig . = 0.0000), by the architects (Kendall W, $\chi^2 = 119.747$, sig . = 0.0000), and by the non-architects college graduates (Kendall W, $\chi^2 = 121.540$, sig . = 0.0000). The buildings considered most satisfactory for the sample of 120 respondents (buildings 3, 2 and 5), suggest a close relationship between the existence of order and stimuli in the architectural composition and the aesthetic satisfaction of the respondents (Table 2). A similar result occurs with the sample of architects (buildings 3, 5 and 2), and the sample of non-architects regarding the mention of buildings 3 and 2 (Table 2).

The most unsatisfactory building for the sample of 120 respondents (building 4) reveals the tendency of the idea of disorder in provoking aesthetic negative reactions among the respondents (Table 2). The result is repeated for the sample of non-architects (building 4) and, partially, for the sample of architects, for which, additionally to building 4, building 1 (historic building with disorder) was also evaluated a one of the most unsatisfactory (Table 2).

Table 2 - Most aesthetically satisfactory and unsatisfactory buildings

Total Sample (120)	Architects	Non-architects college graduates
Most satisfactory buildings		
Building 3 (historic building with order and stimuli)	Building 3 (historic building with order and stimuli)	Building 3 (historic building with order and stimuli)
Building 2 (historic building with order and low stimuli)	Building 5 (contemporary building with order and stimuli)	Building 2 (historic building with order and low stimuli)
Building 5 (contemporary building with order and stimuli)	Building 2 (historic building with order and low stimuli)	
Most unsatisfactory buildings		
Building 4 (contemporary building with disorder)	Building 1 (historic building with disorder) Building 4 (contemporary building with disorder)	Building 4 (contemporary building with disorder)

Note: most satisfactory buildings were ordered from the most satisfactory and have the percentage of satisfied respondents noticeably larger than the dissatisfied; most unsatisfactory buildings were ordered from the most unsatisfactory and have the percentage of dissatisfied respondents noticeably larger than the satisfied.

3.3 The most and least preferred buildings and the reasons for the preferences

A significant difference was found in the preference of the buildings by the total sample of 120 respondents (Kendall W, $\chi^2 = 219.00$, sig.= 0.0000), by the architects (Kendall W, $\chi^2 = 109.81$, sig. = 0.0000) and by the sample of non-architects (Kendall W, $\chi^2 = 135.543$, sig. = 0.0000). Building 3 (historic building with order and stimuli) was evaluated as the most preferred building by the 120 respondents (Table 3).

Table 3 - Order of buildings preference

Total			Architects			Non-architects college graduates				
Build.	Punct	K mrv	Build.	Punct	K mrv	M-W mrv	Build.	Punct	K mrv	M-W mrv
3	653	5,44	3	313	5,22	52,61	3	340	5,67	68,39
2	461	3,84	5	265	4,42	75,13	2	245	4,08	66,52
5	456	3,80	2	216	3,60	54,48	1	202	3,37	70,28
1	347	2,89	6	172	2,87	63,04	5	191	3,18	45,88
6	327	2,73	4	149	2,48	65,21	6	155	2,58	57,96
4	276	2,30	1	145	2,42	50,72	4	127	2,12	55,79

Note: Build.= building; Punct = punctuation received by the building according to order of preference (higher punctuation = higher preference); K mrv = mean rank values received through the Kendall W test (to be compared among the six buildings in each column); M-W mrv = mean rank values obtained through the Mann-Whitney U test (to be compared between architects and non-architects).

Although it was found a statistically significant difference (Mann Whitney U, sig = 0.002) in the preference weight given to building 3 by architects and non-architects, this building was the most preferred by both groups (Table 3). To justify the preference for building 3, the architects have pointed out, more often, the orderly relationship between the shapes, while non-architects college graduates mainly indicated the existence of visual stimuli (Table 4).

Table 4 – Main reasons for the preference

Reasons	Architects	N-architects	Total (120)	Sig	Phi
Most preferred building					
Orderly relationship among shapes	66,7%	51,7%	59,2%	0,095	-0,153
Existence of visual stimuli	51,7%	65,0%	58,3%	0,139	0,135
Geometrical regularity	58,3%	50,0%	54,2%	0,360	-0,084
Similarity between shapes	23,3%	48,3%	35,8%	0,004	0,261
Balance	6,7%	6,7%	6,7%	1,000	0,000
Personal value	3,3%	8,3%	5,8%	0,243	0,107
Less preferred building					
Disordered relationship among shapes	63,3%	43,3%	53,3%	0,028	-0,200
Lack of visual stimuli	45,0%	56,7%	50,8%	0,201	0,117
Lack of similarity	26,7%	26,7%	26,7%	1,000	0,000
Lack of geometrical regularity	25,0%	25,0%	25,0%	1,000	0,000
Geometrical regularity	8,3%	6,7%	7,5%	0,729	-0,032
Similarity between shapes	3,3%	6,7%	5,0%	0,402	0,076
Orderly relationship	3,3%	6,7%	5,0%	0,402	0,076
Visual clutter or confusion	6,7%	3,3%	5,0%	0,402	-0,076

Note: N-architects = non-architects college graduates; reasons mentioned, at least, by 5.0% of the 120

respondents were selected; values of Sig (significance) and Phi were obtained through cross-tabulation.

The least preferred was building 4 (contemporary building with disorder), either for the sample of 120 respondents or, specifically, for the non-architects college graduates (Table 3), primarily explained by the lack of visual stimuli (Table 4). For architects, building 1 (historic building with disorder) was the least preferred, mainly explained by the lack of a clear organization in the relationship among shapes (Table 4). Enquanto, para os arquitetos fica evidenciada a preferência determinada pela existência de ordem e estímulo (seguida pela idéia de ordem com pouco estímulo), independentemente de ser edifício histórico ou contemporâneo, para os não-arquitetos com formação superior a preferência foi determinada pela existência de ordem e estímulo (seguida pela idéia de ordem com pouco estímulo) mas com os edifícios históricos sendo preferidos aos edifícios contemporâneos (Tabela 3). While for the architects is evident the preference for the existence of order and stimuli (followed by the idea of order with little stimuli), whether contemporary or historic building, for non-architects college graduates the preference was for the existence of order and stimuli (followed by the idea of order with little stimulus) but with historic buildings being preferred to contemporary buildings (Table 3). Nonetheless, for both groups the idea of order was found to be related to higher preference while the idea of disorder was found to be related to lower preference.

4 CONCLUSIONS

The positive evaluations of the appearances of the buildings tend to be primarily related to the existence of order and visual stimuli, followed by the existence of order and low stimuli. The idea of order may, however, not be enough to guarantee a satisfactory aesthetic evaluation, when accompanied by visual stimuli that is perceived as very low, generating perception of monotony and/or compositional rigidity. On the other hand, the idea of disorder or the perception of lack of an organizing principle tends to explain the negative evaluations. Nonetheless, the idea of order tends to be more critical for the positive assessments made by the architects than by non-architects college graduates, who appear to give a greater value to the existence of visual stimuli.

Therefore, while the architectural characteristics of a building tend to be decisive in

determining positive or negative aesthetic evaluations, the type of academic training can promote small differences in aesthetic evaluations. In this sense, while assessments of the buildings by the architects were not affected by the building being historic or contemporary, non-architects college graduates favored the historic buildings. Nonetheless, it may be considered that architects tend to have more knowledge about the history of buildings (in accordance with their training on the history of architecture) and thus more likely to establish associations that could positively affect the aesthetic evaluations than non-architects college graduates. Therefore, does not seem reasonable that associations made with the historic buildings, concerning their own history, explain the more positive evaluations by the non-architects of these buildings compared to contemporary buildings. Thus, it is possible that the absence or the smaller amount of detail and the existence of less stimulating colors in contemporary buildings with order may explain the more positive evaluations, by non-architects college graduates, of historic buildings with order than of contemporary buildings with order. Above all, however, according to the results obtained in this investigation, the process of visual perception seems to explain the aesthetic evaluations, both by architects and by non-architects college graduates.

In conclusion, the investigation led to the production of information that reinforces the possibility of explaining the aesthetic evaluations of individuals and thus, emphasizes the importance of the empirical aesthetics approach. Additionally, results support the greater power of formal aesthetics over symbolic aesthetics in explaining the aesthetic evaluations. Thus, this study contributes to a better understanding of the attributes of a qualified architectural composition, which tend to be characterized by the idea of order and visual stimuli. Finally, it may be stressed the importance of empirical aesthetics to advance research on the aesthetics of architecture, and so, increasing the knowledge necessary to explain and to support the aesthetic decisions taken in architecture, and so, providing a better architectural education and practice.

5 REFERENCES

Arnheim, R. (1974). *Art and Visual Perception: A Psychology of the Creative Eye - The*

- New Version*. Berkeley and Los Angeles: University of California Press.
- Cooper Marcus, C., & Sarkissian, W. (1986). *Housing as if People Mattered*. Berkeley: University of California Press.
- Fawcett, W., Ellingham, I. & Platt, S. (2008). Reconciling the Architectural Preferences of Architects and the Public: The Ordered Preference Model. *Environment and Behavior* (40:5, 599-618). Thousand Oaks, CA: Sage.
- Kaplan, R., Kaplan, S., & Ryan, R. (1998). *With People in Mind: design and management of everyday nature*. Washington, D.C.: Island Press.
- Kohlsdorf, M. (1996). *A Apreensão da Forma da Cidade*. Brasília: Editora Universidade de Brasília.
- Lang, J. (1987). *Creating Architectural Theory: the role of the behavioural sciences in environmental design*. New York: Van Nostrand Reinhold.
- Mitchell, W. (1990). *The Logic of Architecture: Design, Computation and Cognition*. Cambridge: MIT Press.
- Nasar, J. (1998a). *The evaluative image of the city*. Thousand Oaks, CA: Sage.
- Nasar, J. (1988b). (Ed.). *Environmental aesthetics: theory, research, and applications*. Cambridge: Cambridge University Press.
- Porteous, J. (1996). *Environmental aesthetics: Ideas, politics and planning*. London: Routledge.
- Prak, N. (1985). *The visual perception of the built environment*. Delft: Delft University Press.
- Reis, A. & Lay, M.C. (2006). Avaliação da qualidade de projetos – uma abordagem perceptiva e cognitiva. In: *Revista Ambiente Construído* (6:3, 21-34). Porto Alegre, Brazil.
- Reis, A., Portella, A., Bennett, J. & Lay, M.C. (2004). Avaliação Estética por Moradores de Conjuntos Habitacionais: Ênfase na Composição Arquitetônica. In: Encontro Nacional de Tecnologia do Ambiente Construído, 10., Conferência Latino-Americana de Construção Sustentável, 1., São Paulo. *Construção Sustentável: anais*. São Paulo: ANTAC, CD.
- Reis, A., Lay, M.C. (2003). Habitação de interesse social: uma análise estética. *Revista Ambiente Construído* (3:4, 7-19). Porto Alegre, Brazil.
- Reis, A. (2002). Aparência, Qualidade e Habitação Sustentável. In: Encontro Nacional

de Tecnologia do Ambiente Construído, 9., Foz do Iguaçu. *Cooperação e Responsabilidade Social: anais*. Foz do Iguaçu: ANTAC, 1105-1112.

Von Meiss, P. (1993). *Elements of architecture—From form to place*. London: E & FN Spon.

Weber, R. (1995). *On the aesthetics of architecture, a psychological approach to the structure and the order of perceived architectural space*. Aldershot, UK: Avebury.

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HERITAGE PRESERVATION, URBAN AESTHETICS AND URBAN PLANNING

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Abstract

The article addresses the process of visual perception of the built environment related to cultural built heritage and their contribution to the visual quality of the urban landscape, in order to ascertain the level of importance attributed to heritage buildings and identify the physical characteristics of existing buildings on sites of heritage value that are more and less attractive to users. The research was implemented through the use of qualitative and quantitative methods. Mental maps and interviews allowed the identification of the strongest positive and negative images of public buildings and urban spaces. Questionnaires were administered in order to evaluate images of urban scenes with different levels of homogeneity. The role of the built heritage on the visual quality of the urban landscape was verified through the evaluation of visual appearance of buildings analyzed individually, according to their formal and symbolic attributes. Results indicate the relevance of studies focused on the visual quality of the urban landscape as a need to promote actions for qualification of public spaces, and in this context include the recognition that the facades of buildings that make up the urban landscape are collective assets that should be considered for the establishment of guidelines for new interventions and projects that generate positive evaluations.

Keywords: built heritage, urban landscape, visual quality.

1 INTRODUCTION

In the process of planning and ordering of the dynamics of urban growth, the cultural built heritage, considered in its full scope and complexity, begins to impose itself as a major component to be considered in the process of evolution and transformation of cities. Despite the statement of its importance, cultural built heritage in most Brazilian

cities is absent from public policies and land management. Regardless if national heritage, regional or local level, the Brazilian municipality has constitutional authority and obligation to protect it. However, in most cities, cultural heritage issues were not accepted, understood or prioritized. The lack of control and concern about the aesthetic quality and the consequences brought to the visual appearance of cities characterized the problem in this research. Generally the regulatory instruments of projects are more directed to define the constructive potential than the aesthetic quality of new buildings, its insertion into the landscape and compatibility with the pre-existence. Consequently, the absence of urban legislation for preservation of cultural built heritage, as well as the absence of regulatory mechanisms and control of urban aesthetics, leads to the destruction of local cultural heritage and the growing disqualification of the landscape and visual appearance of historic cities.

This study investigates the level of importance attributed to the built cultural heritage by the population and its meanings, identifies environmental aspects and qualities that are more and less attractive to users, when evaluating a set of buildings of a certain area (site value sheet), which establishes the values (architectural, historical, emotional, etc.) present in that area and that may influence the perception of its users with respect to urban aesthetics. Moreover, considering that the environmental image affects the attitudes of individuals in relation to urban space, awareness of the visual appearance can result as an important component to be considered in the search for improvements in the quality of landscape aesthetics. The literature suggests that built heritage is an essential element in the rescue of pleasant things and transmitters of sense of well being, these being gradually lost in the process of building modern cities, as well as the relationship between man and environment. In the environmental assessment process, the historical buildings tend to be perceived positively and aesthetic values associated with formal and symbolic (Lang, 1987). Usually located in the central areas of cities where changes occur more quickly and frequently, the permanence of historic buildings is considered essential to maintaining the sense of continuity of places, while the destruction of heritage buildings and landscape change can affect the perception of individuals. According to Lynch (1997) rapid changes in the urban environment added to technical and

functional changes can be emotionally upsetting for the people and disrupt their perceptual image. One of the objectives of the study of aesthetics is seeking to identify and understand factors that contribute to the perception of an object or a process as beautiful, or how they can provide a pleasant experience (Lang, 1987). Stamps (1989) explains the significance of studies on the visual quality of the perceived environment based on the fact that the aesthetics of the urban landscape is related to the human need to have pleasant sensations. Thus, one can infer that pleasant surroundings would be potential generators of pleasant sensations and discover how to preserve or create these environments perceived positively by the local population should be constant objective of urban planning process. Still, studies with an emphasis on cultural heritage buildings (eg, Azevedo Lemos, Lay, Reis, 1999) indicate that the predominance of historic buildings as a reference in the mental process of structuring an urban area are related to certain attributes such as appearance outside of the buildings, their historical importance and use.

Visual quality contributes to the appearance of cities and affects the well being of individuals, whose senses are stimulated through continuity, variety and existing formal standards in urban as well as through images compiled from the cognitive process of the individual (Reis, 2002). The evaluative response is directly related to the physical-spatial environment and previous experience of the observer, their views and expectations and cultural experiences, involving the processes of perception and cognition. In the evaluative response, perception and cognition have probabilistic relationships with one another and with the physical characteristics of the built environment, resulting from the interaction between individuals and the environment. This model suggests two broad components of the evaluative response - perception and cognition - and two types of environmental variables - formal and symbolic (Lang, 1987). That is, while the formal attributes consist of physical elements of buildings that comprise the architectural form used to describe it objectively, buildings and urban space have symbolic attributes, the result of the experiences and values acquired in the interaction between the individual and the urban landscape. There are some visual qualities of landscape attributes that transform them into objects of attention inevitable, despite the ability of selective

vision. Compatibility refers to the formal relationship of a building and the other buildings in context, for example, in terms of volume, coverage, front, empty and full relationship, types and shapes of openings, color and texture of materials and ratio of building with natural elements (Reis, 2002). This is associated with visual coherence characterized by the repetition of certain architectural elements, attributes or formal similarities that give identity and strengthen the character of urban areas.

The compatibility of formal and contextual new insertions is also mentioned as important elements in evaluating the urban landscape since the composition of the buildings suggests an idea of aesthetic order in visual perception. On the other hand, an urban setting where there was concern about the pre-existing buildings, with great contrast and variety of heights and high volumes and diverse visual environment can generate a confusing, chaotic, where individuals may feel disoriented (Lozano, 1988). According to Nasar (1998), cities can increase their positive image evaluation, enhancing the visual coherence or order through a variety of features that can aid in the perception of order, such as readability, repetition, replication features of facades, uniform texture, little contrast between elements or between buildings and their natural context and identifiability - characteristic features and focal point. Lang (1988) argues that some architectural variables carry symbolic meanings, considering its relationship with the dimension of affective experience, such as composition (architectural style), spatial configuration (volume ratio), materials, lighting and the nature of pigmentation (color). Therefore, numbers of buildings or buildings of a particular style show cognitive relations associated with them as symbols of an idea or historical time, acquiring values that affect the aesthetic evaluation, such as historical significance, age, urban references and positive associations with a period in history. Still, Coeterier (1996) highlights the importance of historic buildings as an existential value for people on three levels: the place identity, personal identity and group identity, and argues that the historical buildings amplify the sense of community, collective identity. According to Lynch (1975), people usually respond favorably to historic sites for a variety of reasons, and argues that "many historic and symbolic places convey a sense of security and continuity," adding that "the character of the personal image of time is crucial for individual welfare, as well as it to achieve

success in time to coordinate the environmental transformation and for the outer physical surroundings play a role in building and maintaining this image of time "(Lynch, 1975). This article deals with aesthetic issues in the process of visual perception of the built environment related to the built cultural heritage and its contribution to the visual quality of the urban landscape, with the aim of emphasizing the damage to the aesthetics of the city by the lack or non-inclusion of preservation issues of heritage buildings in the process of urban planning, as well as gather input for the public policies on the preservation and planning.

2 METHODOLOGY

Aesthetic response was measured based on the different levels of satisfaction expressed by individuals regarding the formal and symbolic attributes of buildings. The ratings herein are based on the premise that there is interplay of influences between individuals and visual aspects that make up the urban landscape. The role of cultural heritage buildings in the urban setting was investigated in two cities with initial settlement of the eighteenth century and with different degrees of preservation: Piratini represents cities with preserved historic centers, with a pioneering urban legislation and São José do Norte represents cities where cultural heritage was adulterated due to a lack of legislation that guarantee the preservation of built heritages.



The research was implemented through the use of qualitative and quantitative methods in two stages of investigation. The first aimed at gathering elements to define the study area by applying the technique of mental maps and interviews to users of historic areas, which allowed the identification of the strongest positive and negative images of public buildings and urban spaces (Figure 1). In the second stage, 113 questionnaires were administered in order to evaluate images of urban scenes with different levels of homogeneity, chosen based on criteria established to meet the objectives of the investigation, Data obtained through questionnaires were analyzed quantitatively by means of frequencies and nonparametric tests. Three scenes from each city were selected in order to accommodate the necessary prerequisites to meet the following criteria: a) being located within areas of study defined in the first stage, b) have different levels of homogeneity considering external formal features, heights and construction times resulting in a more homogeneous scene, mixed (more or less homogeneous) scene and an heterogeneous scene, c) present in its composition representative buildings of cultural heritage (buildings of the ancient period), and d) present in its composition buildings representative of modern period, buildings of the contemporary period and / or adulterated. For the purposes of research, the different styles and / or mixtures of styles were classified according to the following periods: a) the early period (until 1930), including the buildings in this period with language influenced by Luso-Brazilian colonial style, the eclectic and buildings that anticipated modernism, called by Nauomova (2009) as pre-modernist, basically corresponding to the art nouveau and protomodernist; b) the modern period (1930 to 1980), influenced by various architectural currents responsible for the consolidation of the Modernist movement such as Art Deco, the Chicago School, the European rationalism, expressionism, neo-classical revival (Kiefer and Luz, 2000), c) the contemporary period (after 1980), marked by the revision of the modern movement d) were also included buildings from any period, disfigured by the loss of their original typological characteristics due to profound changes and / or replacement of items and construction materials. Regardless of typological classification, this research was focused on identifying the building in periods of time

in order to verify the role that cultural heritage building - represented by buildings of the ancient period - carries on the visual quality of the urban landscape.

3 RESULTS

In order to investigate the role that built cultural heritage has in an urban setting, especially if it contributes positively to the visual quality of the urban landscape, the three selected scenes with different degrees of homogeneity were assessed by respondents in each city.

Assessment of urban scenes - Piratini

Scene 1 is the most intact in terms of preservation of cultural heritage buildings and also the most ordered (Figure 2). The buildings that make up the scene are mostly from ancient period.

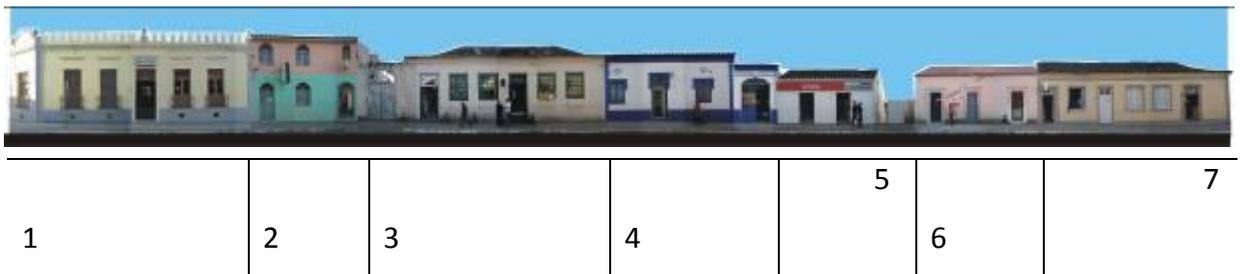


Figure 2 – Scene 1 – Piratini.

Buildings 1 and 3 are the best preserved of cultural heritage buildings, protected by preservation law. Building 7 maintains most of the external formal characteristics. Building 4 has the characteristic structure of the buildings of Luso-Brazilian architecture and introduction of certain eclectic decorative elements. Buildings 5 and 6 had their roofs and frames changed. Building 2 is the only one from the contemporary period with incorporation of old elements like arches and French style frames. The first scene was viewed favorably by 70% of the sample of respondents. The main reasons justifying positively and negatively the visual appearance of the scene are shown in Table 1.

Table 1 – Justifications related to visual appearance of scene 1 - Piratini

VISUAL APPEARANCE SCENE 1 - PIRATINI			
Positive justifications		Negative justifications	
%	Justification	%	Justification
33,3	Outstanding-Preservation of historic building	19,4	Lack of harmony with colors
19,4	Historic meaning-symbolic value of historic buildings	16,6	Visual pollution-advertisements
19,4	Pleasant appearance; beautiful	13,8	Lack of conservation

The main reason for positive evaluation of the appearance of the scene is "preservation of old buildings", emphasizing the importance that respondents from Piratini give to cultural heritage buildings. In second is "historical meaning / symbolic value of historic buildings", indicating meanings and values attributed to built cultural heritage. With the same percentage is the perceived pleasant visual appearance, allowing the pleasantness and beauty associate directly with the homogeneity of the scene. The main negative reasons cited is "lack of harmony in colors". The issue of visual pollution caused by lack of regulation in the use of advertising media on the perimeter of the historic center is also perceived by users. The conservation status was the third most negative reason, which seems to be relevant in aesthetic judgments (Nasar, 1998; Reis and Lay, 2006).

Scene 2 is mixed (consisting of old and new buildings) that represent different styles, blending styles and periods of architecture as the Luso-Brazilian, eclectic, modern and contemporary (Figure 3).



			4						
1	2	3		5	6	7	8	9	10

Figure 3 – Scene 2 – Piratini.

The five buildings of the early period (1, 2, 6, 7 and 10) are protected by municipal law. Building 1 has constructive characteristics of the Luso-Brazilian architecture. Building 2 has the same formal characteristics of traditional building, but its frames were replaced by the French style windows. Building 3 is a contemporary building, with a retreat of gardens and side setbacks and vegetation that differs from the others. Building 4, from modern period, has elements straight and trimmed. Building 5 suffered several alterations. Buildings 6 and 7 form a single volume and have the structure of the Luso-Brazilian architecture and decorative details of standard neoclassical. Building 8 is from contemporary period and is the tallest, with a balcony running the front facade that spreads along the promenade. Building 9 with two floors belongs to the contemporary period and building 10 has a different typology, with the structure of the Luso-Brazilian architecture as roof tiles, but with arched openings, and French style openings. Scene 2 was viewed favorably by more than 50% of respondents. The main positive and negative reasons given by respondents to evaluate the appearance of the scene are shown in Table 2.

Table 2 - Justifications related to visual appearance of Scene 2 - Piratini

VISUAL APPEARANCE SCENE 2 - PIRATINI			
Positive justifications		Negative justifications	
%	Justification	%	Justification
22,2	Beautiful appearance	16,6	Existence of modern and old buildings
16,6	Existence of modern and old buildings	11,1	Ugly modern buildings/new and ugly
1,1	Outstanding preservation of old buildings	11,1	Visual pollution

"Beautiful appearance" is the main positive justification, followed by "the presence of modern buildings and old", which suggests integration between the buildings of different periods. In other words, there was compatibility between the new formal inserts and pre-existence. The integration of buildings from different periods can be considered a major factor in the aesthetic evaluation of the scene which, although less homogeneous than Scene 1, it was considered positive and with beautiful appearance for more than 50% of respondents. The "outstanding preservation of old buildings" is the third positive justification, which shows the duality of views on evaluative responses to the appearance of the scene and about what and how, whether positively or negatively, the buildings that compose the scene contributed. "Presence of modern buildings and old" was considered positive by some and negative for many others, as the main negative justification, which is further reinforced by the second most significant response that consider "ugly" modern buildings / new. The visual pollution was negatively perceived by users and exemplifies the intensity with which it can affect the visual quality of the urban scene.

Scene3 is heterogeneous and was considered one of the "ugly sites" in the mental maps. It has three contemporary insertions that altered the structure of this ancient quarter, both with respect to external and formal characteristics with respect to number of floors (Figure 4).



1				5						10
	2	3	4		6	7	8	9		

Figure 4 – Scene 3 Piratini. .

Of the five buildings from ancient period in the scene, four are protected by municipal law (1, 2, 9 and 10). Buildings 1 and 2 have the structure of the Luso-Brazilian architecture, but standard neoclassical elements were added. Buildings 9 and 10 have typical characteristics of the Luso-Brazilian architecture. Building 7 is from ancient period. Buildings 3, 5 and 8 belong to the contemporary period. Building 4 is from modern period and despite having been included in the Inventory of Property it was uncharacteristic. The same happened with building 6, which had the spans and frames changed / replaced.

Table 3 - Major reasons related to the visual appearance of the scene 3 - Piratini

VISUAL APPEARANCE SCENE 3 - PIRATINI	
%	Negative justifications
41,6	<i>Existence of modern and old buildings</i>
36,1	<i>Chaotic scene</i>
25,0	<i>Different formal characteristics of buildings</i>
9,4	<i>Diversity of styles</i>
16,6	<i>Modern-new buildings</i>
11,1	<i>High</i>

Scene 3 was viewed favorably by 23% of respondents. It is the less orderly scene and the only scene between the three indicated as “ugly”. All justifications are negative (Table 3). The "presence of modern and ancient buildings" is the most mentioned, suggesting lack of integration between the buildings of the early period (pre-existing) and new inserts. The diversity of styles, different forms of buildings and modern buildings / new profile contributed to the chaotic scene. When the contribution of each building for the visual quality of the scene was evaluated, preference for ancient buildings is favored and buildings of the modern period and the contemporary period were negatively evaluated.

The order of preference of scenes 1, 2, 3 was confirmed by 66.7% of respondents, while 8.3% preferred order 1, 3, 2. The more homogeneous scene was evaluated positively by approximately 70% of respondents. The second scene was rated positively by over 50% of the sample. The more heterogeneous scene was evaluated positively by only 23% of respondents. Analyzing the results on the visual appearance of the scenes it can be inferred that the greater the degree of homogeneity, more

visual quality has the scene, and vice versa. The comparison between aesthetic assessment of each scene shows the trend of positive assessments on the scene 1 and 2 and the most negative evaluations in the third scene.

Assessment of urban scenes – Sao Jose do Norte

Scene 1, despite its peculiar appearance, presents its original structure to a greater extent (Figure 6).



1	2	3	4	5	6	7	8	9	10	11	12
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Figure 6 – Scene 1 – São José do Norte.

With the exception of building 11 (contemporary period), all other buildings were listed by the Institute of Historical and Artistic Patrimony of the State - IPHAE.

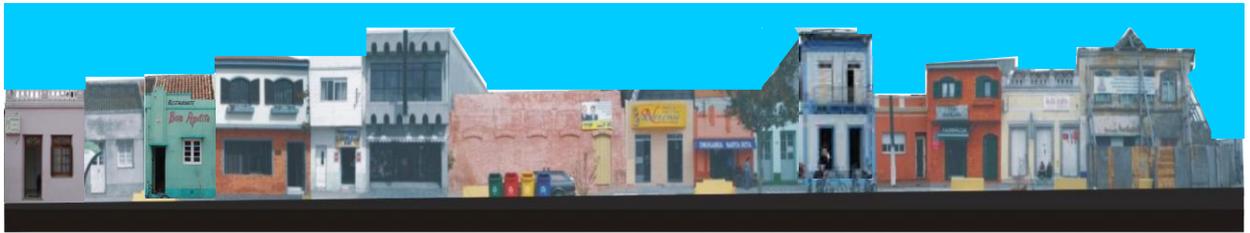
Building 2 has recently been recycled. Buildings 1, 3 and 8 are old, but were adulterated, in greater or lesser degree. Buildings 5, 6, 7 and 9 had facades upgraded into "deco" style. Building 10 is one of the few terrace houses from Luso-Brazilian style most preserved, both externally and internally. Building 12 is a corner house of the modern period. Scene 1 was evaluated positively by 70% of respondents. The main positive and negative reasons given by respondents to evaluate the appearance of the scene are in Table 4).

Table 4 - Justifications related to the visual appearance of scene 1- Sao Jose do Norte

VISUAL APPEARANCE OF SCENE 1 – São José do Norte		VISUAL APPEARANCE OF SCENE 1 – São José do Norte	
Positive justification		Negative justifications	
%	Justification	%	Justification
37,5	Outstanding preservation of old buildings	20,0	Lack of conservation
20,0	Symbolic value of historic buildings	7,5	Lack of attractiveness
15,0	Existence of modern and old buildings	5,0	Alteration on facades

The main positive justification highlights the preservation of old buildings and the second deals with the symbolic values and historical significance. The third reason concerns the positive contrast perceived by the presence of ancient and modern buildings. This scene was rated negatively by only 5.6% of respondents. The main justification was lack of conservation, followed by lack of attractiveness of the scene and the changes performed on the facades.

Scene 2 maintains the land structure from the colonial period, with a few buildings remaining from the original built heritage, currently adulterated or in poor estate of conservation, with modern and contemporary insertions.



1	2		4	5	6		7	8	9	10	11	12	13	14	15
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Figure 7 – Scene 2 São José do Norte.

This scene was positively evaluated by 55% respondents, while 17.5% considered it ugly. The main reasons justifying the positive and negative assessment are shown in Table 5.

Table 5 – Justifications related to visual appearance of scene 2 – São José do Norte.

VISUAL APPEARANCE SCENE 2 – São José do Norte			
% Positive justifications		% Negative justifications	
15,0	Conservation status	15,0	Conservation
15,0	Color of the façade	15,0	Existence of modern and old buildings
10,0	Existence of modern-new buildings	10,0	Demolitions and alterations in the facades

The main positive justifications on the assessment of the scene is the "conservation status" and the "colors of the facades," which highlights how maintenance of buildings is an attribute valued by *nortenses* (so called the residents of Sao Jose do Norte). The existence of modern and new buildings was in third place, as respondents believe that the buildings contribute to the renewal and upgrading of the urban scene. However, the mix of modern and old buildings was considered one of the main negative justifications, along with conservation. The demolitions and changes in the facades are in third. The scene presents such a situation due to the partial demolition of a two-story colonial terrace that dominates the center of the scene (building 7) and adulteration of facades in varying degrees.

Scene 3 (heterogeneous) in São José do Norte collects representative examples of architecture Luso-Brazilian from colonial period (Figure 8). The single-story row houses were adulterated. The colonial mansion located in the center of the scene (6), which dominates by its volume, height and other formal and symbolic attributes, is in disrepair.



						6		
1	2	3	4	5			7	8

Figure 8 – Scene 3 – São José do Norte.

Building 7 (modern period) and building 8 were identified through mental maps as "ugly" places. This scene was positively evaluated by 15% of respondents. Compared with the heterogeneous scenes of the other city, it achieved the highest negative rating (37.5%). The main reasons for the perceived visual appearance of the scene are shown in Table 6.

Table 6 – Justifications related to visual appearance of scene 3 – São José do Norte

VISUAL APPEARANCE		SCENE 3 – São José do Norte	
%	Positive justifications	% justifications	Negative
35,0	Outstanding building (Sobrado dos Imperadores)	42,5	Conservation
-	-	32,5	Alteration on facades
-	-	12,5	Outstanding building (Sobrado dos Imperadores)

Although most of the justifications are negative with respect to the visual appearance of the scene, Building 6, despite its poor condition, was highlighted with the following statements: "could be restored and would be beautiful; is poorly preserved; conservation is not good but it gives life to the scene; the unique beautiful building in the scene is not well maintained". The state of preservation was the main negative justification (42.5%) and in this context, mischaracterization such as alteration in the facades, was more accurately perceived than in the previous scene, where five adulterated buildings were considered positive.

The analysis of aesthetic preference of the scenes in São José do Norte showed that

order of the scenes 1, 2, 3 was preferred by 42.5% of respondents, followed by order of scenes 2, 1, 3 (32.5%). Despite respondents' preference for Scene 1 (47.5%), the rating was slightly higher than Scene 2. Comparing the two scenes, the second presents a greater number of adulteration, six in all, five of which were positively assessed. It transpires in the questionnaire responses that, due to the loss of much of the original structure of the city and state of ruination of the remaining historic buildings, preservation seems to be the key variable that affects preference. Antagonistically to Piratini, where there is a rigorous and critical look from the residents regarding the inclusion of new buildings and adulterations, in São José do Norte evaluation is not dependent if the building is ancient, modern, contemporary, restored to the criteria of good technique or uncharacterized. For example, two respondents with more than 60 years expressed preference for new and modern buildings, rather than the historic ones.

In the third scene, although chaotic, adulterations were perceived as negative. Analyzing the responses as "adulteration of terrace house; modified façade; other buildings have been altered; because it is very uncharacteristic, nothing is as it would be" allows to infer that the domain of Building 6 with its entire formal and symbolic weight, positively influenced the aesthetic response. Some respondents commented that the buildings should be restored to its original characteristics and almost all respondents pointed Building 6 as a priority for restoration.

Relationship between evaluation of the visual appearance of the scenes and formal attributes

The relationship between the assessment of the visual appearance of the scenes and the composition of the buildings was obtained by evaluating the formal attributes "volume", "roofs" and "facades" in each scene. In homogeneous scenes (scenes 1) correlation between the "assessment of the visual appearance of the scene" and "perception of compatibility of facades" (Spearman coef. = 0.244, sig. = 0.00) was confirmed, suggesting that recognition of order and typological patterns of the facades play an important role in the positive evaluation of homogeneous scenes (69%).

In the mixed scenes (scene 2) it was found statistical support for asserting that the “assessment of the visual appearance of the scene” is directly linked to the “perception of compatibility of facades” (Spearman coef. = 0.283, sig. = 0.00), that is, perception of formal compatibility between the facades was a relevant attribute for positive evaluation (51.3%) of mixed scenes. The research also identifies correlation between “assessment of the visual appearance of the scene” and “perceptions of compatibility of roof (Spearman coef. = 0.235, sig. = 0.01), suggesting that formal compatibility of roofs contributed to the positive assessment of the scene.

In heterogeneous scenes (scene 3), it was found correlation between “assessment of the visual appearance of the scenes” and “perception of compatibility of volume” (Spearman coef. = 0.222, sig. = 0.00), which suggests that lack of formal compatibility between the volumes of the buildings that compose the scene contributes to negative evaluation, that is, lack of adequate volume reduces the level of satisfaction with the visual appearance. It was also identified correlation between the “assessment of visual appearance” and “perception of compatibility in terms of facades” (Spearman coef. = 0.194, sig. = 0.03), revealing that the evaluation of appearance of the scene is directly linked to compatibility between the facades of buildings. In the case of heterogeneous scenes, the trend of appearance evaluation was negative, that is, lack of formal compatibility decreased the level of satisfaction. In assessing the visual appearance, only the formal attribute “facades” presented statistic significance in the homogeneous, mixed and heterogeneous scenes, indicating the importance of this attribute in the urban setting. This result allows to infer that the greater the compatibility between the facades, the higher the level of satisfaction with visual appearance of the urban landscape

Relationship between evaluation of the visual appearance of the scenes and formal compatibility with the pre-existences

In all the scenes (homogeneous, mixed and heterogeneous) in the two cities, respondents did not perceive the existence of formal compatibility with new insertions in the urban setting (Table 7).

Table7 – Perception of formal compatibility

Perceptions of formal compatibility		1.1 Piratini	S. J. Norte	P. Alegre
SCENE 1	Compatible	36,1%	12,5%	8,1%
	Neutral	19,4%	12,5%	24,3%
	Not compatible	44,4%	75,0%	67,6%
SCENE 2	Compatible	11,1%	12,5%	2,7%
	Neutral	13,9%	17,5%	16,2%
	Not compatible	75,0	70,0%	81,1%
SCENE 3	Compatible	13,9%	10,0%	13,5%
	Neutral	16,7%	12,5%	10,8%
	Not compatible	69,4%	77,5%	75,7%

In the homogeneous scene in Piratini, where only one building of the contemporary period was inserted (with two floors and height similar to the next door house), there is the lowest perception of formal incompatibility (44.4%), but shows the accuracy as the new inserts were valued by the respondents, especially in a best-preserved ancient structure. Relationships between evaluation of visual appearance, perceived formal, volume, roof and façade were further explored (Table 8).

Table 8 – Relationship between visual appearance and formal compatibility of new insertions

VISUAL APPEARANCE	Scenes 1		Scenes 2		Scenes 3	
	*Cor.	Sig.	Cor.	Sig.	Cor.	Sig.
Assessment of visual appearance	-	-	0,271	0,00	-	-
Compatibility in terms of volume	0,545	0,00	0,342	0,00	0,407	0,00
Compatibility in terms of roofs	0,354	0,00	0,486	0,00	0,496	0,00
Compatibility in terms of facades	0,331	0,00	0,540	0,00	0,435	0,00

Cor. = correlation

Correlations were significant between “assessment of visual appearance” and “perception of formal compatibility with pre-existing buildings only in scenes 2. This trend makes sense because due to its characteristics - not as homogeneous as the first and not as heterogeneous as the third - received the most intense negative assessments about the insertions of new buildings occurring primarily by piratinenses (75%), which confirms perceived incompatibility of the new insertions with respect to pre-existing buildings. The perceived lack of compatibility of volume was detected in the six scenes. In scenes 1, it was found statistical support for asserting that the

new insertions are not compatible with the volume of pre-existing buildings, where lack of compatibility of volume between the buildings indicates the importance of adequate volume in the aesthetic response to visual appearance of urban scenes, especially when the number of buildings tends to be more homogeneous. In scenes 2, it is also identified correlation between “formal compatibility of the new insertions” and “compatibility of volume”. In scenes 3, repeats the correlation between “formal compatibility of the new insertions” and “compatibility of volume”, indicating that the perceived lack of formal compatibility between pre-existing buildings and new insertions was influenced by the lack of compatibility of volume. When correlated with the presence of “compatibility of roof” it was also verified the influence of lack of compatibility of roof in the perception of formal compatibility of the scenes. Note that the negative ratings will increase inversely with the degree of preservation of the scenes, so scenes 3 (heterogeneous) were the most negatively evaluated regarding the compatibility of roof. When evaluated separately, it was identified correlation between “formal compatibility between pre-existing buildings and new insertions” and “compatibility of roof” in scenes 1, indicating once again that the lack of compatibility of roof negatively affects perception of formal compatibility of the scenes. In scenes 2, there is the same correlation and in scenes 3, this correlation is even stronger. Besides confirming that there was no concern of integrating roofs of the new insertions in relation to pre-existing buildings, it can be seen that the more heterogeneous is the scene, the lower the perceived compatibility in terms of roof.

Compatibility of facades assumes a key role on the aesthetic preference of the scenes and on the perception of formal compatibility between the pre-existing buildings and new inserts. The perceived lack of compatibility in the scenes indicates that most respondents considered that there was no such concern. The homogeneous scenes show correlation between “perception of compatibility of the new insertions” and “perception of compatibility of facades” in the scene, indicating that compatibility was negatively perceived, and that the facades of new buildings that were inserted in the urban landscape did not consider the characteristic features of pre-existing facades, affecting the perception of formal compatibility of the scene. The mixed and heterogeneous scenes also show a significant correlation between “perception of

formal compatibility of the new insertions” and “perceived compatibility of facades”, showing the importance of reconciling the facades of the old and new buildings. In this respect, the results confirm results obtained by Groat (1988) on the suggestion to "incorporate some degree of replication (repetition of certain elements, but with current design) in the design of facades, in addition to replication of the spatial pattern (contextual appropriateness) and mass (volume).

4 CONCLUSION

Results indicate the role of built heritage in the aesthetic evaluation of the urban landscape and emphasize the relevance of studies focused on urban aesthetics as a need to promote actions to qualification of public spaces. The importance of a particular order, established by formal consistency is confirmed. For example, when still present in the urban scene in the form of sets, the old buildings tend to fit into a recognizable pattern, suggesting an idea of order, which justifies the preference of the scenes more homogeneous over the others. On the other hand, the perceived chaotic profile of the heterogeneous scenes highlights the lack of order, justifying the arguments of authors such as Lozano (1988), Weber (1995), Nasar (1998), Reis (2002), who consider order as a human need, recognized as an important component that affects evaluation of visual appearance of the environmental. The valuation of the buildings of the early period is confirmed by both their particular formal and symbolic attributes when related to the urban context and especially for their contribution in qualifying visual aesthetics of the urban landscape. Also confirmed is that the symbolic attribute “historical value” can positively affect aesthetic preference, corroborating studies by Coeterier (1996). Results indicate that both the preservation of heritage buildings and the aesthetic quality of new buildings can not be conceived without considering the set of pre-existing buildings. Even belonging to different periods and different styles, the buildings form relationships with each other and can compose harmonics sets, an organic environment, with pleasant visual appearance and positively evaluated or establish ruptures, as a mixture of missing pieces, leading to chaotic appearance and negative evaluations. It was possible to identify relevant aspects in relation to matters of cultural built heritage and the importance of including issues of urban aesthetics in the process of city planning. On

one hand research results confirm the positive contribution of the buildings of the ancient period in visual quality of the urban landscape. On the other, it is evident the need to curb the actions of distortion, mutilation and even demolition of buildings of ancient period located in historic cores.

5 REFERENCES

- Azevedo L. N.; Lemos, J. C.; Reis, A. T.; Lay, M. C. (1999). Morfologia, uso e referenciais urbano no centro de Porto Alegre – ênfase a prédios históricos. In: *Encontro Nacional da Associação Nacional de Pós-graduação e Pesquisa em Planejamento Urbano e Regional*. Porto Alegre: ANPUR, 1999. 1 CD-ROM.
- Coeterier, J. (1996). Permanent Values in a Changing World. The Case of Historic Building. In: *Proceedings of the 14th Conference of the International Association for People-Environment Studies*. Stockholm: IAPS, 120-128.
- Groat, I. N.(1988). Contextual compatibility in architecture: an issue of personal taste? In: NASAR, J. L. (ed.), *Environmental Aesthetics, Theory, Research & Applications*. Cambridge: University Press, 228-153.
- Kiefer, F.; Luz, M. (2000). “A Arquitetura de Porto Alegre”. ELARQ, vol. 10, nº 33. Montevideu: Ed. Dos Puntos SRL, fev. 38-49.
- Lang, J. (1987). *Creating architecture theory: The role of the behavioral sciences in environmental design*. New York: Van Nostrand Reinhold.
- Lang, J. (1988). Symbolic aesthetics in architecture: toward a research agenda. In: NASAR J. L. (ed.), *Environmental Aesthetics, Theory, Research & Applications*. Cambridge: University Press 11-26.
- Lozano, E. (1988). Visual needs in urban environments and physical planning. In: NASAR J. L. (ed.), *Environmental Aesthetics, Theory, Research & Applications*. Cambridge: University Press, 395-421.
- Lynch, K..(1975). *?De qué tiempo es este lugar?* Barcelona: Editora Gustavo Gili.
- Nasar, J. L. (1998). *The evaluative image of the city*. California: Thousand Oaks.
- Reis, A. (2000). *Repertório, análise e síntese: uma introdução ao projeto arquitetônico*. Porto Alegre: Editora da UFRGS.
- Reis, A.; Lay M. C. (2006). Avaliação da qualidade de projetos: uma abordagem perceptiva e cognitiva. *Ambiente Construído*, Porto Alegre, vol. 6, n.3, 21-34.

Stamps, A. E. III (1989). Are environmental aesthetics worth studying?. *Journal of Architectural and Planning Research*, , 6:4.

Weber, R. (1995). *On the aesthetics of architecture: a psychological approach to the structure and the order of perceived architectural space*. Aldershot, England: Avebury.

URBAN SPACE ISOVISTS - METHODS OF DETERMINING AESTHETIC EXPERIENCES OF URBAN SPACES

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Abstract

Experiencing architecture is an experience of space. Designing architecture is the design of space. While space can be seen as the cardinal concept of architecture - it is used in entirely different ways in the two modes of architecture: reception and production. This dichotomy results in a serious problem: urban or interior spaces are conceived in the process of design in a manner that is totally different from how they are experienced live. Space is always treated as a whole, but in actual experience, we cannot perceive space as a whole, but only as fragments of larger spatial configurations which while moving body and eye, are assembled into a larger mental image.

Two major obstacles thus stand between the planning and the experience of space: (1) the fact that experienced space is not Euclidian, but fragmental, and (2) the dichotomy between two-dimensional concepts of the planner and the three-dimensional experience. How can this dichotomy between these different conceptions of space be reconciled? How can designers plan spaces from the start in a manner that takes the visual experience of space into account? The goal of this research is to determine strategies to overcome these dilemmas.

The cognitive image of simple, regular and concave spaces can be formed by head and eye movement. In any other more complex spatial arrangements the whole spatial configuration can only be experienced by movement through the space and all its appendices. But in all cases we only experience a particular segment of space at a given time. To account for this fact, Michael Benedict (1979) proposed the concept of isovists as a tool for analysis of architectural spaces. Alasdair Turner (2001) describes it so: „An isovist, or viewshed, is the area in a spatial environment directly visible from a location within the space. Arthur Stamps (2005) describes it as the area

which is not within the shadows cast from a single source of light.

In our research we will investigate how the concept of the isovist can be used to predict aesthetic qualities of urban spaces and develop strategies for future empirical studies. In a previous paper Schneider (2012) summarizes the situation as follows: „The experiential and behavioral dimensions of isovist properties are not yet fully understood (Franz [11]), but in empirical studies various correlations between those properties and the actually perceived spatial experience have been found. Franz and Wiener [12] showed, using VR experiments, that area, compactness and occlusivity correlate highly with how test persons rated the perceived beauty, complexity and spaciousness of a configuration. Furthermore, they showed that the subjects were able to find points in a configuration with the largest and smallest field of view. Conroy [9] and Wiener et. al. [13] found that isovists capture information that is relevant to way finding behavior, especially when it comes to deciding where to go next. Stamps [14] deals with the description of enclosure by means of isovists. He notes that occlusivity alone is not sufficient to describe enclosure, since the distance of the viewpoint to the surrounding walls plays an equally important role.“

The long term goal of our research will be twofold:

- (1) An appropriate methodology for the representation of spatial configurations needs to be developed. This kind of representation has to orient itself closely with the function of the human visual apparatus, in order to capture the environmental qualities in a similar way as the human eye can. Furthermore, this kind of representation has to be developed on the basis of typical forms of representations that are used in architecture and urban design, e.g., plan and 3D model, in order to control the spatial effect during the initial phases of design as well as to stay within the typical conceptual vocabulary of the architect.
- (2) To develop empirical studies that investigate whether there is a relationship between particular forms of representation and of the actual spatial experience. If these relationships prove to exist then studies on the aesthetic impact of urban spaces can be conducted directly on the visualizations. This would be a far less time consuming method of research.

Problem

Experiencing architecture is an experience of space. Designing architecture is

the design of space. While space can be seen as the cardinal concept of architecture - it is used in entirely different ways in the two modes of architecture: reception and production. This dichotomy results in a serious problem: urban or interior spaces are conceived in the process of design in a manner that is totally different from how they are experienced live. During the process of design, space is mainly treated as an abstract Euclidian concept. It is often represented as a diagram usually in the form of projections, for example, floor plans and elevations. Space is always treated as a whole, but in actual experience, we cannot perceive space as a whole, but only as fragments of larger spatial configurations which while moving body and eye, are assembled into a larger mental image.

Moreover, architectural space is usually diagrammed - mapped - initially using two dimensional hand drawn or digital sketches. It is then tested and modified through various kinds of visualizations, for instance, perspectives which appear to display a three-dimensional image on a two-dimensional surface, such as, paper or a computer screen. The final set of plans that are used to actually construct buildings and spaces, is however again two-dimensional. Only the final experience of the building or the urban space after realization of the project is again a three-dimensional experience. This regular shift back and forth from two to three dimensions results in a loss of essential spatial qualities from the initial idea to its realization. (This is however not the focus of our research.)

Two major obstacles thus stand between the planning and the experience of space: (1) the fact that experienced space is not Euclidian, but fragmental, and (2) the dichotomy between two and three-dimensional concepts. How can this dichotomy between these different conceptions of space be reconciled? How can designers plan spaces in a manner that accounts for the visual experience of space from the start? The goal of this research is to determine strategies to overcome these dilemmas.

The concept of Isovists and Spatial Grammars

People experience space through all of their senses with the eye taking the dominant role. Architecture has a long tradition of developing principles that take into account the characteristics of the human eye, spanning from the entasis of columns to

the curvatures of the architraves of Greek temples to the perspective illusions of interior and urban spaces during the Renaissance and Baroque periods.

But at the root of the matter are the limitations of human vision. First of all, our experience of space is limited through a cone of vision not wider than 40 degrees, (Fig. 1) therefore, we can never see space as a whole. Schubert (1956) has shown, that the cones of clear vision and the boundaries of color perception have empirically been known for centuries and the knowledge was applied as far back as the Parthenon and later in many monuments of world architecture. (Fig. 2) Doxiadis (1933) demonstrated with many examples of Greek temple sites, such as, the Acropolis, that the consideration of these view angles determined the arrangement of individual buildings on the site as a whole. (Fig. 3)



Fig.1 Schubert Cones of Vision Athens, B.C.

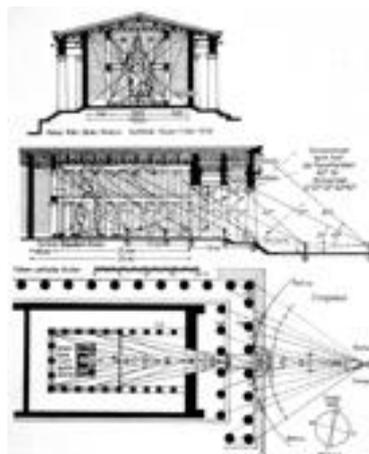


Fig.2 Parthenon Viewangles

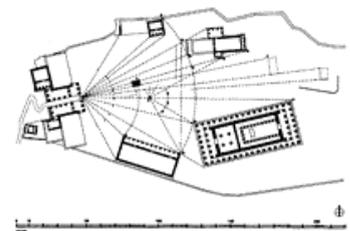


Fig.3 Doxiadis Acropolis III, after 450

Similarly, this principal of dividing a range of vision into segments of vistas or Sichtfächer was used by garden architects in designing English landscape gardens. These principles are all based upon the fact that space can only be partially perceived and never as a whole.

Isovists:

The cognitive image of simple, regular and concave spaces can be formed by head and eye movement. In any other more complex spatial arrangements the whole spatial configuration can only be experienced by movement through the space and all its appendices. But in all cases we only experience a particular segment of space at a

given time. To account for this fact, Michael Benedict proposed the concept of isovists as a tool for analysis of architectural spaces in 1979. Alasdair Turner (2001) describes it so: „An isovist, or viewshed, is the area in a spatial environment directly visible from a location within the space. Arthur Stamps (2005) describes it as the area which is not within the shadows cast from a single source of light.

An Isovists can be described by a number of characteristics: „these include the area, which describes how much can be seen from a particular point of view, the perimeter, which in relation to the area gives a measure of the compactness of the visual field, and the occlusivity that counts the sum of the length of open edges (not touched by physical boundaries)“. A low occlusivity value means that there are few vistas into spatial appendices.

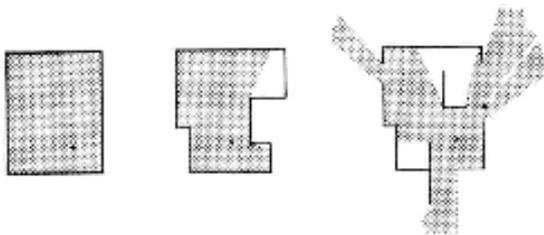


Fig.4 Isovist of increasing Occlusivity

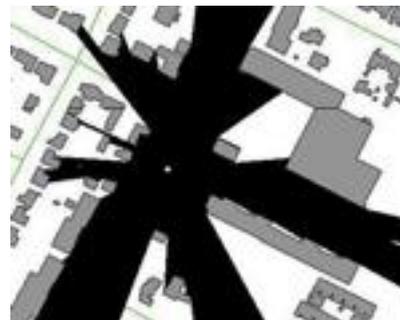


Fig. 5 Isovist of an Urban Space

Obviously, if the space is convex: circular, rectangular or square, then the isovist and the space are identical. (Fig 2) If the space is partly concave, for example: surfaces protruding into the space or elements which inhibit the view of the entire space, then the isovist and space are not identical. (Fig 3)

Isovist Fields

In order to analyze a spatial configuration as a whole, Benedict introduces the term Isovist Field which is a matrix of isovists which represent all locations of a spatial configuration. The light areas in Batty's (2001) computer generated images indicate high visibility, dark areas low visibility.

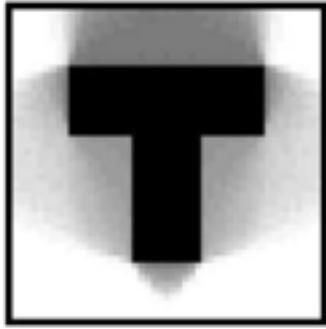


Fig. 4 Isovist field of a T-Shape

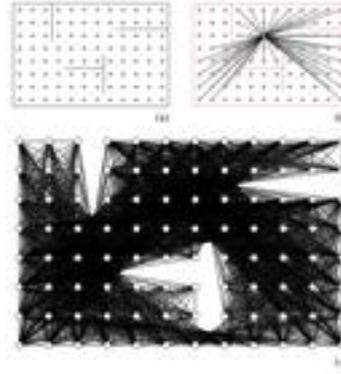


Fig. 5 Visibility Graph of an Urban Space

By using isovist fields it is possible to extract certain patterns or extreme values of the configuration as a whole. This makes it possible to easily find the locations within a floor plan that are most visible

Visibility Graphs

Whereas the isovists give relevant data about the qualities of the shape of visible space from particular points of view, Turner et al (2001) used visibility graphs to make explicit the visual relations of different locations in space. They demonstrate this tool in their study of the Tate Gallery.

Using Isovists to predict aesthetic qualities of urban and interior spaces

In a previous paper Schneider (2012) summarizes the situation as follows: „The experiential and behavioral dimensions of isovist properties are not yet fully understood (Franz [11]), but in empirical studies various correlations between those properties and the actually perceived spatial experience have been found. Franz and Wiener [12] showed, using VR experiments, that area, compactness and occlusivity correlate highly with how test persons rated the perceived beauty, complexity and spaciousness of a configuration. Furthermore, they showed that the subjects were able to find points in a configuration with the largest and smallest field of view. Conroy [9] and Wiener et al [13] found that isovists capture information that is relevant to way finding behavior, especially when it comes to deciding where to go next. Stamps [14] deals with the description of enclosure by means of isovists. He notes that occlusivity

alone is not sufficient to describe enclosure, since the distance of the viewpoint to the surrounding walls plays an equally important role.“

The long term goal of our research will be twofold:

(1) An appropriate methodology for the representation of spatial configurations needs to be developed. This kind of representation has to orient itself closely with the function of the human visual apparatus, in order to capture the environmental qualities in a similar way as the human eye can. Furthermore, this kind of representation has to be developed on the basis of typical forms of representations that are used in architecture and urban design, e.g., plan and 3D model, in order to control the spatial effect during the initial phases of design as well as to stay within the typical conceptual vocabulary of the architect.

The discipline of space syntax, concentrates mainly on the functional aspects of a city, which are largely determined by the flow of movement in urban spaces. For these studies simply two dimensional representations suffice, but for studying the aesthetic experience of spaces these methods are too imprecise. Thus, three dimensional isovists need to be constructed in order to account for topographical inconsistencies and for the height of the buildings that surround an urban space. For instance when observed from the high side of an urban square, buildings seem to be closer, and likewise farther away when viewed from the lower side of the same square.

Furthermore, the view angles, or cones of clear vision are not accounted for in an isovist, hence, it will be crucial to the research to find a method to integrate the cone of clear vision in an isovist simulation.

(2) To *develop empirical studies that investigate whether there is a relationship between particular forms of representation and of the actual spatial experience*. If these relationships prove to exist then studies on the aesthetic impact of urban spaces can be conducted directly on the visualizations. This would be a far less time consuming method of research.

In order to study these relationships one could investigate aesthetic judgements

in existing urban spaces and compare these with judgements made in virtual reality simulation. In both cases the measurements of eye movements could be integrated in order to see which spatial and formal properties trigger the attention of the viewer.

Batty, M., (2001). Exploring isovist fields: space and shape in architectural and urban morphology. *Environment and Planning B: Planning and Design*, 28(1), 123-150.

Benedikt, M. L. (1979). To take hold of space: isovists and isovist fields. *Environment and Planning B*, 6(1), 47–65.

Conroy, R. (2001). Spatial navigation in immersive virtual environments, *Dissertation*, UCL London.

Dioxides, Konstantinos A. *Architectural Space in Ancient Greece*. Cambridge, Mass.: MIT Press, 1972. (Original work published 1937).

Franz, G., (2005). An empirical approach to the experience of architectural space, *Dissertation*, Max Planck Institute for Biological Cybernetics, Tübingen.

Franz, G., Wiener, Jan. (2008). From space syntax to space semantics: a behaviorally and perceptually oriented methodology for the efficient description of the geometry and topology of environments. *Environment and Planning B: Planning and Design*, 35, 574 - 592.

Schneider, S., & Koenig, R. (2012). Visibility-based floor plan design – The automatic generation of floor plans based on isovist properties. Conference Proceedings. Symposium Spatial Cognition for Architectural Design (SCAD 11). New York.

Schubert, O. (1965). *Optik in Architektur und Städtebau*. Berlin: Mann.

Stamps (2005). Stamps, A.E., Enclosure and Safety in Urbanscapes, *Environment and Behaviour*, 37, 102-133.

Turner, A., Doxa, M., O'Sullivan, D., & Penn, A. (2001). From isovists to visibility graphs: a methodology for the analysis of architectural space. *Environment and Planning B: Planning and Design*, 28, 103 -121.

Wiener, J.M., Hölscher, C., Büchner, S. and Konieczny, L. (2011). Gaze behaviour during space perception and spatial decision making. *Psychological Research*.

WHAT IS ART FOR ME? – PERSONAL THEORIES OF VISUAL ARTS

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Abstract

Personal, implicit theories of visual art created by students of visual arts are in focus of research. Students of Faculty of Fine Arts created free responses to question: What is art for you? No restrictions were given.

Subjects were students of painting, sculpturing and graphic art, University of arts Belgrade, 68% of girls and 32% of boys.

Objectives of research were to investigate personal meaning of art phenomenon and to develop tools for personal artistic development and art education.

Research procedure were repeated in nine-year period, covering nine generations of students of visual arts. In total, 178 students participated in period between 2003 and 2011. Responses have been collected and qualitatively analyzed. Most of participants created few responses to question. Qualitative analysis included observation of creation process and classification of responses.

Observation of process showed resistance of students to verbalization (ineffability), 5% expressed themselves by creating drawings, poems, visual objects, but not verbal responses. Most of participants (78%) created more than one response, average number of responses per participant was more than 3, reflecting multiplicity of art phenomenon and sensitivity of students to it's complexity.

Responses were classified in 16 categories, among which most frequent are: 1. Art is process of exploration – 61% ("path", "metamorphosis", "thing I don't force", "good road to death", "investigation", "play", "experiment"), 2. Can't be described by words – 58% (it is seen as "complex", "dynamic", "non-verbal", runs away from the observer, "non-scientific"), 3. Expression, message, transmission, the voice of artist - 57% ("Something itching, you spit out that energy and feel fine, give

the meaning, get feeling that you recorded something important”), 4. Materialized spirituality– 42% (transformation of spirit in physical objects, construction of inward reality) , 5. Emotion – 45% (of love, fear, power, freedom...), 6. Art is revision of reality – 40% (new truth, waking-up, deeper reality, extraction of essence), 7. Stressed strong motivation -29% (“it is the way we live, work”, “this is my whole life”, “my real nature”) and other.

By viewing art as multileveled, transformative phenomenon, the aim was not to “find answers” but to support process of exploration, so important for personal and artistic development.

Implicit theories of art

Research is based on practical work with students of visual arts and offers an insight in process of mutual building of personal/group meaning of art.

Contact with art is complex, individual experience. Our response to art is direct, spontaneous and subjective activity. It is based on implicit, self-created, personal system of norms, ideas, beliefs, values, assumptions and emotions, including conscious as well as unconscious factors influencing this process. Implicit theories, non-scientific, naive theories are not often in focus of researches. Their subjective nature, non-discursive language, fluid and metaphoric structure, require open-ended, participative scientific approach.

During nine-year period, generations of young people in process of education, students of visual arts expressed their personal (non-scientific) theories of art. That „view from within“ shows how future artists see arts, the way they organize art practice, how they see themselves in social environment and how the future is conceptualized.

Research design is based on participation of subjects, giving them full freedom in creation of responses. The content of research is not given in advance, but is created by participants during the process. Participatory method appeared to be of great value in work with students, because it is practice-based, realistic, sensitive to subtle processes and open for complexity of topic (Flores Sabo, 2008). In this case participatory approach was implemented to reveal subjective meaning of art.

Discussing meaning of art, Solso suggests four different levels of understanding art: sensory (perceptual), psychological, schema-story relation expressed by question: *How do I understand this through my own point of view?* and comprehension of art (Solso, 2003). The third level of meaning could be understood as individual contact with art. It assumes existence of implicit theory, personal field of meaning.

Results are expected to show how future artists – students in process of artistic development, see important issues in the field. Most frequent responses are commented and insight in relevant aspects of personal views of art is offered.

Objectives of research were to illuminate personal meanings of art phenomenon and that way support personal/group artistic development.

Procedure

Students of Faculty of Fine Arts were asked to create free verbal responses to question: *What is art for you?* No restrictions were given. Form of response, its length and structure, have been free. Time was not limited. They were told that responses would be qualitatively analyzed and discussed in groups.

Students worked individually, but were allowed to watch others, discuss with others or consult them during work.

Research procedure has been repeated during nine-year period, including generations of students of visual arts in period between 2003 - 2011.

Participants

Subjects were students of painting, sculpturing and graphic art from Faculty of fine arts, University of arts in Belgrade, among whom 60% were girls and 40% boys. In total, 170 students participated.

Analysis

Responses have been collected and qualitatively analyzed. The number and content of responses were observed. Most of participants mentioned more than one meaning of art. Their responses were treated as multiple and were classified in categories. Qualitative analysis based on classification is subjective method but is seen as most appropriate for particular situation, because it is sensitive to diversities of responses and open-ended quality of task.

Results

Ineffability of art

Observation of process and responses showed resistance of students to verbalization. 3% of participants tried to create verbal description, but finally expressed themselves by creating something else: drawings, poems, visual objects,

comics or paper figures.

Example- resistance to verbalization: *Well, now...I would like to write something, but I'm not sure I have enough time for that...*



Words are seen as poor tool for description, any description is seen as incomplete. Finding is interesting in context of aesthetic researches of visual art which are mainly based on verbal scales (such as semantic differential).

“Art exists, it is alive and that is the only definite fact about it.”

“Understanding, harmony,

Creativity,

Unknown,

Unknown...

I simply don't have word!”

26% of participants mention limitation of verbal description in their responses. Subjects who responded non-verbally or by poetry explained that there were no adequate words which could describe their understanding of art. They believe that visual art needs to be explored from the point of view of visual art itself. Together

with group of subjects who verbally described visual art as non-describable, giving adjectives such as “fluid”, “something non-verbal”, “leaking”, “remote”, “running off” etc., the group of subjects who believe that art can not be verbally described at all, or can not be described adequately, gives a majority of participants.

Multiple meaning

Participants who expressed themselves verbally created more than one response. Total number of responses were 678. Average number of responses per participant was 4, reflecting multiplicity of art phenomenon and sensitivity of students to it's complexity. That shows there is no one, simple and clear meaning but rather field of different meanings with complementary roles.

Most frequent classes of responses

Classification of responses shows that most important aspects of art are those related with it's cognitive and communication components. Emotional and motivational aspects are also seen as important, but supporting (not crucial) elements of art. In general, common belief is that art is cognitive, explorative, playful activity. It looks as individual at first sight but is in it's essence interactive, it includes audience (real and anticipated) and expressive exchange.

Most frequent classes will be presented. Number in brackets show percentage of participants who mentioned particular aspect.

1. Art as cognitive activity – thought, idea, insight in reality, inward reality

(60% participants)

Cognitive, intellectual nature of art activity is common to majority of subjects. They describe art as thinking, discovering, creating ideas, constructing process. Creative production is in it's essence the concept, creation of idea and it's transformation into material product. This process is “search for the essence”, looking for the “truth of higher order”, they believe art creates more realistic reality than reality of physical world. In this, new reality, the concepts of objects are represented and ideas exchanged. Reception of art is also seen as complex mental process during which inward, conceptual language is used and modified by audience. It is congruent with basic ideas of gestalt school which understood art as basically cognitive activity, where perception was not seen as passive reception of stimuli, but construction of

visual form in the mind of perceiver (Arnheim, 1974).

“Art is search for truth. It means we place the truth in the work of art. Not our personal truth, but general, eternal truth.”

“Art is construction of more real reality than this one we are in.”

2. *Strong motivation*

(39%)

Art is also seen through motivational aspect: “It is the way we live, work, this is my whole life, my real nature”. It is obvious from psychological researches that motivation for the task is one of the most important factors affecting creative performance (Amabile, 1996, Sternberg, 1999). Here, participants stress need and deep desire for art, some of them being scared that some obstacle could appear on their way. “Art, that’s me. Not you.”

Creation is most important moment in their lives.

“Art is when I buy material for painting instead of food. Then I go home and paint whole night.

When the morning comes, I destroy my paintings. Whole next day I am hungry, but I can’t wait for the evening to go back home and paint.”

3. *Art as explorative process*

(36%)

Art is seen as process of research, experiment and investigation. There is similarity between art experience and play activity. Curiosity is important part of art activity. This understanding of art is close to one stressing cognitive aspect of creation and reception of art. Here, focus is on activity of play and open-ended tasks.

Creative activities are described as “process of metamorphosis, play, good road toward death, exploration”.

Process nature of art is not always visible by naked eye. What we perceive in everyday life are products, outcomes of artistic process. In the same time, process stays hidden in the background. Concerts, paintings on the wall, drama plays represent top of iceberg. Deeper we go in understanding art, more important becomes the process.

Picasso has been one of the artists who believed in importance of the process. During his work on *Guernica*, he recorded development of particular segments of

composition (women, horse, child) and saved drafts made during this process.

It is less visible by naked eye, but not less important that artistic language is marked with uncertainty, confusion, open-ended and semi-structured symbols. For example, in their empirical study of subjective responses to poetry, Hilscher and Cupchik (2005) described few qualitative meaning categories and demonstrated that the responses to poetry were influenced by form of presentation. Reading poetry gives chance to subject to become actively engaged and create constructive interaction with art. Listening and watching performance of poetry decreased levels of surprise and confusion that were, according to authors, necessary for active and personal interaction with art.

Research confirms assumption expressed by many participants in this study, that constructive contact with art is related with ambiguity, confusion and unfinished form of artistic language. It allows process to happen.

4. Emotions and art

(35%)

Positive emotions such as happiness, joy, thrill or delight are related with successful creative work. They also appear during process of reception which is described as appreciation and which reflects emotions presented on art object.

Together with positive, there are negative emotions which appears during unsuccessful or painful creative process and during observation of objects which reflect such emotions. Participants named sorrow, fear, panic, shame, aggression, feeling of being useless, non-creative and untalented. Often, after strong wave of creative energy, participants go into stage of mild depression, apathy and lack of ideas. This is understood as crisis of artist, and it could bring mild or strong impact on overall emotional stability of person. Exchange between participants regarding this issue was seen as important supportive impact of research, because once they understood their emotional fluctuations, they became able to see particular emotional state as a part of the whole. That helped participants to master their emotional investment and gain control over their productive energy.

Feeling of freedom is often mentioned, and it is related with playful nature of art process.

Responses show that emotions play important role during the work of artist

and during reception of works of art. In both cases, they are seen as important impulse and quality which brings energy to art creation and reception. However, they are not seen as main content and crucial factors of these processes but secondary quality. It seems like their role is important but supportive.

5. Expression – self-expression, exposure to others, transferred personal things
(35%)

Another important aspect of art is its expressive nature. Participants explain creative process as exposure of themselves to other people. They create forms and objects that are direct representations of their internal processes, feelings and thoughts. Most of participants see this exposure as risky, vulnerable position which is unavoidable if they intend to be honest as artists.

Some participants describe expressive process as tension. Their expressive act brings sort of relief and in the same time they have feeling they did something good and valuable, recorded something important for people who will watch their art.

6. Art as communication
(26%)

Communicative role of art is related with expressive. What is communicated is expression. Art communicates such expressions that have general meaning and significance (idea close to Martindale's idea of primordial content) to all people.

“Artist has no right to destroy his work, because it is not his property. One part belongs to him, another belongs to everybody, to the universe.”

7. Art as moral power – improvement of the world
(25%)

Part of participants see art as moral action aiming to change the world (“perpetuation of love toward others”). Appearance of this responses coincides with changes in social field, such as social crisis and instability. Part of participants show interest and sensitivity to broader social context, not only local community but mankind or even universe, performance of art is seen as improvement of everything.

Some of ideas are very general and come close to quantum physics (like David Bohm's idea of everything unfolded in everything), stating that art represents

comprised information about everything. The influence of fine art this way, affects whole world (and maybe, more than that!). Responsibility of artist is understood as general, he/she becomes responsible for development of world and human community.

In addition, 20% of participants stress social role of art, it is seen as critics and agent of change of social reality. Being dynamic and autonomous human capacity, art appeared as surprisingly resistant to negative social changes, giving creative results when practiced under pressures of poverty, instability or transition. Social environment is sometimes described as trade-oriented, depleted, narrow-minded, alienated. Contemporary art is sometimes described as too raw, shattering, oversimplified mass-production of kitsch.

“Arts become screaming and cheap. They are pleasant but temporary. It is sad.”

8. Aesthetic experience, harmony

(27%)

Art is seen as pleasure, feeling of harmony. Descriptions are focused on aesthetic value in general. There are no typical explanation for this group of responses, art is described as “beauty”, “harmony”, “perfect equilibrium”, “pleasure”. Search for beauty is general goal of art.

Conclusion

Process of building meaning

The fact that words are not always adequate to express visual impression and philosophy behind it, is not always recognized by researchers in the field of visual arts. Often, researches are based on lists of adjectives, understanding verbal response to arts as sufficient information. Here, participants treat verbal descriptions as part of the picture. Additional methods need to be designed, developed and implemented in order to reach relevant issues about it.

By viewing art as multileveled, transformative phenomenon, we were not looking for answers but tried to support process of exploration, so important for personal and artistic development. In the same time, responses appeared to be good training tool, illuminating and demonstrating plurality and openness, supporting

exchange between participants and creating new field for conversation.

Development of tools for investigation of art phenomenon should include not only discursive language of positive science, but also open meanings and metaphors. Dialectical structured-opened approach will better represent multiplicity of art phenomenon.

Why talking about art?

Resistance to verbalization is often expressed by artist and that could be understood. Many artists believe that if they talk about their work, magic and surprise of creation will fade out. “If I knew what is art, I would write book about it, I wouldn’t be artist. If we found receipt for art creation, it would disappear.”

In the same time art critics sometimes lacks sensitivity and tolerance toward new and original forms, and creates verbal descriptions with negative connotations. These are some of the reasons why verbal description of visual arts is not very popular among artists.

If we understand meaning of art as process, not content, than dialogue could support that process. Idea of Vygotsky, psychologist who studied thinking and language, is that thought and word stay in dialectical relation. Word is not simple expression of thought, relation thought–word is not linear. Word completes thinking process by adding new quality and transforming it. Words have formative role, they express and construct thought in the same time. That’s why it is important to talk about art. Dialogues are creative constructions of meaning. They don’t just support art, they are creative part of it.

References

- Amabile, T. (1996) *Creativity in Context*. Westview press, a member of Perseus Book Group.
- Arnheim R. (1974). *Art and Visual Perception. New version*. Berkeley and Los Angeles: University of California Press.
- Flores Sabo, K. (2008) *Youth Participatory Evaluation*. John Wiley & Sons. San Francisco.

- Hilscher, M., Cupchik, G. (2005) *Reading, Hearing and Seeing Poetry Performed*. Empirical Studies of the Arts, Vol. 23 (1) 47 – 64. Baywood Publishing Co.
- Solso, R. (2003) *The Psychology of Art and the Evolution of the Conscious Brain*. Massachusetts Institute of Technology.
- Sternberg, R. (ed) (1999) *Handbook of Creativity*. Cambridge University Press. Cambridge, New York.
- Vygotsky, L. S. (1930). Tool and symbol in child's development. In M. Cole, V. John-Steiner, S. Scribner & E. Souberman (Eds.). (1978). L.S. Vygotsky, *Mind in Society. The development of higher psychological processes* (pp. 19-30). Cambridge (Mass.)/London: Harvard University Press.
- Vygotsky, L. S. (1971) *The Psychological Problem of Art*. MIT Press.

THINKING MODEL AND COURSES CONSTITUTE OF TVS (TEACHING OF VIEWPOINT-STRUCTURE) - THE UNITY OF SCIENCE-AESTHETICS-PRACTICE

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Abstract: This article mainly deals with Comprehensive Curriculum of Humanities, Sciences and Arts that are based on Viewpoint Structure. Though comprehensive curriculum vary widely, the curriculum have little to do with simply putting together knowledge of various disciplines, aiming at foster all-round creative talents. Therefore, the most difficulty and imperative thing to do is to link knowledge logically so that it can be reorganized to form a new system of knowledge. To solve the problem, the author and her colleague put forward a theory called Viewpoint Structure on the basis of cross disciplines, natural sciences and social sciences and through over a decade's experimental research. Viewpoint Structure embodies logic relations between disciplines, focusing on one certain discipline's knowledge elements, known as viewpoint, that associate related knowledge with one another to establish the relationship among disciplines, known as structure. Furthermore, aesthetic activities play a important role in the practice of Viewpoint Structure because of human and scientific elements that beauty contains, thus forming the Comprehensive Curriculum of Humanities, Sciences and Arts. The Curriculum also consist of texts, audio and video materials, electronic discs, teaching plans, references and other things.

Key words: humanities, sciences and arts; comprehensive; curriculum; Viewpoint-Structure; aesthetics.

THE VALUE AND LOGIC ELEMENTS OF THE CURRICULUM

Education is now facing the difficulty of cultivating all-round creative talents. The rise of ideas and practices of comprehensive curriculum is an active response to that, e.g. cross curriculum, correlative curriculum, digesting curriculum, core curriculum and experience curriculum. From students' point of view, those curriculum also include research study activities, theme study activities, social study, practice study

and life study and so forth. In addition, they also include multi-discipline test questions in subject examination to assess teaching effect. For example, in China, students are supposed to be tested on a subject called comprehensive humanities or comprehensive sciences. These are indispensable part of the curriculum.

However, while people have been seeking for varieties of comprehensive curriculum, there still exists an un-solving problem. That is, the inner logic relations among all disciplines associated with comprehensive curriculum.

Comprehensive doesn't mean simply putting together knowledge of various disciplines, or solving a problem with it. The key point is that whether the relations between various disciplines are reasonable and scientific or not. And although designers of comprehensive curriculum have realized their complexity, logicity and variety, their problems are far more than settled.

Taking into consideration that people haven't reached a conclusion of comprehensive humanities, sciences or arts, it seems too early to talk about all them together. But the truth is that if we are able to organize knowledge according to its common elements and logic relations, which is, of course, a very difficult task, then we could solve that problem no matter it is comprehensive humanities, comprehensive sciences or comprehensive arts because the principle is the same.

LOGIC STRUCTURE OF COMPREHENSIVE CURRICULUM AND ITS ENLIGHTENMENT

Comprehensive curriculum are primarily based on the development of comprehensive disciplines which plays an important role in designing them. The development of comprehensive disciplines results in two categories. One is marginal disciplines resulted from cross disciplines; the other is cross disciplines from reorganization of common elements in multidiscipline. These play a crucial role in the development of natural sciences characterized by their research methods and objects

Cross disciplines are not involved in a certain form of movement or material structure; instead, they emphasize on the common elements of one certain aspect of different forms of movements or material structures. For instance, mathematics only aims at the world's quantitative relations and space form, whereas cybernetics is

based on automatic adjustment, computer, communication technology, neurophysiology and mathematics, connecting itself with physics, chemistry, biology, medicine, mathematics, engineering and space technology through the common elements: control and feedback. And informatics is based on engineering, society, biology and so on, focusing on information; environmental science focuses on environment involving ecology, geochemistry, biochemistry, geography, physics, geology, medicine, meteorology, engineering, sociology, economics, history and so forth.

Concepts associated with various disciplines like quantitative relations and space form, control and feedback and information indicate that they have something in common. This not only enables old mathematics to step forward but also produces new disciplines as mentioned above. Therefore, it is safe to draw a conclusion that cross disciplines have accelerated integrity of modern sciences. From another point of view, one aspect of comprehensive Curriculum is the interaction of natural disciplines and social disciplines. The idea that science and aesthetic judgment are completely different and have nothing in common has proved to be wrong because rapid development of information science, computer science, art designing and other disciplines have shown that they do have similarities and can not be separated from each other. The more sciences and aesthetics develop, the closer they will be.

Under the influence of the development of comprehensive disciplines, we have done lots of research on Curriculum and teaching at different levels. As a result, we put forward several theories concerning comprehensive Curriculum named Comprehensive Aesthetic Education, Teaching of Viewpoint Structure and Aesthetic Teaching, which provide the foundation for the Comprehensive Curriculum.

Comprehensive Curriculum of humanities, sciences and arts refers to a theory of Curriculum and design technology that aims at improving students' moral standard, intelligence, physical and psychological development, aesthetic judgment and skill through viewpoint-----basic knowledge of a certain discipline and its logic relation with other disciplines----- so as to reorganize a network structure of knowledge and disciplines. The Curriculum are characterized by its viewpoints, structure and aesthetic judgment. While viewpoint structure embodies logic relations, aesthetic judgment implies an impelling force. .

VIEWPOINT STRUCTURE: THE LOGIC RELATIONS OF THE COMPREHENSIVE CURRICULUM

Viewpoint structure is the core concept of Viewpoint Structure Teaching brought forward by us a few years ago. It helps students reorganize their knowledge structure by relating viewpoint---the basic element---to the knowledge structure already existed in their minds.

Viewpoint, a word borrowed from art theory, originally means a position from which something is observed or considered, now referring knowledge point, namely, a certain concept or principle of a certain discipline. Those mentioned above like quantitative relation, control and feedback, information \and environment are such knowledge that logically connects itself with various disciplines to reorganize a new structure. Point is also a broad concept. It can be a definition, a principle, a formula, a key word in terms of knowledge, and an approach, a technology, a method in terms of skill. In a word, knowledge points only reflect generalization.

Structure means something made up of a number of parts that are held or put together in a particular way. Here it means the logic relations between knowledge points of disciplines. figure 1 could explain the relationship between viewpoint and structure.

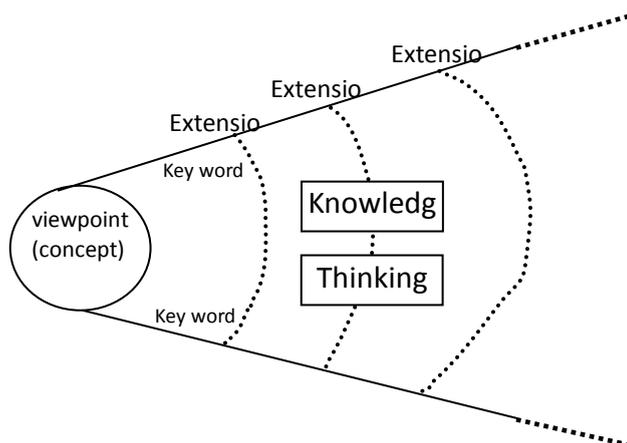


FIGURE 1 Illustration of Viewpoint Structure

Let's take a look at chemical equilibrium, an important and basic concept in chemistry. It is taken out and connected with all concepts within or outside chemistry involving equilibrium. While In chemistry, chemical equilibrium means the state of a

chemical reaction in which its forward and reverse reactions occur at equal rates so that the concentration of the reactants and products does not change with time, in a broader sense, it means a condition in which all quantity and quality are canceled by others. Considering equilibrium, the key words are general quantity and unchanged. So, those concepts in chemistry relating to equilibrium are primarily taken out to form a new knowledge structure. These include electrolytic equilibrium, hydrolysis equilibrium and dissolution equilibrium. Similarly, we get force equilibrium from physics, equation form mathematics and ecological equilibrium from sociology, and further, balance between income and expenditure from economics, population equilibrium from sociology, mental balance from psychology, and action balance from physical training, color balance from art. All these are combined together to reorganize knowledge as a whole.

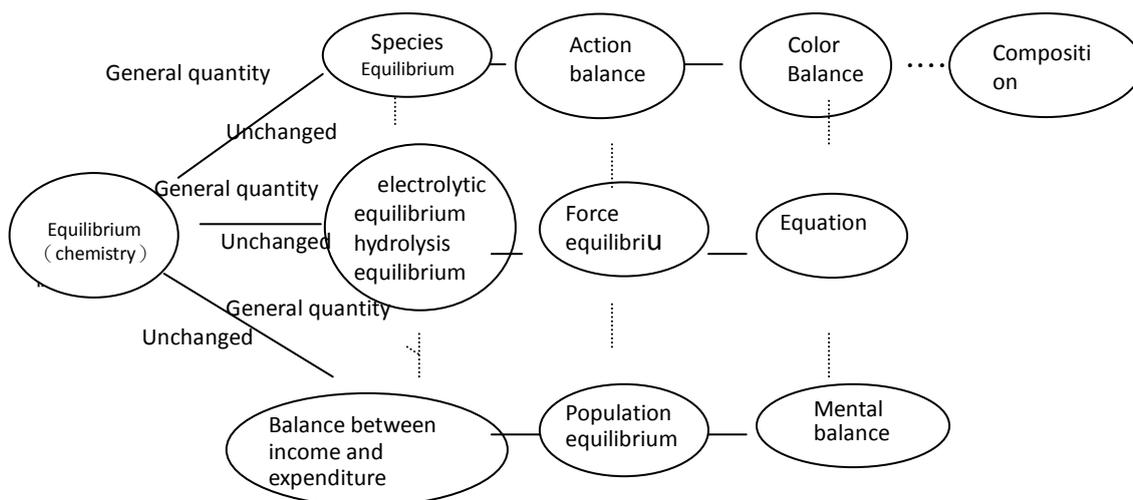


FIGURE 2 Viewpoint of chemical equilibrium and its correlative points

In this way, students can better understand equilibrium in chemistry and are more certain of its characteristics, thus helping them mastering and applying the knowledge. At the same time, students are able to transfer what they have learned so that they can identify equilibriums in other disciplines and easily put them into practice.

Another example can be seen in the viewpoint 'history' selected from social disciplines and 'rhythm' from music. These are illustrated in figure 3 and figure 4.

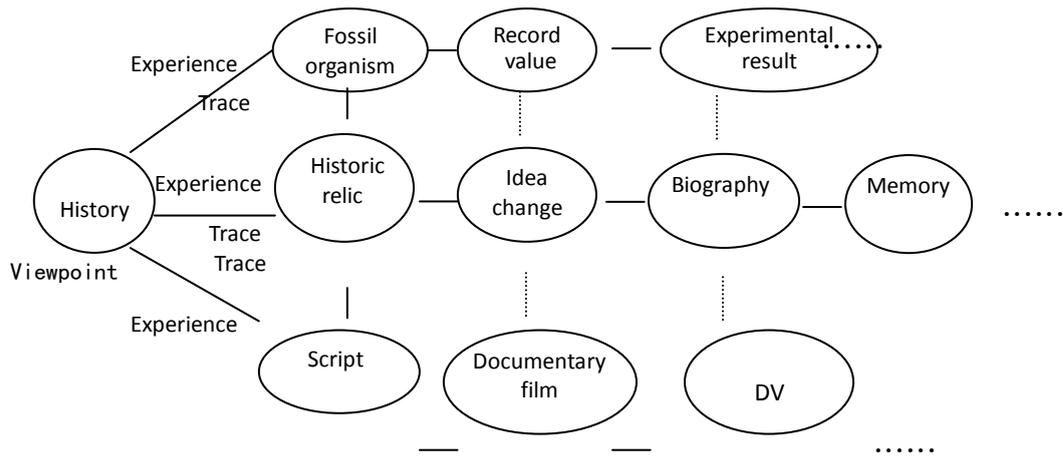


FIGURE 3 Viewpoint of history and its correlative points

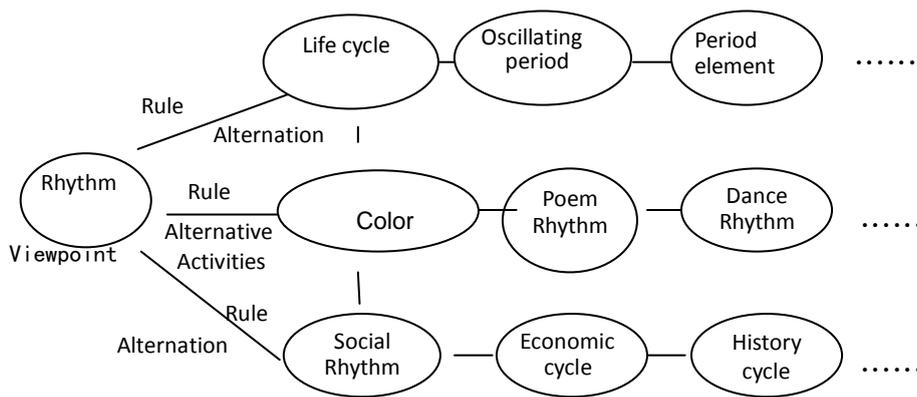
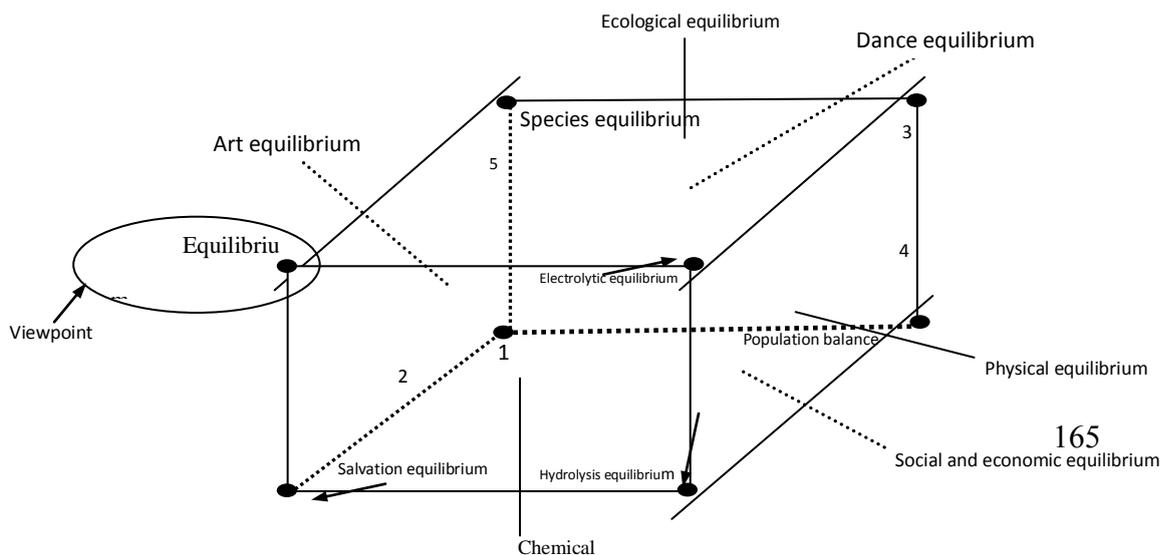


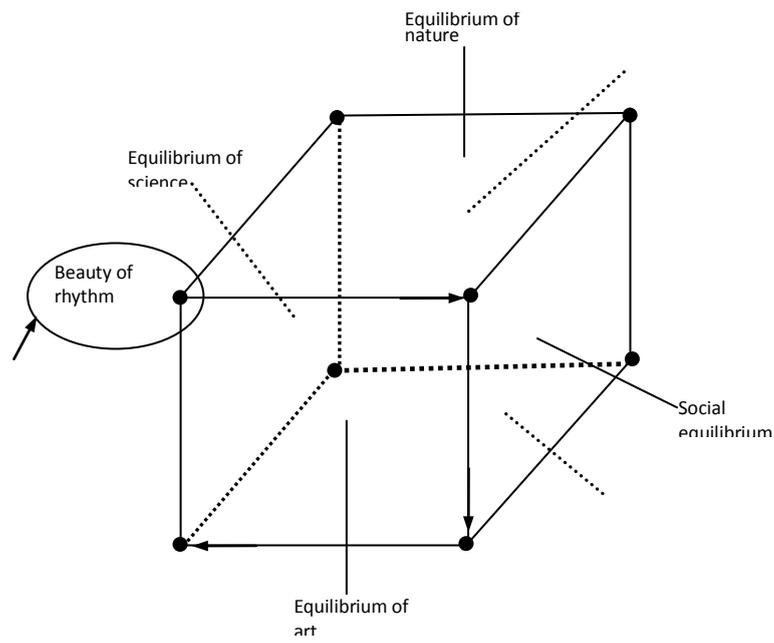
FIGURE 4 Viewpoint of rhythm and its correlative points

We have selected over 81 such viewpoints which are adequate enough to cover almost all elements in disciplines of humanities, sciences and arts in China's elementary and high schools. This is a scientific and logic system that is three-dimensional and open, providing students different angles to view the world.



- 1 Balance between income and expenditure
- 2 Modeling equilibrium
- 3 Action equilibrium
- 4 Equilibrium of forces
- 5 Color balance

FIGURE 5 Three-dimensional illustration of viewpoint structure based on chemical equilibrium



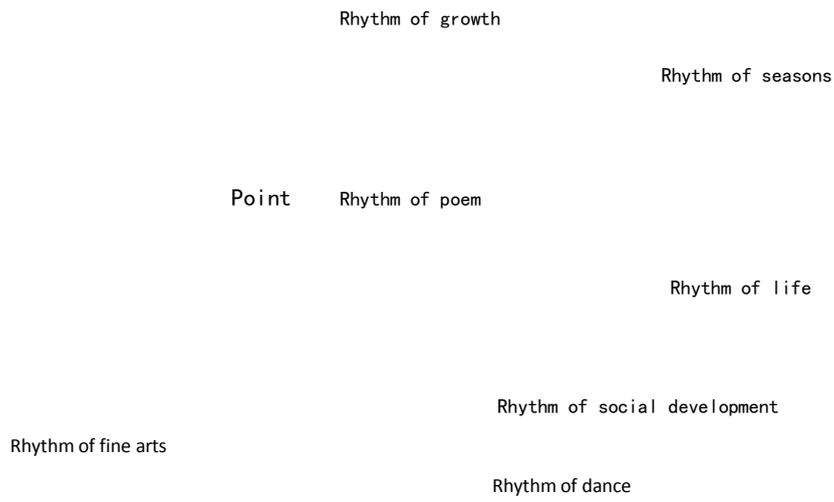


FIGURE 6 Three-dimensional illustration of viewpoint structure based on 'rhythm'.

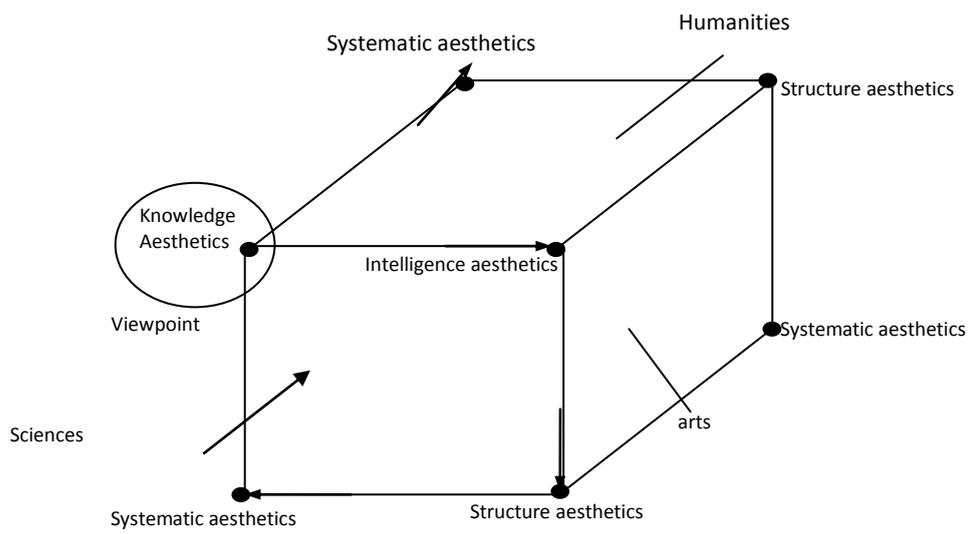


FIGURE 7 Three-dimensional illustration of viewpoint structure based on sciences and aesthetics

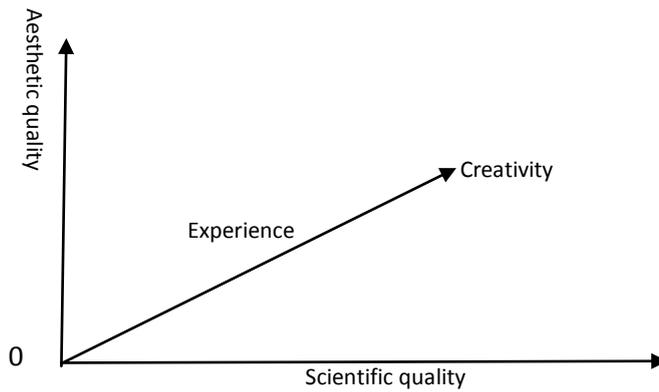
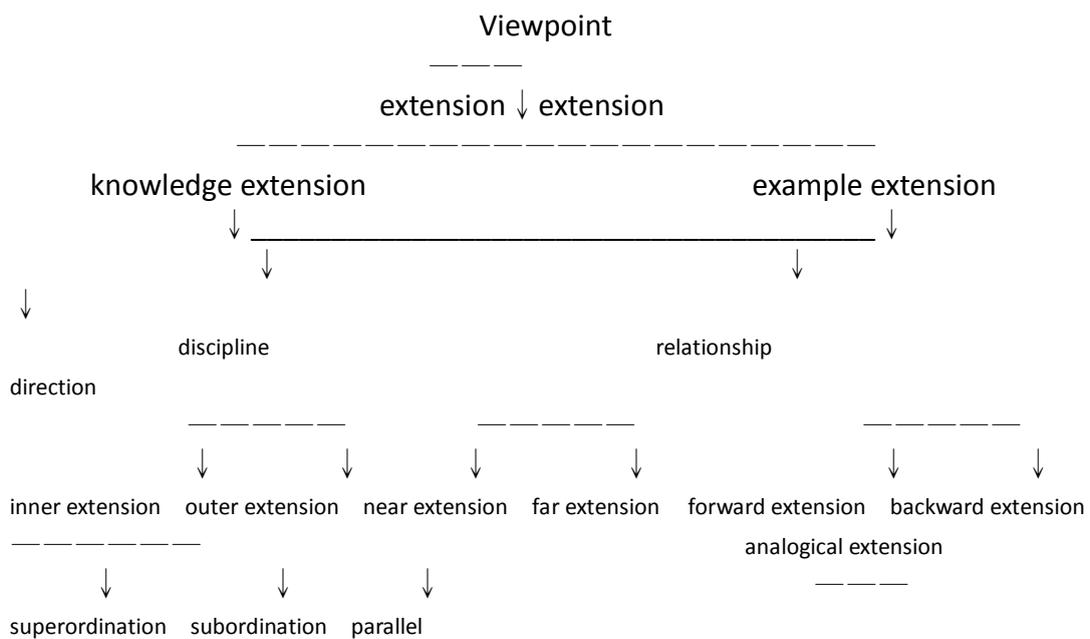


FIGURE 8 Coordinates of science, aesthetic, experience and creativity

Besides, Viewpoint Structure is not changeless. There are a number of ways that it extends to other disciplines and directs to form new structure under the basic principle.



It is obvious that viewpoint structure can be classified into two groups. One is example extension, the other is knowledge extension. Both contain inner extension, outer extension, near extension, far extension, forward extension and backward extension. Inner extension means extension of examples and knowledge inside a discipline, including superordinate extension, subordinate extension and parallel extension. Outer extension means extension of examples and knowledge among

disciplines. Near extension means extension of similar knowledge points, while far extension refers to extension of those points and examples which are more different. Forward extension means extension of identical knowledge points, including analogical extension, while backward extension refers to that of reverse knowledge points and examples.

AN IMPELLING FORCE OF THE COMPREHENSIVE CURRICULUM

While a lot of people are aware of the leading ideas of China's new Curriculum reform that focus on students' curiosity, experience, initiative and creativity, few have realized the importance of beauty and appreciation of the beauty, which can, in our opinion, best express humanism.

Beauty is everywhere and has always been what human seek for. That is why people are in pursuit of the pleasure of appreciation of the beauty even if they are unaware of it. As a matter of fact, appreciation of the beauty and beauty itself do have relations with science, for instance, scientific beauty. But few scholars have realized this or the majority of them refuse to accept it. Therefore, appreciation of the beauty not only has something to do with emotion but shows an impelling force of scientific logic to improve both teachers and students' ability and skill. A lot of evidence has indicated that relations. For example, geometry and geometric modeling in art have something in common; many concepts, laws and formulas in algebra can trace back to study of music, painting and architecture; optics is color theory, and acoustics is music theory. Barriers between natural sciences and aesthetic disciplines should be broken down so as to demonstrate their initial relations. All these can be seen very clearly in our study on Viewpoint structure and other research projects.

A comprehensive curriculum must be based on element integrity with a viewpoint structure, and appreciation of the beauty should be taken into considerations as well. That is why we call ours Comprehensive Curriculum of Humanities, Sciences and Arts based on aesthetic viewpoint structure.

Another thing we should pay attention to is aesthetic words and aesthetic description associated with knowledge points like what mentioned above, say,

very important role in helping both teachers and students reorganize their knowledge and cultivate their creative thinking, and even in forming a harmonious attitude towards the world and life.

Solutions to educational problems mainly depend on teachers, no matter what kind of curriculum is involved. The Curriculum are of course a challenge to teachers' ability and a big problem as well. But if it is solved, all things would go smoothly. Therefore, success of the Curriculum mostly lies on teacher training and the purpose of it.

Comprehensive Curriculum of humanities, sciences and arts and its teaching design might be a controversial question, and there must be other teaching models. However, the question of logic relationship among disciplines is the most fundamental one, and the most difficult point is what relations among disciplines are and how to transform them into skills and practice according to scientific and aesthetic rules.

Remarks: This article is the companion of the presentation paper named as Cognitive concept learning and complex transfer basing on TVS (Teaching of Viewpoint-Structure) model in the 21st IAEA, in August 2010. The author showed how to transfer the TVS teaching model, the TVS thinking model, the TVS cognitive model, the TVS behavioral model and the TVS emotional model into the school curriculum, in order to expand the application of generation principle and technology of "view point" and "structure" in TVS model, to expand the application of the logical and freedom innovation and complex transfer into the building of school curriculum, and then to effectively promote the students' coordinated development in knowledge, thinking, behavior and creative ability; the coordinated development in scientific thinking, aesthetic thinking and practice behavior; the coordinated development in scientific spirit and the human spirit.

Appendix: the abstract of paper "Cognitive concept learning and compound transfer based on TVS model"

Abstract: Cognitive concept learning, whose effect transfer is a necessary prerequisite to forming advanced aesthetic ability, is a premier cognitive style with aesthetic experience. Two different aesthetic concepts ---"Gentle" and "Sublime" are used as empirical material. The subjects included 96 Grade 4

students in an elementary school (the ratio of test and control groups was half and half) and 30 graduate students and university teachers (test group). Both groups learned the “gentle” concept guided by the Teaching of Viewpoint-Structure Model (TVS). The elementary school group was tested repeatedly and university group was tested with additional “Sublime” concept which they never learned before. The results shows: (1) The level of aesthetic concept Interpretation, fact exemplification, aesthetic feeling of both subjects improved significantly. (2) Four regression equations show that, within, the university group, learning the “gentle” concept had significant Interpretation Transfer, fact-exemplification transfer, exemplifying words transfer, Category-word transfer, experience transfer and even preference transfer effects on learning the "Sublime" concept. (3) According to the results, a model of “aesthetic compound transfer” including parallel transfer, longitudinal transfer, cross transfer, circuit transfer and oscillating transfer was built. (4) The theory of "Aesthetic compound transfer" was proposed to explain the osmosis function of aesthetics. (5) This research demonstrated the efficiency of the TVS teaching or learning guide model on the teaching and study of aesthetic concepts and may, thus, serve as a reference for normal concept learning and teaching.

REFERENCES

- James W. McAllister (1996). *Beauty & Revolution in Science*. Cornell University Press.
- Leonard Shlain (1991). *Art & Physics : Parallel Visions in Space, Time and Light*. Quill William Morrow.
- Teng Shouyao (2002). *Interpretation of art Curriculum for compulsory education*. Beijing: Beijing Normal University Press.
- Xu Jimin (1986). *The outline of Sciences*. Changsha: Hunan People's Press.
- Zhao Lingli (1996). *Experimental study on comprehensive aesthetic education*. Chongqing: Southwest China Normal University Press.
- Zhao Lingli (2002). *Principles of Viewpoint structure teaching and technology*. Shanghai: Baijia Press.
- Zhao Lingli (2002). *Practice and principles of aesthetic teaching*. Changchun: Jinlin People' Press.

Zhao Lingli (2003). On the development of cross disciplines in universities and colleges in the 21st century. *Contemporary College Teaching*, 2.

Zhao Lingli (2004). *Cognition of aesthetic concept*. Beijing: Xinhua Press.

Zhao Lingli (2004). *Comprehensive Curriculum of humanities, sciences and arts: science, aesthetics and practice*. Beijing: Zhonghua Press.

(Translated by wang-hong)

PUTTING WORDS TO FORMS: FROM TANS TO GESTALTS

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Abstract

I will report on an online survey conducted to uncover systematic relationships between pictorial and verbal semiotic systems. At the intersection of two rather distinct areas of human cognition – perception (e.g., Boselie, 1997; Leeuwenberg & Boselie, 1988) and communication (e.g., Clark & Wilkes-Gibbs, 1986; Hadelich & Crocker, 2006) – the present study aims at identifying factors which guide the way in which people create figurative expressions.

In the survey, participants (> 280 German native speakers; mean age 24 years; 75 % females) were asked to verbally label 50 tangram silhouettes each by a name or a brief description. The verbal label of a tangram figure should reflect the participant's spontaneous impression but, at the same time, should be specific enough to unambiguously identify that figure from among a set of similar ones. Since each tangram silhouette consists of a particular array of the same seven basic shapes („tans“), the figures were equal in area. However, the tangram figures varied greatly with respect to overall iconicity (as established in a pilot study) and with respect to topological features such as symmetry, convexity, contour, and the orientation of the tan elements (cf. Elffers, 1968; Wang & Hsiung, 1942).

For the analysis (ongoing), the participants' descriptions (24,990 words in total) were transcribed and classified individually and independently by three annotators. In addition to content variables (in the first place, the distribution of semantic categories), surface characteristics of the verbal materials were ascertained (utterance length, distribution of word classes, and the like). By computing Herfindahl measures of concentration, the participants' answers (which reflect the conformity as well as the diversity of figurative thinking) could be statistically related to the mathematical features of the tangram figures (which reflect, in a way, the processing effort required to arrive at a satisfactory interpretation).

In conclusion, the results will shed some light on the cognitive mechanisms that underlie the creative momentum in the generation of gestalt, in the use of figurative language, and in verbal and visual metaphor (Hörmann, 1986; Rickheit, Sichelschmidt & Strohner, 2007). Knowledge of these mechanisms will help practitioners in improving the design and the usability of iconic signs.

Most of us will be familiar with the Rorschach inkblot test, a somewhat controversial, highly interpretive psychodiagnostic tool used to assess a person's thoughts. While people's descriptions of how they interpret a couple of inkblot-like abstract shapes may not be suited to reveal much about the individual's personality traits, they are likely to tell something about cognitive strategies – or, more precisely, about the connection between perception and language.

The Rorschach inkblot test is a drastic instance of everyday occurrences of object recognition: Whenever we encounter visual information which does not readily lend itself to organization, categorization, and interpretation, we have to rely on similarity-based associations, on expectations and prior knowledge as well as on our creative mind to arrive at a viable solution to the question “just what is this?”.

Obviously, linking an abstract icon such as  to an appropriate referent is an intricate process. In the course of visual object recognition, we often have to overcome obstacles due to noise and variance and to fragmentation, ambiguity, distortion, or abstraction. According to the recognition-by-components theory of object perception (Biederman, 1987), the stimulus features that help us most in overcoming such obstacles are the components, the edges, and the concavities of the shapes we process: Identifying the components gives us an idea of the partonomy of a referent object, the edges ensure stability across viewpoints, and the concavities inform us about properties such as contour, colinearity, curvature, and symmetry. Finally, having arrived at a satisfactory solution, we should be able to convey our ideas to others by assigning a verbal designation (usually a noun phrase) to the perceived shape, thus enabling communication about the objects in our environment.

So far, we have focused on the ‘bottom-up’ side of processing – on the perceptual characteristics of the stimuli and the situation. An issue yet to be addressed is the question of how viewers make use of their mental resources – the ‘top-down’ side.

What makes us, for instance, interpret – and accordingly name – an icon like  as something which symbolizes a generic male human in one context, and a waiting pedestrian in a different context? Current theories of object recognition do not provide adequate explanations of conceptual aspects. The verbal designation of the objects perceived has not received extensive treatment to date. So, there is a demand in the cognitive sciences for approaches that accomplish the following: (1) explain how to handle highly abstract or ambiguous stimuli; (2) determine which factors influence the interpretive process; (3) predict the probability of a particular interpretation; and (4) explain the occurrence of particular expressions in verbal designations of a visual form.

This is a point where Gestaltist considerations come into play. In a detailed discussion of the principles that govern the higher processes in object recognition, Leeuwenberg and Boselie (1988) contrasted a ‘likelihood’ principle to a ‘minimum’ principle. The likelihood principle draws on people’s empirical knowledge; it states that the preferred interpretation of a visual form reflects the most likely object or event. In contrast, the minimum principle draws on the structure of the stimuli; it states that people prefer the simplest possible interpretation of a visual form. Invoking Gestalt notions related to ‘prägnanz’ – good continuation, common fate, and similarity – Leeuwenberg and Boselie (1988) argued that likelihood is just a secondary implication of the interpretation process which, in itself, is guided by simplicity. In a similar vein, Chater (1999) argued that the likelihood and minimum principles are indeed equivalent, simplicity being a fundamental principle in cognitive processing anyhow. With reference to observations from a wide range of cognitive domains, including perception, learning and reasoning as well as empirical aesthetics, Chater (1999) pointed out that generally, people prefer the briefest possible representation of the available information – more precisely, they prefer the solution that encodes the data with the least cognitive effort. While there are diverse ways in which encoding effort could be quantified (by recourse to a Bayesian framework, to a Kolmogorov complexity metric, or to decision making heuristics), simplicity appears to be an important guiding principle in making sense of ambiguous or abstract shapes (Buffart, Leeuwenberg & Restle, 1983; Hulleman & Boselie, 1999) – and in

aesthetic judgment as well (Boselie, 1983).

At the same time, the interpretation of visual stimuli marks a point where language should be taken into consideration. The particular verbal labels that a person assigns to referent objects may reveal how she or he has conceptualized those items. Indeed, several psycholinguistic studies of verbal reference have taken up an object recognition task originally introduced by Krauss and Weinheimer (1964). Their key finding was that subjects who had to describe the layout of a set of black-and-white figures tended to shorten their expressions as they repeatedly referred to the same figure. Later experiments have corroborated this finding (Clark & Wilkes-Gibbs, 1986), leading to a pervasive theory of communication which posits that verbal reference is a collaborative process which includes the explicit or tacit establishment of conceptual pacts and which is sensitive both to the actualities of the current situation and to the participants' mutual beliefs (Clark, 1996). As a side effect, Clark and Wilkes-Gibbs (1986) have reported that the participants' verbal designations varied in complexity between the figures: The easiest figure took less than 10 words to specify whereas the most difficult one took more than 26 words per trial. This may reflect differences in the ease of conceptualizing an object. According to Clark and Wilkes-Gibbs (1986), the majority of conceptualizations – as apparent from the referential expressions used – were analog, concise, and holistic in nature: People clearly preferred figurative labels (“...is like a rabbit”) over lengthy lists of features. – The very same task – describing the layout of a set of black-and-white shapes – again showed up in a number of recent experiments on alignment in dialogue (Hadelich & Crocker, 2006) and on joint attention in conversation (Baran, Doğusoy & Çağiltay, 2007). For instance, Dale, Kirkham and Richardson (2011) tracked people's eye movements as they engaged in conversation about silhouette sets, finding that not only the verbal expressions but also the patterns of eye movements of the interlocutors aligned in the course of the experiment.

Altogether then, there is ample evidence in favor of processing economy as a basic cognitive principle. Keeping to simple solutions, which require minimal coding effort and which are intricately tied to an individual's conceptual knowledge, will reduce workload, accelerate processing, enhance robustness, and facilitate communication.

Yet there is one issue that calls for clarification: Is simplicity to be conceived of primarily as a bottom-up notion or as a top-down notion? In other words: Is simplicity an inherent characteristic of the stimulus or is it a characteristic of the cognitive strategies which people employ in conceptualizing that stimulus? If the former were true, we would expect structural properties of the visual stimuli to correlate with structural properties of the verbal expressions people use to refer to them. If, however, the latter were true, we would expect the linguistic structure of the referential expressions to be largely independent of the topological structure of the referent items, varying to a much larger extent along with the individuals concerned.

Here, at the intersection of two rather distinct areas of human cognition – perception and communication – the study in hand aims at identifying factors which affect the way in which people create figurative expressions, and thus, at gaining a deeper insight into visuo-linguistic understanding.

Method

In an online survey, we asked people to verbally label abstract forms. The purpose of this was to obtain a set of meaningful descriptions evoked by seemingly meaningless items – in order to identify diverse classes of objects and classes of imaginative and verbalization strategies. We ran the study using Questback EFS survey ‘unipark’ software. In addition to a few demographic questions, the participants were presented a series of black-and-white shapes; they were to supply a short description of each of these shapes in writing. The instructions said that the verbal designation – a single word or a few words – should reflect the viewer’s spontaneous ideas. The items were presented one at a time in a fixed, quasi-random order. As a reward for completing the survey, participants were given the opportunity to take part in a raffle.

Participants

Altogether, 287 participants took part in the survey; 220 of them completed all the items. All the participants were native speakers of German. all but 10 (96 %) were students (mostly from the humanities and social sciences). Their mean age was 25

years ($s = 5$), and three out of four (77 %) were females.

Materials

Tangram is a dissection puzzle of ancient Chinese origin which became popular during the 19th century. The puzzle consists of seven so-called ‘tans’ – flat standard elements (right-angled triangles of different sizes, a square, and a parallelogram) which were created from splitting up a square and which are to be put together to render different shapes supplied as silhouettes (using all seven pieces, which may not overlap).

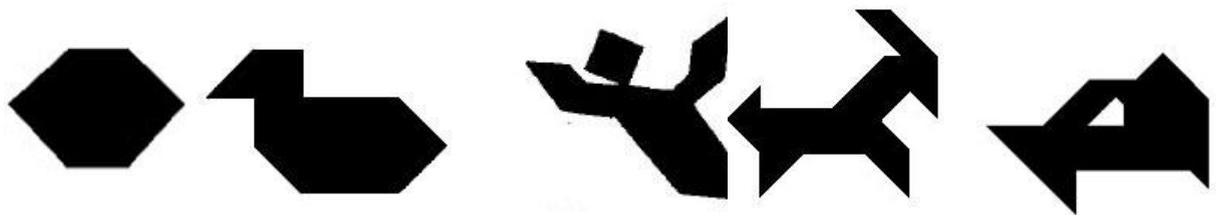


Fig. 1: Sample tangram silhouettes (a) convex, symmetrical; (b) 10-polygonal; (c) non-Eulerian

We selected 50 tangram silhouettes from various compilations, consulting previous studies that had used similar materials (Elffers, 1997; Picon, 2010). Our selection was guided by three considerations. The silhouettes were to cover a range from (seemingly) abstract shapes to shapes which suggest a figural interpretation; they should range from topologically simple forms to topologically complex ones, and they should run the gamut from the easy to the hard in terms of describability.

Indeed, the tangram silhouettes varied greatly with respect to the orientation of the tan components and to topological features such as symmetry or convexity (Wang & Hsiung, 1942). Of the 50 selected tangram silhouettes, 94 % showed Eulerian characteristics (i.e., could be outlined using a single uninterrupted line); 20 % were symmetrical, and 4 % were fully convex (i.e., did not have any indented angles).

Typically, the tangram silhouettes had a 13-polygonal outline ($s = 5$; min = 3; max = 22). For example, a triangle would be considered 3-polygonal (i.e., could be outlined by 3 connecting straight edges). As to the angles, 5 were right, 3 were acute, and 5 were obtuse on average. When setting the hypotenuse of the largest triangular tan equal to 100, the mean perimeter of the tangram silhouettes was 640 units ($s = 162$; min = 383; max = 979).

Results

The survey yielded a corpus of 11,606 referential expressions (24,990 words in total). On average, each referential expression comprised 2.15 words (or 12.91 characters); a relatively low value which is due to the written modality employed in the survey. For example, participants typically described the silhouette given in Fig. (1b) as “duck”, “tangram duck”, “waterfowl” or the like. The descriptions were transcribed and classified individually by three trained annotators who were to come to a consensus on each entry. The primary aspect of classification was conceptual – itemizing the semantic categories that the participants employed in their descriptions. For example, “duck” and “tangram duck” counted as instances of the same category, while “waterfowl” fell into a different category. Hence, we have compiled a list of all the semantic categories used in the descriptions, together with the corresponding frequencies. Though for each tangram item there was a preferred interpretation, the distribution of semantic classes varied: some items showed few categories with high frequency (the silhouette in Fig. 1b was labeled “duck” in 94 % of all 248 cases); others showed a plethora of low-frequency categories. The average number of categories per item was 45 ($s = 22$; min = 8; max = 86). In order to capture the distribution of categories, we computed the Herfindahl index H . H is a measure of concentration widely applied in econometrics. Unlike other measures of concentration, it takes into account the absolute number of categories. The Herfindahl index can range from 0 (a very large number of very infrequent interpretations) to 1 (a very small number of highly frequent interpretations). In our study, the mean Herfindahl index was 0.21 ($s = 0.22$; min = 0.03; max = 0.88).

In order to analyze the connections between topological features of the tangram stimuli on the one hand and linguistic features of the participants’ answers on the other hand, we computed r -type correlation coefficients plus t -tests (with $p < .01$ or adjust for the large number of comparisons). Here are the most important observations:

- Symmetry correlated with the length of the descriptions (number of words: $r = -.369$; $p = .008$): Symmetrical forms took less words to describe than asymmetrical forms ($t(48) = 2.75$; $p = .008$).

- Contour correlated with the length of the descriptions (number of words: $r = .515$; $p = .000$; number of characters: $r = .473$; $p = .001$): The more edges a silhouette had, the longer the descriptions were ($t(36) = 3.53$; $p = .001$).
- Angularity correlated with the length of the descriptions (words: $r = .394$; $p = .005$; characters: $r = .383$; $p = .006$): The more right angles a silhouette had, the longer the descriptions turned out to be ($t(48) = 3.04$; $p = .004$).
- Semantic diversity – as indicated by the number of different categories used in the descriptions – correlated with length (words: $r = .567$; $p = .000$; characters: $r = .544$; $p = .000$): The more different categories people used on a tangram item, the longer the descriptions were ($t(48) = 4.63$; $p = .000$).
- Concentration – as measured by the Herfindahl index – correlated with length (words: $r = -.527$; $p = .000$; characters: $r = -.542$; $p = .000$): The clearer the preference for one particular interpretation was, the shorter were the descriptions ($t(48) = -3.59$; $p = .001$).

Notably, none of the stimulus variables in our study were statistically related to any of the semantic variables (the number or distribution of semantic categories). The only reliable relationships that we found concerned topological features of the visual materials and linguistic surface variables (in the first place, the number of lexemes used).

Discussion

Taken together, this pattern of findings is compatible with the top-down view which emphasizes the relevance of world knowledge, inference, imagination and of people's creative potential in cognitive processing: As regards content, the participants' answers, which reflect the conformity as well as the diversity of interpretations, emerged largely independently from the surface topology of the stimuli. Rather, the semantic categories used suggest that people employ holistic, Gestalt-oriented figurative strategies in making sense of abstract forms. Simplicity, so to speak, is in the mind of the beholder (Hörmann, 1986).

Moreover, the findings point at the importance of processing economy (Rickheit, Sichelschmidt & Strohner, 2007). The regularities in the present study can be explained in terms of minimization of the cognitive effort in interpretation and

dissemination: With those tangram silhouettes that suggest one particular solution, a short verbal expression will suffice to impart this interpretation to other interlocutors. However, in the case of several competing solutions, more elaborate descriptions or justifications may be appropriate, resulting in longer referential expressions (Clark, 1996).

Though the present study stops short of predictions about which interpretation people prefer for the given stimuli under the given circumstances, it sheds some light on the cognitive mechanisms that underlie the creative momentum in figurative thought and in the use of figurative language as well as in verbal and visual metaphor (Glucksberg & McGlone, 2001). Knowledge of such mechanisms will help practitioners to improve the design and the usability of iconic signs. Likewise, cognitive scientists might benefit from focusing on topics such as analogy, iconicity, and imagery from a visuolinguistic point of view.

So, this study is a first step towards going deeper into the relationships that hold between the bottom-up side of processing (governed by the characteristics of the visual materials) and the top-down side (governed by the cognitive resources of the humans concerned) – plus, going deeper into the relationships that hold between the visual world and the world of words.

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References

- Baran, B., Doğusoy, B. & Çağiltay, K. (2007). How do adults solve digital tangram problems? Analyzing cognitive strategies through eye tracking approach. In J.A. Jacko (Ed.), *Human-Computer Interaction. HCI Intelligent Multimodal Interaction Environments* (pp. 555-563). Berlin: Springer. Doi: 10.1007/978-3-540-73110-8_60
- Biederman, I. (1987). Recognition-by-components: A theory of human image

- understanding. *Psychological Review*, 94, 115-147.
- Boselie, F. (1983). Ambiguity, beauty, and interestingness of line drawings. *Canadian Journal of Psychology*, 37, 287-292.
- Buffart, H., Leeuwenberg, E. & Restle, F. (1983). Analysis of ambiguity in visual pattern completion. *Journal of Experimental Psychology: Human Perception and Performance*, 9, 980-1000.
- Chater, N. (1999). The search for simplicity: A fundamental cognitive principle? *Quarterly Journal of Experimental Psychology*, 52A, 273-302.
- Clark, H.H. (1996). *Using Language*. Cambridge: Cambridge University Press.
- Clark, H. H. & Wilkes-Gibbs, D. (1986). Referring as a collaborative process. *Cognition*, 22, 1-39.
- Dale, R., Kirkham, N.Z. & Richardson, D.C. (2011). The dynamics of reference and shared visual attention. *Frontiers in Psychology*, 2, #255. doi: 10.3389/fpsyg.2011.00355
- Elffers, J. (1997). *Tangram. Das alte chinesische Formenspiel*. Cologne: DuMont.
- Glucksberg, S. & McGlone, M.S. (2001). *Understanding figurative language: From metaphor to idioms*. Oxford: Oxford University Press.
- Hadelich, K. & Crocker, M. W. (2006). Gaze alignment of interlocutors in conversational dialogue. In K.J. R  ih   & A.T. Duchowski (Eds.), *Proceedings of the 2006 Symposium on Eye Tracking Research and Applications* (pp. 38). New York: ACM. doi: 10.1145/1117309.1117322
- H  rmann, H. (1986). *Meaning and Context. An Introduction to the Psychology of Language*. New York: Plenum Press.
- Hulleman, J. & Boselie, F. (1999). Perceived shape regularity does not depend on regularities along the contour. *Perception*, 28, 711-724.
- Krauss, R.M. & Weinheimer, S. (1964). Changes in reference phrases as a function of frequency of usage in social interaction. *Psychonomic Science*, 1, 113-114.
- Leeuwenberg, E. & Boselie, F. (1988). Against the likelihood principle in visual form perception. *Psychological Review*, 95, 485-491.
- Picon, D. (2010). *Tangram*. Cologne: Sevenhill-Fleurus.
- Rickheit, G., Sichelschmidt, L. & Strohner, H. (2007). *Psycholinguistik*. T  bingen: Stauffenburg.

Wang, F.T. & Hsiung, C.C. (1942). A theorem on the Tangram. *American Mathematical Monthly*, 49, 596-599. [doi:10.2307/2303340](https://doi.org/10.2307/2303340)

INVESTIGATING THE IMPACT OF TOPOLOGICAL PROPERTIES OF TWO-DIMENSIONAL LAYOUTS ON AESTHETIC PREFERENCE

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Abstract

The starting point of this study is the hypothesis that aesthetic judgements about two-dimensional layouts indirectly inform how functional aspects are evaluated. To test this assumption we investigated whether there is a connection between the topological property of the “intelligibility” of two-dimensional layouts and their aesthetic evaluation. Intelligibility, a criterion from Space Syntax theory, can be regarded as a simplified measure of the functionality of a layout (it is commonly used as an indicator for ease of orientation in an urban layout). In an online survey we collected data from 62 test persons on the aesthetic judgement of different two-dimensional layouts. The analysis of the collected data has shown that, contrary to the hypothesis, no correlation could be found between intelligibility values and the aesthetic evaluation of the tested layouts.

Keywords: Aesthetic Preference, Topological Properties, Visibility Graph Analysis

1. Introduction

In this paper we study a topological property of layouts to ascertain its impact on aesthetic preference. Layout describes, in general, the arrangement of elements in a given context. In architecture and urban design, layout describes the spatial arrangement of elements (such as walls or buildings) in Euclidean space. The evaluation of urban layouts is often undertaken using figure-ground plans which represent a section of a city two-dimensionally, with built-up areas drawn in black

and empty areas (the space between the buildings) shown in white (see Figure 2, top). These plans help architects understand and evaluate the spatial structure of a city (Curdes, 1997). The evaluation often takes place intuitively, and within a very short time, although these plans offer little information about functional criteria. Hillier (1996) claims that the evaluation process of spatial structures is non-discursive to a great extent: humans deal competently with them on a subconscious level, but are not able to verbalise the evaluation criteria used.

Layouts can be analysed in terms of geometric and topological properties. Geometric properties are represented by absolute measures, such as length and width of elements or distances between specific elements. Topological properties are derived from relations between the elements. This makes it possible, for example, to identify the degree of centrality of elements in a layout. Topological properties have acquired particular importance in the analysis and evaluation of urban plans and building floor plans. In empirical studies it was shown that usage patterns (movement flows and land use) in cities correlate strongly with the topological properties (such as the degree of integration) of the spatial structure (see Hillier, 1996).

In the following we will examine whether there is a connection between a particular topological property and the personal aesthetic judgement of two-dimensional layouts. Since the topological properties of a layout are closely related to its functional aspects, the evidence of such a correlation would mean that subjective (aesthetic) judgement of layouts would be closely related to their functional aspects. Such knowledge would be particularly interesting in order to understand the non-discursive character of architectural evaluation processes.

In the field of empirical aesthetics, this kind of study is interesting for two reasons. First, topological properties detect positional relationships between elements. Since studies of aesthetic preference commonly use geometric properties to capture the object properties of test-items (McWhinnie, 1987), topological properties could serve as an interesting supplementary aspect for further investigation. Secondly, the topological properties of structures can be derived completely automatically. The properties of test-items can be captured independently of subjective influences.

2. Visibility Graph Analysis

To calculate the topological properties, the layout must first be converted into a suitable form of representation. This representation is referred to as configuration (Hiller, 1996). A configuration consists of (spatial) elements as well as their relationships to each other and can be converted into a graph. The elements of the configuration provide the nodes and the relationships between the edges of the graph. In this study we use Visibility Graph Analysis (Turner, Doxa, O'Sullivan, & Penn, 2001) to calculate the topological properties of layouts. Here, the layout is divided into a grid which is used to create the visibility graph: the points in the grid represent the elements and thus the nodes and the connections between the elements of the edges of the visibility graph. The latter are based on the mutual visibility of elements: a connection exists if a line can be drawn between two elements that does not intersect the boundary lines of an element in the layout (Figure 1).

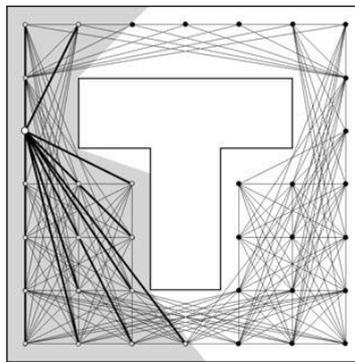


Figure 1: Visibility graph for a layout with a T-shaped element on a square (from Turner et al, 2001)

The visibility graph can be used to calculate different measurements. One differentiates between primary and secondary measures: primary measures can be derived directly from the relationships between the elements while secondary measures can be derived from the correlation of various primary measures. Primary measurements include, for example, *Connectivity* and *Integration*. *Connectivity* indicates how many elements are connected to one element and is a local measurement as it considers only the relationships between an element and its immediate neighbours. *Integration*, however, is a global measure for which the shortest distances of one element to all other are calculated and summed. An element is deemed integrated if the sum of visual distances to all other elements are very short and segregated if these are very long. In the urban context this measure indicates the topological centre of a city, i.e. the part of a city where most people reside and where the highest density of buildings with retail functions is to be found.

As a secondary measurement, we can consider *Intelligibility*. *Intelligibility* describes the degree of correlation between *Connectivity* and *Integration*. *Intelligibility* is described by the coefficient of determination, R^2 , of this correlation. According to Hillier (1996), this coefficient provides information on how legible or understandable a layout is in an urban scale. A layout is therefore more understandable if areas from which one can see a lot (elements with high *Connectivity*) are also spaces that are well integrated (elements with high *Integration*). In Hillier's book "Space is the machine" *Intelligibility* is illustrated using two sample layouts (Figure 2). Both layouts are made of the same elements, but differ in their arrangement. The arrangement of the elements in one layout shows a relatively ordered structure while the other appears chaotic. For both layouts, a topological analysis of the space between the layout-elements was performed. The *Connectivity* and *Integration* values for each element in the configuration (nodes in the graph) were recorded in a scatter diagram. This shows that in the orderly layout (left) there is a strong correlation between the two values, while in the disordered layout (right), the relationship is relatively weak.

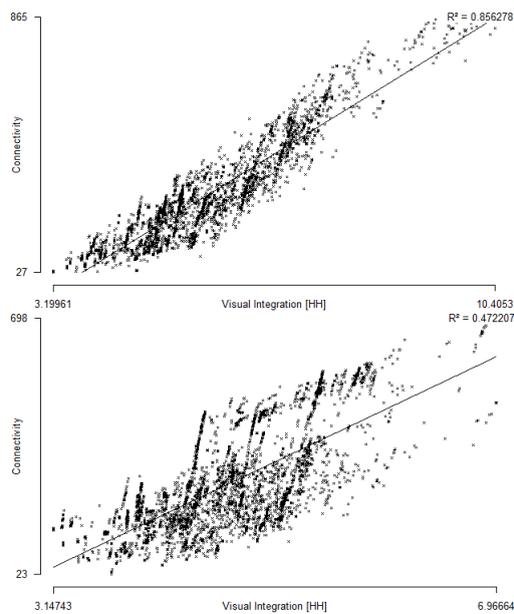
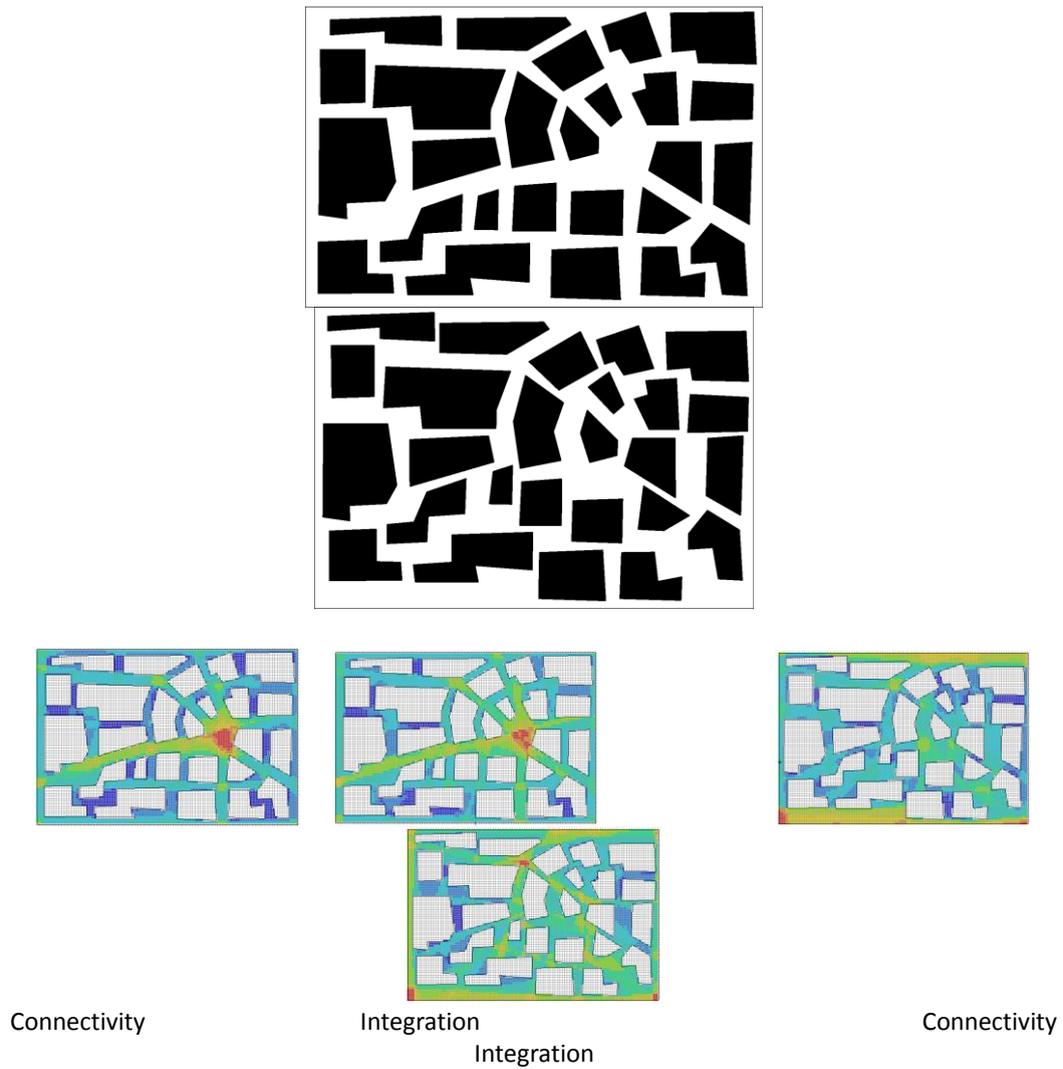


Figure 2: Top: Two layouts with identical elements but different arrangement. Centre: Visibility Graph Analysis showing connectivity and integration. Bottom: Scatter diagrams show the relationship between connectivity and integration (see Hillier, 1996, p.95ff).

The measure of intelligibility of a layout is particularly plausible in the urban context.

Hillier writes: *“Since by definition, urban space at ground level cannot be seen and experienced all at once but requires the observer to move around the system building up a picture of it piece by piece, we might suspect that intelligibility has something to do with the way in which a picture of the whole urban system can be built up from its parts, and more specifically, from moving around from one part to another”* (Hillier, 1996, p.93). Interestingly, the intelligibility of the two layouts in Figure 2 is not only perceived differently from the perspective of an urban observer (pedestrian perspective), but also from the “bird's eye view” where the layout is seen as a whole. In this example the value appears to make statements about the order of a layout on two scales: on the scale of the urban structure and on the scale of the two-dimensional graphics. Since to a certain extent the degree of order in an image affects our aesthetic judgement (Berlyne, 1971), we assume that the value of intelligibility is not only meaningful at a functional level but also at an aesthetic level. To ascertain whether this thesis can be confirmed we conducted an empirical study. The design, implementation and results of this study are presented below.

3. Method

3.1. Participants

62 students and staff at the Bauhaus-University Weimar participated in the study. 43 of these have an artistic background, e.g. training or qualification, while 19 participants stated that their education has no specific artistic background.

3.2. Material

The test-items in this study are abstract layouts in the form of figure-ground images (Figure 3). We used abstract layouts so that images do not appear familiar to the test persons. This is important because it has been found that people’s opinions are influenced by images that are known or familiar (Zajonc, 1968). The images were created using parametric modelling software (Grasshopper for Rhino). A series of algorithms were programmed which permit the production of numerous structurally similar layouts that can be varied systematically. Layouts were generated that look similar in principle but have different topological properties. When generating the layouts we tried to ensure that many factors that could affect aesthetic judgement

remain constant (e.g. symmetries, same number of elements, coverage of the background). The topological property *intelligibility* was calculated for each item (Figure 3).

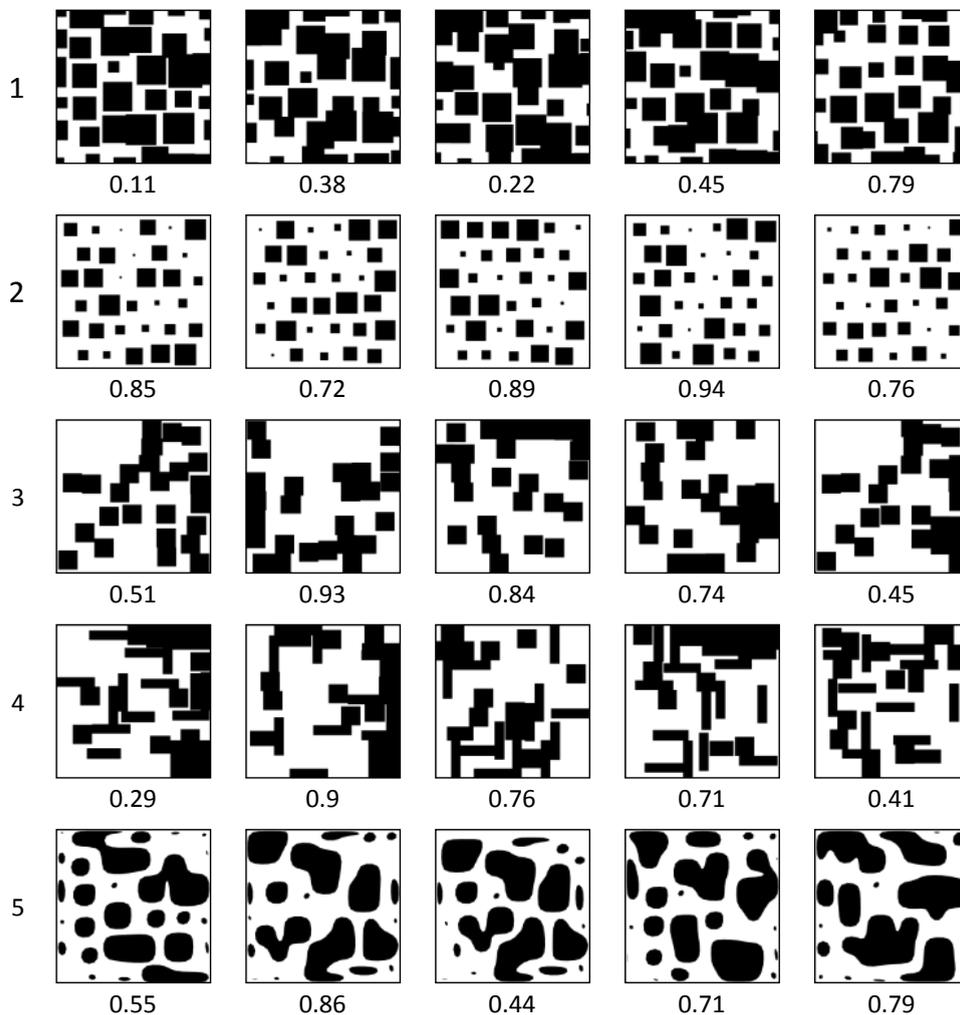


Figure 3: The different item-series with their associated intelligibility values

3.3. Survey

To evaluate the aesthetic rating of the test items, we conducted an online survey which was made available on an university-internal URL for a period of seven days. A questionnaire was created comprising two different test configurations, each with several test series. In the first part of the survey, the test subjects were shown as five rows with five images of layouts. These are shown in Figure 3. The images of a series were displayed together on a single screen and participants were asked to rate them on a scale of 1 “do not like at all” to 5 “like very much” (Figure 5, left). It was possible to rate two or more images with the same rating.

In the second part of the survey we present pairs of images for comparison. This

method was originally introduced by Cohn (1894) and used in his study on the identification of colour preferences. It is considered to be the most adequate method of retrieving value judgements (Taylor et al., 2005). Participants were asked to choose the image of the adjacent pair that they liked most (Figure 5, right). The second part of the survey included a total of eight image pairs (Figure 4).

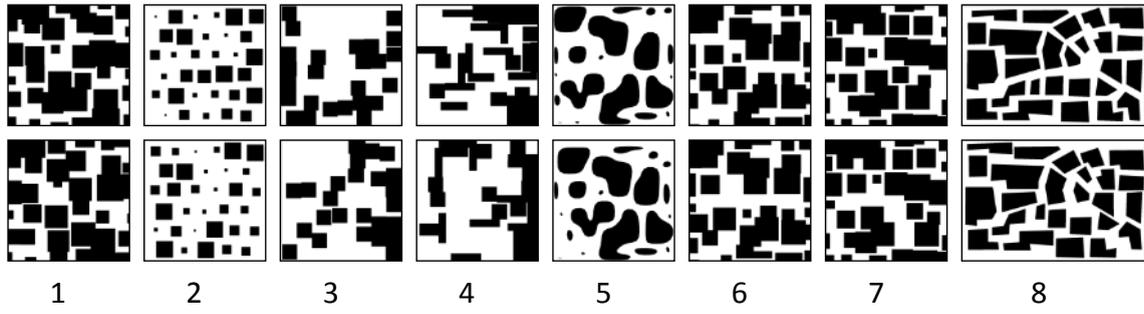


Figure 4: The item-pairs

The arrangement of the items in each test pair and the sequence in which they appeared was randomised. Finally, the subjects were asked to provide some socio-demographic data including age, sex and educational level as well as any background in artistic and creative training in order to take into account the possible impact of design education on aesthetic preferences.

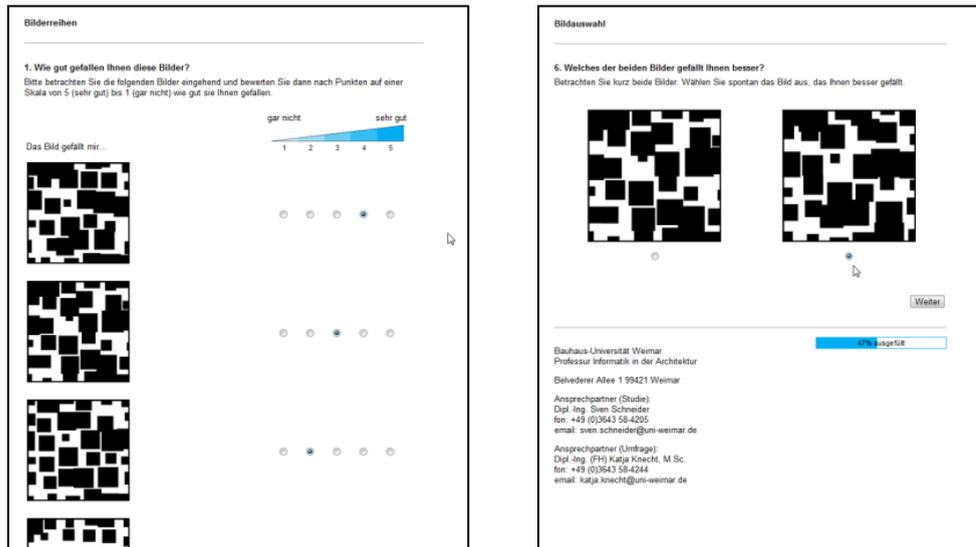


Figure 5: Screenshot of the online questionnaire (left: image-series, right: image-pairs)

4. Evaluation

In this section we look at the relationship between the aesthetic ratings of the items and topological property of intelligibility that result from the survey.

4.1. Image series

In the first part of the survey each layout series was evaluated individually because while on the one hand the different image-styles are directly comparable, it was not always possible to constantly vary the values for *Intelligibility* when generating the image. Thus, there are image sequences in which the values for intelligibility vary widely (between 0.11 and 0.87 in sequence 1) and low (between 0.72 and 0.94 for

sequence 2).

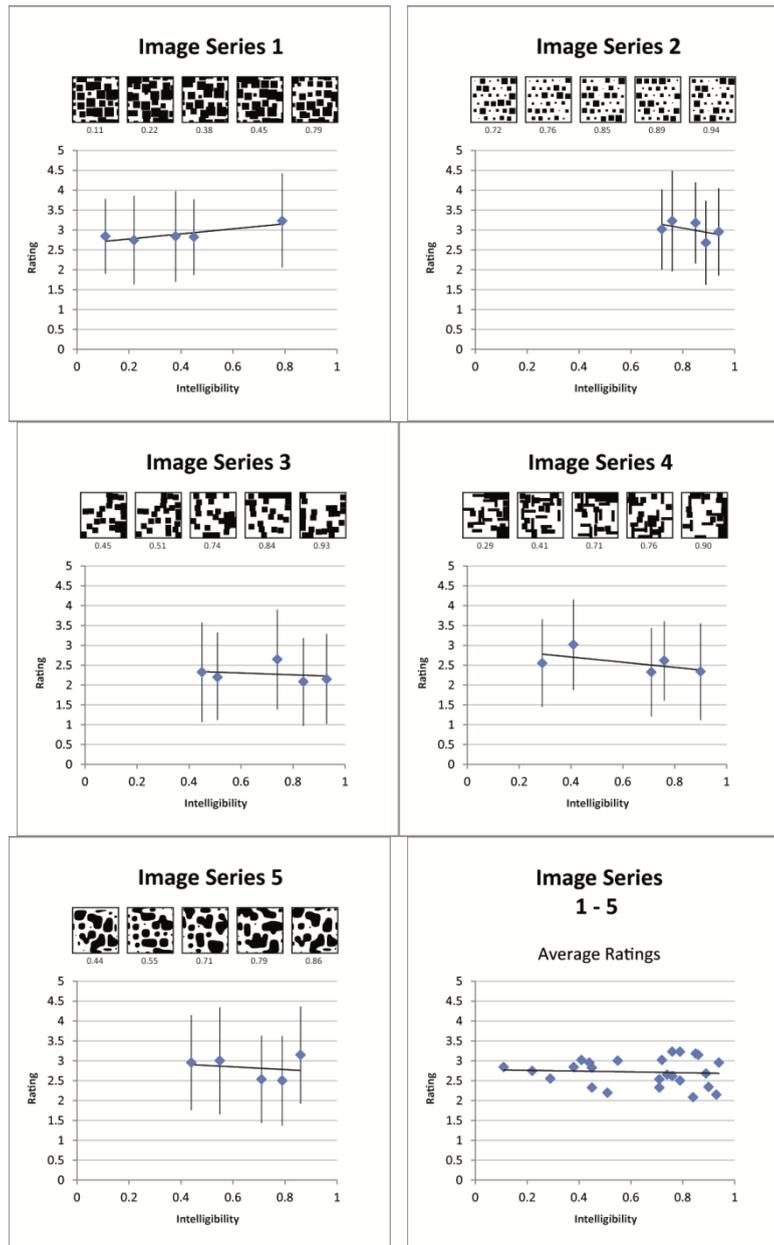


Figure 6: Diagrams for the relationship between aesthetics and intelligibility (Picture series 1 - 5 in Figure 3). In all diagrams the mean values of $n = 62$ individual scores are shown.

In the diagrams 1-5 one can see no correlation between *intelligibility* and the mean values of aesthetic evaluation. Although weak trends can be observed in the single series, the direction of these trend-lines varies in the different series. The average scores of the different items in each test series are very close to the mean value. Furthermore the mean values of the underlying single-assessment are strongly scattered.

In the last diagram in Figure 6, all mean values of the aesthetic ratings of all items were compared with the respective values of intelligibility. It is obvious that there is

no relationship between the intelligibility and the aesthetic evaluation of the various items. The coefficient of determination is $R^2=0.01$. The regression line shows that regardless of the *intelligibility*, the same aesthetic rating for all items can be expected.

The results show no significant difference between subjects with or without artistic backgrounds in the aesthetic evaluation of the items.

4.2. Image Pairs

Overall, 8 layout-pairs were presented to the subjects, where one of the two images had a higher *intelligibility* value than its direct neighbour image. An evaluation of the results shows that no clear preference for layouts with higher intelligibility can be found. The diagram in Figure 7 shows that for items 1-4, the layout with lower intelligibility was preferred and for items 5-8 the layout with higher intelligibility. In Figure 7, the deviation from the mean value of the aesthetic rating is shown. The mean value is 0.5 and expresses an equal preference for the two layouts presented (50% of subjects). The deviation from this mean value lies between 10% and 20% for the items 1-7. Only in item 8 can one see a deviation of about 30%.

The layouts in items 1-4 are layouts that already occurred in the first test configuration (Figure 3). Interestingly, the ratings in the pair-wise comparison deviate from those in the first test configuration. This discrepancy indicates on the one hand that the test persons had problems distinguishing the layouts from one another when rating the items in a series and on the other that the deviations from the mean in Figure 7 are relatively small and could be based on geometric properties of the layouts that could not be kept constant. This becomes more obvious when looking at items 5-8.

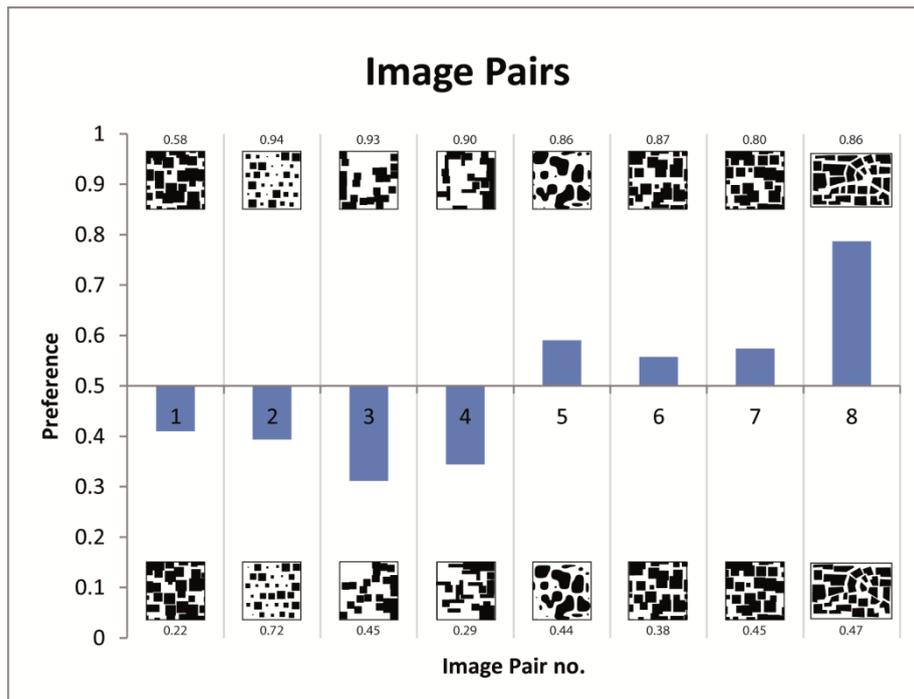


Figure 7: Diagrams for the relationship between aesthetics and intelligibility (image pairs 1-8 in Figure 4). Shown are the deviations from the mean for each pair of images (mean = 0.5). n = 62 individual ratings were recorded.

Items 5-8 consist of layouts whose number and shape of elements is identical, but whose arrangement varies slightly. In all four pairs the layout with the higher intelligibility value was preferred. The intelligibility of the higher-rated layouts is approximately 0.8, that of the other layouts approximately 0.4. Clearly visible is the strong preference for the layout with higher intelligibility in item 8, which is the example of the two fictional urban layouts presented in Section 2. Since in all four items the difference between the intelligibility values is approximately constant and the preference in item 8 is significantly higher, it suggests that factors such as continuous lines, good shape and so on have a strong influence on aesthetic preference and that these factors cannot be adequately represented by the intelligibility value.

5. Interpretation

From the analysis of the collected data in the previous chapter it is clear that in the present study no correlation between *intelligibility* and aesthetic rating could be found. The hypothesis on which this study was founded was that there is such a link. Since we have assumed that the intelligibility value can be interpreted as a crucial measure of the functionality of a layout, the hypothesis aimed to verify that

functional criteria are evaluated in the course of aesthetic judgements. This insight would be of great importance for understanding evaluation processes in architecture and urban design because the evaluation of layouts is based to such a strong degree on intuitive judgements. As in our empirical investigation no such correlation could be found, we can assume that functional aspects should be evaluated separately from aesthetic judgements. In other words, a layout with high aesthetic quality is not necessarily highly functional. In terms of design-evaluation processes the results confirm that an evaluation based primarily on aesthetic considerations does not necessarily lead to satisfactory design results. The role of functional aspects in architectural and urban design processes, as well as the question of how adequately such aspects can be evaluated by professionals needs to be discussed in further studies while not ignoring the integration of aesthetic variables.

6. Acknowledgements

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7. References

- Berlyne, D. E. (1971). *Aesthetics and psychobiology*: Appleton-Century-Crofts.
- Cohn, J. (1894). Experimentelle Untersuchungen über die Gefühlsbetonung der Farben, Helligkeiten und ihre Combinationen. . *Philosophische Studien*, 10, 562-602.
- Curdes, G. (1997). *Stadtstruktur und Stadtgestaltung*: Kohlhammer.
- Hillier, B. (1996). *Space is the machine: a configurational theory of architecture*: Cambridge University Press.
- McWhinnie, H. J. (1987). Some Studies of Aesthetic Preference. *British Journal of Aesthetics*, 27, 76 - 86.
- Taylor, R. P., Spehar, B., Wise, J. A., Clifford, C. W., Newell, B. R., Hagerhall, C. M., . . .

Martin, T. P. (2005). Perceptual and physiological responses to the visual complexity of fractal patterns. *Nonlinear Dynamics, Psychology, and Life Sciences*, 9(1), 89-114.

Turner, A., Doxa, M., O'Sullivan, D., & Penn, A. (2001). From isovists to visibility graphs: a methodology for the analysis of architectural space. *Environment and Planning B: Planning and Design*, 28(1), 103-121.

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology*, 9(1-27).

DOES COMPREHENSION TIME CONSTRAINT AFFECT POETIC APPRECIATION OF METAPHORS?

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Abstract

In this paper, we examine whether metaphor comprehension affects metaphor appreciation by imposing a constraint on the comprehension time of metaphors. In particular, we compare the poetic quality of metaphor appreciation between two types of comprehension classified according to the total time constraint (Gerrig, 1989). The first type of comprehension is time-limited comprehension and governed by the total time constraint. This type corresponds to the situation where people understand metaphors in everyday conversation or other time-limited circumstances. The second type is leisurely comprehension and freed from the total time constraint. This type corresponds to the situation where metaphors (especially poetic metaphors) are enjoyed at leisure.

We predict that poetic appreciation is facilitated when metaphors are comprehended at leisure, and thus the degree of metaphor poeticality perceived is higher in leisurely comprehension than in time-limited comprehension. The rationale behind this prediction is that metaphor appreciation is governed by the process of incongruity resolution (Utsumi,2005,2006).According to the incongruity resolution theory, poetic effects are evoked when an incongruity is perceived in a figurative expression and it is resolved by reinterpretation. Therefore, when people enjoy poetic metaphors at leisure, they are more aware of the incongruity involved in these metaphors, and thus arrive at a richer interpretation to receive a reasonable payoff for the efforts. As a result, people who enjoy metaphors at leisure appreciate them more than those who comprehend metaphors under time pressure.

In order to test this prediction, we conducted a psychological experiment in which 94 undergraduate students comprehended metaphors under time pressure (i.e., the time-limited comprehension condition) or at leisure (i.e., the leisurely comprehension condition). The metaphors used in the experiment were 40 Japanese nominal metaphors of the form “An X is a Y” (e.g., “Love is a game,” “Words are jewels”). In the time-limited comprehension condition, 38 participants were

assigned 20 metaphors, and asked to understand each metaphor as quickly as possible and rate the poeticality of the metaphor on a 7-point scale ranging from 1 (nonpoetic or nonliterary) to 7 (poetic or literary). On the other hand, in the leisurely comprehension condition, 56 participants were assigned five metaphors. They were asked to understand each metaphor at leisure and write down five or more meanings of the metaphor. Afterwards, they were then asked to rate the poeticality of the metaphor on the same 7-point scale.

The result was that metaphors were perceived as significantly more poetic in the leisurely comprehension condition ($M=4.60$, $SD=0.70$) than in the time-limited comprehension condition ($M=4.05$, $SD=0.69$), $t(39) = 4.57$, $p < .0001$. This finding is consistent with the prediction, suggesting that poetic appreciation of metaphors is affected by the process of metaphor comprehension and the incongruity resolution theory provides one possible explanation for the relation between metaphor comprehension and appreciation.

Introduction

Metaphors, such as “My love is a red rose”, are literary devices used to say something about a concept (i.e., the “topic”) figuratively in terms of a different concept (i.e., the “vehicle”). Although how metaphors are comprehended or understood has been examined by the enormous number of cognitive or psychological studies (e.g., Bowdle & Gentner, 2005; Gibbs, 2008; Glucksberg, 2003; Lakoff & Johnson, 1980), there have been relatively few attempts to examine the mechanism of metaphor appreciation. Metaphor appreciation refers to some aesthetic judgment, especially on poetic character of metaphors. Exploring the mechanism of poetic appreciation of metaphor is an important topic of research on literary texts in general and metaphors in particular, because the primary function of metaphor is to evoke poetic or aesthetic effects to the addressee’s mind, as well as to communicate what literal language cannot precisely convey. Recent arguments for “language as sexual ornament” hypothesis (e.g., Miller, 2000) on the origin of language seem to suggest that the importance of poetic or aesthetic function may be also the case with language in general. (Think of a birthday cake that makes your son, daughter or wife happy. Such cake must have not only a good sweet taste, but also beautiful decorations!)

One intriguing question that arises here is whether (and how) metaphor comprehension affects

metaphor appreciation. Early studies (e.g., Gerrig & Healy, 1983; Gerrig, 1989; McCabe, 1983) reported negative findings against the relationship between metaphor comprehension and appreciation. For example, Gerrig and Healy (1983) demonstrated that ratings of metaphor quality (i.e., the goodness of metaphors) had no reliable effect on reading times of the metaphors. McCabe (1983) showed that metaphor quality was not correlated with either ratings of topic-vehicle similarity or ratings of comprehensibility when metaphors were presented in an extended natural context. On the other hand, recent studies (e.g., Utsumi, 2005, 2006; Taira, Kusumi, & Utsumi, 2012) have demonstrated the strong relationship between metaphor comprehension and appreciation. For example, Utsumi (2005) found that metaphor poeticality was correlated with the richness of interpretation (i.e., interpretive diversity). He also suggested that the relationship of comprehension and appreciation may differ between comprehensible and less comprehensible metaphors.

In this paper, we address this question and examine whether metaphor comprehension affects metaphor appreciation by imposing a constraint on the comprehension time of metaphors.

Two Types of Comprehension

Gerrig (1989) argued that metaphor comprehension can be divided into two types according to the total time constraint. The first type of comprehension is time-limited comprehension, which is governed by the total time constraint. This type corresponds to the situation where people understand metaphors in everyday conversation, in the theater, or other time-limited circumstances. The second type is leisurely comprehension and freed from the total time constraint. This type corresponds to the situation where metaphors (especially poetic metaphors) are enjoyed at leisure.

Gerrig (1989) also suggested that different theories or models may be required for the two types of comprehension, implying that the two types may be governed by different processes. It naturally follows that, if metaphor comprehension affects metaphor appreciation, the same metaphors would be appreciated differently depending on whether they are experienced in a time-limited circumstance or enjoyed at leisure. On the other hand, if metaphor comprehension and appreciation are independent processes, metaphors would be appreciated in the same fashion regardless of comprehension type.

Hypothesis

In this paper, we compare the poetic quality of metaphor appreciation between the two types of comprehension. On the basis of the empirical findings obtained by our recent studies (Utsumi, 2005, 2006; Taira et al., 2012), we argue that metaphor comprehension affects metaphor appreciation, and consequently the same metaphors are appreciated differently between the two types of comprehension.

Specifically, we predict that poetic appreciation is facilitated when metaphors are comprehended at leisure, and thus the degree of metaphor poeticality

perceived is higher in leisurely comprehension than in time-limited comprehension. The rationale behind this prediction is that metaphor appreciation is governed by the process of incongruity resolution (Utsumi, 2005, 2006). According to the incongruity resolution theory, poetic effects are evoked when an incongruity is perceived in a figurative expression and it is resolved by reinterpretation. Therefore, when people enjoy poetic metaphors at leisure, they are more aware of the incongruity involved in these metaphors, and thus arrive at a richer interpretation to receive a reasonable payoff for the efforts. As a result, people who enjoy metaphors at leisure appreciate them more than those who comprehend metaphors under the total time constraint.

Method

Participants

Ninety-four undergraduate students of the University of Electro-Communications participated in the experiment as volunteers. All participants were native speakers of Japanese.

Materials

Forty Japanese nominal metaphors of the form “An X is a Y,” which were used in our previous experimental study (Utsumi, 2005), were used for this experiment. These metaphors were divided into 10 groups, and four metaphors in each group were constructed from all possible pairings of two topic words with two vehicle words. For example, from the two topics “life” (“jinsei” in Japanese) and “lover” (“ai” in Japanese), and the two vehicles “journey” (“tabi” in Japanese) and “game” (“ge-mu” in Japanese), the following four metaphors were created: “Life is a journey” (“Jinsei wa tabi da”), “Life is a game” (“Jinsei wa ge-mu da”), “Love is a journey” (“Ai wa tabi da”), “Love is a game” (“Ai wa ge-mu da”). Table 1 provides a list of 10 groups of topic-vehicle pairs from which 40 metaphors were constructed.

Table 1: Topic-vehicle pairs from which metaphors for the experiment were constructed

Group	Topic	Vehicle
1	life (jinsei), love (ai)	journey (tabi), game (ge-mu)
2	anger (ikari), sleep (nemuri)	sea (umi), storm (arashi)
3	perfume (ko-sui), star (hoshi)	bouquet (hanataba), ice (kooori)
4	sky (sora), eye (me)	mirror (kagami), lake (mizuumi)
5	lover (koibito), hope (kibou)	sun (taiyo), rainbow (niji)
6	child (kodomo), words (kotoba)	jewelry (houseki), water (mizu)
7	the aged (roujin), voice (koe)	deadwood (kareki), doll (ningyou)
8	character (seikaku), marriage (kekkon)	fire (hi), stone (ishi)
9	death (shi), anxiety (fuan)	night (yoru), fog (kiri)
10	time (jikan), memory (omoide)	money (okane), arrow (ya)

Note. The original Japanese expressions used in the experiment are shown in parentheses, preceded by their literal English translations.

Procedure

A between-participants design was used with each participant rating metaphors in only one of the two conditions, i.e., a time-limited comprehension condition and a leisurely comprehension condition.

In the time-limited comprehension condition, 38 participants were assigned two metaphors that shared neither vehicles nor topics (e.g., “Anger is the sea” and “Sleep is a storm”) from each of the 10 groups; therefore, each participant was assigned 20 metaphors from the total of 40. Metaphors of each group were counterbalanced across participants such that they were rated by 19 participants. The presentation order of metaphors was randomized for each participant. Participants in this condition were asked to understand each metaphor as quickly as possible and rate the poeticity of the metaphor on a 7-point scale ranging from 1 (nonpoetic or nonliterary) to 7 (poetic or literary). In addition, they were asked to rate the comprehensibility of the metaphor on a 7-point scale ranging from 1 (not at all comprehensible) to 7 (extremely comprehensible).

In the leisurely comprehension condition, 56 participants were assigned five metaphors. Metaphors were counterbalanced across participants such that they were

rated by seven participants. The presentation order of metaphors was randomized for each participant. Participants in this condition were asked to understand each metaphor at leisure and write down at least five meanings of the metaphor. Afterwards, they were asked to rate the poeticality and comprehensibility of the metaphor on the same 7-point scales as in the time-limited comprehension condition.

Result and Discussion

For each metaphor and condition, the poeticality and comprehensibility ratings were averaged across participants. The mean comprehensibility rating across 40 metaphors was 3.76 (SD=1.23) in the time-limited comprehension condition and 4.14 (SD=1.16) in the leisurely comprehension condition. A paired t-test revealed that metaphors were significantly easier to understand in the leisurely comprehension condition than in the time-limited comprehension condition, $t(39) = 3.52, p < .01$. This result indicates that this experiment was successful in manipulating the participants' mode of comprehension; in the leisurely comprehension condition, they indeed took much time to understand metaphors, and as a result they found the same metaphors easier to understand

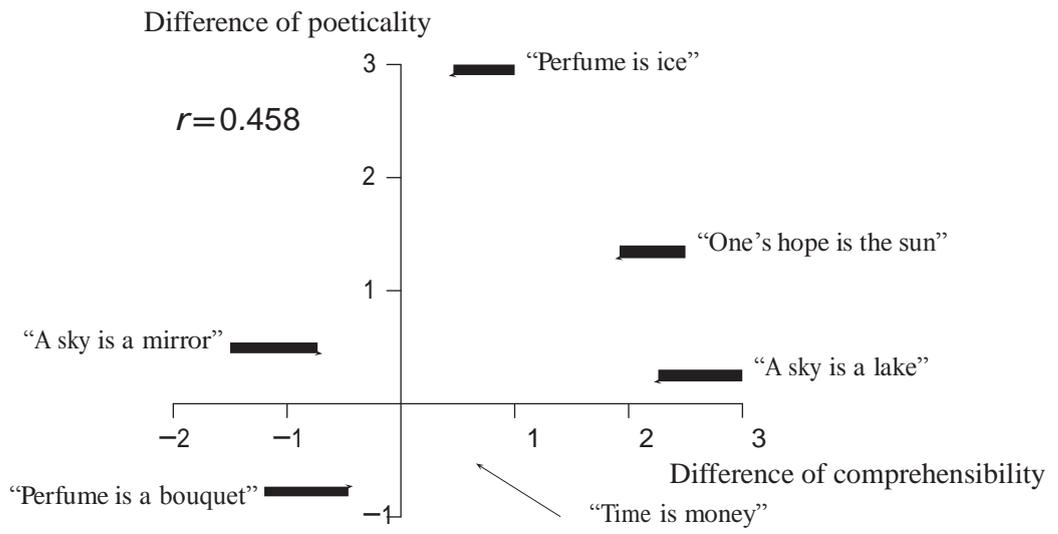


Figure 1: A scatterplot of comprehensibility difference and poeticality difference

as compared to the time-limited comprehension condition.

The mean poeticality rating across 40 metaphors was 4.05 (SD=0.69) in the time-limited comprehension condition and 4.60 (SD=0.70) in the leisurely comprehension condition. A paired t-test revealed that metaphors were perceived as significantly more poetic in the leisurely comprehension condition than in the time-limited comprehension condition, $t(39) = 4.57, p < .0001$. This finding is consistent with the prediction, suggesting that poetic appreciation of metaphors is affected by the process of metaphor comprehension and the incongruity resolution theory provides one possible explanation for the relation between metaphor comprehension and appreciation.

To further confirm whether an increase in comprehensibility of an individual metaphor contributes to the increase in poeticality of that metaphor, we also analysed a correlation between comprehensibility change and poeticality change. Figure 1 shows a scatterplot of comprehensibility difference and poeticality difference for all the 40 metaphors. These difference values were calculated by substituting the mean rating in the time-limited comprehension condition from that in the leisurely comprehension condition. For example, in the case of the metaphor “One’s hope is the sun,” its mean comprehensibility and poeticality rating increased by 1.80 and 1.27 when it was understood at leisure, as compared to the time-limited comprehension condition.

As Figure 1 shows, poeticality difference was positively correlated with comprehensibility difference. Although there are some exceptions (e.g., “A sky is a mirror,” “Time is money”), metaphors whose comprehensibility increased in the leisurely comprehension condition were perceived as more poetic, and metaphors whose comprehensibility decreased were rated as less poetic. A correlation coefficient between two differences was $r = .458$ and statistically significant ($p < .01$). This

result obviously indicates that metaphors are appreciated more poetically if they are easier to comprehend and provides empirical evidence for the view that metaphor comprehension affects metaphor appreciation.

Concluding Remarks

In this paper, we have demonstrated that comprehension time constraint affected poetic appreciation of metaphors; metaphors were appreciated more poetically when they were comprehended at leisure than when comprehended in a time-limited circumstance. This finding implies that metaphor appreciation is affected by the comprehension process and it is consistent with the incongruity resolution view of poetic appreciation (Utsumi, 2005, 2006). Future work includes exploring the cognitive processes of two types of comprehension and developing a unified theory of poetic appreciation of several figurative languages and aesthetic judgment in general (e.g., Leder, Belke, Oeberst, & Augustin, 2004).

Acknowledgments

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References

- Bowlde, B. & Gentner, D. (2005). The career of metaphor. *Psychological Review*, 112(1), 193–216.
- Gerrig, R. (1989). Empirical constraints on computational theories of metaphor: Comments on Indurkha. *Cognitive Science*, 13, 235–241.
- Gerrig, R. & Healy, A. (1983). Dual processes in metaphor understanding: Comprehension and appreciation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 9(4), 667–675.
- Gibbs, R. W. (Ed.). (2008). *The Cambridge Handbook of Metaphor and Thought*. Cambridge University Press.

- Glucksberg, S. (2003). The psycholinguistics of metaphor. *Trends in Cognitive Sciences*, 7(2), 92–96.
- Lakoff, G. & Johnson, M. (1980). *Metaphors We Live By*. The University of Chicago Press.
- Leder, H., Belke, B., Oeberst, A., & Augustin, D. (2004). A model of aesthetic appreciation and aesthetic judgments. *British Journal of Psychology*, 95, 489–508.
- McCabe, A. (1983). Conceptual similarity and the quality of metaphor in isolated sentences versus extended contexts. *Journal of Psycholinguistic Research*, 12(1), 41–68.
- Miller, G. (2000). *The Mating Mind: How Sexual Choice Shaped the Evolution of Human Nature*. New York: Doubleday.
- Taira, T., Kusumi, T., & Utsumi, A. (2012). Individual's process of metaphor interpretations and interestingness cognition. In *Proceedings of the 34th Annual Meeting of the Cognitive Science Society (CogSci2012)*.
- Utsumi, A. (2005). The role of feature emergence in metaphor appreciation. *Metaphor and Symbol*, 20(3), 151–172.
- Utsumi, A. (2006). A cognitive approach to poetic effects of rhetorical figures: Toward a unified theory of cognitive rhetoric. In *Proceedings of the 19th Congress of the International Association of Empirical Aesthetics (IAEA2006)*, pp. 413–417.

A MULTI-LEVEL RE-ANALYSIS OF THE “SWAN SONG” EFFECT IN CLASSICAL MUSIC

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Abstract

Two key questions in the psychology of the arts concern how creativity unfolds over the lifespan and the extent to which individuals differ in their creativity trajectories. Many metrics of creativity, such as masterpiece quality (Kozbelt, 2011), show a single-peaked age function that starts low, increases for a time, and diminishes later in life. However, there is also evidence to suggest that classical composers may enjoy a revival of creativity when approaching death: in a quantitative analysis of 1,919 works by 172 classical composers, Simonton (1989) suggested a swan song effect, whereby composers in their very last years show a tendency to produce compositions that are shorter and less melodically original, but more critically acclaimed.

The current study attempted to refine Simonton’s study using 16,296 melodies from 2,263 works by 58 eminent composers, re-analyzed by hierarchical linear modeling (HLM), which better treats the nested structure of the data and allows for individual trends to be disentangled, compared to multiple regression (Kozbelt & Meredith, 2010). As in Simonton (1989), here overall linear, quadratic, and cubic age effects were first removed from five variables for each composition: mean melodic originality, standard deviation of melodic originality, duration, expert quality ratings (Halsey, 1976), and recording counts. These residuals were used as independent variables to predict two outcome measures: continuous linear time until death and exponential time until death. Since the exponential measure is sensitive to change only in the last few years of life, the swan song effect should be evident by significant effects only on that outcome variable.

HLM results showed only mild and mixed evidence for the swan song effect. Marginally reliable results were found on the exponential time until death for residual melodic originality, $t(57) = -1.80$, and duration, $t(57) = 1.78$, both $p = .08$: that is, works written near death had less original melodies but longer durations. Level-2 HLM results indicated that longer-lived composers showed a marginally less negative

relation between melodic originality mean and exponential time until death ($p = .08$) and a more negative relation between duration and exponential time until death ($p = .008$). No other effects were reliable. Isomorphic follow-up regression analyses were also done for each of the 58 composers individually; interestingly not one case of the swan song effect as described by Simonton was found in these analyses either.

Several decades of empirical research has shown that the longitudinal creative productivity of elite creators in various artistic and scientific domains tends to follow an inverted backwards J-shaped trajectory (Simonton, 1997). Generally speaking, the output of creators tends to start low, quickly rise, often peak around age 40, then decline more slowly until death. However, there is also evidence to suggest that classical music composers may divert from this typical trajectory and enjoy a resurgence of creativity at the end of their lives. In the only quantitative study of this so-called “swan song” phenomenon, Simonton (1989) examined the possibility that the nature and quality of composer’s works change in systematic ways as they approach death. Specifically, composers may ruminate about the end of their creative enterprise, and this might ignite motivation to generate great final works that embody their creative legacy.

In his study, Simonton (1989) used a sample of 1,919 works by 172 classical composers and synchronized the careers of each composer by age at death. Simonton identified five characteristics of each composition, which served as independent variables in multiple regression analyses that would predict either linear or exponential time counting down to death. The independent variables were *melodic originality*, *melodic variation*, *duration*, *aesthetic significance*, and *repertoire popularity*. For a given theme, *melodic originality* was operationalized as an average of the transitional probabilities of the first six notes of a melody, using entries in thematic dictionaries by Barlow and Morgenstern (1948, 1976), which contain over 18,000 musical themes encompassing virtually the entire repertoire of the Western musical tradition; originality scores for all themes in a work were averaged to yield a point estimate of the melodic originality of each work. Similarly, *melodic variation* was simply the standard deviation of the melodic originality scores of themes within a given work. *Duration* was operationalized as the length of the work’s performance time. *Aesthetic significance* scores for each work were derived from ratings by Halsey (1976), who used a 5-point scale representing the consensus of music critics, which ranged from ‘masterpiece’ to ‘flawed.’ Finally, *repertoire popularity* was

operationalized by a composite citation measure from various musical reference sources. For each of the five variables, overall linear, quadratic, and cubic age effects were also statistically removed, to guard against the possibility that any observed effects were due simply to general age trends, rather than being specifically end-of-life effects. Finally, Simonton also included two control variables, for composer eminence (or importance in music history) and overall productivity (measured by number of themes in Barlow & Morgenstern, 1948, 1976).

Using these methods, Simonton claimed to have quantitatively demonstrated the existence of the “swan song” effect, whereby composers’ last works are more aesthetically significant, of a shorter duration, and less melodically original. However, this claim is problematic, for several reasons. Perhaps most importantly, his analysis was done using standard multiple regression, which assumes that each data point in the analysis is independent; however, datasets with a highly nested structure – like Simonton’s – violate this assumption, since musical compositions are nested within different composers and thus are not independent. This issue is compounded by the fact that the distribution of elite creativity is generally very positively skewed (Murray, 2003), such that a small number of persons dominate the distribution; thus, what are touted as general effects may be attributable to just a few individuals. Along these lines, it is almost certainly not the case that all 172 composers in Simonton’s sample actually composed to the very end of their lives. Indeed, those who stopped producing new work long before death should probably not be considered in an end-of-life context.

These problems can be resolved by a multi-level statistical approach, such as Hierarchical Linear Modeling, or HLM (Raudenbusch & Bryk, 2002; Silvia, 2007). Because in HLM each creator is in some sense analyzed separately, HLM maintains independence of the data and equally weights the contribution of each creator, obviating the problem of a positively skewed distribution of achievement. As a natural consequence, individual differences between creators can potentially be accounted for (though in this brief report we do not focus on this aspect of the analyses, which in any case were not hugely informative). Previous research has successfully applied HLM to various aspects of classical composers’ longitudinal creativity (Kozbelt, 2008, 2011; Kozbelt & Meredith, 2011). Here we apply HLM to a data set paralleling that of Simonton’s (1989) “swan song” study, in order to test its robustness.

Method

Since our basic unit of analysis was musical works (rather than themes), and given our statistical methods, which require fitting regression functions to individual composers, composers with fewer than six works could not be analyzed. In the end, our dataset consisted of 2,270 accurately datable works by 57 composers (which collectively consisted of 16,284 melodies). Works by these composers encompass almost the entirety of the standard classical repertoire (see Moles, 1958/1966).

As in Simonton's (1989) study, we used the same five variables to identify relevant characteristics of musical compositions – *melodic originality*, *melodic variation*, *performance duration*, *aesthetic significance*, and *repertoire popularity* – operationalized in virtually the same ways as Simonton, and with *performance duration* and *repertoire popularity* both ln-transformed to normalize the distributions. We likewise removed overall linear, quadratic, and cubic age effects from each of the five independent variables for some of our analyses. Similarly, we used two dependent measures, *linear time until death* and *exponential time until death* ($\text{exponential time until death} = e^{\text{linear time until death}}$), as in Simonton's original study. As noted above, variability in the regression terms between composers can potentially be explained by composer-level variables incorporated into the Level-2 analysis, but this set of (rather inconclusive) results is not reported here.

Results

Four sets of HLM Level-1 analyses are reported. The first uses the five composition characteristic variables (*melodic originality*, *melodic variation*, *performance duration*, *aesthetic significance*, and *repertoire popularity*) to predict *linear time until death*, without incorporating any age variable controls; the second is identical, except that age controls for the five composition characteristic variables are introduced, as described above. The third uses the five composition characteristic variables to predict *exponential time until death*, without incorporating any age variable controls; the fourth repeats this analysis, adding age controls for the five composition characteristic variables. Finally, regression analyses of individual composers (again using *linear* and *exponential time until death* as the dependent measures, both with and without age controls) are also reported, as a way of looking

for further evidence of the swan song effect.

Linear time until death

In the first set of analyses, the five composition characteristic variables were used to predict *linear time until death*, initially without incorporating any age variable controls. The Level-1 HLM model explained 11.4% of the variability in *linear time until death* and yielded the following results: for the *intercept* term, $b = -28.43$, $SE = 2.09$, $t = -13.57$, $p < .000$, for the *melodic originality* term, $b = 0.35$, $SE = 0.29$, $t = 1.18$, *n.s.*, for the *melodic variation* term, $b = 0.20$, $SE = 0.37$, $t = 0.54$, *n.s.*, for the *ln-transformed performance duration* term, $b = 0.68$, $SE = 0.29$, $t = 2.33$, $p = .023$, for the *aesthetic significance* term, $b = 1.21$, $SE = 0.24$, $t = 4.98$, $p < .001$, and the *ln-transformed repertoire popularity* term, $b = -0.37$, $SE = 0.37$, $t = -0.98$, *n.s.* (all $df = 56$). Thus, of the Level-1 variables, only *ln-transformed performance duration* and *aesthetic significance* showed any statistically reliable effects in predicting *linear time until death*, with *performance duration* showing a positive effect (i.e., later works having a longer duration), which is in the opposite direction compared to that found by Simonton (1989). The random effects of the Level-1 model showed great inter-composer variability in the *intercept* ($p < .001$) and the other independent variables, each $p < .01$, except *melodic variation*, $p = .055$.

To probe for swan-song effects another way, we next removed linear, quadratic, and cubic age effects from each of the five composition characteristic variables, using coefficients derived from Level-1 HLM models to compute residuals for each composition characteristic variable. The residuals were then used as the independent variables in another HLM analysis. Recall that this age-controlled analysis tests the robustness of the previous set of Level-1 results, since the reliable effects for *ln-transformed performance duration* and *aesthetic significance* may be due to overall age effects that have nothing to do with the swan song phenomenon *per se*.

The Level-1 model explained 9.9% of the variability in *linear time until death* and yielded the following coefficients: for the *intercept* term, $b = -25.56$, $SE = 1.75$, $t = -14.55$, $p < .001$, for the *residual melodic originality mean* term, $b = -0.07$, $SE = 0.34$, $t = -0.22$, *n.s.*, for the *residual melodic variation* term, $b = 0.48$, $SE = 0.40$, $t = 1.18$, *n.s.*, for the *residual ln-transformed performance duration* term, $b = -0.60$, $SE = 0.35$, $t = -1.69$ *n.s.*, for the *residual aesthetic significance* term, $b = 0.08$, $SE = 0.32$, $t = 0.25$, *n.s.*, and the *residual ln-transformed repertoire popularity* term, $b = -0.34$, $SE = 0.39$, $t = -0.87$, *n.s.* (all $df = 56$). Thus, none of the age-controlled Level-1 variables

showed any statistically reliable effects in predicting *linear time until death*. The random effects of the Level-1 model again showed great inter-composer variability in the *intercept* ($p < .001$) and each of the other five independent variables, each $p < .03$.

The pattern of reliable Level-1 effects does little to provide a coherent theoretical picture of the swan song effect. Moreover, as Simonton (1989) noted, effects that are truly uniquely situated at the end of creators' lives ought to be evident mainly when exponential, rather than linear, time to death serves as the dependent variable.

Exponential time until death

To pursue this issue, we turn next to Level-1 HLM analyses of *exponential time until death*, which were structurally identical to that of *linear time until death* reported above. As before, the initial analysis was conducted without any age controls. The Level-1 fixed effects explained 7.3% of the variability in *exponential time until death* but yielded largely non-significant coefficients. Specifically, for the *intercept* term, $b = 0.001$, $SE = 0.006$, $t = 0.21$, *n.s.*, for the *melodic originality* term, $b = -0.001$, $SE = 0.002$, $t = -0.72$, *n.s.*, for the *melodic variation* term, $b = 0.003$, $SE = 0.004$, $t = 0.74$, *n.s.*, for the *ln-transformed performance duration* term, $b = 0.008$, $SE = 0.002$, $t = 2.91$, $p = .006$, for the *aesthetic significance* term, $b = 0.001$, $SE = 0.001$, $t = 1.24$, *n.s.*, and for the *residual ln-transformed repertoire popularity* term, $b = -0.003$, $SE = 0.004$, $t = -0.87$, *n.s.* (all $df = 56$). Thus, only *ln-transformed performance duration* showed a reliable effect – positive, as it was in the isomorphic analysis of *linear time until death*. Contrary to Simonton's (1989) finding for *exponential time until death*, we observed no decrease in melodic originality or performance duration and no increase in aesthetic significance in the works of composers' last few years of life.

In contrast to the analyses of *linear time until death*, the random effects from the Level-1 model indicated that none of the five independent variables showed any significant variability to model using the Level-2 variables. This is almost certainly due to the fact that only a rather small subset of the composers continued to write music into the very last few years of their lives, where the dependent measure of *exponential time until death* showed any real variability (and thus scope to pick up on correlations). In general, since most the composers' outputs occupied the range of exponential scores that hardly varied at all, the analytic framework of HLM, which seeks to model variability across different individuals, unfortunately does not apply

very well – despite its capacity to handle nested data better than a technique like standard multiple regression.

However, to complete the series of analyses, *exponential time until death* was also predicted by age-controlled composition characteristics. Here the Level-1 fixed effects yielded uniformly non-significant coefficients for the five independent variables. Specifically, for the *intercept* term, $b = 0.01$, $SE = 0.004$, $t = 3.58$, $p = .001$, for the *residual melodic originality mean* term, $b = -0.004$, $SE = 0.002$, $t = -1.79$, *n.s.*, for the *residual melodic variation* term $b = 0.006$, $SE = 0.004$, $t = 1.29$, *n.s.*, for the *residual ln-transformed duration* term, $b = 0.004$, $SE = 0.002$, $t = 1.78$, *n.s.*, for the *residual aesthetic significance* term, $b = 0.00$, $SD = 0.00$, $t = -0.10$, *n.s.*, and for the *residual ln-transformed repertoire popularity* term, $b = -0.002$, $SE = 0.004$, $t = -0.54$, *n.s.* (all $df = 56$). Random effects showed great individual variability only in the *intercept* ($p < .001$). None of the other five independent variables showed any significant variability, almost certainly for the same reason described above.

The overall pattern of results in the HLM analyses strongly suggests the putative “swan song” effect is spurious: the Level-1 effects were mostly rather weak and did not survive control for overall age effects, and the effect of performance duration is in the opposite direction from that found by Simonton (1989). Moreover, the exponential outcome measure did not show any evidence of any effects being localized to composers’ final few years of life. Does this mean that the swan song effect does not apply to any composers at all? How then to explain Simonton’s (1989) findings? In principle, the swan song effect might apply only to a few prolific composers who could dominate a multiple regression-style analysis but whose impact is attenuated in the context of HLM.

Analyses of individual composers

In a final concerted effort to detect a swan song effect, we thus conducted four sets of multiple regression analyses on each individual composer. The analyses echo the four sets of Level-1 HLM analyses described above. The first two sets of analyses used *linear time until death* as the outcome measure: one with no age controls for the five composition characteristic independent variables, and one implementing age controls for each independent variable using coefficients taken from the Level-1 HLM analyses of the entire sample (rather than coefficients computed on each individual composer, which would likely overfit the data and leave little scope for detecting

effects on the outcome measure). The last two sets of analyses were isomorphic to these but used *exponential time until death* as the outcome measure.

The reliable effects were relatively sparse and seldom mapped onto the pattern found by Simonton. Indeed, strikingly, there was not a single instance of a composer who shows a consistent swan song effect in even one of the multiple regression analyses, let alone all four. In sum, little evidence was found supporting the existence of the “swan song” phenomenon.

Discussion

In this study we attempted to replicate and extend Simonton’s (1989) study of end-of-life changes in the creativity of classical composers using a comparable database but a more appropriate statistical technique, HLM. Overall, our findings strongly suggest the putative “swan song” effect is spurious. Reliable effects were relatively sparse, sometimes in the opposite directions as found by Simonton, and not confined to the exponential time until death measure. Moreover, even at the individual level of analysis, no consistent instances of swan song-like effects were found, suggesting that Simonton’s findings were not driven by consistent effects within a few productive (and thus impactful) composers. The reasons for the discrepant results are unclear. Perhaps the most likely explanation concerns the greater statistical power of Simonton’s approach, which (albeit inappropriately) pooled almost 2,000 compositions into a single set of analyses, such that very small effects could be found to be statistically reliable. In any case, our results argue against the robustness of Simonton’s findings. While it is possible that other operationalizations of late-life creativity could yield reliable findings in future analyses, for the moment, our results represent a swan song for the “swan song” phenomenon.

References

- Barlow, H., & Morgenstern, S. (1948). *A dictionary of musical themes*. New York: Crown.
- Barlow, H., & Morgenstern, S. (1976). *A dictionary of opera and song themes*. New York: Crown.
- Ford, G. (Ed.) (2003). *The RED classical catalog*. London: RED.
- Halsey, R.S. (1976). *Classical music recordings for home and library*. Chicago:

American Library Association.

- Kozbelt, A. (2008). Longitudinal hit ratios of classical composers: Reconciling “Darwinian” and expertise acquisition perspectives on lifespan creativity. *Psychology of Aesthetics, Creativity, and the Arts*, 2, 221-235.
- Kozbelt, A. (2011). Age and aesthetic significance in classical music: A multi-level reanalysis of Halsey’s (1976) ratings. *Empirical Studies of the Arts*, 29, 129-148.
- Kozbelt, A., & Meredith, D. (2011). Composer age and melodic originality: A hierarchical linear modeling approach. *International Journal of Creativity and Problem Solving*, 21, 63-79.
- Moles, A. (1966). *Information theory and esthetic perception* (J. E. Cohen, Trans.). Urbana, IL: University of Illinois Press. (Original work published 1958).
- Murray, C. (2003). *Human accomplishment: The pursuit of excellence in the arts and sciences, 800 B.C. to 1950*. New York: HarperCollins.
- Raudenbusch, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Application and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Silvia, P. J. (2007). An introduction to multilevel modeling for research on the psychology of art and creativity. *Empirical Studies of the Arts*, 25, 1-20.
- Simonton, D., K. (1989). The swan song phenomenon: Last-works effects for 172 classical composers. *Psychology and Aging*, 1, 42-47.
- Simonton, D. K. (1997). Creative productivity: A predictive and explanatory model of career landmarks and trajectories. *Psychological Review*, 104, 66–89.

AN APPROACH TO LINGUISTIC AESTHETICS BY FUNCTIONAL GRAMMAR

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Abstract

Sentences often behave without grammatical constraints. Especially the poetic sentences are far beyond the sentential grammar constraints while maintaining an incredibly attractive power on human's language understanding soul. In this paper we take HAIKU, classical Japanese short poetic sentence as a typical example of beautiful persuasive sentence. By using a functional grammar approach we try to solve the secret of simple sentential beauty. The beauty of HAIKU is often said to exist in ellipses, abbreviation and suggestions. Various events and mental states are described in a very short and simple sentence which is composed of 5-7-5 letters words or phrases. The main point of Functional Grammar is that every sentence is composed of two categories: kernel sentence and meta-sentence. We show typical examples of meta-sentences and kernel sentences obtained from HAIKU, and try to reveal the secrets of aesthetic beauty of ultimately simple sentences.

1. Introduction

Sentences often behave without grammatical constraints. Especially the poetic sentences are often far beyond the sentential grammar constraints while maintaining an incredibly attractive power on human's language understanding soul.

Thus we can expect the techniques for composing impressive sentences or making persuasive talks through the study on poetic sentence constructions. Though there are many genres or styles in poetic sentences, in this paper we take HAIKU, classical Japanese short poetic sentence as a typical example of beautiful persuasive sentence. By using a functional grammar approach we try to solve the secret of simple sentential beauty. The essence of beauty of HAIKU is often said to exist in ellipses, abbreviation and suggestions. Various events and mental states are described in a very short and simple sentence which is composed of 5-7-5 letters words or phrases.

Usually HAIKU never talks directly about the emotion or judgment of writer's mind; it only suggests them by other simple words describing weather, plants, animal, climate or scenic beauty expecting and inviting the readers' conjecture or imagination.

HAIKU is now going beyond the classical region of Japanese culture or literary arts, which has already obtained the position of a world model of beautiful sentence composition. On this ground we have taken HAIKU and its English translation as a corpus, which is to be analyzed through Functional Grammar in order to investigate the secret of beautiful and simple sentence construction.

The main point of Functional Grammar is that every sentence is composed of two categories: kernel sentence and meta-sentence. Meta-sentence can be understood as a sentence structuring operator, while kernel sentence is a simple structured, mono-predicate sentence. Kernel sentence has obvious translation of canonical form, while meta-sentence represents logical-semantic structure of sentence which takes kernel sentence(s) as its dominating variable(s). From meta-sentences we can draw a lot of useful semantic information.

We show typical examples of meta-sentences obtained from typical Japanese short sentence known as "HAIKU". Through meta-sentences, we expect that the essence of the simple beauty in HAIKU can clearly be extracted, which will give some hints to compose beautiful sentences together with fundamental language teaching methods.

Let us show a simple and easily understandable example of HAIKU and its associated meta-sentence together with an English translation.

Hj = Kageroi ya Hito mo Tachiki mo Yura-yura to Nitta Toushu

He = Heat haze shakes gently ----- both people and clump of trees.

Mj(Kj1,Kj2, Kj3) = Kj1 ya Kj2, Kj3

Kj1=Kageroi

Kj2=Hito mo Tachiki mo

Kj3=Yura Yura Yureru

Haru-no nodokas-tp nukumori-wa, hitobito-no kinchou-wo toite hotto-shita kibun-ni saseru. nagaku samui fuyu-ga owari atatakai kisetsu-ga tourai-shita-koto-wo, sasayaka-ni yorokobu kimochu-ga sunao-ni yomi-komare-te-iru.

(A calm and quiet atmosphere of spring season is described in a frank and strait fashion together with the delightful relieved feeling of welcoming warm spring arrival.)

He(Ke1,Ke3, Ke2) =Ke1 Ke3(=Vt Adv) Ke2

Ke1 = “Heat haze”

Ke3(=Vt Adv) = “shakes gently”

Ke2= “both people and clump of trees”

Reference and association are important to get the both heart-and-body-warming atmosphere

R (K1, K2, K3) = { Time=Spring, Cold winter was over, Place=maybe park or grassland where people are gathering against a background of grove. }

2 · Meta-sentence and Fragmental Syntax

First of all we claim that every sentence is composed of two categories: kernel sentence K and meta-sentence. M() Let us denote K as kernel sentence and M() as meta-sentence. Meta-sentence behave like a function over kernel sentence, thus we can write:

$$S = M(K)$$

Here S denote a sentence. If we would like to emphasize that sentence S is written by language j or language e, then we would write:

$$S_j = M_j (K_j) \quad \text{or} \quad S_e = M_e (K_e)$$

where, Mj means the meta-sentence in language j, and Ke means kernel sentence in language e.

If we denote the translation between language j and language e as Tran , $\text{Tran}: S_j \rightarrow S_e$

Then at the same time, $\text{Tran}: M_j() \rightarrow M_e()$ represents the bilingual alignment between language j and e, whose concrete example will be shown later.

(1) Explanation about kernel sentence K:

The “kernel” designates the kernel of sentential meaning and the kernel of translation. Roughly speaking the kernel sentence has a simple predicate-and-argument structure, that is one verb and dominating noun(s). Kernel sentence can be a form of no verb(-phrase) , that is of noun(-phrase) only.

The kernel sentence has usually an obvious translation of canonical form and has high possibility of pseudo symmetrical translation property.

If sentence K has the symmetrical translation property, then

$$\text{Tran}(K) = K' \quad \text{and} \quad \text{Tran}^{-1}(K') = K$$

In case of pseudo- symmetrical translation property,

$$\text{Tran}^{-1}(K') = K$$

The antonym of “symmetrical translation property” is “directional translation property”, that is $\text{Tran}^{-1}(\text{Tran}(S)) \neq S$.

If sentence S has symmetrical translation property, then this sentence is easily translatable and has obvious translation. Thus these kinds of sentences are expected to form some baseline for overall translation.

(2) Explanation about meta-sentence M():

The meta-sentence is a kind of hyper-sentence that operate over kernel sentence(s). This operation is viewed as sentence constructing operation that makes actual surface sentence using kernel sentence(s) as its component. The essential part of meta-sentence depends on function word in Japanese and preposition and connection word in English.

Now let us see a concrete example of fragmental syntax in HAIKU, which still maintains strong message passing ability. Haiku is composed of only 17 phonetic characters, which nevertheless has strong message appealing power to readers. In compensation for this stylish conciseness, Haiku is often obliged to transcend the ordinary sentential syntax. It may lack main verb, subject and/or object, but still it

maintains strong message passing ability. Let us see a typical example.

***Furuike-ya kawazu tobi-komu mizu-no oto Bashou

Furuike=old pond=Noun

ya=Function Word

kawazu=frog=Noun

tobi-komu=jump into=Verb Phrase

mizu=water=Noun

no=Postpositional Particle (designating “belonging”)

*Translation(Interpretation):

***Kanjaku-nari Furuike-no katawara / Aogaeru Tobi-komu Mizu-no-naka / Mizu-utu

Oto Hitotsu-Ari (Literal reading of Kanpei(Chinese Haiku)

***An old pond-----/A frog dives into / with a quiet splash Translated by Nitta

Toushu

***An old quiet pond---- / A frog jumps into the pond / splash! Silence again.

Harry Behn

The syntactic structure of original Haiku is:

Subj(N) + F + Subj(N) + Vi + Subj(NP)

which is fragmental. Nevertheless, the sequence of Noun or Noun Phrase plus Function Word brings about deep poetic meaning.

In order to clarify the deep poetic meaning, it is useful to apply the notion of kernel sentence and meta-sentence. Let H be an original Haiku, then meta-sentence M() and kernel sentences K1 and K2 of H make a formula:

$H = M(K1, R, K2)$

K1=Furuike-ga aru=There is an old pond.

K2=kaeru-ga Mizu-ni tobi-kon-de oto-wo tate-ta=A frog jumped into water with a splash.

R=Scene-event relation

In this Haiku H, the first noun old pond (Furuike) has no verb and stands alone. Some imaginary association with the noun, old pond, derives the kernel sentence K1 and relation R.

This example suggests us even one isolated noun could convey lots of information, if noun were chosen carefully.

From Chinese sentences to English or Japanese sentences, we can relatively easily

obtain direct word-by-word translations. These word-by-word translations are usually of fragmental syntax, but still can transfer substantial messages. Let us see another example.

C=(Literal reading of Chinese)=Kotoshi okonau-wo ezu-tomo mata myounen ari / hfurui-okoseya yaruki-wo!

A direct translation of C to English may be:

Tran(C) =this year not done, again exists next year, encourage sprits!

If we denote S_j as source language sentence, S_e as target (=translated) sentence and Tran as translator between S_j and S_e , then we will write:

$$\text{Tran}(S_j) = S_e$$

for translation between language j and language e .

We propose that each sentence S is composed of two categories: kernel sentence(s) K and meta-sentence $M()$. Meta-sentence is a sentence structuring operator.

$$S=M(K),$$

$$\text{Tran}(S)=\text{Tran}(M(K))=\text{Tran}(M)(\text{Tran}(K)).$$

Roughly speaking, kernel sentence K represents simple structured, mono-predicate sentence which has obvious translation of canonical form, while meta-sentence $M()$ represents logical-semantic structure of sentence which takes K as its dominating variable, and shows a relationship among kernel sentences.

3. Interpretation of HAIKU by meta-sentence

HAIKU has achieved the representing simplification to its limit; nevertheless it can keep the potentials of message passing ability to the readers. It depends on the imaginary association potentials of component words and phrases. This situation can be formalized in somewhat naive intuitive style as follows:

$$H = K + R$$

H: HAIKU sentence (very short simple concise (pseudo-)sentence)

K: Kernel Sentence (that has canonical meaning)

R: References to outer world (Association, Conjecture)

R naturally depends on H.

$$R = f(H) \text{ or } R = f(H, K)$$

f is a function which has H and K as its objective variables. F is a meta-sentence that exists at the base of HAIKU H . The successfulness of semantic interpretation by

meta-sentences will be confirmed through the translation of Japanese HAIKU into English HAIKU.

Paying attention to the form:

$$H - K = R$$

We would like to extract R, reference to outer knowledge world. R depends on H. We can write:

$$R = f(H) \text{ or } R = f(H, K)$$

The function $f()$ can be interpreted as a meta-sentence that exists at the base of HAIKU H. Note that for the notational simplicity we put $M = f^{-1}$. From now on we treat $M()$ as meta-sentence instead of $F()$.

***Hj1: Ume saku-ya nani-ga futte-mo haru wa haru Kaga Chiyojo

He1: flowering plum----/ even if rain or snow falls / spring is spring

translated by

P.Donegan[14]

$$Hj1 = K1 \text{ dearu-kara+tatoe}K2 \text{ demo} + \text{zettai-ni } K3$$

$$K1 = \text{Ume-ga saku} = \text{plum is flowering}$$

$$K2 = \text{Nanika-ga furu} = \text{something falls}$$

$$K3 = \text{Haru de-aru} = \text{it is spring now}$$

$$Hj1 = M(K1, K2, K3)$$

Tran(Hj1) = As plum is flowering, even if rain or snow falls, it is already and definitely spring.

***Hj2: Ume-ga ka-ya tori-wa ne-sasete yo-mo sugara K. Chiyojo

He2: the plum's fragrance / makes the birds sleep-----/ the night falls

translated by P.D.

$$Hj2 = K1 \text{ wa } K2\text{-saseru Adv}$$

$$K1 = \text{Ume-no kaori} = \text{plum's fragrance}$$

$$K2 = \text{Tori-wo ne-saseru} = \text{makes the birds sleep}$$

$$\text{Adv} = \text{hito-ban-jyuu} = \text{all night long}$$

$$Hj1 = M(K1, K2, \text{Adv})$$

Tran(Hj1) = The plum's fragrance makes the birds sleep all night long.

***Hj3 = Ume-ga ka-ya koto-ni tsukiyo-no omoshiro-shi K. Chiyojo

He3 : the plum's fragrance / makes it interesting-----/ especially that the moonlight night

$$Hj3 = K1 \text{ wa } K2 \text{ wo tokubetsu-ni } K3 \text{ ni-suru}$$

K1 = Ume-no kaori = plum's fragrance

K2 = Tsukiyo = moonlight night

K3 = omoshiroi = interesting

Tran(Hj3) = The plum's fragrance makes especially the moonlight night interesting.

***Hj4 = Wa-ga ware-wo oki-wasure-taru atsusa-kana

He4 : I forget / where to put myself-----/ so hot today translated by Nitta

Toushu

K1 = Kyou-no atsu-sa = hot day today

K2 = Watashi = myself

K3 = Watashi-no mi-wo dokoka-ni oku-koto = to put myself

K4 = wasureru = forget

Tran(hJ4) = Today is so hot that I forget where to put myself.

***Hj5 = Kogarashi-ya sugu-ni ochituku mizu-no tsuki K. Chiyojo

He5 : chilly wind----/ the moon's reflection / soon becomes calm

translated by P.D.

Hj5 = K1 ga K2 wo V shite-iru-ga sugu-ni notV ni-naru

K1 = Kogarashi = chilly wind

K2 = Mizu-ni utsuru tsuki-kage = the reflection of the moonlight on the water surface

V = midasu = to make rumple

notV = midare-te inai, ochitsui-te iru = be not stirred, be calm

Tran(Hj5) = The chilly wind makes the reflection of the moonlight rumple but soon it becomes calm.

***Hj6 = Osoru-beki kimi-ra-no chibusa natsu ki-taru Saitou Sanki

He6 : shocking to see / your glamorous breasts----/ summer has come

translated by N

Toushu

Hj6 = K1 ga K2 shita-ga K3 wo shirase-te kure-ta.

K1 = Osoroshi-hodo-ni kan-nou-teki-na kimira-no chibusa = your threateningly voluptuous breasts

K2 = I am shocked by

K3 = summer has come

Tran(Hj6) = The voluptuously exposed breasts of yours makes me shocked but at the same time realize that summer has come.

***Hj7 = Haka arau nare-no tonari-wa chichi-no za-zo

Kadokawa Genyoshi who survives

his son.

He7 : Washing the gravestone of my son-----/ soon I will go / to your next.

translated by N.T.

Hj7 = K1 shite-iru-ga K2 de-aru (K3 seyo)

K1 = haka-wo arau = Washing the gravestone

K2 = Omae-no tonari-wa chichi-no za-de-aru = your next is my position

K3 = Sabishi-garazu-ni matte ina-sai = Don't be lonesome and wait me for a short time

Tran(Hj7) = I am washing your gravestone where I will visit soon, so don't feel lonely and wait my arrival.

4. Concluding Remark

We have proposed the functional view of sentential semantics and demonstrate its power using HAIKU, typical Japanese simple sentence. We also try to reveal the secret of “concise beauty” of Haiku, a typical simple Japanese poetic sentence.

Most vital feature exists in the notion of meta-sentence which is a kind of operator for surface sentence formation. Meta-sentence is working over the domain of kernel sentences. The kernel sentence behaves like a fundamental element in language translation, which has canonical form of translation correspondence in target language and also has bi-directional (symmetrical) translation property. Thus kernel sentence has simple structure and is easily translatable and forms the baseline of overall translation.

Currently meta-sentences have been extracted and collected semi-automatically using naive pattern matching programs based on regular expression[3] [14].

Our next step is to construct a more powerful program to extract and manipulate meta-sentences, and to make more extensive experiment to investigate the fine fragmental syntax of Haiku-like poetic sentences.

References

- [1] L. Bentivogli, and E. Pianta, "Exploiting Parallel Texts in the Creation of Multilingual Semantically Annotated Resources: the MultiSemiCor Corpus", *Natural Language Engineering*, Vol.11, No.3 (2005) pp.247-261
- [2] K. Church, I. Dagan, W. Gale, P. Fung, B. Satish and J. HELFMAN, "Aligning Parallel Texts: Do Methods Developed for English French Generalize to Asian Languages?" *Proceedings of the Pacific Asia Conference on Formal and Computational Linguistics* (1993)
- [3] A. Kinyon, "A Language-Independent Shallow-Parser Compiler", *Proc. 39th ACL Ann. Meeting (European Chapter)* (2001) pp.322-329
- [4] E.Macklovitch and H. Marie-Louise, "Line 'em up: Advances in Alignment Tecnology and Their Impact on Translation Support Tools", *AMTA*(1996)pp145-156
- [5] R. Mihalcea, and M. Simard, "Parallel Texts". *Natural Language Engineering* Vo.11, No.3 (2005) pp.239-246
- [6] J.Munday, *Introducing Translation Studies*, Taylor & Francis Group (2009)
- [7] Y. Nitta, "Idiosyncratic Gap: A Tough Problem to Machine Translation", *Proc. Comp. Linguistics, COLING'86 ACL* (Assoc. Comp. Ling.) (1986)
- [8] Y. Nitta, "Problems of Machine Translation: From a Viewpoint of Logical Semantics", *Economic Review of Nihon University*. Vol.72, No.2, Nihon University, Tokyo: (2002) pp.23-42
- [9] Y. Nitta, "The Utility and Problem of Insufficient Machine Translation", *Economic Review of Nihon University*. Vol.80, No.4 (2001) pp.1-54
- [10]A. Pim, *Exploring Translation Theories*, Routledge, Taylor & Francis Group (2010)
- [11]M.Saraki and Y.Nitta. "The Semantic Classification of Verb Conjunction in the "Shite" Form", *Proceedings of Spring IECEI Conference*, IECEI Japan(2005)
- [12] M. Saraki, ed. and Y. Nitta, "Regular Expression and Text Mining (in Japanese) Second Printing", Akashi-Shoten (2008) 312p
- [13] Hangeveld(Editor), Simon C. Dik: *The Theory of Functional Grammar 1 & 2*, FGS 20, Mouton de Gruyter(1997)
- [14] Tadashi Yamane(Translated by: Yoshiie Ishibasi and Patoricia Donegan), *Chiyo-Jo's Haiku Seasons*, MattoCity (Pub.) Kitaguni-Shuppa-Kyoku (1996-10-10)

[15]Rinka Ohno (Supervisory Editor) Haiku-Bungakukan(ed). Handy-version
Introductory Haiku-Saijiki, Kadokawa-shote(1994-4)

THE IMPACT OF BLOCKBUSTER EXHIBITION ON MUSEUMS IN TAIWAN FROM MUSEUM STAFF' S VIEW

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Abstract

In this paper, I interviewed a director, a researcher and a docent respectively to talk about the impact of blockbuster exhibitions on art education in museums and on their own lives. What I found are as follow:

1. Taiwan's Culture and Arts environment is mature enough to promote such exhibitions.
2. Blockbuster exhibitions are knowledge carriers which connect exhibits with the audience.
3. It is aimed at emphasizing on humane value and lifting the social cultural level.
4. Holding blockbuster exhibitions is not a panacea for raising museum's professional reputation.
5. All the derived phenomena are meaningful; they pushed the museum staff members to reflect and activated the museum's operating strategy.
6. They have positive effects on museum staff's working ability, art knowledge and professional development.

In sum, blockbuster exhibitions attract tremendous visitors which stimulate art-popularization gradually and vitalize the museum's operations. They also facilitate a continuous dialogue between museums and museums, museums and the public, exhibits and the public. The more attention the audiences get from the museum, the sooner the museum can be converted into a multi-field which integrates research, education, entertainment, and other diverse functions.

Introduction

To attract a large number of visitors and to meet clients' need, museums in Taiwan have been exhibiting artworks borrowed from museums abroad since 1990s. The overwhelming desire to hold blockbuster exhibitions has been the rage since then and become a significant cultural phenomenon of our life world. The attention and anticipation brought by these exhibitions have great impact on viewers, museums, and even to the whole society. The more success they were, the more criticism they got. The criticisms were most from outside the museums, such as social culture critics, art educators and the researchers in academic institutions. They, as the by-standers, criticized everything evolved from the blockbuster: the low quality of the exhibitions, too commercialized, young visitors fight for the souvenirs instead of watching the displays..., etc. They especially mentioned the exist of an unequal power structure; the media played the most powerful role and make the visitors' voices disappeared, the museum even keep the system continue to run stably which reflected the weakness of museum's professional and social role (Chiang, 2009).

However, these descriptions are insufficient to show the whole truth. What makes me curious is: how do the curators, the staff members of the museums who have experienced the development of the show, view these blockbuster exhibitions? I adopted the phenomenological standpoint, bracketing off my pre-understanding about blockbusters and emphasizing the openness on doing research in order to answer the following two questions.

1. What does the museum staff think of the value and the impact of these exhibitions on art educations in museums?
2. What is the influence of these blockbuster exhibitions on museum staff's daily work, their personal artistic concepts and their professional development?

Definitions

Blockbuster exhibitions :

Blockbuster exhibition means big international special exhibitions hold by museums or with the sponsorship of the media and corporations. The art works often borrowed from the Western prestigious artists or from mysterious ancient civilization countries. The coverage in the media is so huge that the extraordinary

costs usually draw and create tremendous public interests.

Method

Multiple case study approach was adopted by this research. Through purposeful sampling, I interviewed several well-experienced museum professionals. A blockbuster involves three main parts: pre-procedure decisions, administration of installation and educational promotion activities, and on-the-scene docent. Due to time consuming, I interviewed a director, a researcher, and a docent respectively from National Museum of History and Taipei Fine Arts Museum to get the information I need with semi-structured interviews.

Findings and discussion

I have organized what I found from director's, researcher's and docent's views respectively and I will explain these phenomena in three aspects as follows:

1. The director's point of view:

To museums:

Usually a blockbuster means an exhibition spending over ten million NT dollars with governmental assistance and is well-known by other nations. No any museums can do this without sufficient money subsidies, or without professional staffs who are well-experienced in international shows, such as National Palace Museum, National Museum of History, Taipei Fine Arts Museum and The National Taiwan Museum of Fine Arts. Of course to train the volunteers and do an on-the-job training will fix the problem in manpower shortage. An exhibition combined with corporations and media could draw broad-based public interests and create immense value both on the art and the public welfare. They can use the researchers to compile the catalogues and pamphlets; ask the media to report the news or related stories, cooperate with cultural creativity industries to develop virtual reality and sell replicas and peripheral merchandise. However, Too many crowds and intensive performances will exhaust museum staff members and neglect their primary obligation. Besides, museums' professional status might be challenged if the exhibits are not accordance with the characteristic of the museum. Travelling Exhibitions are pretty common here in Taiwan. It is good in balancing the cultural gap between the city and the country, but museums also lost their own curatorial ability under this kind of package exhibitions.

To art education in museums:

Blockbuster is aimed to add its value in humanity and make life meaningful, not to make money. It has positive influence in art education, especially in children of school-age. Children should be taught in accordance with their aptitude. It works well only when museums provide diverse guide pamphlets according to their ages. Intensive and lack of organized exhibitions will spoil viewers' appetite and cause visual fatigue. Visiting the exhibition should be done after the viewers have learned the basic cultural and artistic knowledge at school.

To museum professionals:

Only when they get involved in the whole process can they enhance their professional development and curatorial abilities and furthermore to increase the museum's credibility.

2. The researcher's point of view:**To museums:**

The reason why museums abroad are willing to cooperate with local museums is because Taiwan's museums are mutual enough to promote such exhibitions and the audiences are capable to appreciate artworks. Intensive blockbuster exhibitions appeared in a short period also offered a platform for diversified competitions among museums which is beneficial for Taiwan's art education. Unfortunately most of the museums are doing their own ways in finding money or sponsors. Sometimes they competed so hard that they took over the market shares, cut down the effect of the show and caused the waste in resources. To hold a loan exhibition has many complicated procedures. A high quality and meaningful exhibition relays on curators' team work. It is shameful that some museums abandon their own professionalism by changing themselves from an active curators into a passive authorized curatorial. Museums that cooperated with the media or the enterprises cannot promote art education smoothly unless each of them do their own jobs well; the former provides the space and professional staff who have the right to select objects and the right of interpretation while the later is in charge of the advertisement, ticket selling and fund raising.

The objects on display should correlate with the museums' feature so as to help building its outstanding style. Usually the curators chose masterpieces of western

art history which are often discussed in art curriculum and can guarantee a box office hit. On the other hand, it indicates how local artists have been ignored in art education at schools. “Let the audience decide what they want to see” will cause spiritual bias and is rather disadvantaged in promoting communication and understandings different cultures.

To art education in museums:

School children are the target in boosting art education. The strategy they used was “Capture the leader first” which means to arrange seminars for school principals and teachers through the money they got from Ministry of Education. The main purpose is introducing the museums’ facilities while at the same time promoting their special exhibitions so that schools can arrange their students to visit the show. It really worked; that is why I call it “Capture the leader first.” Gradually more and more diverse strategies appeared (parent-child activities, workshops on weekends, and lectures), and even the media participated in the blockbusters will get involved in educational promotion mode. Quanta Culture & Education Foundation is a good example. The Foundation used to be the money- donor but now they become the executive. They exhibit the duplicates by traveling around different campuses, especially among remote areas which offset the museum’s “mobility of the originals” problem and expand the range of art education.

Audio tours and docents can bring meaningful interactions with the visitors. Yet, over-crowded viewers always obstruct the route and worsen the quality of the show, which can be improved by making enough space between objects displayed, providing different schedules for audiences, extending the exhibition period, decreasing the content of the audio tour..., etc. Though the staff members’ workload will be increased when museum stays open at night, it can encourage visitors who need to work at daytime to join the show after work.

Another purpose of a blockbuster exhibition is to attract audiences to view the regular display held on other floors of the museum. However, audiences sometimes felt fatigue not because of the intensive exhibitions but the pressure of not knowing the artistic background knowledge. As to the derived merchandise, it is the by-product of cultural and creative enterprises. It is a must; it can satisfy the

viewers' need while at the same time release museums' stress in extraordinary high premium. Those souvenirs can also remind the audience the experience of visiting the museums is also a good way in promoting art education.

Blockbuster exhibition will encourage independent curators who emphasize their own ideas to provide variety of materials to benefit the audiences in the future. Besides, cross-border big show involves different countries, cultural backgrounds and artists. All of these will bring impact on conceptual thinking and meet the museums' educational goal-- offer diversified choices to visitors.

To museum professionals:

The researchers' daily work remains the same after a blockbuster exhibition; however, it helps them work well under the pressure and enhances the spirit of team work. They learned how to adjust themselves when dealing with the audiences' complains. It is a great challenge to curatorial staffs when facing exhibitions they are not familiar with, yet it also pushes them to increase their professional knowledge by reading related information.

3. The docent's point of view:

To museums:

All they do is to provide the space for blockbuster exhibitions. The problem is that most museums in Taiwan do not have enough space for such a big show; the heavy traffic nearby is notorious during the show, the viewing route is not nicely organized. The image of the museum will not be elevated without fixing these problems first.

To art education in museums:

Blockbuster exhibitions do uplift the social image and increase cultural population. They bring positive values in viewers' minds indeed, but the influences are not promptly and obviously. Only when the visitors get rid of the mindset of following trend and visit the museums actively and regularly to fulfill their spiritual satisfaction then can we say Taiwan's social culture has been raised. The value of blockbuster is to cultivate viewers' sense of appreciation in watching the objects of art and resonate with the artists' creative thinking.

To museum professionals:

A blockbuster brings positive meaning and values to docents. They need to overcome many obstacles they encountered during the show which uplift their own abilities. To make audiences understand their introduction, they have to push themselves to read and learn and internalize a lot of related background knowledge so that they can simplify and organize their own thoughts and output that information systematically in a very short time. They also need to learn the strategies of communication with over-crowded and impatient visitors. They need to have keen observation; find the problems and fix them immediately. They are the key member to provide a wonderful experience and bring the artists and the audiences together. They will guide the audiences to find the answer instead of telling them directly. Let the audiences feel the momentum of the show and cultivate their sense of art is the best reward for the docents.

The docent I interviewed has been teaching children art and also creating his own artworks at the same time. He thinks a blockbuster is the best way to communicate with the artistic masters. He learned one thing: some great painters also imitate children's drawings, so children should have confidence on themselves. Meanwhile, when art combines with new inspirations, it brings new development potentials which will reflect on his own works and rich his creativity and life experience.

Conclusion

Director, researcher and docent have different point of views in art education in museum and personal reflections. Through their comprehensive views, the answer of the two questions mentioned above are as follows :

1. Taiwan's Culture and Arts environment is mutual enough to promote such exhibitions.

Museums have equipped with adequate hardware and software to hold such exhibitions while the viewers possess the general capacity on art.

2. Blockbuster exhibitions are knowledge carriers which connect the exhibits with the audience

Through the show, visitors interact with exhibits. They get first-hand visual experience and review what has learned from school. Furthermore, they pushed themselves to learn more about the cultural origins and historical context of arts.

As a result, they will get brand new experiences and insights.

3. It is aim at emphasizing on humane value and lifting the social cultural level.

Blockbusters make people's life more meaningful. People from different social ranks are attracted by these exhibitions. They provide real perceptual experience in art which is something one cannot get from the book. They change the museum-goers from "join the fun" into real virtuosi who appreciate beauty and pursuit spiritual satisfaction. When more people appreciate the art, the social cultural level has been lifted imperceptibly.

4. Holding blockbuster exhibitions is not a panacea for raising museum's professional reputation of museum.

In order to enhance museums' professional image, they have to hold the interpretation of art works, provide the audience a comfortable environment and match the exhibits with Museum's features.

5. All the derived phenomena are meaningful; they pushed the museum staff members to reflect and activated the museum's operating strategy.

Blockbusters are the tool to vitalize human's mind and performance. They bring certain challenges to museum staff members. They are forced to reflect or adjust themselves in dealing with the derived phenomena which pushed themselves to provide better services and meaningful art learning.

6. They have positive effects on museum staff's working ability, art knowledge and professional development.

Different job responsibilities have different challenges in blockbusters. Museum staff members' working ability, art knowledge and professional development are enhanced imperceptibly through learning by doing, which is the best policy in dealing with challenges.

As a whole, blockbuster exhibitions attract tremendous visitors. All the non-expected phenomena promote self-reflection of museum staff members and activate the museum's operating strategy. They put up the bridge to facilitate a continuous dialogue between museums and museums, museums and the public, the exhibits and the public. The more attention the audiences get from the museum, the sooner the museum can be converted into a multi-field which integrates research,

education, entertainment, and other diverse functions.

Reference

Chiang, Y. C. (2009). *Reflections on museum's social role through Taiwanese visitors' experiences of blockbuster exhibitions: A case study of "Millet and his times: Masterpieces from the Musée d' Orsay"* (Unpublished master thesis). National Taiwan University of Arts, New Taipei City, Taiwan.

THE INFLUENCE OF PRODUCT EXPOSURE ON PERCEIVED MODERNITY AND AESTHETIC APPRAISAL OF PRODUCT DESIGNS

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Abstract

Designers can use product attributes (e.g., luxurious, playful, modernity) to design products that are positively aesthetically appraised. The relationships of physical properties (e.g., curvature, shape) of product designs with product attributes and aesthetic appraisal are often considered to be generalizable over product categories. However, we provide empirical proof that the product's physical properties in combination with a person's previous exposure to products influence perception and aesthetic appraisal of product designs. Previous exposure to product designs within a certain product category provides a benchmark to compare newly encountered product designs to: a prototype. We argue that deviation from what people are used to, the prototype, makes a product design look more modern. Our results show that for product designs that are prototypically angular, curvature positively influences whether these are perceived as modern (toasters), while for product designs that are prototypically curved, curvature negatively influences whether they are perceived as modern (juicers). Modernity positively influences aesthetic appraisal, and thus, both angular and curved products were positively aesthetically appraised. Hence, the relationships of physical properties with product attributes and aesthetic appraisal are dependent on the product designs that people have previously been exposed to in daily life.

Keywords: product exposure, perceived modernity, aesthetic appraisal, product design

Product attributes (e.g., modernity, playful, and simplicity) can be incorporated in product designs in order to make product designs more aesthetically pleasing. People derive product attributes from a combination of the product's physical properties (e.g., color, shape, texture). The effects of these product attributes on consumers' appraisal are often generalizable over product categories. For example, we know that people generally like product designs that are simple (Veryzer & Hutchinson, 1998; Reber et al. 2004, Berlyne, 1971). In addition, people will often agree on the level of simplicity of a product design. It is generally suggested that designers can use the same combinations of physical properties to make a product design more simple across various product designs (Crozier, 1994). Not surprisingly, relationships between physical properties with product attributes and aesthetic appraisal are often considered to be robust and generalizable over product categories. However, we argue that for some product attributes, the relationships of physical properties with product attributes and aesthetic appraisal may not always be generalizable. This may hold especially for time-spirited product attributes (e.g., modernity, hip, innovative) that are often of great interest for product design.

Through repeated product exposure, people gain knowledge on the combination of physical properties that products within a product category usually adhere to; a prototype. By comparing a newly encountered product to this prototype people assess the appearance. We argue that perception of time-spirited product attributes, like modernity, and aesthetic appraisal of product designs are influenced by people's previous product exposure. More specifically, we argue that product designs that deviate from the prototype are perceived as modern. The products that are introduced into the market differ between product categories, and thus prototypes differ between product categories. Because modernity positively influences aesthetic appraisal of product designs (Creusen & Schoormans, 2005; Hsu, Chuang & Chang, 2000), we expect that the physical properties that positively influence modernity and therefore aesthetic appraisal differ between product categories. We contribute to the literature by researching the effect of product exposure on perceived modernity and aesthetic appraisal of product designs.

Modernity is especially relevant when researching aesthetic appraisal for product designs, as compared to visual art works or polygons. People often use the product attribute modernity to describe product designs (Creusen & Schoormans, 2005; Blijlevens, Creusen & Schoormans, 2009). More importantly, when people consider a

product to be modern, they are more likely to positively appraise it (Creusen & Schoormans, 2005; Hsu, Chuang & Chang, 2000). Thus, designers need to know how to make a product design look modern. The question rises: when is a product design perceived to be a modern one? Designers are good in using their intuition when designing product designs to convey a certain meaning. However, designers and laymen may differ in their perception of product designs (Hsu, et al, 2000; Blijlevens, Creusen & Schoormans, 2009). For this reason, previous research has tried to provide guidelines on how product attributes that positively influence appraisal of product designs can be incorporated into product design (Hsiao & Wang, 1998; Orth & Malkewitz, 2011). For example, product attributes, such as serious and prestigious, can be mapped to specific combinations of physical properties for product designs within different product categories (e.g., Hsiao & Wang, 1998; Dahlgaard, Schütte, Alikalfa, & Dahlgaard Park, 2008; Orth & Malkewitz, 2008). Hsiao and Wang (1998) found that heightening the body of a car will result in the car looking more well-bred and showed that this relationship holds for every car-model of which the body is heightened. Moreover, it is assumed that the same relationships between physical properties and product attributes exist for different product categories, thereby assuming generalizability of the relationship to other product categories. For example, both vacuum cleaners and cars that are grey, basic, and robust shaped are perceived as serious (Mugge, et al., 2009). Similarly, both wine bottles and perfume bottles that are small, and short bottlenecked are perceived as prestigious (Orth & Malkewitz, 2008). Hence, the relationship between certain physical properties and the product attributes serious for vacuum cleaners and prestige for wine-bottles apply to the designs of several other product categories (Orth & Malkewitz, 2008; Mugge, et al., 2009). However, we argue that the relationship of physical properties with perceived modernity is not always generalizable over product categories, because this is dependent on product exposure.

In an interactionist view, perception and aesthetic appraisal of product designs are influenced by properties of an object (e.g., color, shape and texture) in combination with the characteristics of the perceiver and the world he or she lives in (Moshagen & Thielsch, 2010). The perceiver him or herself influences the effect that a product design may have on him or her based on his or her experiences in the world. In line with this view, we believe that the product designs within a market that people are exposed to influences perception and aesthetic appraisal of product designs.

Accordingly, we argue that repeated exposure to various product designs within a market provide people with a benchmark, which people use to identify, make sense of, and categorize a newly encountered product design. Repeated exposure to physical product properties (color, shape, material) results in the internalization of the combination of these properties into people's knowledge system (Veryzer, 1999). Products from a certain product category commonly adhere to a specific combination of physical properties. For example, most washing machines are white, angular and box-shaped and are made from a smooth, shiny material. When these products are encountered often, the human brain stores the specific combination of physical properties for this product category. Hence, people form a general idea of to what physical properties a product from a certain product category adheres to. This general idea of how product designs look like within a product category is called a prototype. People compare a newly encountered product to this prototype in order to assess the design. People often consider product designs that they are exposed to regularly and are, thus familiar with, to be traditional, normal or ordinary. These product designs that are perceived to be traditional, normal and ordinary also constitute the prototype of a product category. Logically, deviation from this prototype, means deviation from 'traditional', 'normal' and 'ordinary' and thus increases perceived modernity. In an interview performed by Creusen and Schoormans (2005), a respondent describes products as modern when they differentiate in design from what he previously often encountered in the market ("All that has a more rounded design than previously, really", pp 72, Creusen & Schoormans, 2005). Concluding, we argue that a product design is perceived as modern when it deviates from the product designs that people are exposed to in the market. The prototype is constituted from the combination of physical properties of product designs that people are exposed to in the market. Hence, the relationship of physical properties with modernity is dependent on the prototype and thus previous product exposure for a product category. For example, a glass teapot will most probably not be viewed as particularly modern, while this most likely does hold for glass toasters (see Figure 1). When physical properties that constitute prototypes differ between product categories, differences in the physical properties that influence perceived modernity can be expected.



Figure 1. Concept for a glass toaster by Inventables Concept Studio

The above reasoning has its consequences for the hypothesized effects of the physical properties of product designs on aesthetic appraisal. We believe that the relationships of physical properties and modernity are dependent on the prototype for a product category and therefore product exposure. We know that modernity has a positive relationship with aesthetic appraisal. Hence, we expect that physical properties influence aesthetic appraisal differently between product categories. A few studies have indicated that people generally like natural, organic, and curved product designs (Bar & Neta, 2006; Silvia & Barona, 2009). This phenomenon is explained from an evolutionary perspective, which states that sharp transitions in contour signal danger or threat, while curved shapes are friendlier and, are therefore, appraised more positively (Aronoff, Woike, & Hyman, 1992; Bar & Neta, 2006). However, recent research has suggested that research results attained during the last few years indicating that curvature is preferred, is confounded with the fact that many designs have become more curved as compared to the preceding prototypically angular designs from the eighties (Carbon, 2010). This is congruent with literature that describes that each fashion trend follows a life cycle with the same phases: introduction, rise, culmination, decline, and obsolescence (Jernigan & Easterling, 1990). Correspondingly, we notice that, nowadays, angular car designs are being introduced into the market more and more. When given information about the time period of which car-designs were from, respondents' aesthetic appraisal ratings were no longer directly influenced by the level of curvature of car designs per se, but rather by product attributes such as novelty (Carbon, 2010). In that case, angular car designs

were sometimes more aesthetically pleasing than curved car designs (Carbon, 2010). In the recent past, people have been overly exposed to curved designs, and thus consider curved designs as prototypical. It may very well be that once these people are introduced to angular designs, that angular designs are more preferred compared to the curved prototype for cars. The angular designs are then more aesthetically pleasing, because they are perceived as being more modern.

Summarizing, we believe that the relationship between physical properties and modernity depends on to which physical properties of a certain product category people are exposed and are thus found in the visual prototype of that particular product category. Specifically, because the visual prototype may differ between product categories, we propose that the relationship between physical properties and perceived modernity is product-category dependent. Because perceived modernity influences aesthetic appraisal, the relationship of physical properties with aesthetic appraisal is therefore also expected to be product category-dependent.

In this study, we will investigate the effect of the physical property curvature on the product attribute modernity. Curvature is a physical property regularly mentioned in the design literature and is often used in design to differentiate from other products on the market (Chuang & Ma, 2001; Fontana, Giannini, & Meirana, 1999). Therefore, we chose curvature as the physical property to be manipulated in this study. Manipulating curvature of product designs will influence the level of prototypicality of a product design within a product category. We expect that if the visual prototype of a product category is curved, then a product with an angular product design will be seen as modern. If the visual prototype of a product category is angular, then a product with a curved product design will be seen as modern. Consequently, it is expected that curvature positively influences aesthetic appraisal of a product design when the visual prototype of that product category is angular, because then the curved design is perceived as modern. However, we expect that curvature negatively influences aesthetic appraisal of a product design when the visual prototype of that product category is curved, because then the angular design is perceived as modern. Our expectations and stimuli are depicted in Figure 2 and 3.

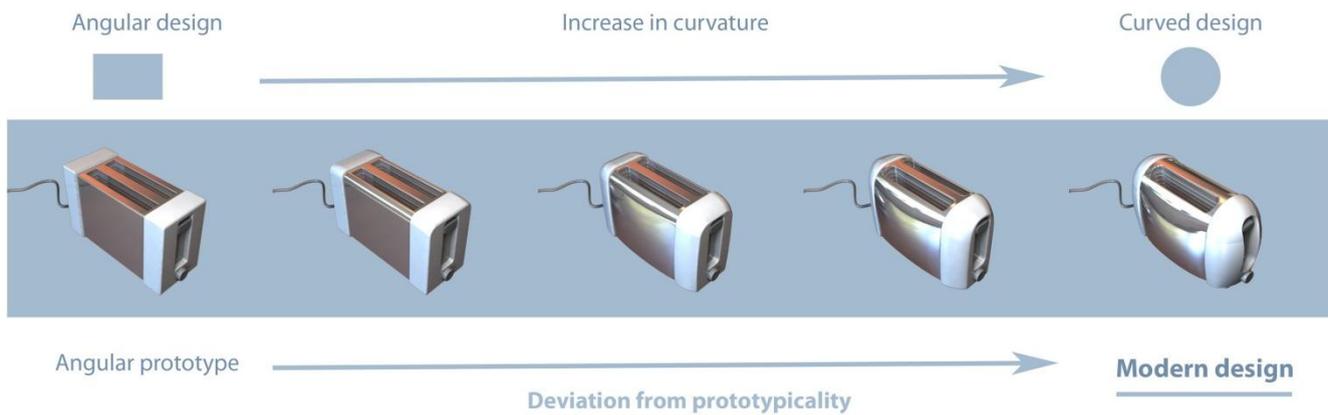


Figure 2. Increasing a prototypically angular toaster in curvature makes it look more modern

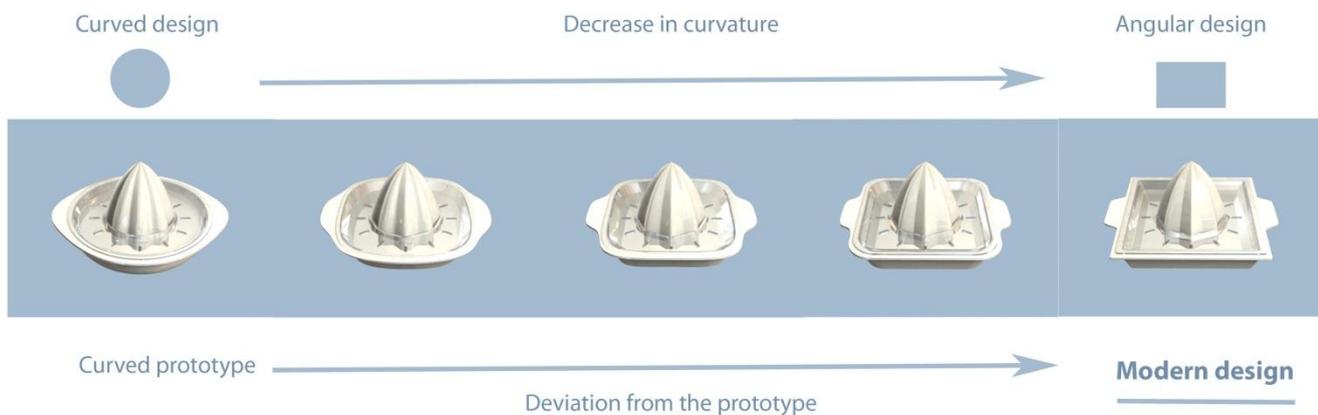


Figure 3. Decreasing a prototypically curved juicer in curvature makes it look more modern

Method

Stimuli

After analyzing the market, the product categories toasters and hand-juicers were chosen to serve as stimuli. These product categories were chosen as stimuli, because the prototype of the product category toasters is angular, and the prototype of the product category juicers is curved. A trained designer created digital 3-D models of toasters and hand-juicers and changed the shapes of the stimuli in the level of curvature in four steps (see Figure 2 and 3). Specifically, toasters were deviated from the prototype by making the original design more curved in four steps, and hand-juicers were made more angular in four steps, resulting in 10 stimuli products (including the two originals).

Respondents

A total of 154 (mean age = 51, SD = 13, 83 females) respondents from a consumer panel participated in this research. Respondents received EUR 2.20 for participation, a common compensation for respondents from the consumer panel.

Procedure

For this research, a 2×5 mixed design was used with product category as a within-subjects factor and prototype deviation as a between-subjects factor. All respondents received one toaster and one juicer similar in level of prototype deviation to judge on several constructs that consisted of several items. The constructs were measured on 7-point scales. The items (not) modern, (not) futuristic and the reversed item (not) oldish were averaged to form a measure for modernity (Cronbach's $\alpha_{\text{hand-juicer}} = .79$, Cronbach's $\alpha_{\text{toaster}} = .77$; Blijlevens, Creusen & Schoormans, 2009). Curvature was assessed with the items (not) curved and (not) angular ($r_{\text{toaster}} = -.50$, $r_{\text{hand-juicer}} = -.60$, p 's < .001). Aesthetic appraisal was measured by asking how (not) attractive the design was (Page & Herr, 2002). Additionally, perceived typicality was measured, which consisted of the item good example of the product category - bad example of the product category (Veryzer & Hutchinson, 1998). Finally, overall functionality, which consisted of the items (not) functional and (not) easy to use ($r_{\text{toaster}} = -.49$, $r_{\text{hand-juicer}} = -.68$, p 's < .001), was measured. Functionality may have an effect on aesthetic appraisal and therefore it is important to ascertain that no differences in overall functionality are perceived between prototype deviation levels.

Results

Manipulation checks

First, manipulation checks were performed to check whether perceived typicality and curvature were manipulated as intended. A mixed ANOVA was performed with product category and prototype deviation as independent variables and perceived curvature as dependent variable. No significant main effects for prototype deviation and product category were found (F 's < 1.0). A significant interaction effect on perceived curvature was found ($F(4, 294.46) = 80.40$, $p < .001$). Results showed a significant increase in curvature for toasters with increasing prototype deviation ($F(4, 149) = 49.6$, $p < .001$, mean range = 1.58 – 5.34) and a significant decrease in curvature as prototype deviation increased for juicers ($F(4, 149) = 33.3$, $p < .001$, mean range = 2.17 – 5.64).

Second, a mixed ANOVA with perceived typicality as dependent variable and prototype deviation as independent between-subjects variable and product category as within-subjects variable revealed significant main effects for prototype deviation ($F(4, 285.63) = 10.0, p < .001$) and product category ($F(1, 285.63) = 16.1, p < .001$), and a significant interaction effect ($F(4, 285.63) = 4.6, p < .01$). Separate one-way ANOVAs were performed for each product category. A decrease in perceived typicality was shown as prototype deviation increased for both toasters ($F(4, 149) = 3.3, p < .05$, mean range = 6.25 – 5.33) and juicers ($F(4, 149) = 9.9, p < .001$, mean range = 6.03 – 3.79). Finally, a mixed ANOVA for overall functionality revealed a significant main effect of product category ($F(4, 227.06) = 41.8, p < .001$). However, no significant effects were found for overall functionality within product categories (F 's $< 1.0, p > .10$). Hence, we can assume that overall functionality was not perceived to change between stimuli within each product category.

Relationships of curvature with modernity and aesthetic appraisal

Structural Equations Models were performed with AMOS statistical software (Arbuckle, 1995) in order to test whether the relationships of curvature with level of modernity and aesthetic appraisal differ between product categories. The model tested included the latent independent variable curvature consisting of the items curved and angular, level of modernity as a latent mediator consisting of the items modern, futuristic and oldish, and aesthetic appraisal as a dependent variable. All analyses were performed by making group comparisons between toasters and juicers in order to ascertain that the tested model showed a fit for both product categories. A model comparison was performed of a model wherein partial mediation was assumed by including a direct path from curvature to aesthetic appraisal with a model in which full mediation was assumed by restricting the parameter of that same path to zero. Within the group comparison analysis, the partial mediation model had a significantly higher model fit compared to the full mediation model ($\Delta\chi^2/df = 4.164, p < .05$; RMSEA = .05, $\chi^2/df = 1.80, (p = .03)$, GFI = 0.97, AGFI = 0.92, NFI = 0.95, CFI > 0.98). Congruent with our hypothesis, for toasters a significant positive relationship of curvature with modernity was found ($B = 0.34, p < .001$). However, for juicers a negative relationship of curvature with level of modernity was found ($B = -0.31, p < .01$). Hence, we find that the relationship between curvature and perceived modernity differs between product categories. A positive relationship of modernity

with aesthetic appraisal was found for both toasters and juicers ($B_{\text{toaster}} = 0.38, p < .001$ and $B_{\text{juicer}} = 0.49, p < .001$). These results show that the relationship between the physical properties of a product design with aesthetic appraisal can be different between two product categories. Finally, for both product categories curvature had a positive effect on aesthetic appraisal ($B_{\text{toaster}} = 0.12, p < .05$ and $B_{\text{juicer}} = 0.14, p < .05$).

General Discussion

The results in this study are compliant with our expectations. As expected, the relationship between the physical properties of a product design, modernity, and consequently, aesthetic appraisal depends on previous product exposure on which, on its turn, the prototype is based. Because, the visual prototypes are product-category specific, we cannot generalize the relationships of physical properties and modernity over product categories. Therefore, the indirect effect of physical properties on aesthetic appraisal for product designs, through perception of modernity, is product-category specific.

This research contributes in several ways. First of all, we argued that a product design is perceived as modern when it deviates from the product designs that people are currently used to, the prototype. The product designs that people often encounter in the market are the product designs that people are used to. Hence, we concluded that previous exposure to the market should influence perceived modernity. Our results show that for product designs that are typically angular, curvature positively influences whether these products are perceived as modern, while for product designs that are typically curved, curvature negatively influences whether they are perceived as modern. People know to what physical properties product designs adhere within a certain product category. People compare a newly encountered product design with the prototype they have for a certain product category. When a product design deviates from this prototype it is perceived as more modern.

Second, in accordance with existing literature, we find that perceived modernity positively influences aesthetic appraisal of product designs (Carbon & Leder, 2005; Creusen & Schoormans, 2005; Hsu, et al., 2000). Consequently, whatever influences perception of modernity also influences aesthetic appraisal of product designs.

Hence, product exposure influences aesthetic appraisal of product designs. This is compliant with a more interactionist view of aesthetic appraisal where beauty is seen as influenced by properties of an object (e.g., unity, complexity) in combination with

the characteristics of the perceiver and the world he or she lives in (Moshagen & Thielsch, 2010).

Third, we found a partial mediation of modernity for the effect of curvature on aesthetic appraisal. This result suggests that a direct and positive effect of curvature on aesthetic appraisal exists as well. This is congruent with dominating views in research on the relationships of physical properties and aesthetic appraisal of product appearances in recent years (e.g., Bar & Neta 2006; Silvia & Baron, 2009). People seem to have a natural tendency to positively appraise curved objects. An explanation is that angular and sharp objects signal danger (Bar & Neta, 2006). However, we show that the positive relationship between curvature and aesthetic appraisal partly depends on what people are exposed to in the market.

Finally, in this research the product designs were manipulated to differ in their physical properties. We decided to use strategically manipulated stimuli, rather than using a broad array of existing products in the market as stimuli, because that way you can control for confounding effects, such as functionality or purchase goal. In order to test our hypotheses, stimuli were needed that are carefully manipulated to differ in curvature only, while controlling for differences in other properties of a product design. In order to reduce confounds, for example functionality, all other physical properties than those needed for the manipulations of curvature, were controlled for as much as possible when creating the stimuli. In a manipulation check we find that indeed, perceived functionality did not change across designs within a product category.

Even though this research sheds light on how product exposure influences the perception and aesthetic appraisal of product designs, several questions remain unanswered. In this research, we focused on the product attribute modernity and found that prior product exposure influences its relationships with physical properties of a product design and its perception. However, it must be noted that relationships that were found generalizable over different product categories in prior research are not necessarily incorrect. Indeed, physical properties that may evoke a specific product attribute for wine bottles may also do so for perfume bottles (Orth & Malkewitz, 2008). For example, the physical properties glass finish and relief/molding influence product attributes, such as sincere, excited and sophisticated. For both wine and perfume bottles, product designs are often shiny and smooth suggesting that the visual prototypes for wine bottles and perfume bottles have similarities. Accordingly, a

generalized relationship between the product attributes and physical properties for wine and perfume bottles was found (Orth & Malkewitz, 2008). Contrarily, we showed that the relationship between curvature and modernity is not always generalizable over different product categories. However, for some product attributes the relationship may be less dependent on the visual prototype of the product category. For example, a product attribute, such as playful, will most likely have some curvature whatever the product category is, because it refers to the anatomy of babies or young animals. After all, babies and young animals are regarded to be playful. Similarly, the same curved product design will most probably be perceived equally playful in local and global markets. Possibly, some product attributes are more stable because they are based on other aspects than the prototype. More research in what factors influence whether product attributes are dependent on product exposure would be valuable. Contradictory to what is often assumed, the relationships between physical properties of product designs and product attributes are not always generalizable over product categories. This has its implications for how results of prior research can be used in design practice. What makes one product design look modern can make a product design from another product category look classical. Guidelines given in, for example, Kansei engineering or other physical-emotional mapping techniques, may not always be generalizable across product categories (Dahlgaard et al., 2008). These techniques wherein product attributes are mapped to the product's physical properties are based on extensive databases of the physical properties and product attributes of many different kinds of product categories. Knowing that the relationship between physical properties and modernity, is not always generalizable over product categories suggests that guidelines based on such studies should be implemented with great care. Even though we find that modernity positively influences aesthetic appraisal, it is important to keep in mind that modernity and deviation from the prototype is beneficial, but only up to a certain degree. Research has shown that people like products to be deviant, but they still need to be recognizable (Blijlevens, Carbon, Mugge, Schoormans, 2011). Hence, modernity may only be positively related to aesthetic appraisal up until a certain point. When a product design extremely deviates from the prototype, it may be too difficult for people to understand what it is and therefore people may be unable to categorize it to the appropriate product category. This may lead to a negative aesthetic appraisal (Mandler, 1982). In future research, it would be valuable to assess up to what point modernity is still positively appraised

and what factors influence this optimal point.

References

- Arbuckle, J. L. (1995). *Amos Users' Guide*. Chicago: Small Waters.
- Aronoff, J., Woike, B.A., & Hyman, L.M. (1992). Which are the Stimuli in Facial Displays of Anger and Happiness: Configurational Bases of Emotion Recognition. *Journal of Personality and Social Psychology*, 62(6), 1050-1066.
- Bar, M., & Neta, M. (2006). Humans Prefer Curved Visual Objects. *Psychological Science*, 17(8), 645-648.
- Berlyne, D. E. (1971). *Aesthetics and Psychobiology*. New York: Appleton-Century-Crofts.
- Blijlevens, J., Creusen, M. E. H. & Schoormans, J. P. L. (2009). How Consumers Perceive Product Appearance: The Identification of Three Product Appearance Attributes. *International Journal of Design*, 3(3), 27-35.
- Blijlevens, J., Carbon, C.-C., Mugge, R. and Schoormans, J. P. L. (2012), Aesthetic Appraisal of Product Designs: Independent Effects of Typicality and Arousal. *British Journal of Psychology*, 103, 44–57
- Carbon, C. C. (2010). The Cycle of Preference: Long-term Dynamics of Aesthetic Appreciation. *Acta Psychologica*, 134(2), 233-244.
- Carbon, C. C. and Leder, H. (2005). The Repeated Evaluation Technique (RET). A Method to Measure Dynamic effects of Innovativeness and Attractiveness. *Applied Cognitive Psychology*, 19, 587-601.
- Chuang, M.-C., & Ma, Y.-C. (2001). Expressing the Expected Product Images in Product Design of Micro-electronic products. *International Journal of Industrial Ergonomics*, 27(4), 233-245.
- Creusen, M. E. H. & Schoormans, J.P.L. (2005). The Different Roles of Product Appearance in Consumer Choice. *Journal of Product Innovation Management*, 22, 63-81.
- Crozier, R. (1994). *Manufactured pleasures: psychological responses to design*. Manchester: University Press Manchester.
- Dahlgaard, J. J., Schütte, S., Alikalfa, E., & Dahlgaard Park, S. M. (2008). Kansei/Affective Engineering Design – a Methodology for Profound Affection and

- Attractive Quality Creation. *The TQM Journal – International Review of Organizational Improvements*, 20(4), 299-311.
- Fontana, M., Giannini, F., & Meirana, M. (1999). A Free Form Feature Taxonomy. *Computer Graphics Forum*, 18(3), 107-118.
- Hsiao, S.-W., & Wang, H.-P. (1998). Applying the Semantic Transformation Method to Product Form Design. *Design Studies*, 19 (3), 209-330.
- Hsu, S. H., Chuang, M. C. & Chang, C. C. (2000). A Semantic Differential Study of Designers' and Users' Product Form Perception. *International Journal of Industrial Ergonomics*, 25, 375-381.
- Jernigan, M. H., & Easterling, C. R. (1990). *Fashion Merchandising and Marketing*. New York: Macmillan.
- Mandler, G. (1982). The Structure of Value: Accounting for Taste. In M. S. Clarck & S. T. Fiske (Eds.), *Affect and Cognition: The Seventeenth Annual Carnegie Symposium on Cognition* (pp. 3-36). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Mugge, R., Govers, P.C.M., & Schoormans, J.P.L. (2009). The Development and Testing of a Product Personality scale. *Design Studies*, 30(3), 287-302.
- Orth, U. R. & Malkewitz, K. (2008). Holistic Package Design and Consumer Brand Impressions. *Journal of Marketing*, 72, 64-71.
- Page, C. & Herr, P. M. (2002). An Investigation of the Processes by which Product Design and Brand Strength Interact to Determine Initial Affect and Quality Judgments. *Journal of Consumer Psychology*, 24(1), 89-99.
- Reber, R., Schwarz, N., & Winkielman, P. (2004). Processing Fluency and Aesthetic Pleasure: Is Beauty in the Perceiver's Processing Experience? *Personality and Social Psychology Review*, 8(4), 364-382.
- Silvia, P. J., & Barona, C.M. (2009). Do People Prefer Curved Objects? Angularity, Expertise, and Aesthetic Preference. *Empirical Studies of the Arts*, 27(1), 25-42.
- Veryzer, R.W. & Hutchinson, J.W. (1998). The Influence of Unity and Prototypicality on Aesthetic Responses to New Product Designs. *Journal of Consumer Research*, 24, 374-394.
- Veryzer, R. W. (1999). A Nonconscious Processing Explanation of Consumer Response to Product Design. *Psychology & Marketing*, 16(6), 497-522

THE REUTILIZATION AND DEVELOPMENT OF VACANT SPACES IN TAIWAN: A CASE STUDY OF THE HUASHAN 1914 CREATIVE PARK

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Abstract

Established in 1914, Huashan was a vital alcohol beverage manufacture factory during the Japanese colonial period. The alcohol beverage manufacture factory has earned abundant historical and cultural significance. After years of desertion, with the efforts of the art field, the government commissioned the Association of Culture Environment Reform Taiwan to reorganize the space called the Huashan Arts District. Since then, the Huashan Arts District has provided those of the artistic world, non-profit organizations, and individuals with an area for the creation of visual art, performing art, and literature. Currently, the Huashan Arts District incorporates diverse art forms, serving as an interdisciplinary platform for emerging young artists.

To comply with governmental policies for economic development; Huashan transformed into the “Huashan 1914 Creative Park” in 2003 for the cultural and creative industries use and managed by Taiwan Cultural-Creative Development Co., Ltd. The mission of the park is to promote domestic design abilities and public living aesthetics through the provision of space for artists to exchange, learn, promote, and market their creative works.

This study discusses the developmental phases of Huashan from a historical perspective: the period of the Taipei Winery (1914 to 1987), the time during which the land was vacant (1987 to 1998), the period of the Huashan Arts District (1998 to 2003), the transformational period (2003 to 2007), and the period of the Huashan 1914 Creative Park (2007 to present). This study employs a literature review and panel interviews to investigate the transformation process, conditions, and potential development of Huashan. The research results can serve as a reference for the transformation and use of vacant spaces in Taiwan.

Introduction

Huashan Creative Park is located in the center of the capital. In 1997, a group of artists discovered that this waste of space that retained memories of the past was ideally suited for artistic activities. This new use for Huashan meant that new attitudes toward the park began to flourish. For the next decade, "Huashan Arts District" hosted a combination of multi-arts performances in line with the country's economic policy for cultural and creative industries. This development of Huashan was a highly creative approach to reclaiming old spaces while retaining the city's historical memories and sentiment.

In Huashan, entire buildings dating back to the wine industry during the Japanese occupation have been preserved. Artists were attracted by its architectural structure and interior spaces, and saw the potential for the vacant space to be infused with new life and vitality. During its controversial transformation into a space that features "artistic autonomy" and "cultural output value," Huashan has become a standard model where social and revolutionary idealists fight for democracy and autonomy (Pin-Tzu Chen, 2005). It is also a benchmark of vacant space reutilization. The political and economic forces behind the policies of Taiwan's cultural and creative industries will ensure the establishment of Huashan's new orientation.

The policies and status of reutilization of public vacant spaces

The "reutilization of vacant space" refers to original monuments, historic buildings, general constructions, or distinctive spaces. Such buildings or areas have been neglected or abandoned for some time, but with proper planning, they can be actively and effectively reused. "Vacant space" is considered a resource for alternatively imagined spaces. This concept can be considered an extension of the principle of the space abolishing martial law, and focuses on creating movement in urban multicultural environments (Huang-Rui Mao & Li-Hung Hsiao, 2002). Vacant space connects with the historical context to introduce new vitality through a recycling initiative that combines various regions with the living environment (Pao-Shia Hsueh, 2008).

The reutilization of vacant space in Taiwan is realized primarily through non-profit programs, where local art and culture are integrated to promote the development of spaces for arts and culture and cultural exchanges. This solution not

only solves the challenge of a lack of spaces for arts and culture, but also revitalizes the legacy of past industries by preserving buildings that represent a specific style and history. Policies that ensure the support of the community and government for the reuse of old resources will enable these spaces to become the city's most valuable cultural assets.

The key to ensuring that spatial reuse continues to fulfill its role is the operations manager. Operations management of the reutilization of vacant spaces in Taiwan can occur by two routes. The first is management by government authorities, and the second is the outsourcing business model. The outsourcing model includes the dimensions of Operate-Transfer (OT), Build-Operate-Transfer (BOT), and Rehabilitate-Operate-Transfer (ROT). In OT, non-governmental organizations are commissioned to manage the space, with the agreement that operations are returned to the government after the expiration of the designated period. In BOT, the space is financed, built, and operated by non-governmental organizations, but the ownership of the construction transfers to the government after the operation period expires. In ROT, a non-government organization leases existing facilities from the government to conduct renovation and expansion, the operation is then returned to the government without asking for the expenses on renovation and expansion.

The various development phases of Huashan have used the ROT model of management. The more feasible direction for sustainable development is expected to be identified by government policies.

The historical background and development process of Huashan

1. The period of the Taipei Winery (1914 to 1987)

After occupying Taiwan, the Japanese constructed new wineries to increase their revenue. The alcohol beverage manufacturing industry in Taiwan thus gained the status of an independent new industry rather than continuing as an agricultural sideline. In 1914, a Japanese alcohol beverage company raised funds to build the site now known as Huashan Culture Park in Taipei. This company ran a brewery that manufactured brewage, distilled, and remanufactured products. However, the wartime economic crisis resulted in a steadily dwindling production that eventually had to be discontinued. In 1922, the Japanese government bought the winery and

changed its name to Taiwan Governor-General's Monopoly Bureau, Taipei Wine Factory. The factory produced mainly alcohol and added rice wine, wine, plum liquor, and other local flavors for alcoholic beverages to its product list.

After Taiwan's retrocession, in 1975, Huashan Park was renamed Taiwan Province Tobacco & Wine Government Monopoly Bureau, Taipei First Winery. The main products were rice wine and fruit wine. However, the wine manufacturing process caused environmental pollution, and no effective solution could be found for this problem. The dissatisfaction of the local residents led to the closure of the winery in 1987.

2. The period of inactive space (1988 to 1998)

After the Taipei Winery was relocated, the factory stood abandoned for many years and became desolate. In 1997, while searching for a venue for the Sino-French Art Exhibition, artists discovered the huge creative potential that Huashan offered. Huashan entered a phase of promotion of movement, which gained momentum in 1997 and 1998. With the incident of The Golden Bough Theatre trespassed into Huashan and staged various plays in the abandoned halls. This experimental performance drew the attention of the local community and law enforcement agencies, resulting in the arrest of the director for illegal invasion of national land. This event caused shock and anger in the arts community, and a number of senior artists (from the fields of visual arts, performing arts, filmmaking, and art education) joined to form an interdisciplinary civil society organization called Huashan Arts District Promotion Association. The artists led a series of street demonstrations and performances, and obtained people's signatures and submitted petitions to the government. In this manner, they hoped to contribute the establishment of the Huashan Arts District. Continuing petitions eventually resulted in the "Association of Culture Environment Reform Taiwan" being formally established in October 1998 under a governmental agreement.

3. The period of the Huashan Arts District (1998 to 2003)

In January 1999, the "Association of Culture Environment Reform Taiwan" was commissioned by the Ministry of Culture (former Council for Cultural Affairs Central Office) to be responsible for Arts District operations management. This role included restructuring Huashan to become a multi-arts space where performances and

exhibitions could be held. The legalization of the Arts District was promoted, and restoration and management on the four historical buildings was initiated. The buildings were the plum wine factory, sillian building, fruit wine building, and administration building. The space also included an outdoor "Art Street."

To keep Huashan on track, the association organized a management committee and invited experts to participate in planning the specific direction of the business. These professionals had experience in business management, urban development, sociology, and landscaping. After Huashan had been operating for 6 years, the government drafted a policy of "cultural and creative industries." This policy considered arts activities as a cultural and creative industries, and Huashan was renamed as the Cultural and Creative Industries Park. The association then resigned from Huashan because they felt that the Huashan Arts District was unable to meet the government's target for achieving the required output value.

4. The transformational period (2003 to 2007)

In 2003, L'orangerie International Art Consultant Co. Ltd obtained the right to manage Huashan. The park was renamed "Huashan Cultural and Creative Industries Park" to emphasize the aspect of cultural and creative industries. From 2004 onward, the company guided Huashan into an entrepreneurial management style. The government still owned the initiative at this stage and provided a subsidy for its management expenses to L'orangerie International Art Consultant Co. Ltd every year. The park still currently emphasizes spatial orientation for arts exhibitions and annually plans 12 exhibitions.

5. The period of the Huashan 1914 Creative Park (2007 to present)

In 2007 the Taiwan Cultural-Creative Development Co. Ltd. assumed responsibility for the renovation and operation of the park, and renamed it Huashan 1914. Taiwan Cultural and Creative Development Co., Ltd, which is led by Yuan-Liou Publishing Co., Ltd, manages the 30 buildings in Huashan Creative Park, excluding the cinema, which is under construction and will be managed by the Taiwan Film and Culture Association. The spaces in Huashan can be divided into two categories: performance rental areas and stationary vendors. The performance rental areas extend and continue the original purpose of Huashan Arts District, providing rental spaces for performances, exhibitions, rehearsals, and organized activities. The stationary

vendors in the park are primarily caterers and cultural and creative commodity sellers; they hope to attract larger crowds and capitalize on business opportunities. The spatial planning of the entire park is shown in Figure 1.



Figure 1 : The spatial planning of the Park (Source: modified roadmap)

In 2012 the park included numerous vendors, one gallery, two music promotion companies, three cultural and creative commodities, seven restaurants, and one yoga studio. Fourteen stationary vendors provide related services.

Conclusion

This study presents a review of the relevant literature and the results of a SWOT (strength, weaknesses, opportunities, and threats) analysis of Huashan Creative Park. According to the results of SWOT analysis, we interviewed store owners, theater workers, and administrative staff in Huashan Creative Park between April 16, 2012, and April 20, 2012. The data were subject to qualitative analysis. The development of Huashan Creative Park was subjected to SWOT analysis from the perspectives of cultural policy, space, art education, cultural output value, service providers, and location.

1. The aspect of cultural policy

(1) Strength: The development of the Park was a pioneer in the field, it provides a landmark example of reused space, containing city monuments and historical buildings within the Park to allow the construction of the park to be perfectly preserved.

(2) Weakness: Lack of policy guidance and underutilization of neighboring resources led to a lack of industry clusters efficiency.

(3) Opportunity: Plans to provide an arts corridor to connect the center of the Park to the periphery and to extend the arts space.

(4) Threat: Under-regulated mode of operation, leading to the loss of cultural and creative professionals and an inability to effectively attract creative producers stationed in the Park.

2. The aspect of space

(1) Strength:

- a. To use the space for diverse activities or vendors, including performances, exhibitions, small concerts, movie theaters, rehearsal space, meeting rooms, restaurants, and the shops for selling cultural and creative merchandise.
- b. With the advantage of its ample space, it is perfect for large-scale events.
- c. Huashan Creative Park is divided into several areas: indoor, outdoor, the Central Arts Park, and the overall park. This approach facilitates the management of open space and public access to Huashan.
- d. A large proportion of space is used mainly for culture and arts-related activities, maintaining the original objective of the Arts District, that is, enabling arts communities to continue engaging in artistic creation and exchange activities.

(2) Weakness:

- a. Huashan Creative Park is defined as a special precinct in urban planning and is not zoned for residential use. Thus, the park cannot provide low-cost housing for artists.
- b. The Park lacks adequate production spaces with their own creative producers and artists' studios. Cultural activities are focused more on consumption than simple productions.

(3) Opportunity:

- a. The citizens of Taipei regard Huashan as a place of leisure.
- b. Huashan provides students and non-profit arts groups with preferential rental rates, with the intention of attracting more arts exhibitions and activities.

(4) Threat: A large portion of space in the Park is used for culture and arts-related activities, which are homogeneous to the Arts District's original purposes and does not significantly enhance the cultural output value of the cultural and creative industries.

3. The aspect of art education

(1) Strength: The Park provides lectures, courses, and workshops for people in the visual arts and performing arts. Artistic teams are invited to guide people in their appreciation of the arts and to experience artistic creations.

(2) Opportunity: Students may hold graduation exhibitions at Huashan and would thereby learn from each other and observe their competitors' works.

4. The aspect of cultural output value

(1) Strength:

- a. Private participants invest in research projects through the outsourcing business model, which, combined with the various cultural and creative industries, improves the productivity of Huashan Creative Park.
- b. Commercial activities increase the Park's popularity and benefit its economic potential

(2) Weakness:

- a. Commodities and restaurants in the Park are expensive, and are thus not readily affordable for all consumers.
- b. Most cultural activities in the Park follow a model of consumption or of consumption combined with production. Less emphasis is placed on simple production. The park thus risks becoming dominated by performances, exhibitions, and the showcasing of cultural and creative products.

(3) Opportunity:

- a. One of the tourist attractions in Taipei.
- b. To provide a platform for talented people to meet and communicate.
- c. The Park is situated close to the National Taipei University of Technology.

Opportunities may exist to cooperate with the Academy linked to the school and for the school to provide industrial talent to the Park.

(4)Threat: Enterprise and talent interact at a relatively superficial level at Huashan Creative Park. The challenge of providing continuous and in-depth stimulation and greater innovation is considerable.

5. The aspect of service provider

(1) Strength:

- a. Good service manner and management.
- b. Established parking lots, consumption can offset the parking fees.

(2) Opportunity: From time to time, large-scale exhibitions and events should be organized to increase public participation and raise awareness of the nature of Huashan Creative Park.

(3) Threat: The majority of vendors stationed in the Park are restaurants, resulting in a lack of diversity among the Park's businesses.

6. The aspect of location

(1) Strength:

- a. The Park is located in the center of Taipei city making it a favorable geographical landmark. Convenient transportation access is provided by the MRT and a high-density bus network.
- b. The Park attracts people wanting to dine out.
- c. Huashan is close to the downtown shopping district, and this position provides economic benefits.

(2) Opportunity: Close to shopping malls that sell electronic products to collaborate with electronic industries to attract young people.

Suggestions

1. The aspect of cultural policy

The government should grant greater autonomy to the Huashan operational management team. The park needs to attract creative producers and artists as well as vitalize the monuments, historic buildings, vacant space, and facilities. Interdisciplinary integration is necessary to drive the development of culture and creative industries.

2. The aspect of space

Government grants should facilitate relevant arts activities and provide struggling arts groups with the chance for exposure. The use of rehearsal space should be clearly specified and reserved for arts groups or creative individuals. Enterprises could develop the new markets for the non-profit arts groups so they could share the space. The part of areas should be designated for artists to transform the Park landscape into a Taipei SOHO district to attract the crowds.

3. The aspect of art education

To prevent Huashan from becoming merely a performance and merchandise display venue, some of the large spaces should be subdivided and dedicated to Art Education Corner. In such an area, people could experience hands-on artistic activities or participate in role-play model. However, this should be a reoccurring event with seasonal themes being introduced, rather than occasional workshops.

4. The aspect of cultural output value

The vendors in the park operate independently from each other. The park management should explore the mutual benefits available for the vendors regarding production, distribution, and consumption in the industry. They should encourage horizontal and vertical cooperation among vendors to promote the establishment of a cooperation network in the cultural and creative industry.

5. The aspect of service provider

Most vendors serve food and beverages. The restaurant styles in Park were extremely similar. The range of businesses should be increased to include different types of shops, to prevent Huashan Creative Park from becoming a food court.

6. The aspect of location

The development of the park should involve absorbing the surrounding resources to integrate the park into the local environment. The integration with surrounding shops and artists as well as regional development would result in the growth of the park.

References

Chen, P. T. (2005). *Huashan: Transition Art Space as a Presentation of Culture Industry* (Unpublished master dissertation). Providence University, Taichung.

Tchen, Y. C. (2001, December). Preface: Old Space, New Vision. *Arts, Stationed, operation and management: the construction of arts development opportunities and unused space to discuss the forum Record*. Nantou: Preparatory Office of the Council for Cultural Affairs Art Village.

Hsueh, P. S. (2008, February). Space lifting of martial law VS. Installation Art
Artist, 393, 132-137.

Hsiao, L. H.& Huang, J.M. (2002). *Creative programming in reuse of spaces : an interational perspective*. Taipei: Council for Cultural Affairs.

AESTHETIC EVALUATION CRITERIA FOR SUSTAINABLE CAMPUS

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Abstract

Sustainability discourses and environmental problems have become a fundamental part of everyday life concerns as we enter the end of the first decade of twenty-first century. With sustainable buildings promote better life conditions, sustainable campus aims to provide better environment for greater learning potential. Since the physical environment can significantly impact students' learning and instructors' teaching capability, the goal of sustainably designed school facilities is that they will operate more efficiently and last longer.

In attempt to understand the nature of aesthetic experience, it is useful to distinguish between sensory, formal, and symbolic interaction between viewer and the environment. Sensory aesthetics is concerned with the pleasure of the sensations human receive from the environment. Formal aesthetics is concerned primarily with the appreciation of the physical attributes in the visual world, such as the shapes, rhythms, complexities, and sequences of experiences of individual buildings and the combinations of buildings that form the built environment. Symbolic aesthetics addresses the associational meanings that humans hold through their appreciation of the environment (Lang1974).

This research aims to explore aesthetic evaluation criteria for sustainable campus planning. Potential influential factors concerning aesthetic values and experience in sustainable campus design were first compiled through literature review, Fuzzy Delphi method (FDM) was then incorporated to elicit key evaluation indicators. Entropy weight method could then be applied to objectively calculate the weight of each indicator to effectively provide design suggestion and consideration for future sustainable campus planning.

Keywords: aesthetic evaluation, sustainable campus, Fuzzy Delphi method, sensory aesthetics, formal aesthetics, symbolic aesthetics.

Introduction

With the concept of sustainability been generally acknowledged, the issue of environmental education has raised international awareness concerning the importance of academic profession, innovative creation and global perspective of future development. In Taiwan, the idea of ecological thinking and environmental protection were first incorporated into the educational system by Chiang in year 2004.

Campus building acts as an important part of the public architecture as well as a teaching environment. The design of campus architecture must consider relevant issues regarding environmental education. The concept of sustainable campus, also known as “ecological campus” or “green campus”, considers several dimensions in a perspective of long-term responsibility. The goal is to manage and design the campus facility in consideration of having both the software and hardware operate more efficiently and last longer. Since year 1999, the educational board of Taiwan has started to promote programs such as “green campus planning” (Lin, 2004). In year 2004, the educational board changed the program title from “green campus planning” to “sustainable campus planning” to emphasize the integration of green architecture and ecological technology under the principle of sustainability, ecology and environmental health for educational campus design.

According to Chiang (2004), the concept of sustainable campus addresses the integration of sustainable campus architecture with ecological campus environment in the application of local technology and sense of place. The idea of sustainable campus requires the teaching environment to consider community awareness, response to the environmental and climatic factor, take into account the local identity and sustain with the surrounding environment. It aims to provide high quality learning environment with comfortable and dynamic learning space to promote the joy of learning and inspire interaction between teaching and learning.

The field of environmental aesthetics focuses on perceiving and recognizing the meaning of human interactions with the environment. Researchers and designers involved with environmental aesthetics seek to find the universal principles that explain similarities and differences in human responses that give rise to aesthetic appreciation. According to Nasar (1988), environmental influences on aesthetic evaluation have two components, the formal and the symbolic or associational. Formal analysis of aesthetics focuses on the attributes of the object and how they

contribute to aesthetic response. Such an analysis may consider physical properties of objects such as size, shape, colour, complexity and balance. Symbolic analysis of aesthetics focuses on factors that allow humans to imply meanings, judgments or thoughts through experience or interaction with the perceived object and its attributes such as style or context.

Jon Lang (1988) suggested that in attempting to understand the nature of the aesthetic experience, it is useful to distinguish between sensory, formal, and symbolic interaction between people and their built environment. *Sensory aesthetics* is concerned with the pleasure of the sensations human receive from the environment. It involves the arousal of one's perceptual systems, it is multidimensional, and arises from the colours, orders, sounds, and textures existing within the environment. *Formal aesthetics* in architecture is concerned primarily with the appreciation of the physical attributes in the visual world, such as the shapes, rhythms, complexities, and sequences of experiences of individual buildings and the combinations of buildings that form the built environment. *Symbolic aesthetics* addresses the associational meanings that humans hold through their appreciation of the environment.

In this paper, sensory aesthetics is defined as the direct feelings and stimulations on human sense resulted from building and the environment (Hsiao, 2004; Hsu, 2005; Chen, 2007; Chang, 2009; Hsieh, 2009); the formal aesthetics addresses the responses produced by human cognition regarding situations and distinct features exist in the building and the environment (Santayana, 1896; Hsiao, 2004; Hsu, 2005; Chen, 2007); and the symbolic aesthetics describes the underlining meaning or associational experience created by building and the environmental image (Morris, 1938 ; Nasar, 1987 ; Hou, 2002 ; Hsu, 2005).

Method

Literature review- collection of potential evaluation criteria

Potential evaluation criteria concerning aesthetic evaluation in sustainable campus were first collected through literature reviews on the topics of environmental aesthetics (Hou, 2002; Hsiao, 2004; Hsu, 2005; Chen, 2007; Chang, 2009; Chen, 2008; Hsieh, 2009; Morris, 1938; Nasar, 1987; Santayana, 1896) and sustainable campus planning (Chen, 2007; Che, & Chen, & Pan, 2009; Lin, 1999; Chiang, 2004).

A framework was set up employing the “Sustainable Campus Guideline – campus planning and design criteria” published by the Ministry of Education of Taiwan in 2006 and the environmental aesthetic categorizes set up by Lang in 1974. There are four principle categories listed in the Sustainable Campus Guideline as: Environmental Sustainable Site, Ecological Cycles, Energy Resource Management, and Healthy Building Environment. This framework was utilized as the basic structure for the process of literature review in collecting potential evaluation criteria. Interviews and discussion sections were also set up with experts in the field of campus planning and design, environmental aesthetics, architecture, landscape and users in university campus to aid the process. As a result, a total of 113 possible impact factors were obtained and shown in Table 1.

Table 1. List of potential evaluation criteria and the extraction result

Category	Aspect	Aesthetics	Possible impact factors	MIN	GEO	MAX	TFN	D _i
1.Environmental Sustainable Site	1.1Response to the sense of place	Sensory (SeA)	1.Comfortable	2	6.52	9	(2, 6.52, 9)	5.84
			2.Diverse	3	5.52	9	(3, 5.52, 9)	5.84
			3.Fitted	4	6.80	9	(4, 6.80, 9)	6.60
		Formal (FA)	4.Building form	3	5.25	9	(3, 5.25, 9)	5.75
			5.Building style	2	5.16	9	(2, 5.16, 9)	5.39
			6.Building space composition	4	5.87	9	(4, 5.87, 9)	6.29
		Symbolic (SyA)	7.Geographical identity	4	6.74	9	(4, 6.74, 9)	6.58
			8.Sense of place	2	5.87	9	(2, 5.87, 9)	5.62
			9.Culture uniqueness	2	6.93	9	(2, 6.93, 9)	5.98
	1.2Response to the existing environment	Sensory (SeA)	1.Creative	2	4.70	9	(2, 4.70, 9)	5.23
			2.Harmony	3	7.09	9	(3, 7.09, 9)	6.36
		Formal (FA)	3.Overall planning	3	7.77	9	(3, 7.77, 9)	6.59
			4.Building design	2	5.59	9	(2, 5.59, 9)	5.53
			5.Extension of environment	2	7.15	9	(2, 7.15, 9)	6.05
		Symbolic (SyA)	6.Locality	2	6.47	9	(2, 6.47, 9)	5.82
			7.Campus style	2	6.27	9	(2, 6.27, 9)	5.76
			8.Campus landmark	2	5.41	9	(2, 5.41, 9)	5.47
	1.3Environmental protections	Sensory (SeA)	1.Balance	2	6.12	9	(2, 6.12, 9)	5.71
			2.Blend in	2	5.56	9	(2, 5.56, 9)	5.52
			3.Natural	2	6.80	9	(2, 6.80, 9)	5.93
		Formal (FA)	4.Minimalist style	2	5.45	9	(2, 5.45, 9)	5.48
			5.Lightweight structure	2	5.74	9	(2, 5.74, 9)	5.58
			6.Ecological material	2	6.64	9	(2, 6.64, 9)	5.88
		Symbolic (SyA)	7.Integration with natural environment	2	7.71	9	(2, 7.71, 9)	6.24
8.Campus image			1	6.68	9	(1, 6.68, 9)	5.56	
2.Ecological Cycle	2.1Water cycle	Sensory (SeA)	1.Diverse	1	5.90	9	(1, 5.90, 9)	5.30
			2.Comfortable	3	6.70	9	(3, 6.70, 9)	6.23
			3.Overall planning	4	7.48	9	(4, 7.48, 9)	6.83
		Formal (FA)	4.Material style	1	5.51	9	(1, 5.51, 9)	5.17
			5.Building shape	1	5.48	9	(1, 5.48, 9)	5.16
		Symbolic (SyA)	6.Ecological image	2	6.32	9	(2, 6.32, 9)	5.77
			7.Ecological education and demonstration	3	6.77	9	(3, 6.77, 9)	6.26
	2.2Biodiversity	Sensory (SeA)	1.Assorted	2	5.51	9	(2, 5.51, 9)	5.50
			2.Comfortable	2	5.77	9	(2, 5.77, 9)	5.59
			3.Friendly	2	5.54	9	(2, 5.54, 9)	5.51
		Formal	4.Biodiversity planning	3	6.45	9	(3, 6.45, 9)	6.15

3. Energy Resource Management	2.3 Ecological horticulture	(FA)	5. Building form and shape	2	5.49	9	(2, 5.49, 9)	5.50
			6. Overall site greenery	2	6.42	9	(2, 6.42, 9)	5.81
		Symbolic (SyA)	7. Diversity of space	3	7.31	9	(3, 7.31, 9)	6.44
			8. Landscape space	3	6.78	9	(3, 6.78, 9)	6.26
		Sensory (SeA)	1. Natural	3	7.10	9	(3, 7.10, 9)	6.37
			2. Multifarious	2	6.37	9	(2, 6.37, 9)	5.79
		Formal (FA)	3. Horticulture planning	1	6.49	9	(1, 6.49, 9)	5.50
			4. Ecological plantation	2	6.01	9	(2, 6.01, 9)	5.67
	Symbolic (SyA)	5. Landscape image	3	6.54	9	(3, 6.54, 9)	6.18	
		6. Ecological education and demonstration	1	5.76	9	(1, 5.76, 9)	5.25	
	3.1 Energy saving	Sensory (SeA)	1. Acknowledged	2	5.39	9	(2, 5.39, 9)	5.46
			2. Comfortable	3	6.55	9	(3, 6.55, 9)	6.18
		Formal (FA)	1. Building planning	4	7.41	9	(4, 7.41, 9)	6.80
			2. Control system	2	6.52	9	(2, 6.52, 9)	5.84
			3. Energy saving method	2	6.95	9	(2, 6.95, 9)	5.98
		Symbolic (SyA)	1. Campus image	2	5.83	9	(2, 5.83, 9)	5.61
			2. Overall performance	1	6.33	9	(1, 6.33, 9)	5.44
		3.2 Utilization of natural resource	Sensory (SeA)	1. Friendly	2	5.79	9	(2, 5.79, 9)
	2. Innovative			3	4.73	9	(3, 4.73, 9)	5.58
	Formal (FA)		1. Overall design	2	5.52	9	(2, 5.52, 9)	5.51
2. Equipment planning			3	6.36	9	(3, 6.36, 9)	6.12	
Symbolic (SyA)	1. Resource management and development		2	7.21	9	(2, 7.21, 9)	6.07	
	2. Friendly Campus		2	6.19	9	(2, 6.19, 9)	5.73	
3.3 Water resource management and recycle	Sensory (SeA)	1. Participated	2	5.70	9	(2, 7.70, 9)	5.57	
		2. Comfortable	2	5.89	9	(2, 5.89, 9)	5.63	
	Formal (FA)	1. Overall planning	3	7.47	9	(3, 7.47, 9)	6.49	
		2. Equipment design	2	5.38	9	(2, 5.38, 9)	5.46	
	Symbolic (SyA)	1. Local identity	2	5.46	9	(2, 5.46, 9)	5.49	
		2. Teaching and promotion	4	6.54	9	(4, 6.54, 9)	6.51	
3. Locality	1	6.60	9	(1, 6.60, 9)	5.53			
3.4 Resource recycling	Sensory (SeA)	1. Diverse	3	4.91	9	(3, 4.91, 9)	5.64	
		2. Comfortable	2	5.51	9	(2, 5.51, 9)	5.50	
		3. Reminiscent	3	4.91	9	(3, 4.91, 9)	5.64	
	Formal (FA)	1. Building reuse	1	6.58	9	(1, 6.85, 9)	5.53	
		2. Building material recycle	1	6.73	9	(1, 6.73, 9)	5.58	
		3. High endurance and low maintenance	4	7.45	9	(4, 7.45, 9)	6.82	
	Symbolic (SyA)	1. Continuity	3	6.20	9	(3, 6.20, 9)	6.07	
		2. Campus history and cultural identity	2	6.03	9	(2, 6.03, 9)	5.68	
4. Healthy Building Environment	4.1 Healthy sound environment	Sensory (SeA)	1. Natural	2	5.72	9	(2, 5.72, 9)	5.57
			2. Familiar	2	5.77	9	(2, 5.77, 9)	5.59
			3. Tranquil	4	7.35	9	(4, 7.35, 9)	6.78
		Formal (FA)	1. Campus planning	3	6.69	9	(3, 6.69, 9)	6.23
			2. Create campus identity	2	5.58	9	(2, 5.58, 9)	5.53
			3. Indoor sound environment	2	6.40	9	(2, 6.40, 9)	5.80
	Symbolic (SyA)	1. History and culture	3	5.26	9	(3, 5.26, 9)	5.75	
		2. Healthy sound environment	1	6.34	9	(1, 6.34, 9)	5.45	
	4.2 Healthy lighting environment	Sensory (SeA)	1. Balance	1	6.42	9	(1, 6.42, 9)	5.47
			2. Comfortable	1	5.98	9	(1, 5.98, 9)	5.33
			3. Warm	2	5.86	9	(2, 8.86, 9)	5.62
		Formal (FA)	1. Building envelopes and opening	4	6.67	9	(4, 6.67, 9)	6.56
2. Building design			2	6.32	9	(2, 6.32, 9)	5.77	
3. Building material			2	5.68	9	(2, 5.68, 9)	5.56	
Symbolic (SyA)	4. Building location and style	4	6.97	9	(4, 6.97, 9)	6.66		
	1. Health environment	2	5.39	9	(2, 5.39, 9)	5.46		
2. Colour planning	2	5.44	9	(2, 5.44, 9)	5.48			

4.3Healthy heat environment	Sensory (SeA)	1.Comfortable	1	6.32	9	(1, 6.32, 9)	5.44
		2.Cool	2	6.77	9	(2, 6.77, 9)	5.92
	Formal (FA)	3.Building orientation	3	7.81	9	(3, 7.81, 9)	6.60
		4.Thermal vegetation	4	6.60	9	(4, 6.60, 9)	6.53
		5.Building openings	1	6.85	9	(1, 6.85, 9)	5.62
		6.Building design	2	5.30	9	(2, 5.30, 9)	5.43
	Symbolic (SyA)	7.Campus development	2	6.19	9	(2, 6.19, 9)	5.73
		8.Local identity	3	4.81	9	(3, 4.81, 9)	5.60
4.4Healthy air environment	Sensory (SeA)	1.Comfortable	4	7.06	9	(4, 7.06, 9)	6.69
		2.Healthy	3	7.37	9	(3, 7.37, 9)	6.46
	Formal (FA)	3.Landscape and building planning	2	6.95	9	(2, 6.95, 9)	5.98
		4.Building indoor material	1	6.44	9	(1, 6.44, 9)	5.48
	Symbolic (SyA)	5.Campus Style	2	5.80	9	(2, 5.80, 9)	5.60
		6.Horticulture distribution	3	6.02	9	(3, 6.02, 9)	6.01
4.5Healthy water environment	Sensory (SeA)	1.Hygienic	4	6.92	9	(4, 6.92, 9)	6.64
		2.Healthy	4	7.08	9	(4, 7.08, 9)	6.69
	Formal (FA)	3.Building orientation	2	5.67	9	(2, 5.67, 9)	5.56
		4.Building design	3	5.18	9	(3, 5.18, 9)	5.73
		5.Equipment planning	2	6.84	9	(2, 6.84, 9)	5.95
		6.Landscape design	2	5.61	9	(2, 5.61, 9)	5.54
	Symbolic (SyA)	7.Management and maintenance	2	7.08	9	(2, 7.08, 9)	6.69
		8.Healthy building	2	6.40	9	(2, 6.40, 9)	5.80

Fuzzy Delphi method- extraction of critical evaluation criteria

The Delphi method has been used widely in variety of research applications, since its conception and development by Dalkey and Helmer in 1963. Murray, Pipino, & Van Gigch (1985) first applied the fuzzy theory to the traditional Delphi method, and then many different types of fuzzy Delphi method are derived. Fuzzy number and membership degree are used to establish the membership function of each participant. This paper incorporated the FDM developed by Hsu & Yang (2000) to elicit critical evaluation criteria for sustainable campus. The procedures for carrying out the method are briefly explained as follows (Kuo & Chen, 2008; Shen, Lin, & Tzeng, 2011 ; Wang & Chen, 2012):

Step 1: Collect all possible impact factors (PIFs).

Step 2: The experts' opinions of each PIF collected by questionnaires are identified by the TFN as follow:

$$T_i = (L_i, M_i, U_i)$$

$$L_i = \min(X_{ij})$$

$$M_i = \sqrt[n]{\prod_{j=1}^n X_{ij}}, \quad j \text{ denotes the } j\text{th expert, } j = 1, 2, \dots, n$$

$$U_i = \max(X_{ij})$$

Where T_i is the fuzzy number of the PIF i ; X_{ij} indicates the appraisal value of the

j th expert for PIF i ; L_i is the minimum of the experts' evaluation; M_i denotes the geometric mean of the experts' evaluation, and U_i indicates the maximum of the experts' evaluation.

Step 3: Defuzzification with center-of-gravity method (Shen et al., 2011) for the TFNs, where D_i denotes the clear value as follow:

$$D_i = \frac{L_i + M_i + U_i}{3}$$

Step 4: Extract criteria by comparing D_i with the threshold value (S). If $D_i \geq S$, select PIF i ; and if $D_i < S$, eliminate PIF i . In general, the threshold value is determined by decision makers subjectively (Dzeng & Wen, 2005; Kuo & Chen, 2008).

Anonymous questionnaires of FDM were prepared, 17 experts related to the field of environmental aesthetics were asked to estimate the importance of each potential evaluation criteria. A convergence of their opinions was obtained, and 38 critical evaluation criteria were extracted to be applied in the next step of the research. By referring to the arithmetic mean of D_i of all aspects, we subjectively set the threshold value, S , to be 5.86 for the potential evaluation criteria obtained. The results are shown in Table1, with the selected factors shaded in gray.

Results

Employing the fuzzy Delphi method, a total of 38 evaluation criteria was extracted from the obtained 113 criteria, shown in Table 1. The extracted critical evaluation criteria were evenly distributed across the five categories. The extracted criteria and their respective aspects and categories are explained as follows.

Category 1- Environmental Sustainable Site

This category contains three aspects as: 1.1 Response to the sense of place, 1.2 Response to the existing environment, and 1.3 Environmental protections.

Aspect 1.1- Response to the sense of place

This aspect requires the campus to be integrated with the local environment by considering all the various elements in the site environment, the micro-climatic conditions and the socio-culture characteristics through participation of local community. Criterion fitted representing sensory aesthetics was extracted which requires the atmosphere of the overall campus maintains the character of the site and sensitively merged with the local environment. Under the formal aesthetics, criterion building space composition was extracted which calls for the planning and

composition of both inside and outside building space in the campus to be able to hold local activities and undertake the participation from community. Geographical identity was extracted as the evaluation criterion from the category of symbolic aesthetics. This criterion asks the campus design to integrate with the neighboring geographical identity to create distinct campus image.

Aspect 1.2- Response to the existing environment

This aspect requires the campus to design in consideration of the overall environment by integrating with local landscape, as well as maintaining and developing distinct identity for the local community. The criterion, harmony, extracted to represent sensory aesthetics suggests that the diversity of campus architecture and landscape design should maintain the distinct feature of the existing environment and also merge with the local context. Overall planning, from formal aesthetics, requires the building volume and the proportion and size of the landscape to be designed under the principle of overall existing environment. Extension of environment, from formal aesthetics, suggests that building and the nature landscape should develop unique identity while maintaining the distinct feature of the existing environment. None of the criteria from symbolic aesthetics were extracted.

Aspect 1.3- *Environmental protection*

This aspect focuses on preventing negative impact and damage to the site environment from the construction and design of the campus building and landscape. Criterion natural from the sensory aesthetics category was extracted to emphasize the importance of the comfortable and natural feeling created by harmonizing campus building with the natural landscape environment. Building must utilize natural material and construction method to minimize the potential impact to the site environment, as described in criterion ecological material under the formal aesthetics. Under symbolic aesthetics, criterion integration with natural environment was extracted to emphasize the need of integrating campus planning with local history and culture, as well as respect the local natural environment.

Category 2- Ecological Cycle

This category contains three aspects as: 2.1 Water cycle, 2.2 Biodiversity, and 2.3 Ecological horticulture.

Aspect 2.1- Water cycle

This aspect requires the campus to incorporate water feature landscape using water cycle system, water collecting roof system and other water facility to ensure the

function of on-site water retention. It aims to maintain the natural site planning and to achieve natural water cycle through water penetration structure and construction method. Criterion comfortable representing sensory aesthetics was extracted addressing the use of pond design to benefit the visual landscape, adjust climate condition and increase comfortable level of the campus environment. Under the formal aesthetics, criterion overall planning was extracted which requires the planning and design of the campus to consider building environment and climate condition in achieving coherence with the water cycle facility. Ecological education and demonstration was extracted from symbolic aesthetics to suggest that the concept of water cycle system should be integrated into the overall campus development planning and demonstrated through ecological education program.

Aspect 2.2- Biodiversity

This aspect requires the campus environment to sustain and protect local existing biodiversity and overall plantation to construct and maintain an ecological balanced habitation environment. Under this aspect, none of the criteria from sensory aesthetics were extracted. Biodiversity planning, from formal aesthetics, requires the campus planning to maintain the diversity among and within plant and animal species in the campus environment to ensure ecological balance. Diversity of space, from symbolic aesthetics, addresses the connection between building, plantation and animal species to ensure the balance of ecological environment. Landscape space, from symbolic aesthetics, asks the overall campus environment to sustain and protect existing biodiversity and also to ascertain the ecological balance of the neighborhood environment.

Aspect 2.3- Ecological horticulture

This aspect focuses on incorporating diverse plant species and planting methods to create and maintain the balance of ecological system. Criterion natural from the sensory aesthetics category was extracted to address the importance of creating natural feeling environment through landscape and horticulture planning with considerations of ecological system and native species. None of the criteria from formal aesthetics were extracted. Landscape image, representing symbolic aesthetics suggests that native species should be incorporated into the campus horticulture planning to raise the overall ecological and environmental protection image of the campus.

Category 3- Energy Resource Management

The third category from the Sustainable Campus Guideline is Energy Resource

Management, which contains four aspects as: 3.1 Energy saving, 3.2 Utilization of natural resource 3.3 Water resource management and recycling, and 3.4 Resource recycling.

Aspect 3.1- Energy saving

This aspect requires campus building to decrease energy consumption by enhancing thermal resistance of building envelopes, effectively manage energy control system and minimize the use of air conditioning. Under sensory aesthetics, criterion comfortable was extracted to address the need of comfortable learning environment through concept of energy saving and integration of natural environment. Building planning, extracted from formal aesthetics, suggests that the orientation of building and the design of building envelopes could benefit campus planning in achieving energy saving. Energy saving method, extracted from formal aesthetics, requires the design of campus building to consider total energy consumption and employ energy saving materials and design methods. None of the criteria from symbolic aesthetics was extracted.

Aspect 3.2- Utilization of natural resource

This aspect considers the use of wind-power energy system, solar-energy heating facility and other reuse and recycling system of natural energy resource. None of the criteria from sensory aesthetics were extracted. Equipment planning was the criterion extracted from the formal aesthetics category. It requires the proportion and scale of natural resource equipment to be suitable with existing aesthetic quality of the campus. Resource management and development was extracted from the symbolic aesthetics category to suggest that the overall campus planning and development should incorporate usage of natural resource to effectively manage environmental resource surrounds the campus.

Aspect 3.3- Water resource management and recycling

This aspect considers issues of water resource reuse including rain water collection, daily water consumption and usage of water saving equipment. None of the criteria from sensory aesthetics were extracted. Overall planning was extracted to represent formal aesthetics to address that the planning of water saving equipment should be integrated with building design to ensure the safeness, convenience and aesthetic quality of building indoor space. Teaching and promotion was another criterion extracted under the category of symbolic aesthetics. This criterion asks for the water resource management and recycling concept to be incorporated into campus

development and also to be promoted through teaching and participation.

Aspect 3.4- Resource recycling

This aspect is concerned with building reuse, material recycling and selection of building materials. High endurance and low maintenance building material should be considered when building additions and renovations are undertaken. None of the criteria from sensory aesthetics was extracted. High endurance and low maintenance was extracted as formal aesthetics criterion to address the importance of incorporating long-life materials in building design. Representing symbolic aesthetics, criteria continuity was extracted which addresses the importance of resource management and the concept of resource recycling.

Category 4- Healthy Building Environment

The final category, Healthy Building Environment, contains five aspects as: 4.1 Healthy sound environment, 4.2 Healthy lighting environment, 4.3 Healthy heat environment, 4.4 Healthy air environment, and 4.5 Healthy water environment.

Aspect 4.1- Healthy sound environment

This aspect requires campus design to minimize noise level and create healthy sound environment which incorporates local identity and the existing natural sound environment. Under sensory aesthetics, criterion tranquil was extracted to address the need of providing noise buffer to ensure high quality sound environment for the learning and teaching activity. Campus planning was extracted from the category of formal aesthetics, which suggests that teaching space should be specially located and separated from the passageway and traffic movements to prevent noise interference. None of the criteria from symbolic aesthetics was extracted.

Aspect 4.2- Healthy lighting environment

This aspect requires campus design to provide sufficient natural lighting area and also consider color planning for both indoor and outdoor space. None of the criteria from sensory aesthetics were extracted. Under formal aesthetics, criterion building envelop and opening was extracted to address the need of sufficient natural lighting through building opening and envelop design. Building location and style was also extracted from formal aesthetics category, which suggests that the location and style of campus building should take into account the existing landscape to provide comfortable, bright and aesthetically pleasing environment.

Aspect 4.3- Healthy heat environment

This aspect requires campus design to utilize efficient equipment to provide

natural ventilation for the purpose of reducing heat convection and ensuring comfortable temperature level. Under sensory aesthetics, criterion cool was extracted to address the requirement of providing comfortable indoor temperature and indoor moisture level through suitable equipment planning. Building orientation was extracted from formal aesthetics, which suggests that the orientation and form of building should be the first consideration during campus planning to ensure sufficient natural ventilation was take into account. Thermal vegetation was also extract from formal aesthetics, which addresses the use of plants to adjust outdoor temperature and decrease the amount of direct sunlight and heat convection to ensure comfortable indoor temperature. None of the criteria from symbolic aesthetics were extracted.

Aspect 4.4- Healthy air environment

This aspect focuses on ensuring both indoor and outdoor air quality. Under sensory aesthetics, criterion comfortable was extracted to address the requirement of providing comfortable indoor and outdoor air quality. Healthy was also extracted from sensory aesthetics, which requires that plants and vegetation were evenly distributed both indoor and outdoor to ensure healthy air environment. None of the criteria from both formal and symbolic aesthetics were extracted.

Aspect 4.5- Healthy water environment

This aspect focuses on ensuring the water quality of the campus environment, including both daily use water and drinking water. Hygienic, extracted from sensory aesthetics, criterion requires both indoor and outdoor environment to be well managed in regards to air moisture level. Healthy, also extracted from sensory aesthetics, requires the drinking water and daily usage water to be under surveillance to ensure the quality of water environment. None of the criteria from formal aesthetics were extracted. Management and maintenance was the criteria extracted from the category of symbolic aesthetics. It addresses the healthy water environment image obtained by the campus through well maintenance and management of water equipment and water quality.

Conclusion

This research aims to explore aesthetic evaluation criteria for sustainable campus planning. Potential influential factors concerning aesthetic values and experience in sustainable campus design were first compiled through literature review, Fuzzy Delphi method (FDM) was then incorporated to elicit critical evaluation indicators. Entropy

weight method could then be applied to objectively calculate the weight of each indicator to effectively provide design suggestion and consideration for future sustainable campus planning.

Bibliography.

Che-Ming Chiang, (2004), Introduction to Sustainable Building, p234-235, Building intelligence Chi Society, Taipei.

Chia. Jung Hsu., (2005). The Preference Factors of Formal Aesthetic in Commercial Space: An Example of Clothing Stores, Chung Yuan Christian University interior design.

Chen. Chia Lin., (2007). A Study of Environmental Aesthetic Cognition and Aesthetic Responses on Urban Spotlight of Kaohsiung City, Southern Taiwan University Department of Leisure, Recreation, and Tourism Management.

Che. Ming Chiang & Hsing. Hao Chen & Chih. Chien Pan. (2009). Journal of Architecture, No.67, pp.1~23, Mar.

Chin. Wei Chen., (2008). A Study on Environmental Aesthetics of Townscape—A Case Study of Taichung City, National Taipei University of Technology Department of Architecture.

Chih. Feng Hsieh., (2009). A study on the preference of Taiwanese hotel design style for potential Chinese tourists, Fu Jen Catholic University Department of Restaurant, Hotel and Institutional Management.

Dzeng, R. J. & Wen, K. S. (2005). Evaluating project teaming strategies for construction of Taipei 101 using resource-based theory. *International Journal of Project Management*, 23: 483-491.

Hou. Chiang Lee., (2002). A Study on the Influence of Illuminance & Color Temperature of Artificial Lighting on Visual Perception and Survey of Lighting Models-Using Living Room as an Example, Chung Yuan Christian University interior design.

Hsiao. Ping Chang., (2004). The Relationship between Aesthetic Factors and Aesthetic Responses in Indoor Environments: Using Living Room as an Example. Chung Yuan Christian University interior design.

Hsu, T. H. & Yang, T. H. (2000). Application of fuzzy analytic hierarchy process in

- the selection of advertising media. *Journal of Management and Systems*, 7(1): 19-39.
- Jack, I. N., 1988. *Environmental Aesthetics* , CAMBRIDGE UNIVERSITY PRESS.
- Kuo, Y. F. & Chen, P. C. (2008). Constructing performance appraisal indicators for mobility of the service industries using Fuzzy Delphi Method. *Expert Systems with Applications*, 35: 1930-1939.
- Lang, J. N., (1988). Symbolic aesthetics in architecture: toward a research agenda. In J. L. Nasar (Ed.), *Environmental Aesthetics : Theory, Research, and Application* (pp.11-26).
- Lin. Min Ray.(1999). Sustainable Campus, Education special issue of *Environmental Science and Technology*,p26-42.
- Nasar, J. L. (1988). Editor's introduction. In J. L. Nasar (Ed), *Environmental Aesthetics : Theory, Research, and Application* (pp.3-5). New York: Cambridge University Press.
- Shen, Y. C., Lin, G. T. R., & Tzeng, G. H. (2011). Combined DEMATEL techniques with novel MCDM for the organic light emitting diode technology selection. *Expert Systems with Applications*, 38: 1468-1481.
- Wang, W. M., & Chen, C. C. (2012). Universal design applied to establishing evaluation criteria for university campus open space. Paper presented at the 2012 International Conference on Business and Information, Japan : Sapporo.

RECOGNITION OF EMOTIONAL INTENSITIES IN CHINESE CALLIGRAPHY BY A NON-CHINESE SPEAKING POPULATION IGNORANT OF THE ART OF CALLIGRAPHY

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Abstract

Emotionality can affect cortical processing at very short latencies: As early as 100 ms post stimulus, the occipital P1 component of the Event Related brain Potentials (ERPs) amplitude is modulated by emotional content. We explored if encoding emotionality in art stimuli would lead to such early effects as for natural scenes, or expressive faces.

We used recordings of ERPs to investigate how naive subjects perceived emotional intensity from Chinese calligraphies. Sixty Chinese calligraphies were produced by an artist by pair so as to render two versions of a same Chinese sign with different emotional expressivity intensity: one with high emotional expressivity (HEE) and a second with low emotional expressivity (LEE).

Twenty one participants were asked to rate the intensity of the feeling they experienced while viewing each calligraphy. As early as 90 msec post stimulus, occipital responses differentiated LEE from HEE calligraphies, with P1 wave larger in response to HEE than to LEE calligraphies. Emotionality from abstract visual art might be encoded as rapidly as emotionality from natural scenes, or expressive faces, during the perceptive stages of information processing.

Moreover, those results indicate a significant resemblance in the classification of calligraphies in emotional level between a non-Chinese speaking population ignorant of the art of calligraphy and the artist's own classification. Some implications of these results for the study of emotion perception and for the study of the perception of style in Chinese calligraphy are then discussed.

Introduction

In order to explore the emotionality of Chinese calligraphy, we designed experiments using techniques from experimental psychology and affective neuroscience based on Chinese calligraphies of various emotional intensities created by the artist Dr LIANG Yang. The objective of the first experiment was to evaluate, using psychophysical methods, the sensitivity of observers to detect emotional intensity differences of Chinese calligraphic characters. More specifically, the objective of the experiment was to evaluate firstly whether a non-Chinese population without any knowledge in Chinese language and without practice or knowledge of the art of calligraphy would classify calligraphies in emotional level in a non-random way. The second objective was to determine if and to what extent a classification of calligraphies in emotional level by the same population would match the artist's classification in emotional level of the calligraphies he himself created for the experiment. On a second step, we recorded EEG responses while subjects faced the calligraphies, to explore the temporal dynamics of emotional calligraphies processing.

Methods

Participants. 22 right-handed subjects with normal or corrected-to-normal vision and no neurological disorders participated in the study (11 women, mean age $22,4 \pm 2,59$). All were naive to Chinese calligraphy or Chinese language and provided informed consent to take part in the experiment that had been previously approved by the local ethical committee.

Stimuli. 60 Chinese calligraphies were drawn, divided in pairs, one with high emotional expressivity (HEE) and a second with low emotional expressivity (LEE) (see figure 1 for an example). All stimuli were transformed in black and white and were equalized for average luminance. Images were presented in random order on a computer screen and subtended a vertical visual angle of $10,05^\circ$ and an horizontal visual angle of $9,41^\circ$.

Procedure. Participants were explicitly informed that they would be shown abstract artworks. On each trial, the participant was asked to depict on a scale from 1(low

intensity) to 5 (high intensity) the emotional intensity that he perceived in the stimulus (3 if the stimulus was of intermediate emotional intensity and 2 or 4 if the stimuli appeared nearer to neutral or strong, respectively). A block of 8 practice trials preceded the 60 experimental trials. Each trial began with the presentation at the centre of the screen of a fixation cross for 200 ms, followed by a stimulus (calligraphy) for 2000 ms. The interval between trials was fixed at 1000 ms. The analysis of the data was based on Signal Detection Theory, which assumes that the perceiver's capacity of detecting a signal is constrained by internal responses to the stimuli and contamination by noise (MacMillan & Creelman, 2005). In this context, the signal is the difference of emotional intensity evoked by the LEE and HEE calligraphies, LEE being noise and HEE being noise plus signal. Our goal was to determine whether or not naive subjects were able to detect the signal ie the emotional classification proposed by the artist. If the participants categorized the stimuli according to the artist's classification (or in direct opposition), the d'



Figure 1. Example of a pair of Low Emotional Expressivity (LEE, left) and high emotional Expressivity (HEE, right) characters.

index (a sensitivity index reflecting the capacity of detecting a signal from a noisy background and corresponds to the estimated difference in the distributions of internal response evoked by the two classes of stimuli) is significantly different from 0. This would mean that the subjects detected the emotional content of the calligraphies. Otherwise, subjects would answer randomly and the d' index wouldn't be significantly different from 0.

Electrophysiological recording and analysis. A second experiment employed electroencephalograms (EEGs), acquired from 62 Ag/AgCl Electrodes positioned

according to the extended 10-20 system and referenced to the nose. Impedances were kept below 5 kOhms. The horizontal electro-oculogram (EOG) was acquired using a bipolar pair of electrodes positioned at the external canthi. The vertical EOG was monitored with supra- and infra-orbital electrodes. The EEG and EOG signals were sampled at 500 Hz, filtered online with a bandpass of 0.1-100 Hz and offline low pass at 30 Hz using a zero phase shift digital filter. Eye blink were removed offline and all signals with amplitudes exceeding ± 100 μ V in any given epoch were discarded. Data were epoched from -100 ms to 1000 ms after stimulus onset, corrected for baseline over the 100 ms window pre-stimulus, transformed to a common average reference, and averaged for each individual in each of the four experimental conditions.

Results

Psychophysical results. The full data set was then fit with a mixed-effects model, which permits to evaluate several potential sources of variability in the data. Specifically, we fit a model that included random effects of Observer (individual differences among participant),

Item (individual differences in the difficulty among the 30 calligraphies) and Observation (variation in each participant's rating responses beyond that expected by a multinomial model of rating attribution). The results indicate that the random effects of Observer and Observations are significant ($p < 0.001$ in both cases) but that due to item is not ($p = 0.06$). However, the test employed is conservative and can be too large by as much as a factor of two, which if the case would yield significance for an effect of item (Pinheiro and Bates, 2000). The proportion of the total variance accounted for by each source is Observer: 48.2%, Observation Level: 49.3% and Item: 2.5%, suggesting that differences in difficulty in rating the different calligraphies play only a small part in the overall results. By treating Observer and Item as random effects, the fixed effect estimates (d' here) can be extrapolated to a population estimate. The estimated population d' was 1.076 (SE = 0.223). This indicates a significant resemblance in the classification of calligraphies in emotional level between a non- Chinese speaking population and the artist. 16 of the participants had values of d' significantly different from 0 (see figure 2), thereby showing that they discriminated the

emotional categorization of the calligraphies. Among them, 4 had a negative d' index, i.e. they perceived the difference between the two categories of stimuli but identified, in opposition to the artist classification, the LEE as emotionally intense and the HEE as poorly emotional. d' of the remaining 5 subjects did not differ significantly from 0 indicating that these participants did not detect the artist's classification.

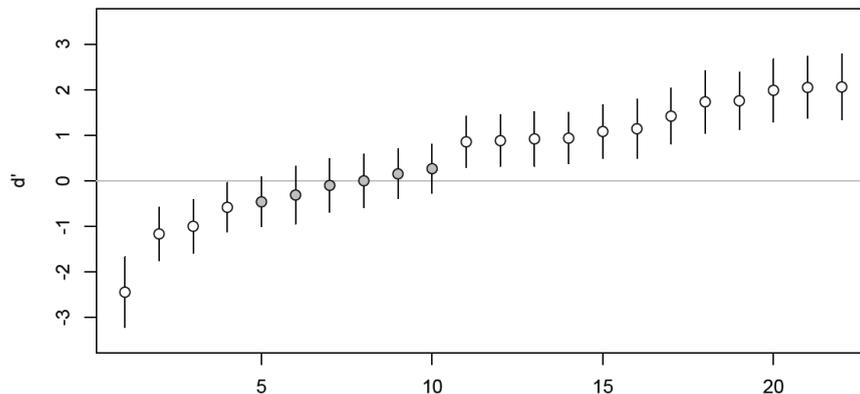


Figure 2. Individual d' values plotted ordered and with estimated 95% confidence intervals. Grey circles indicate not significant d' values.

Strategies employed. The participants were debriefed with questionnaires that revealed heterogeneity in the strategy adopted to categorize the stimuli. Four groups emerged (see Figure 3), whose strategies were based respectively on the figurative aspect found in the works (Group I), on the force of strokes (Group II), on no particular strategy (Group III) and on the perceived movement (Group IV). The heterogeneity of the strategy adopted was significantly correlated to the heterogeneity of d' values (linear regression, $F(1,21) = 28.89$, $p < .0001$). The subjects who used a strategy based on the perception of movement or those that did not use any definite strategy were the most successful in the classification task.

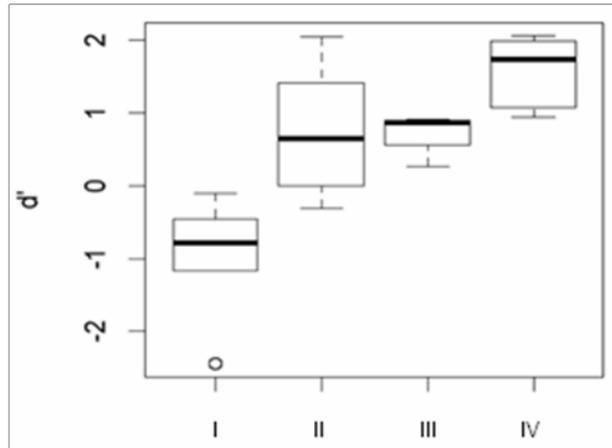


Figure 3. Representation of the 4 strategies. Group I: form – Group II: force of strokes – Goup III: none - Group IV: perceived movement.

Perimetric complexity and amount of ink of the stimuli. We investigated whether the physical characteristics of the stimuli could, if at all, be used to categorize the stimuli. Two properties were studied in this regard: i) the total amount of ink in each calligraphy and ii) the perimetric complexity (perimeter squared over ‘‘ink’’ area), i.e. an index that quantifies how convoluted is a character and which is calculated after having transformed the stimuli into binary images (Pelli et al., 2006; Attneave and Arnoult, 1956). In figure 6, the two values are plotted one against the other with the two types of images in different colors (red for HEE, blue for LEE). Then we asked whether there were various lines that could be drawn through the points that would best discriminate the two sets of points. Once the lines are drawn, we calculated an ideal d' based on the classification. We found that perimetric complexity ($d' = 2.78$) would be a better discrimination cue as compared with total ink ($d' = 1.28$) if that is what observers used. If observers were to use both indexes together (see the oriented line in Figure 4), however, the d' value does not improve, indicating that complexity alone would best discriminate the two sets of stimuli.

Normalized Total Ink |

Figure 4. The plot depicts in red the HEE calligraphies and in blue the LEE ones. The horizontal and vertical lines indicate the optimal separations for either indice (amount of ink and perimetric complexity) alone and the slightly oriented one represents the best line when using both indices at once. The values have been normalized on the

EEG results. EEG data were analysed for 21 subjects. During EEG recordings, participants had to judge the intensity of their feelings on a 4 point scale from 0 to 3. While subjects reaction time were not affected by the emotional intensity of calligraphies ($t_{v=20} = 0,54$; $P=.59$), subjects reported marginally higher feelings intensity in response to the HEI ($1,49 \pm 0,57$) than in response to the LEI calligraphies ($1,19 \pm 0,73$) ($t_{v=20} = 1,78$; $P=.045$). ERP components showed well identified peaks in the P100 window, culminating on occipital areas, in the N150 window, culminating in the temporo-occipital areas, followed by an occipital P200, and then a LPP. Grand average ERP over the P08 parieto-occipital site is shown in figure 7. None of these 4 components was modulated by the emotional intensity of the calligraphies (all p NS).

Conclusion

Our study suggests that Chinese calligraphy may be a vehicle for transmitting emotional intensity. Indeed, the data indicate that naive subjects were able to discriminate whether non- representational artistic stimulus like calligraphy expressed high emotional content rather than low emotional content, although we cannot say which kind of emotion viewers discriminated in calligraphy (anger, fear, joy, disgust, sadness and happiness, which are the six basic emotions according to basic emotion theory; Ekman, 1992; Izard, 2007). However, at the brain level, no differences were evidenced between the two sets of calligraphies. This makes us surmise that emotion perception in Chinese calligraphy is not necessarily driven by cultural acquisition. It seems that a talented calligraphist has the power of loading various emotional intensities in traces of brushstrokes in such a way that naive viewers may grasp the emotional intensity of the calligraphies just by seeing them, without specific knowledge. On that basis, humans must be credited of an innate potential to recognize emotional intensities in Chinese calligraphies created by artists.

Since only few information is conveyed by the brush strokes (see for instance ink area and perimetric complexity in the results), we hypothesize together with Jenefer Robinson (2007) that “[a]n artwork that expresses an emotion in an expressive way is one that reveals something of what it is like to be in such an emotional state” (2007, 33). On that basis, we suggest that HEE are expressive because they render expressively the expression of emotion in the calligraphy while LEE are less expressive because they render less expressively the expression of emotion. Expressiveness is a matter of degree and is a property of the relation between an artwork and its audience: it “(...)depends on how effectively the artwork reveals to a (suitable) audience what that emotion is like (36).” Here is how Robinson distinguishes between the two notions of expression

and expressiveness: “I have suggested that expression should be thought of as a relation between an artwork (the expression) and an expresser, who is either the author or an imagined agent such as the implied author, a narrator or a character in the work. By contrast, I have treated expressiveness as a relation between the expression and the audience to whom it communicates. Whether something is or is not an expression depends on whether it is a product of a person or agent who is expressing his or her emotions. Expressiveness, on the other hand, depends on how effectively the artwork reveals to a (suitable) audience what that emotion is like (36)”.

Finally, it is interesting to note that, to express different degrees of emotion, Chinese calligraphists use two different styles, so that all HEE characters are in the cursive style, and that all LEE are in the regular style. Besides, since the distinction between HEE and LEE calligraphies does not seem to rely on the possession by participants to the study of any kind of knowledge or culture, it may well be that style-related information is perceived in Chinese calligraphy very reliably without learning. In our experiment, we have asked participants to see the stimuli as abstract artwork, not as Chinese calligraphies, and to evaluate their perception of emotional intensities or expressiveness of each stimulus. Apparently, this directive has led participants in our study to be attentive to the stylistic properties of the stimulus. Thus, the claim put forward by Cupchik et al. on the art of painting “(...)when artists create paintings, (...), they attempt to evoke subjective reactions in the viewer to the stylistic and structural properties of their works (2009, 84)” could be generalised to the art of calligraphy.

References

- Attneave, F., & Arnoult, M. D. (1956). The quantitative study of shape and pattern perception. *Psychological Bulletin*, 53, 452–471.
- Cupchik G.C. et al. (2009) Viewing artworks: Contributions of cognitive control and perceptual facilitation to aesthetic experience. *Brain and Cognition*, 70, 84–91.
- Ekman, P. (1992). An argument for basic emotions. *Cognition & Emotion*, 6, 169–200.
- Izard, C. E. (2007). Basic emotions, natural kinds, emotion schemas, and a new paradigm. *Perspectives on Psychological Science*, 2, 260–280.
- Pelli DG, Burns CW, Farell B, Moore-Page DC. (2006) Feature detection and letter identification. *Vision Res.*, 46, 4646-74.
- Pinheiro, J.C., and Bates, D.M. (2000) *Mixed-Effects Models in S and S-PLUS*. Springer, New York.
- Robinson, J. (2007) Expression and expressiveness in art. *Postgraduate Journal of Aesthetics*, Vol. 4, No. 2, August 2007, 20-41.

CONSTRAINTS ON MANIPULATIONS OF EMOTIONS BY MUSIC: FAULTY ASSUMPTIONS ABOUT EMOTIONAL SYSTEM'S PLASTICITY

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Abstract

The validity of Tom Cochrane's assumptions regarding the processing and effects of music in his article "Expression and Extended Cognition" (2008) is questioned. One problem is the manner in which ideas from the philosophical, as well as the bio- and socio-psychological, theories of emotion are treated. Another concerns the somewhat arbitrary use of some philosophical theories of music expression. The third is Cochrane's excessive reliance on a highly speculative neuro-scientific application of the "mirror-neuron" system to humans and to music. Throughout, the method of application of extended cognition to music is questioned, rather than the general idea of extended mind or "active externalism." Finally, because the musician, the instrument, and the improvised/"composed" music is uniquely intertwined in jazz improvisation, this may be the only fertile ground for extended cognition in music, the cost being that any claims to generality are sharply curtailed.

In a chapter that compared the respective roles of emotion and reason in art-music composers' creative process (Konečni, 2012), I suggested that *emotivism* was the currently dominant position in the study of, and talk about, music. I defined it informally as a general proclivity for excessive insertion of emotion and feeling into both scientific and lay accounts of mental life, needs, and motivation in daily behavior – in matters artistic, especially musical – and non-artistic. I begin this brief article with a mention of emotivism, because it is an insufficiently recognized backdrop for a number of contemporary debates in the philosophy of music. Somewhat paradoxically, it seems to be a *cognitive* stance taken by many philosophers and experimental psychologists of music, one that reflects their – I would claim – unwarranted acceptance of a quasi-ideological cultural context that has been characterized by many as deeply anti-intellectual; Bottum (2000) has written a semi-popular, but closely reasoned, overview of (especially American)

anti-intellectualism in the socio-cultural status of music.

The preceding comments are offered as an oblique introduction to my critical analysis of an important recent article that can be regarded as the epitome of one aspect of emotivism – the near-arbitrary blurring of boundaries of the human emotional system in its interaction with the environment, and more specifically, the musical environment. Having been published with high visibility, in the lead position in an issue of a premier journal of philosophical aesthetics, undoubtedly contributed to the attention the article has received – as have its provocative assumptions about the nature of human emotions and their relationship to music expression, music listening, and music production. The character of the various assumptions and the manner in which they are combined – implying an almost completely unconstrained plasticity of the human emotional life with regard to its manipulation by music – turn my critique into a case study of a telling example of emotivism applied and in action.

In the following critical observations, I address a variety of theoretical issues in relation to the validity of assumptions made by Cochrane (2008) in his article entitled "Expression and extended cognition." My remarks are limited – in line with Cochrane's – to expression and experience of emotion and do not refer to other affective states, such as moods (Konečni, 2010). Furthermore, as is the case with Cochrane's discussion, mine is limited to music. The latter decision, on my part, was necessitated by the specific or idiosyncratic features that the philosophical ideas of "extended cognition" acquire when applied to the domain of music by Cochrane. In other words, in this article, I question the additional assumptions that Cochrane appears to have had to make in order to apply the notion of "extended mind" (Clark & Chalmers, 1998) to music, rather than the notions of extended cognition (or of "active externalism") themselves.

The critique is divided into nine brief sections, all addressing Cochrane's assumptions and, in several instances, generalizations. One problem with the assumptions is the manner in which ideas from the philosophical, as well as the bio- and socio-psychological, theories of emotion are treated. Another concerns Cochrane's interpretation and application of philosophical theories of music expression. And the third is his rather uncritical reliance on an unconventional, highly speculative neuroscientific account by Molnar-Szakacs and Overy (2006) of the

"mirror-neuron" system – applied by them to humans and to music – for the purpose of developing, with the additional aid from the concepts of empathy and "contagion," a view of human emotions as an improbable system of essentially unconstrained plasticity and permeability by music.

The article concludes on a note of moderate encouragement: Because the musician, the instrument, and the improvised/"composed" music are characteristically and interestingly intertwined in jazz improvisation, this may be the only fertile ground for extended cognition in music, the cost being, however, that any claims to generality are sharply curtailed. There is also a parting shot at the narrative means by which excessive emotivism oversimplifies and distorts the issues of expression in music.

1. To begin with, Cochrane (2008, p. 329) states: "I will assume that emotions are essentially constituted by patterns of bodily changes. These patterns of bodily changes are registered in the brain, which then generates the felt experience of the emotion." An important question needs to be raised here. How do "bodily changes" manage to occur (or, more precisely, to be instilled) *before* they are "registered in the brain"? To the extent that most human emotions with evolutionary significance arise in response to an external – often social – stimulus of some sort (or to a cognitive representation of such a stimulus), and that, moreover, the stimulus needs to be perceived and at least perfunctorily interpreted before any bodily changes can possibly occur (on both physiological and logical grounds), it is obvious that a major (even if extremely rapid) cognitive step of interpretation and appraisal is missing from Cochrane's account – without his acknowledging or commenting on the issue.

But this is, in fact, a problem of long standing for those non-cognitive theories of emotion in philosophy and psychology that contain the attribute of automaticity in the temporal sequence of components of emotion episodes. There is a kinship between some of these positions and the one originally endorsed by William James (1884). Arguments advanced here regarding the necessary sequence of events in the generation of emotion are analogous to those that are used to support the Prototypical Emotion-Episode Model (or PEEM; Konečni, 2008b: see Figure 1, p. 117).

It is worth noting that in the quoted statement Cochrane seems to acknowledge

both the importance of subjective experience in emotion and the role of cognition in generating it. I will show later that these acknowledgements contradict Cochrane's main thesis.

2. Cochrane continues: "I will assume a version of the resemblance theory of musical expression similar to that offered by Malcolm Budd. This position is summarized by the slogan 'the music sounds the way emotion feels.'" Most emotion theorists would probably agree that any "slogan" is likely to underestimate or misrepresent the complexities in the domain of the relationship between music and emotion. In fact, Cochrane (2008: his Note 2, p. 339, italics added) himself – by writing elsewhere in the article, "I also accept many of the claims of resemblance between music and *expressive behavior* made by Stephen Davies and Peter Kivy" – clearly testifies to the obvious limitations of the above-mentioned slogan. In effect, in what seems to have been an afterthought, another slogan, "the music sounds the way emotion looks", was added to the already long list of Cochrane's assumptions, without being carefully assimilated into the argument.

In any case, to someone paying heed to parsimony in theorizing, it is unclear how Cochrane's endorsement of the resemblance theory contributes anything valuable to his thesis – beyond what Carroll Pratt, Susanne Langer, and Peter Kivy had previously hypothesized about the role of "iconicity," "iconography," and "physiognomy" of musical expression with regard to the "feels" and "looks" slogans (Kivy, 1980, see chapters V and VI; Langer, 1942, pp. 244-245; Pratt, 1931, p. 203).

3. Cochrane (2008) proceeds in the following manner: "A third assumption is that these resemblances are tracked by the same mechanism in the brain that registers bodily changes in emotions. In support of this claim, a connection has been made between the perception of musical expression and the empathic simulation of the emotions of others" (p. 329). These statements are highly speculative. In fact, one finds them unwarranted after carefully examining the evidence and the argumentation for the alleged implications of the *human* "mirror-neuron system" in the relationship between music and emotion (implicating numerous processes, including simulation, empathy, and contagion) that is presented in the previously

mentioned article by Molnar-Szakacs and Overy (2006) in which Cochrane (2008, Note 3) seeks conceptual and neuroscientific support.

It is essential to keep in mind the main (itself controversial) claim made by Molnar-Szakacs and Overy (2006, p. 236): “According to the simulation mechanism implemented by the human mirror neuron system, a similar or equivalent motor network is engaged by someone listening to singing/drumming as the motor network engaged by the actual singer/drummer; from the large-scale movements of different notes to the tiny, subtle movements of different timbres.” This seems unrealistic and implausible. Moreover, the contention is in and of itself logically insufficient to enable one to predict rationally that emotion would be induced by music in this situation *unless an improbably high degree of automaticity were also postulated* – automaticity, that is, of the effect of watching a drummer’s activity on the observer’s own motor system. Such automaticity would seem to imply the “virus” or “drug” notions of music’s effects – medical metaphors that have been found unsatisfactory in the aesthetics literature. Cochrane must be aware of this and therefore embraces another highly speculative idea, “unconscious emotions” (to which I shall return in section 6.).

4. Cochrane (2008, p. 329, italics in the original) speculates further: “By resembling emotional activity... music can hijack the mechanisms in the brain that are responsible for tracking both our own emotions and the emotions of others. As a result, when we listen to music we seem to perceive emotion *in* the music.” There is actually very little reason for us to place trust in the use of “we” in the above quotation, because imposing the “we” on the reader is hardly a legitimate method of argumentation in an area as theoretically contentious as this one – unless some empirical support can be recruited for the claim of unanimity of the reference population. Far more importantly, proposing the idea that “music can hijack the mechanisms in the brain” again indicates Cochrane’s insistence on (cognition-excluding) automaticity – implying a frequent absence of one’s correct judgment about the true cause (another person’s behavior *versus* the music as the source) of one’s own physiological fluctuations, or about the nature of one’s internal response (mere biologically insignificant physiological fluctuations *versus* genuine

emotions), or both.

In other words, Cochrane seems to assume – in normally functioning human adults (that is, in people unaffected by drugs or misleading instructions from psychologists-experimenters) – an implausible absence of appraisal, introspection, and self-awareness, as well as of the ability to make simple correct causal attributions (Kivy, 2006; Konečni, Brown, & Wanic, 2008). In contrast to Cochrane's assumption, I am conscious of my bodily sensations and their source(s), and of the temporal and causal relations between them and what is happening in my environment. On a large proportion of occasions, if I am so inclined, I can report my emotions accurately (and there are objective laboratory means to measure my accuracy). I am also aware, for example, that a couple of minutes ago it was the sudden loud percussion in the piece to which I was listening that temporarily raised my heart and respiration rates via the brain-stem reflex. And I did not need the interoceptive and proprioceptive information from my body and face to label the emotion of which the music I heard was expressive – I could readily do that by careful listening and analysis alone.

In addition, I would not, on the occasion when the percussion raised my heart rate, label my internal state as one of, say, anger just because it happened to me, in the past, that my heart rate went up when I was rudely treated on the telephone by a person at some "customer service" – in part because, on the latter occasion, other differentiating manifestations had occurred concurrently. In sum, it is patently clear that I can – most of the time – easily distinguish among cause-effect sequences and correctly link causes to consequences. Intuitively, music seems to be a very unlikely stimulus to produce drastic causal misattributions.

5. But Cochrane (2008, p. 329) continues: “[My] large assumptions... allow us to argue that music can potentially play the same role as bodily changes in realizing the musician’s emotional state” and that the “physical constitution of some mental states extends beyond the brain of the subject” – the latter being, according to Cochrane, the main argument that follows from the theory of extended cognition. As I mentioned in the introduction, a critique of extended cognition deserves a separate article, which would include a detailed analysis of the implications of the two

just-quoted statements. However, all I have space for here is to request that the reader apply the criticisms that have been presented so far in this article to the above two statements of Cochrane's – the controversial gist of which I take to be the following: (a) The music itself, with its expressive features, becomes the performer's emotional state, bypassing his or her bodily changes – provided that the performer fully controls all details of the music; and (b) The performer's emotion can find its way “beyond the brain” (and presumably consciousness) of that person, and “leak” into his or her performance on a musical instrument, notably during jazz improvisation. Cochrane (2008, p. 329) states the latter contention thus: “Playing the music cognitively extends the musician’s emotion.”

In brief, Cochrane's various claims taken together would involve multiple improbable misattributions (or a misattribution feedback loop) via the empathic or contagion-prone capability of the mirror-neuron system, all of which is so speculative that Cochrane must find refuge in a relatively tiny harbor of music – jazz improvisation. Moreover, it is important to note that the early, rather fanciful, assertions regarding human empathy and contagion in the mirror-neuron literature – on which Cochrane's claims are largely based – have in the meantime been forced by empirical work into a more realistic and circumscribed account. Household-object metaphors of “mirror” and “sponge” have been gradually disposed of and the view that has emerged recognizes that people cognitively evaluate the status (in all the ramifications of this term) of the “stimulus person” and engage in a complex causal (attributional) analysis in the process of experiencing or not experiencing empathy with that person (see Jaffe, 2007, for an overview). A more reserved attitude toward the possibility of contagious influence of music's expressive features has also begun to emerge (Konečni, 2008a).

6. Cochrane (2008, p. 330) states: “Note that... I [do not] identify the emotion with the conscious experience of the emotion.” In contradiction to the view that he explicitly expressed in the quotation in Section 1. above, Cochrane here ignores the process of appraisal and the key significance of emotional *experience* – which includes conscious access to numerous distinguishing features of the felt emotion; instead, he seems yet again to endorse automaticity, which is a necessary component

of the Molnar-Szakacs and Overy hypothesis. For these reasons, Cochrane is essentially forced to subscribe to the (small-) minority view of the possibility of “unconscious emotions” (citing Jesse Prinz and Peter Goldie as his sources), which excludes appraisal and “emotion-labeling” – the latter being a process that relies on the cognitive operations of monitoring one’s internal physiological symptoms, integrating them, and interpreting them (Konečni, 2008b; Konečni, et al., 2008).

7. In the opening paragraph of his article and in the first sentence under the heading “The Musician’s Emotion,” Cochrane (2008, pp. 329-330) implicates music composers in the narrative. In light of the present discussion, it might appear that this represents additional overreaching, because Cochrane’s hypotheses, laconic and opaquely worded as they sometimes are, nevertheless generally seem restricted to situations removed from the composing process. After all, the problem of the role of emotions in music composition is highly complex and multifaceted (e.g., Konečni, 2012, Sections 9.3 - 9.5). On the other hand, it is indeed the case that Cochrane is concerned with jazz improvisation and that to classify improvisation as a form of composition is generally considered justifiable. Therefore, since the relationship among the musician, his or her instrument, and the music that is improvised (or “composed”) is rather unique in jazz, this may be a reasonable, or indeed the only, place for the development of “extended mind” ideas in music.

8. However, Cochrane’s thesis would not be applicable to most music performers, because, even if one were to accept as correct the claim by Molnar-Szakacs and Overy (Section 3. above), performers – while indeed also being in the role of listeners to other performers in chamber, orchestral, and jazz settings – are usually required to execute either something quite different than their co-performers are (for example, as members of a string quartet) or to do for a time the same thing that the others are doing, but (usually) *without a temporal lag* – whereas a lag is required by Cochrane’s hypothesis on perceptual and physiological grounds.

9. Concluding Remarks. Perhaps Cochrane’s view does fit to a certain extent the

special case of jazz improvisation, but even in this case it would be applicable only if one were to accept the (small-minority) view of unconscious emotions; this would, however, invite other conceptual problems. Moreover, Cochrane's is only one of several possible accounts of how emotion may be involved in improvisation – which is, apart from the reservations presented here, an undoubtedly fascinating musical activity well worth research and theoretical attention.

Cochrane's position involves a near-arbitrary blurring of boundaries of the human emotional system in its interaction with the musical environment. In this view, there are virtually no constraints on the manipulations of emotions by music (at least in some musical activities), suggesting a view of human emotions as an improbably plastic and permeable system. These conjectures borrow neuroscientific claims of dubious reliability, generally deny the role of cognition in human emotional life (instead invoking emotion-processing automaticity and unconscious emotions), and exploit to an excessive degree the concepts of empathy and contagion. However, the numerous assumptions necessary to develop Cochrane's implausible position do not bear close scrutiny well. This is not surprising because, to put it bluntly, human emotions are a serious evolutionary business, not a plaything. There are constraints on the extent to which these metabolically costly states, with enormous mental-health and behavioral consequences, can be manipulated by listening to music or by producing it.

In its assumption of an improbable degree of emotional system's plasticity, Cochrane's approach bears a resemblance (by him unacknowledged) to an extreme aspect of Stanley Schachter's socio-psychological inheritance in the area of self-perception and misattribution of emotion (e.g., Laird, 1974; Storms & Nisbett, 1970; Valins, 1966; Valins & Ray, 1967). All these overreaching studies have serious methodological problems, with the findings dependent in large part on outlandish instructions to research participants, dubious dependent measures, and sometimes on questionable statistical analyses.

For a concluding example of a conceptualization influenced by emotivism, I quote Cochrane (2008, p. 329) once more: “The artist clarifies and develops his emotional state by expressing it.” To this position that treats the creative process as an exercise in emoting – while, significantly, neglecting to specify how the emotional

state arose in the musician or visual artist in the first place, and to discuss the possible emergence of a feedback loop between the fluctuations of the artist's emotional states and the developing artwork – one can contrast the view that great music, like all great art, exists at a *necessary distance* from its creator and that a calm, contemplative, analytical mastery is crucial.

References

- Bottum, J. (2000). The soundtracking of America. *The Atlantic Magazine*, 285, 56-70.
- Clark, A. & Chalmers, D. (1998). The extended mind. *Analysis*, 58, 7-19.
- Cochrane, T. (2008). Expression and extended cognition. *Journal of Aesthetics and Art Criticism*, 66, 329-340.
- Jaffe, E. (2007). Mirror neurons: How we reflect on behavior. *Association for Psychological Science Observer*, 20, 20-25.
- James, W. (1884). What Is an Emotion? *Mind*, 9, 188-205.
- Kivy, P. (1980). *The corded shell: reflections on musical expression*. Princeton, NJ: Princeton University Press.
- Kivy, P. (2006). Mood and music: Some reflections for Noël Carroll. *Journal of Aesthetics and Art Criticism*, 64, 271-281.
- Konečni, V. J. (2008a). A skeptical position on 'musical emotions' and an alternative proposal. *Behavioral and Brain Sciences*, 31, 582-584.
- Konečni, V. J. (2008b). Does music induce emotion? A theoretical and methodological analysis. *Psychology of Aesthetics, Creativity, and the Arts*, 2, 115-129.
- Konečni, V. J. (2010). The influence of affect on music choice. In P. N. Juslin & J. A. Sloboda (Ed.), *Handbook of music and emotion: Theory, research, applications* (pp. 697-723). Oxford, UK: Oxford University Press.
- Konečni, V. J. (2012). Composers' creative process: The role of life-events, emotion, and reason. In D. J. Hargreaves, D. E. Miell, & R. A. R. MacDonald (Ed.), *Musical imaginations: Multidisciplinary perspectives on creativity, performance, and perception* (pp. 141-155). Oxford, UK: Oxford University Press.
- Konečni, V. J., Brown, A., & Wanic, R. A. (2008). Comparative effects of music and recalled life-events on emotional state," *Psychology of Music*, 36, 289-308.

- Laird, J. D. (1974). Self-attribution of emotion: The effects of expressive behavior on the quality of emotional experience. *Journal of Personality and Social Psychology, 29*, 475-486.
- Langer, S. K. (1942). *Philosophy in a new key: A study in the symbolism of reason, rite, and art*. Cambridge, MA: Harvard University Press.
- Molnar-Szakacs, I. & Overy, K. (2006). Music and mirror neurons: From motion to 'e'motion. *Social, Cognitive and Affective Neuroscience, 1*, 235-241.
- Pratt, C. C. (1931). *The meaning of music: A study in psychological aesthetics*. New York: McGraw-Hill.
- Storms, M. D. & Nisbett, R. E. (1970). Insomnia and the attribution process. *Journal of Personality and Social Psychology, 16*, 319-328.
- Valins, S. (1966). Cognitive effects of false heart-rate feedback. *Journal of Personality and Social Psychology, 4*, 400-408.
- Valins, S. & Ray, A. A. (1967). Effects of cognitive desensitization on avoidance behavior. *Journal of Personality and Social Psychology, 7*, 345-350.

Notes

1. E-mail: vkonecni@ucsd.edu
2. This listener, for one, does not perceive emotion as being located *in* the music and believes that he has not done so since about the age of seven when he conducted imaginary orchestras in front of a large mirror and *faux*-emoted in tandem with "emotional" music. However, although he has ever since been fully cognizant of music's status as a non-sentient being, he is aware that many pieces of music (including absolute music) are *expressive of* various emotions – cf. Kivy (2006) and Konečni (2008a).

BEYOND WORDS AND IMAGES – A SCHEMATIC APPROACH TO MEDIEVAL STUDIES

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Abstract

Beyond words and images: a schematic approach to medieval studies

Medieval pictures, often painted three-dimensionally as in altarpieces or on wall paintings, display significant differences in comparison to the tableaux that became common beginning in the 16th century. One can speculate that it was less important for people in the medieval period to reconstruct optical perceptions into two-dimensional space. As we know, medieval images were illustrations of a mental world. In my presentation I will suggest that medieval arts can indeed offer us a new clue to solve a long-standing and intractable problem about our cognition regarding images and words.

Images are often compared with words. This comparison has always been treated as an important theme in aesthetics as well as in art history. Current studies have two tendencies: on the one hand images and words are analyzed in a semantical or semiotic perspective with an emphasis on the similarity between them; on the other hand the difference between them based on aesthetic experience is stressed. Behind the semantical and semiotic analyses lies a representational world view. Words and images are treated as representations of (real-world) representatives. That might be a reason why these approaches uncritically apply linguistic theories to images. This causes severe problems: the apparent differences between words and images cannot be explained based on this uncritical use of linguistically-based approaches. Whereas focusing on the aesthetic perspective and treating images independently from words might initially seem reasonable, because this can explain quite well how images differ from words, what is not taken into consideration is the fact that images are described and explained by words. If images and words might manifest themselves in completely different ways, why could we explain images with words? In the aesthetic approach the two worlds – the iconic

and the verbal world – will never be linked and synthesized in cognition.

Generally, current studies bear upon a dialectical problem: words and images work differently but at the same time are similar. As long as we focus merely on “words” and “images” on their own, their relationship can only be captured insufficiently. To explain how words and images operate interdependently in our cognition, we have to go beyond them.

In my talk, the approach of cognitive linguistics will be adopted to analyze words and images in medieval studies. In cognitive linguistics words are regarded as elements of our cognitive activity, i.e. not as linguistic artifacts or objects. Lakoff built a theory which is based on metaphor and different image-schemata. As he suggests, his approach is not only restricted to the linguistic field, but covers all cognitive activity, e.g. images or even mathematics. Following Lakoff, I will treat words and images equally as cognitive products of schematic activity. As medieval images function as illustrations of mental worlds rather than as optical perceptions, they reflect our cognitive processes more directly than modern tableaux. Therefore the relation between words and images might be better identified by analyzing medieval arts schematically. It might also explain why generally images appear more directly and immediately to us than words.

The attempts to build a theory of imagery have always been passionately pursued, but until now none has come to dominate this subject. Current studies in which images are often compared with words have two tendencies: on the one hand images and words are analyzed in a semantical or semiotic perspective with an emphasis on the similarity between them; on the other hand the difference between words and images, based on the aesthetic experience, is stressed. This situation bears upon a dialectical problem: words and images work differently but at the same time are also similar. As long as we focus merely on “words” and “images” on their own, their relationship cannot be captured sufficiently. To explain how words and images operate interdependently in our cognition, we have to go beyond them. Drawing on Lakoff’s schematic approach, we can describe a cognitive level where words and images are products of our cognitive activity. This kind of schematic analysis will be demonstrated by means of medieval artifacts that bear upon a parallel use of what we today call “words” and “images”. I want to show that

medieval artifacts mirror our cognitive processes more directly and immediately than pictures following the Renaissance. In the following I will start with the typical opposition of words and images (1), and then shift the investigation to a conceptual level in order to introduce Lakoff's schematic approach (2). Based on the concept of an idealized cognitive model (ICM) I can show how words and images are related in medieval artifacts (3). This paper offers nothing more than a first preliminary sketch of a schematic approach to medieval studies. I hope that this attempt will raise interest for the importance of schematic studies in medieval image analysis.

1 Boehm's aesthetic approach vs. Goodman's semiotic approach

Boehm's approach primarily consists in making a substantial difference between words and images (Boehm 2007). According to Boehm, the reduction of images to language forms a *historical fallacy* that neglects the specific character of images. To state the essential difference between images and words Boehm formulates the notion of an aesthetic surplus shown by Lyotard (Lyotard 2011). This surplus is based on an iconic difference as the main feature of images. Whereas the details of an image as form, color and figuration display a confined material object, there is a unity of meanings, i.e. a whole image that contains the displayed in terms of meaning. But this meaning comprises significantly more than the material object. Furthermore, images allow for a focus on details and, at the same time, for taking into account the whole scene by means of a comprehensive, simultaneous overview, whereas words are not simultaneously perceived, but sequentially.

Goodman formulates an elaborated functional account of how symbols work in all forms of cognition such as perceiving, understanding, and constructing the worlds of our experience (Goodman 1976). Hence, he seeks to explain the text-image-boundary based on the structure and function of symbolic systems. Regarding the apparent differences between images and words, the image has to be conceived as continuous analog data, whereas text consists of atom-like elements like digital data. Goodman reduces both, words and images, into distinctive symbolic subgroups. As Mitchell mentions (Mitchell, 1987), for Goodman words and images are not merely different sorts of entities, but opposite ones. Boehm and Lyotard merely stressed this opposition whereas Goodman made an effort to integrate it to

one system with this reduction. Still, he was unable to explain *why* and *how* each character is brought up.

2 Words and images as categories: a schematic approach

Regardless of which position is taken, words and images have been always seen as opposing concepts, as Mitchell mentions. But in fact we have no problems reading texts combined with illustrations in books, describing pictures or landscape with words, or painting according to texts as in traditional Christian painting. As long as we hold these concepts to be opposing, we remain unable to explain the comprehensive cognitive activity operating with words and images that occurs so *naturally* and *unconsciously*. At the same time we must take into account the apparent differences between them. Instead of just focusing on the figural and linguistic phenomena, I suggest to shift the focus to a conceptual level where *words* and *images* are regarded as *conceptual categorizations*, with which we are able to cognize the world.

As Lakoff says (Lakoff, 1990), without the ability to categorize we could not cognitively function at all, neither in the physical world nor in our social and intellectual lives. How we categorize is central to any understanding of how we think and how we function. Categorization had been known well since Aristotle, and traditionally categories were assumed to be abstract containers, with entities either inside or outside the category. Entities belong to the same category if and only if they share certain properties. The properties they had in common were taken as defining the category. Eleanor Rosch objected to this classical view of categorization (Rosch, 1988). She argued that if categories are defined only by properties shared by all members, every member should be equivalent within the category; furthermore, if categories are defined only by properties inherent in the members, categories should be independent from any kind of human factor such as capacity or culture. But her experiments reveal that categories generally have best examples, which she called “prototypes”, and that all human capacities or cultural factors do play a role in categorization.⁸ Rosch's concept of prototype effects can describe asymmetries

⁸ It is impossible to outline all of her arguments here. For example, “basic levels” is another important topic.

among category members that cannot be predicted within the traditional view. First Rosch had tried to prove that prototype effects directly mirror category structure, but over the years she had to abandon this idea and to accept the conclusion that the concept of prototype effect is too superficial to represent the structure of our cognition. This structure must be caused by some other sources, which Rosch could not determine. Although later Rosch was more careful not to state that prototype effects mirror our cognitive structure, her early idea of prototype effects as cognitive structure was developed further independently from these later corrections. However, all the experiments on categorization show us that the mechanisms of categorization are more complicated than our natural view supposes. (Lakoff, 1990)

The works by Rosch left us with the question of what actually structures prototype effects in categorizations. To solve it Lakoff, who considers words a cognitive means, is developing a kind of schematic theory based on ICMs (idealized cognitive models). The meaning of “idealized” is that the models are generated by means of some kind of “cognitive” process. He affirmed that we organize our knowledge with these ICMs and that categorizations or their prototype effects are by-products of this organization. These ICMs are structured by cognitive principles, the metonymical and metaphorical mappings with image schemas. ICMs can be combined or expanded by means of metaphorical and metonymical mapping according to an image schema, i.e. to understand one difficult category by means of another, better known category. This further mapping forms a complicated conceptual world. Cognitive mapping results in various structures of ICMs with prototype effects. If an ICM does not fit the world very precisely, it causes prototype effects, since, as I see it, much more mapping is needed to let ICMs fit to the world. The worse the fit between the background conditions of the ICM and our knowledge, the bigger the range of prototype effects becomes. In the following section we will see more precisely about Lakoff’s schematical approach.

Lakoff recognized the need to see phenomena as effects and to assume causes resulting from these effects: the schematic level. Rosch, the discoverer of prototype effects, could not find causes of prototype effects, because she had tried to find causes of effects just in effects themselves. Hence, Lakoff’s schematical approach shows us that the ambiguous relation between words and images in

current theory thus stems from the fact that words and images are only analyzed at a phenomenal level. If we go beyond words and images as opposing concepts at the phenomenal level and try to capture them again from a more comprehensive perspective as products of human cognitive activity, images as well as words are equivalent as schematic products. At the same time the differences between images and words can be explained by means of the variations of cognitive processing.

3 Beyond categories: a schematic approach to medieval studies



fig. 1

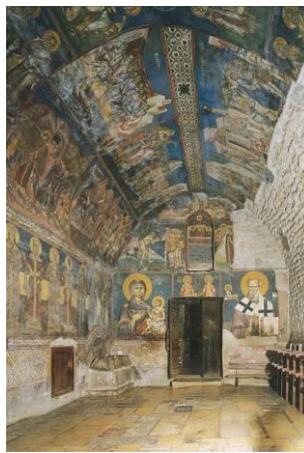


fig. 2

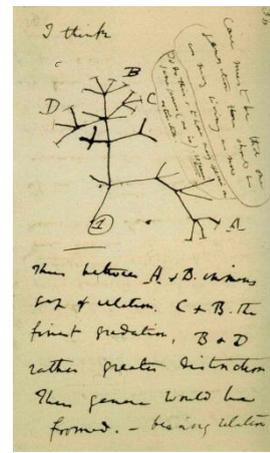


fig. 3

From the discussions in the theory of imagery, we can see that medieval people had different ICMs from ours. For example the capital illumination in the medieval codex which can be seen as word “I” and images of Christ’s acts at the same time (fig. 1)⁹, cannot be described in terms of Goodman's distinction. In medieval artifacts the distinction between words and images is not as clear as it might be today. Furthermore, images as categories are much different from our common idea. Medieval altarpieces or medieval frescos (fig. 2)¹⁰ cannot be simultaneously perceived as Boehm argues. While the images after Renaissance are intended to be

⁹ Initial *I* of Genesis, from a Franciscan Bible made in France ca. 1250. Newberry Library, MS 19, fol. 4v. (R. Clemens & T. Graham. (2007) *Introduction to Manuscript Studies*. Ithaca & London: Cornell Univ. Press, fig. 2-22, p 28)

¹⁰ Peć Patriarchtae, Church of the Sveti Postli, fresco of the west wall. (Sekai bijutsu daizenshu. Byzantin bijutsu, Seiyou hen 6., (Ed.) Takahashi. E. (1997), Tokyo: Shogakukan, fig 165, p 243)

reproductions of our optical perceptions, medieval pictures often ignore proportions or positions between motives in the three dimensional perspective. The more important the motive is, the more bigger that is often painted. I will argue here that medieval studies within the schematical approach can indeed offer us a new clue to capturing the relation between words and images.

First we will inspect Lakoff's cognitive processing, i.e. metaphorical and metonymical mappings according to image schema, more precisely. Image schemas¹¹ are immediately perceived by our bodily experiences, and their basic structures are prior to and independent of any concepts. They organize what can be perceived and visualized, but they themselves cannot be directly visualized in our phenomena. They are much like Kant's "schema" for a triangle, which he conceived of as fitting equilateral, isosceles, acute, and obtuse triangles to make any particular one visible. So far five image schemas have been listed: the container schema, the part-whole schema, the link schema, the center-periphery schema, and the source-path-goal schema. They all possess a kind of logic corresponding to each configuration as *gestalt*. Here I will describe three of the schemas: (1) *Container schema*: consists of interior, boundary and exterior. Everything is either inside a container or out of it. (2) *Part-whole schema*: consists of a whole, parts, and a configuration. We are whole beings with parts that we can manipulate. Our entire lives are spent with an awareness of both our wholeness and our parts. (3) *Source-path-goal schema*: consists of a source, a destination, a path, and a direction. If you go from a source to a destination along a path, then you must pass through each intermediate point on the path. Metonymy and metaphor are relational concept of mapping an image schematic model. *Metonymy*: we take one well-understood or easy-to-perceive aspect of something and use it to stand either for the thing as a whole or for some other aspect or part of it. *Metaphor*: metaphor maps an image-schematic model of one category to a corresponding structure in another category (Lakoff & Johnson, 1986).

Medieval people had developed a complicated metaphorical system for Maria, and Maria was represented with such a symbol in the theological texts and religious

¹¹ The concept of "image schema" was given by Johnson (Johnson, 1987).

images. A vase of glass is a typical symbol for the virginity of Maria. Maria is also a kind of category in the theological-cultural context as well as the glass vase. Two mutual processes can be seen in this association: (1) Glass vase is metonymically mapped onto the entity of vase according to the container schema. Maria is also metonymically mapped onto her body according to the container schema. Hence, Maria and glass vase can be associated by means of metaphorical mapping. (2) Glass vase is metonymically mapped onto transparency according to the source-path-goal schema. Maria is metonymically mapped onto transparency according to the source-path-goal schema, since the Holy Ghost could go through Maria without any mark. Hence, Maria and the glass vase can be metaphorically mapped. Maria was theologically difficult for common people to understand. It was necessary for medieval people to understand the category Maria by means of the better known category of a glass vase. Maria is such a complex of associated ICMs.

Medieval images stood above all for illustrating Christian knowledge, i.e. Christian ICMs. Images are cognitive product like words, but what is different from words is that images are products based on *gestalt-like* reflection of ICMs structured with *image* schemas. Words are also products based on reflection with cognitive mapping, but words need further cognitive processes to fit the structure of ICM. This is because words are more specifically structured with the source-path-goal schema whereas images are structured more by the part-whole schema (*gestalt*). To reflect on *gestalt-like* ICM with the part-whole schema reconstructive processes are needed. Boehm's argument that words are never simultaneously perceived but consecutively might be half right. This is the reason why, in general, images appear more directly and immediately to us than words, and why the medieval common people needed these images. Furthermore medieval images mirror our cognitive processes more directly and immediately than the images after Renaissance. This is because images after the Renaissance have been formed very strongly based on optical reflection, such that modern images consist of different kinds of schema from medieval ones. In this period it became more difficult for modern images to represent knowledge, ICM, as immediately as in the medieval images. But the mission to represent ICM was

taken on by model illustrations in science.¹²

Conclusion

Words and images are both idealized cognitive products, which are structured by metonymical and metaphorical mapping with image schemas. The difference between words and images stems from the varied combinations of these cognitive mappings. Medieval images give us a new clue to understand our cognitive mapping because medieval images are more immediate products within gestalt-like reflection of our *image schematical* cognitive processing.

References

- Bredekamp, H. (2010), *Darwin no sango. Shinkaron no diagram to hakubutsugaku.* (Hamanaka, H., Trans.) Tokyo: Houseidaigaku Shuppan.
- Boehm, G. (2007). Hintergründigkeit des Zeigens. Deiktische Wurzeln des Bildes. G. Boehm (Ed.), *Wie Bilder Sinn erzeugen. Die Macht des Zeigens* (p 19–33). Berlin: Berlin Univ. Press.
- Bredekamp, H. (2006). Darwin's Korallen. Die frühen Evolutionsdiagramme und die Tradition der Naturgeschichte. Berlin: Klaus Wagenbach.
- Takahashi. E. (Ed.). (1997) *Sekai bijutsu daizenshu. Seiyou hen 6. Byzantin bijutsu.* Tokyo: Shogakukan.
- Goodman, N. (1976). *Languages of Art.* Indianapolis, Indiana: Hackett Pub Co Inc.
- Johnson, M. (1987). *The Body in the Mind. The Bodily Basis of Meaning, Imagination, and Reason.* Chicago: Univ. of Chicago Press.
- Lakoff, G. (1990). *Women, Fire, and Dangerous Things.* Chicago: Univ. of Chicago Press.
- Lakoff, G. & Johnson, M. (1986). *Metaphors We Live by.* Chicago: Univ. of Chicago Press.
- Mitchell, W. (1987). *Iconology. Image, Text, Ideology.* Chicago: Univ. of Chicago Press.
- Rosch, E. (1988). Coherences and categorization. A historical View. F. Kessel (Ed.),

¹² Bredekamp (Bredekamp, 2006) has lately given his new view about the famous Darwin's tree of life: Darwin could develop his theory, because he could find the appropriate imagery model. What inspired him is not the tree that is so well known, but actually a coral which he found on his first world trip. See his diagram in the Notebook B (fig. 3: the photo from (H. Bredekamp, 2010), fig. 14).

Festschrift for Roger Brown. (p 373-392). Hillsdale, N.J.: Lawrence Erlbaum Associates.

CATEGORIZATION OF PORTRAIT

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Abstract

The research investigates the problem of categorization of portrait painting. The aim is to determine whether certain characteristics of portraits, such as: gender, orientation and artistic style influence the grouping of portraits by similarity.

The survey was conducted on a sample of 40 subjects, first-year students of psychology (both gender, age between 19 and 20), who were not specifically trained in the field of fine arts. The stimuli were eighteen reproductions of portraits created by fine artists. Portraits were of male and female adults. The portraits were varied by orientation in space (left, right, en face) and by the epoch-the art style which they belonged to (the Renaissance, realism, expressionism).

Stimuli were exposed in pairs, by random order (total of 153 pairs). The task was to assess similarities between portraits, using seven-degree scale (1 - maximum similarity, 7 - maximum diversity). Subjects were making judgments based on their general impression of similarity.

Cluster analysis was performed. Two clusters have been separated. The first cluster includes portraits that are oriented to the left. The second cluster is less clearly defined. It includes two subgroups that vary by the type of contour that dominates in the portraits. The first subgroup articulates portraits characterized by strong, accurately defined contours. The second subgroup comprises semi-profiles characterized by fine, insufficiently precise contours.

The results go in favor of thesis of the dominance of left orientation in portraits. Also, the results suggest the importance of artistic style in the classification of portraits.

Keywords: classification of paintings, portrait orientation, the artistic style

Introduction

This paper investigates process of portrait categorization. Portraits are frequent theme in paintings. They occur early in paintings and are present in all cultures. Portraits carry characteristics that represent the qualities, characteristics and style of the times, social and psychological moment, in which they were created (Figure 1).



Figure 1. Self-portrait of Pablo Picasso from different periods in which they were created

If we observe portraits, it seems like there is a habit to paint portraits from one angle. This is confirmed by investigations which show dominance of either left or right side of the face (Gordon, 1974; Grusser, Selke & Zynda, 1988; McManus & Humphrey, 1973). However, orientation of portraits is not equally distributed. Research shows that artists more frequently portray face from the left angle – with nose to the left (Gordon, 1974; McManus & Humphrey, 1973). This tendency is more noticeable on female portraits (Conesa, Brunold-Conesa, & Miron, 1995; Gordon, 1974; Grusser et al., 1988; McManus & Humphrey, 1973) and complete figures (McManus & Humphrey, 1973). The tendency to more often portray the left side of face in portraits has decreased over time, in the contemporary art this difference is almost lost (Grusser et al., 1988).

The findings also confirm that the orientation is sensitive to the social status of the person being portrayed, as well as the social distance between artists and the person presented. Therefore, the portraits of socially powerful females are often portrayed from the right side (Grusser et al., 1988). On the other hand, some artists, like Rembrandt, have often painted portrait of the person with whom they were in close connections or were related to, set from the right angle of their face (Humphrey & McManus, 1973). It is interesting to note that the portraits which were painted from

the right angle have been evaluated as more “powerful” and more “active” (Benjafield & Segalowitz, 1993) and are more widely preferred (McLaughlin & Murphy, 1994).

The Adventure of Style Research

In the psychology of art and experimental aesthetics there are not many studies dealing with the cognitive problems and categorization of art works. Mainly, the studies were done using stimuli of different art styles measuring the cognitive relation to dominating styles and themes (Avital & Cupchik, 1988; Berlyne & Ogilvie, 1974; Cupchik, 1974).

As an example, Berlyne and Ogilvie (1974) observed the problem of appreciating the style from the theoretic-informational point of view. They have extracted four factors, named: 1. *Subjectivism* (saturated with all scales connected to physiologic processes of the artist); 2. *Realism* (highly saturated with scales: *reproduction* and *form* and is negatively saturated with scales of *color*); 3. *Classification* (saturated with scales: *composition*, *lines* and *form*), and 4. *Impressionism* (saturated with scales: *perception* and *surface*).

On the other hand, Cupchik (1974) based his findings on dimensional approach to style classification. He was interested in proving whether the dimensions of style, which are mentioned in the history of art, are relevant for recognizing difference of styles, set aside the perception of the observer. He identified four factors: 1. *Classification* (positively saturated with scales *composition*, *lines*, *angle* and *cold* and negatively saturated with scales *artist's feelings*; *surface*), 2. *Subjective style* (positively saturated with scales *form*, *artist's perception*, *tone harmony* and negatively saturated with scales *lighting* and *reproduction*), 3. *Complexity* (positively saturated with scales *complexity* and *lighting*) and 4. *Expressionisms* (positively saturated with scales *tendency* and *feelings of the artist* and negatively saturated with scale *objective ideas*).

O'Hare (1976) has considered the experience of style by the investigation of the effects of artistic education to evaluation of art work according by similarities. He was interested in finding out whether artists and non-artists used the same criteria for evaluating, do they pay attention to the same features of artworks. In this research he used reproductions of landscapes of different styles. He identified two dimensions: 1.

Realistic – which distinguishes highly realistic representations from low realistic representation and 2. *Clarity* – distinction between artworks according to the clarity. The artists had based their estimation on the dimension of clarity, while the non-artists had based it on the realistic dimension.

On the other hand, Avital and Cupchik (1988) had researched the reception of abstract pictures. They identified two dimensions: 1. *Soft-hard lines* and 2. *Distinction of the background figures*. Dimension of soft-hard lines is similar to Cupchik's (1974) factor which encompasses integral characteristics of classicism. The other dimension describe contrast, the central figure is clearly distinct from the background, where the background figures and the background are in harmony. This dimension is more representative of orientation (orientation as a whole, against the center of the picture). In congruence with the Gestalt theory, it reflects the integration against the separation of background figure. It is in congruence with the figurative-abstract dimension which Avital (1997) had separated in one of his earlier findings.

This short review of the findings confirms that the basic perception of styles lies in a smaller number of dimensions which make it possible to distinguish different styles.

Research

In this study we were interested in finding out whether certain portrait characteristics, like: gender, orientation and artistic style influence the grouping of portraits according to their similarities.

Method

Subjects: The study was conducted on 40 participants, students of first year of psychology, both genders (30 females and 10 males), with average age of 20. The participants were not systematically educated in the field of fine arts.

Stimuli: A total of 18 portraits, reproductions of famous artists were used for the material. The portraits represented adult individuals, of different genders, different orientations of portraits (left, right, front) different epoch/style of art (Renaissance, realism and expressionism). The chosen stimuli were organized in 153 pairs, combinations of each stimulus with the other. The position of stimuli in pair was

balanced (left-right). That way, each stimulus was presented on the left in half, and on the right, in another half of situations (Figure 2).

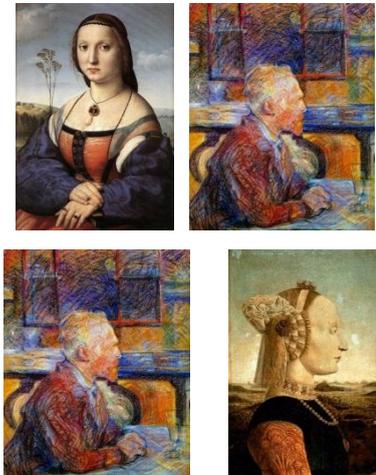


Figure 2. Prime balancing position of the same stimulus in pairs

Procedure: The participants were presented pairs of stimulus in random order. Each participant was presented 153 pairs of stimulus. Their task was to determine to which degree two stimuli look similar (scale 1 – 7, where 1 - means maximum similarity, 7 – means maximum difference). The criteria according to which two stimuli compared by similarity are not precise (example: similar style, color, line, etc.). This finding indicates that the participants based their estimations on their own general impression about the similarity. The pairs of pictures were presented via an LCD projector.

Sessions were conducted collectively. The participants were organized into four groups.

Data processing: The average estimation values were computed for each pair. Then the matrix of distances was formulated – direct measure of similarity. Next, the cluster analysis was done.

Results

Cluster analysis showed two clusters. The first cluster is larger and it includes twelve portraits. The second cluster includes six portraits.

The first cluster is more difficult to define. It encompasses two under-clusters which differ in the type of contour which is dominant in portraits. One part of clusters contains clearly defined portraits which have dominant and precise contours. The

other contains half-profiles which are defined with weak and incomplete precision of contours. Second bigger cluster encompasses portraits which are left-oriented (Figure 3).

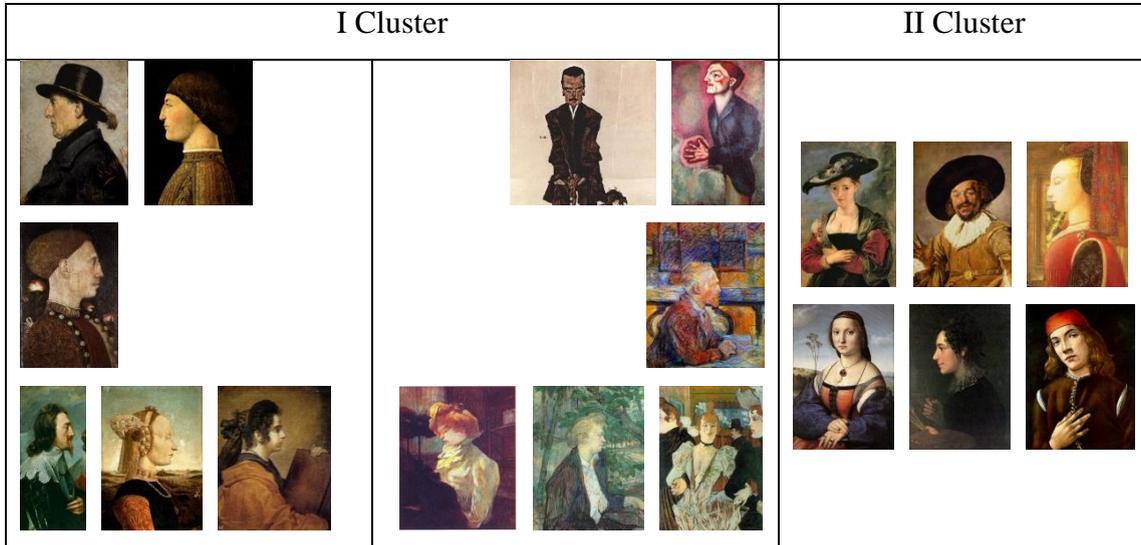


Figure 3. Clusters

Discussion

The results obtained support the finding of dominant left orientation of portraits. One of explanations could be by hypothesis of handedness. Maybe right-handed artist finds it easier to portray left-directed portrait. Taking into consideration that right-handed artists are in majority, it is understandable that frequent tendencies to display left-sided faces of portraits represent handedness of authors.

The results are also in accordance with hemispheric differences in perception of faces. McLaughlin and Murphy (1994) expressed assumption that the right hemisphere is specialized for recognition of faces. That could be reason why observers prefer right-sided objects in their left-peripheral view (Gilbert & Bakan, 1973; Levy, Heller, Banich & Burton, 1983).

In addition, other factors influencing this process are of interest, but are overcoming scope of this research.

The peripheral preference toward left-oriented portraits can be explained because of conditional cultural habits, respectively drawing from left to right.

The results speak about the importance of orientation and artistic style (defined

by line type) in classical portraits, but not in half-portrayed individuals.

References

- Avital, T. (1997). Footprints literacy: The origins of art and prelude to science. *Simetry: Art and Science*, 8, 1.
- Avital, T., & Cupchik, G. C. (1998). Perceiving Hierarchical Structures in Nonrepresentational Paintings. *Empirical Studies of the Arts*, 16 (1), 59-70.
- Benjafield, J., & Segalowitz, S. (1993). Left and right in Leonardo's drawings of faces. *Empirical Studies of the Arts*, 11, 25-32.
- Berlyne, D. E., & Ogilvie, J. C. (1974). Dimensions of perception of paintings. In: D. E. Berlyne (Ed.), *Studies in the New Experimental Aesthetics* (181-226). Washington, D. C.: Hemisphere Publishing Corporation.
- Conesa, J., Brunold-Conesa, C., & Miron, M. (1995). Incidence of the half-left profile pose in single subject portraits. *Perceptual and Motor Skills*, 81, 920-922.
- Cupchik, G. C. (1974). An experimental investigation of perceptual and stylistic dimensions of paintings suggested by art history. In: Berlyne, D. E. (Ed.), *Studies in the New Experimental Aesthetics* (235-257). Washington, D. C.: Hemisphere Publishing Corporation.
- Gilbert, C., & Bakan, P. (1973). Visual asymmetry in perception of faces. *Neuropsychologia*, 11, 355-362.
- Gordon, I. (1974). Left and right in Goya's portraits. *Nature*, 249, 197-198.
- Grusser, O.-J., Selke, T., & Zynda, B. (1988). Cerebral lateralization and some implications for art, aesthetic perception and artistic creativity. In I. Rentschler, B. Herzberger, & D. Epstein (Eds.), *Beauty and the brain. Biological aspects of aesthetics* (257-293). Boston: Birkhauser.
- Humphrey, N., & McManus, C. (1973). Status and the left cheek. *New Scientist*, 59, 437-439.
- Levy, J., Heller, W., Banich, M., & Burton, L. (1983). Asymmetry of perception in free viewing of chimeric faces. *Brain and Cognition*, 2, 404-419.
- McLaughlin, J., & Murphy, K. (1994). Preference for profile orientation in portraits. *Empirical Studies of the Arts*, 12, 1-7.
- McManus, I., & Humphrey, N. (1973). Turning the left cheek. *Nature*, 243, 271-272.

O'Hare, D. P. A. (1976). Individual differences in perceived similarity and preference for visual art: A multidimensional scaling analysis. *Perception and Psychophysics*, 20, 445-452.

PERCEPTUAL FACTORS AND CATEGORIZATION OF PAINTINGS BY SIMILARITY

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Abstract

This research examines the correlation between the perceptual factors of paintings with dimensions that are in the bases of perceptual grouping by similarity (realistic-abstract, colorful-plain and light-dark). The intent was to determine the extent to which respondents rely on the perceptual properties of paintings when evaluating paintings by similarity. The properties were defined by physical features of paintings (lines, color, shape, form, etc.).

The survey was conducted on a sample of 44 subjects of both gender, age between 19 and 20, who were not specifically trained in the field of fine arts. The stimuli were 50 reproductions of paintings created by well known artists. Selected paintings belonged to different historical periods, styles, trends and dealt with different motives.

Subjects evaluated each stimulus on ten seven degree bipolar scales, in the form of semantic differential, which measured the dimensions: brightness, complexity, integrity, quality colors and non-voluminousity and eight seven degree unipolar scales, which measured the dimensions: orientation lines, warm colors, cool colors and neutral colors.

The multiple regression analysis has been made. The criterion variables were the dimensions: realistic-abstract, colorful-plain and light-dark, while the predictor variables were perceptual dimensions: brightness, complexity, integrity, non-voluminousity, color quality, warm colors, cool colors, neutral colors and line orientation.

The results show that there is a statistically significant correlation between the perceptual properties of paintings and the distribution of paintings by realistic-abstract dimension. The best predictors are these dimensions: complexity, neutral colors and integrity. With the increasing of abstractness in paintings all of the three dimensions

decline.

The results also show that there is a statistically significant correlation between the perceptual properties of paintings and the distribution of paintings by colorful-plain dimension. The best predictors are these dimensions: color quality and brightness. With the reduction of color in the painting the proportion of cold, saturated, bright colors and shiny surfaces increases.

It is also evident that there is a statistically significant correlation between the perceptual properties of paintings and the distribution of paintings by light-dark dimension. Analyses of individual contributions of predictors show that the best predictor is the cool color dimension. With the increase of dark tones in the painting the share of cool colors (blue and purple) decreases.

These results indicate that with the change of painting`s classification criteria the contribution of painting`s perceptual properties changes. The subjects rely more on the perceptual factors when the content (realistic-abstract criteria) is the dominant criteria for categorization of painting similarity.

Keywords: painting categorization, perceptual factors, style, content, color

Introduction

This research examines the correlation between the perceptual factors of paintings with dimensions that are in the bases of perceptual grouping by similarity (realistic-abstract, colorful-monochrome and light-dark). The intention was to determine the extent to which respondents rely on the perceptual properties of paintings when evaluating paintings by similarity. The properties were defined by physical features of paintings (lines, color, shape, form, etc.). In other words, the intention was to examine the extent to which the observers, while judging paintings by similarity, rely on perceptual dimensions that represent the properties of a painting. Is subjective measure in which observer finds two paintings similar based on complex or formal perceptual characteristics of painting? What characteristics participate in this cognitive process?

Paintings represent complex visual stimuli. How this will be observed and evaluated depends on the observer and the way he/she perceives aesthetic properties of a painting, its content and style. Thus, studies show that non-artists pay more attention to bright colors, and realistic descriptions of the content, while artists pay more attention to compositional elements (lines, shapes and colors) and the relations among them (Child, 1965; Nodine, Locher & Krupinski, 1993; Winston & Cupchik, 1992). Also, non-artists rely more on semantic and artists on formal and stylistic properties of paintings (Cupchik & Gebotys, 1988; Hekkert & van Wieringen, 1996; Winston, 1992). These and other findings, which will be mentioned, show that the perception and aesthetic judgments are influenced by various structural properties of a painting.

Painting characteristics researches

There are a large number of research studies that have examined the characteristics of different paintings, guided by the idea that their systematic effects produce the aesthetic evaluation.

Complexity is one of the characteristics of a work of art, which has been studied most consistently in relation with aesthetic evaluation. Even during Fechner's aesthetics, the complexity and arrangements have most often been the aesthetic factors of the objects. For Berlyne (1974) the complexity is a very important "collative

variable” which influences the aesthetic experience of the artwork.

The researches of correlations, complexity and quaintness of artworks indicate that no consistency can be found. Some studies indicate that moderately complex stimuli are most appealing (Berlyne, 1974; Saklofske 1975; Wohlwill, 1968), while the other allegations are completely opposite and show that this relationship could vary with the type of stimulus, which is estimated (Cutting, 2003; Martindale, Moore & Borkum, 1990). On the other hand, there are studies that confirm the positive linear correlation between complexity and aesthetic preference (Krupinski & Locher, 1988; Nicki & Moss, 1975; Osborne & Farley, 1970; Stamps, 2002), and studies showing a negative linear correlation (Cupchik & Gebotys, 1988; Nicki, Lee & Moss, 1981).

The reasons for such a large diversity of findings lie primarily in the choice of stimuli, samples of observers and evaluation of different aspects of visual complexity (symmetry, the ambiguity, the number of elements, and the amount of information....). Analyses of individual studies show that the assessments of complexity of a single painting differ depending on the characteristics on which the observers are focused on (Kreitler, Zigler & Kreitler, 1974; Rump, 1968).

An important factor in perception of paintings and aesthetic judgment is also the color. Together with the shape and brightness, color has a determinative role in the identification of objects. In the field of experimental aesthetics there were numerous studies that examined various aspects of color. As part of a wider study, it was found that by removing the color from a painting it becomes less attractive for a non–artist (Hekkert & van Wieringen, 1996). Recent researches, however, confirm these findings only partly and show that the effect of color depends on the content of images (Kreitler & Kreitler, 1972; Oyama, 2003; Polzella, Hammar & Hinkle, 2005).

Apart from the mentioned, there were researches concerning the effects of other characteristics of aesthetic judgments, although to a lesser extent. For example, it was found that orientation has a stronger impact on preference than the size and the position (Boselie, 1992), and the spherical forms are more preferred than pointy (Silvia & Barona, 2009).

The impact of the artistic style on the aesthetic appeal has also been studied. The artistic style was usually studied through representative-abstract dimension. Studies have found a negative correlation between the preference of abstract and representational art (Furnham & Walker, 2001; Knapp, 1964). Also, studies have shown that there is greater presence of horizontal and vertical lines than of inclined on

realistic paintings (Miller, 2007), and there are more details (Pejic, 2004).

The problem of research

In psychology of art and experimental aesthetics, not many studies that have dealt with the problem of cognitive categorization of paintings. Mostly, there were studies that examined the experience of art styles and the relationship between cognitive domination of style and theme in artistic paintings (Arnheim, 1980; Avital & Cupchik, 1998; Berlyne & Ogilvie, 1974; Cupchik, 1974). However, there is a lack of studies that determine the criteria for grouping of paintings. In this sense, this research attempts to fill this gap.

Method

Participants: The study was conducted on a sample of 44 participants of both sexes, average age 20 years. Respondents were not specifically trained in the field of fine arts.

Stimuli: A total of 50 painting reproductions in color, done by recognized artists. Paintings belonged to different epochs, styles, movements and schools, and dealt with various themes and motifs. Paintings were selected independently by two experienced art historians.

Instrument: Ten seven-degree bipolar scales, in the form of semantic differential, which measures five dimensions: brightness (dark-bright colors, matt-glossy surface), complexity (simple forms-complex forms, geometric forms-free form), integrity (dashed line-continuous lines, diminished form-all forms), non-voluminous quality (curves-straight lines, enlarged form-elongated form) and the color quality (cold-hot color, color-saturated colors) and eight seven-degree unipolar scales measured four dimensions: warm colors (yellow, red), cool colors (blue, purple), neutral colors (gray, brown) and the orientation of lines (horizontal and vertical lines).

Procedure: The task was to assess each stimulus on eighteen scales. Respondents expressed their assessments by circling one of the values on the scale. In bipolar rating scale 1 (regardless of sign) always represented a minimal expression, while a score 3 (regardless of sign) denoted maximum expression of features. In unipolar scale number 1 represented minimal presence, while the level 7 denoted maximum presence of characteristics. The subjects were divided into four groups

randomly. The stimuli were displayed via the LCD projector, in random order. The time of exposure and assessment of the stimulus was not restricted.

Data analysis: First, the estimations obtained on bipolar scales were transformed (from -3 to 3) in the unipolar form (1 to 7). This was followed by multiple regression analysis (MRA). Criterion variables were the dimensions: realistic-abstract, colorful-monochrome and light-dark, while the predictor variables were perceptual dimensions of images: brightness, complexity, integrity, non-voluminosity, color quality, warm colors, cool colors, neutral colors and orientation of lines.

Results

The results of MRA for the realistic-abstract dimension

The results of multiple regression analysis show that the model which includes the all perceptual factors of a painting represents a good predictor of realistic-abstract dimensions: $r^2 = .839$; $F(9;49) = 29,284$, $p < .01$

The analysis of contributions of individual perceptual factors of a painting, in the determination of realistic-abstract dimensions, shows that statistically significant predictors of realistic-abstract dimensions are: complexity, integrity, and neutral colors. The highest variance is explained by the complexity factor of 57,2%, followed by a factor of neutral colors 41,6%, while the integrity factor explains the lowest variance 31,2% (Table 1).

Table 1. The contribution of individual predictors in the MRA

The predictor variables	β	t	p
Brightness	.057	.636	.528
Complexity	-.572	-6,300	.000
Integrity	-.312	-4,209	.000
Non-voluminosity	-.170	-1,697	.097
Color quality	-.080	-.583	.563
Warm colors	.073	.559	.579
Cool colors	-.111	-1,392	.172
Neutral colors	-.416	-5,292	.000

Orientation of lines	.001	.007	.994
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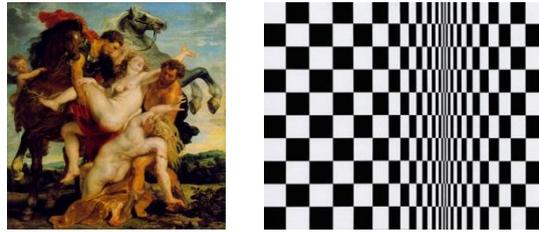


Figure 1. Example of paintings with extreme values on realistic-abstract dimension and factor of complexity

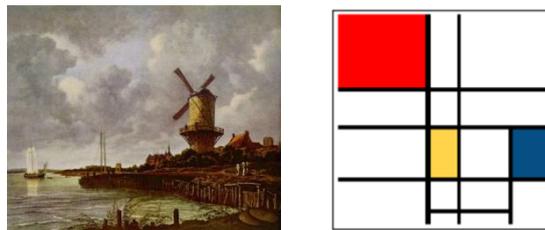


Figure 2. Example of paintings with extreme values on realistic-abstract dimension and neutral color factor



Figure 3. Example of paintings with extreme values on realistic-abstract dimension and integrity factor

The results of MRA for the colorful-monochrome dimension

The results of multiple regression analysis show that the model which includes the all perceptual factors of a painting, is a good predictor of *colorful-monochrome dimension*: $r^2 = .795$; $F(9;49) = 22,076$, $p < .01$.

The analysis of contributions of individual perceptual factors of a painting in determining the criterion variable has shown that the factors: brightness and color quality are statistically significant predictors of the *colorful-monochrome dimension*. Color quality factor explains 57,2% of the variance, while the brightness factor explains 36,8% (Table 2).

Table 2. The contribution of individual predictors in the MRA

The predictor variables	β	t	p
Brightness	.36 8	3,64 1	.001
Complexity	-.19 2	-1,87 5	.068
Integrity	-.16 6	-1,98 5	.054
Non-voluminosity	-.14 5	-1,28 1	.208
Color quality	-.57 9	-3,75 7	.001
Warm colors	-.27 7	-1,87 8	.068
Cool colors	.16 0	1,77 2	.084
Neutral colors	.14 5	1,63 2	.111
Orientation of lines	.09 7	.805	.426



Figure 4. Example of paintings with extreme values on colorful-monochrome dimension and color quality factor

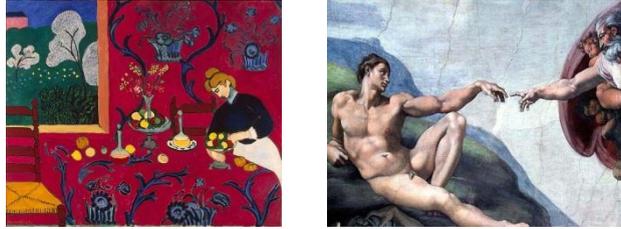


Figure 5. Example of paintings with extreme values on colorful-monochrome dimension and brightness factor

The results of MRA for the light-dark dimension

The results of multiple regression analysis show that the model which includes the all perceptual factors of a painting is a good predictor of the light-dark dimension: $r^2=.526$; $F(9;49)=7,047$, $p<.01$.

The analysis of contributions of individual perceptual factors of a painting in determining the criterion variable has shown that the factor cool color is the only significant predictor of the light-dark dimension. This factor explains 60,0% of the variance (Table 3).

Table 3. The contribution of individual predictors in the MRA

The predictor variables	β	t	p
Brightness	-.189	-1,233	.225
Complexity	-.007	-.043	.966
Integrity	-.079	-.624	.536
Non-voluminosity	-.138	-.800	.429
Color quality	-.318	-1,357	.182
Warm colors	-.045	-.202	.841
Cool colors	-.600	-4,389	.000
Neutral colors	-.040	-.299	.766
Orientation of lines	.039	.216	.830



Figure 6. Example of paintings with extreme values on light-dark dimension and cool color factor

Conclusion

The results show that there is statistically significant correlation between the perceptual factors of paintings and distribution of paintings on dimensions realistic-abstract, colorful-monochrome and light-dark. That shows that classification of paintings is based on few basic perceptual properties of works of art.

The distribution of paintings on dimension realism-abstract is primarily determined by factors including: complexity, integrity, and neutral colors. The increasing abstraction quality of paintings is related with decrease of all three factors. This further means that if paintings are more abstract, there are more common and simple forms and dashed lines diminished, rather than the presence of neutral colors (brown and gray), which is consistent with the characteristics of abstract art. Conversely, more realistic paintings are estimated as more complex and there are

more whole forms, continuous lines and neutral colors. The results indicate that abstract paintings will be perceptually marked with the simple, geometric, diminished form, the dashed line and lower intake of neutral colors. Inverse, the realistic paintings will be characterized by complex, free, whole forms, continuous lines and neutral colors.

The distribution of paintings by dimension colorful-monochrome is primarily determined by factors of quality of color and light. With the reduction of color in the painting increases the proportion of cool, saturated and bright colors and shiny surfaces. Inverse, the increase of color in the painting increases the proportion of warm, saturated and dark colors, and matte surfaces. The results show that less colorful paintings are characterized by cool, saturated, bright colors and shiny surfaces will be less colorful. The colorful paintings are perceptually marked with presence of warm, saturated, dark colors and matte surfaces.

The distribution of paintings by dimension light-dark is determined by cool colors. With the increase of dark tones in the painting decreases contain of cool colors (blue and purple). Logically, with increase of bright tones, decreases presence of cold colors in the painting.

The results indicate that changing of classification criteria changes the role of perceptual factors of the painting. When the content is the dominant criterion for classification of painting by similarity (realistic or abstract), the respondents rely more on perceptual factors which are mainly related to the form. However, when the style is dominant, classification of paintings (dimensions: colorful-monochrome and light-dark), that the greater role is given to the properties of color (tone, saturation, lightness).

The results indicate that the change of the classification criteria of the paintings (shift from content toward the style), reduces the importance of characteristics such as the complexity and integrity and in the same time increases the role of formal characteristic of color, such as brightness, saturation and tone. Color appears to be important formal characteristic of painting influencing classification process of observers.

References

- Arnheim R. (1980). *Visual Thinking*. Berkely and Los Angeles: University of California Press.
- Avital, T. & Cupchik, G. C. (1998). Perceiving Hierarchical Structures in Nonrepresentational Paintings. *Empirical Studies of the Arts*, 16 (1), 59-70.
- Berlyne, D. E. (1974). *Studies in the New Experimental Aesthetics*. Washington, D. C.: Hemisphere Publishing Corporation.
- Berlyne, D. E. & Ogilvie, J. C. (1974). Dimensions of perception of paintings. In: D. E. Berlyne (Ed.), *Studies in the New Experimental Aesthetics* (181-226). Washington, D. C.: Hemisphere Publishing Corporation.
- Boselie, F. (1992). The golden section has no special aesthetic attractivity! *Empirical Studies of the Arts*, 10, 1-18
- Child, I. L. (1965). Personality correlates of esthetic judgement in college students. *Journal of Personality*, 33, 476-511.
- Cupchik, G. C. & Gebotys, R. J. (1988). The search for meaning in art: Interpretive styles and judgments of quality. *Visual Arts Research*, 14 (2), 38–50.
- Cupchik, G. C. (1974). An experimental investigation of perceptual and stylistic dimensions of paintings suggested by art history. In: Berlyne, D. E. (Ed.), *Studies in the New Experimental Aesthetics* (235-257). Washington, D. C.: Hemisphere Publishing Corporation.
- Cutting, J. E. (2003). Gustave Caillebotte, French Impressionism, and mere exposure. *Psychonomic Bulletin & Review*, 10, 319-343.
- Furnham, A. & Walker, J. (2001). The influence of personality traits, previous experience of art, and demographic variables on artistic preference. *Personality and Individual Differences*, 31, 997-1017.
- Hekkert, P. & van Wieringen, P. C. W. (1996). Beauty in the eye of expert and nonexpert beholders: A study in the appraisal of art. *The American Journal of Psychology*, 109 (3), 389-407.
- Knapp, R. H. (1964). An experimental study of a triadic hypothesis concerning the sources of aesthetic imagery. *Journal of Projective Techniques and Personality Assessment*, 28, 49-54.
- Kreitler, H. & Kreitler, S. (1972). *The psychology of the arts*. Durham, NC: Duke University Press.

- Kreitler, S., Zigler, E. & Kreitler, H. (1974). The complexity of complexity. *Human Development*, 17, 54-73.
- Krupinski, E. & Locher, P. (1988). Skin conductance and aesthetic evaluative responses to non representational works of art varying in symmetry. *Bulletin of the Psychonomic Society*, 26, 355-358.
- Martindale, C., Moore, K. & Borkum, J. (1990). Aesthetic preference: Anomalous findings for Berlyne's Psychobiological Theory. *The American Journal of Psychology*, 103 (1), 53-80.
- Miller, R. J. (2007). Another Slant on the Oblique Effect in Drawings and Paintings. *Empirical Studies of The Arts*, Vol.25(1), 41-61.
- Nicki, R. M. & Moss, V. (1975). Preference for non-representational art as a function of various measures of complexity. *Canadian Journal of Psychology*, 29, 237-249.
- Nicki, R. M., Lee, P. L. & Moss, V. (1981). Ambiguity, cubist works of art, and preference. *Acta Psychologica*, 49, 27-41.
- Nodine, C. F., Locher, P. J. & Krupinski, E. A. (1993). The role of formal art training on perception and aesthetic judgment of art compositions. *Leonardo*, 26, 219-227.
- Osborne, J. W. & Farley, F. H. (1970). The relationship between aesthetic preference and visual complexity in abstract art. *Psychonomic Science*, 19, 69-70.
- Oyama, T. (2003). Affective and symbolic meanings of color and form: Experimental and psychological approaches. *Empirical Studies of the Arts*, 21 (2), 137-142.
- Pejic, B. (2004). *Tipovi crteža u likovnoj umetnosti i modusi estetske preferencije*. Magistarski rad. Filozofski fakultet. Beograd.
- Polzella, D. J., Hammar, S. H. & Hinkle, C. W. (2005). The effect of color on viewers' ratings of paintings. *Empirical Studies of the Arts*, 23 (2), 153-163.
- Rump, E. E. (1968). Is there a general factor of preference for complexity? *Perception & Psychophysics*, 3, 346-348.
- Saklofske, D. H. (1975). Visual aesthetic complexity, attractiveness and diverse exploration. *Perceptual and Motor Skills*, 41, 813-814.
- Silvia, P. J. & Barona, C. M. (2009). Do People Prefer Curved Objects? Angularity, Expertise and Aesthetic Preference. *Empirical Studies of the Arts*, 27 (1), 25-42.
- Stamps, A. E., III. (2002). Entropy, visual diversity, and preference. *The Journal of*

General Psychology, 129, 300-320.

Winston, A. S. (1992). Sweetness and light: Psychological aesthetics and sentimental art. In: G. Cupchik & László, J. (Eds.), *Emerging visions of the aesthetic process: Psychology, semiology, and philosophy*. New York, NY: Cambridge University Press.

Winston, A. S. & Cupchik, G. C. (1992). The evaluation of high art and popular art by naïve and experienced viewers. *Visual Arts Research*, 18, 1-14.

Wohlwill, J. F. (1968). Amount of stimulus exploration and preference as differential functions of stimulus complexity. *Perception & Psychophysics*, 4 (5), 307-312.

RELATIONSHIP OF PERSONALITY TO PREFERENCE FOR REPRESENTATIONAL VERSUS NON-REPRESENTATIONAL ART

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Abstract

The relationship of personality to aesthetic preference has been previously researched. The present study uses the “Big Five” personality inventory, which includes Neuroticism, Openness to Experience, Conscientiousness, Extroversion and Agreeableness to explore the relationship between personality and Representational versus Non-representational art. There were 372 Nipissing University undergraduate participants involved in this study, across a variety of majors. Of these participants 33.3% were male and 66.6% female. Each participant completed the “Big Five” inventory that was created by John (1991) at Berkeley University. Following this, they viewed 20 randomized pieces of art, displayed on a projector with 10 being Representational and 10 Non-representational.

Aesthetic experience was positively correlated with overall preference ratings (+0.32; $p < 0.001$) as well as for preference ratings for both the Representational (+0.24; $p < 0.001$) and Non-representational art (+0.29; $p < 0.001$). Openness was the only trait to be found to correlated with Aesthetic Experience (+0.48; $p < 0.001$).

Openness was also the only trait to show a simple direct correlation with increased overall preference ratings (+0.38; $p < 0.001$), and was more strongly correlated with Representational (+0.35; $p < 0.001$) than Non-representational ratings (+0.28; $p < 0.001$).

However, a Split Plot Analysis uncovered some other significant interactions. When participants were categorized by dominant personality trait, a significant difference in preference for Representational over Non-representational art was found for those whose dominant personality trait was either Extroversion ($p < 0.001$), Agreeableness ($p < 0.001$), Conscientiousness ($p < 0.001$) or Neuroticism ($p < 0.001$). Also, those who were dominant for Extroversion ($p < .025$) and Openness ($p < .043$) were found to prefer Non-representational art significantly more than those high in Conscientiousness. When looking at sex differences, females had significantly higher

Neuroticism ($p < .001$) and Conscientiousness ($p < .019$) scores than did males. Finally, those high in aesthetic exposure preferred all art more than those who had neutral aesthetic exposure in their life, not a lot, or no exposure.

1. Introduction

Experimental investigations of aesthetics and personality have been conducted to reveal fundamental factors which contribute to differences in artistic preference. Although it may seem that this is a relatively new field of interest, scientific research regarding the connection between personality and artistic preference dates back more than 70 years. One of the earliest studies in this field was carried out by Burt (1933), which involved a series of artistic post cards that his participants ranked in order of preference. Not long after this study, Eysenck (1940, 1941) continued this research, extending the presented art to preferences of modern art. Furnham and Walker (2001) proposed a series of questions relating to the connection between personality and art. Can a person's choice of fine art be an unobtrusive measure of personality? Which personality traits are most clearly related to art ratings, and why? Finally, does personality account for more of the variance in art rating than art education or interest? These are all relevant questions that continue to be studied by personality psychologists and those interested in art. This current study examines the connection between personality and artistic preference through a close examination of participants' results of Berkley Personality Lab's BFI, preference for Representation versus Non-representation art, and key demographic characteristics. The importance of participants' art education or aesthetic exposure will also be taken into account, which may be an important factor in revealing individual differences in artistic preference.

1.2 Scales Used to Study Personality and Artistic Preference

In many scientific reports about the connection between artistic preference and personality, a common method used is a previously established and tested personality scale. The Big Five model of personality has often been used to correlate the relationship of personality and art (Chamorro-Premuzic 2009), as well as a scale of Sensation Seeking –SS (Furnham 1988). Furnham and Walker (2001) also used a new version of the Sensation Seeking Scale –SSS VI in a later study when looking at personality and Abstract, Pop Art and Representational paintings. Finally, a scale of ambiguity tolerance was used by Furnham and Avison (1997) when looking at personality and Representational and ambiguous paintings. Several other scales appear in personality and artistic preference literature, but the previously mentioned scales are used more frequently, therefore resulting in more conclusive data.

1.3 Expansion of Personality Scales

There are two versions of the Sensation Seeking Scale that appear in many papers about art and personality. Furnham and Bunyan (1988) used this scale, which was originally created by Zuckerman (1972), who defined sensation seeking as an individual's need for novel stimuli that can be a complex sensation. According to Zuckerman (1972) sensation seeking also involves the willingness to take social risks for the sake of experiencing these novel sensations. Furnham and Bunyan (1988) explained the SS model and its four subscales. The first of these subscales is “Thrill and Adventure Seeking”, the second being “Experience Seeking”, the third being “Disinhibition”, and the final scale being “Boredom Susceptibility”. Zuckerman (1994) explained a new version of the Sensation Seeking Scale which contains only two subscales: Thrill and Adventure Seeking (TAS) and Disinhibition (DIS). These two subscales are used in many studies pertaining to aesthetic preference and personality, such as a study by Furnham and Walker (2001). The Ambiguity Tolerance Scale as described by Furnham and Avison (1997) relates to the manner in which an individual perceives and interprets ambiguous stimuli or situations where the elements can be incongruent, unfamiliar or complex. Lastly, the Big Five Inventory has been widely used to determine various participants’ personalities in relation to many different variables. In recent literature it has often been used when comparing aesthetic preference to personality.

1.4 The Big Five Personality Inventory

Particularly relevant to this study is a description of the components of the Big Five, as well as research that has linked the Big Five to aesthetic preference. McCrae and Costa (1992) stated that there is an increasing consensus among psychological researchers that personality can be reduced to five fundamental factors. The Big Five factors used in this model to measure personality are “Openness”, “Conscientiousness”, “Extraversion”, “Agreeableness” and “Neuroticism”. Chamorro-Premuzic et al. (2009) defined each of these personality traits. They define Extraversion as a measure of quantity and intensity of interpersonal interaction, activity level and external stimulation. Conscientiousness, as defined by Chamorro Pre-muzic et al (2009) measures the degree of organization, persistence, dependability and goal directed behavior. Furnham and Avison (1997) described the trait of Openness as Openness to experience, consisting of actively seeking and appreciation of varied experiences for ones’ own sake. Chamorro Pre-muzic et al (2009) defined Neuroticism as emotional instability, easily distressed, and a predisposition to have

unhealthy coping strategies. Furnham and Walker (2000) described the Big Five measure of personality, Agreeableness, as good natured individuals who possess qualities of helpfulness, altruism, and are more likely to have a forgiving nature. As McCrae and Costa elucidate, personality can be reduced to these five factors. Schmitt (2007) explained in one study that the NEO-PI-R, which is a version of the Big Five, encompasses multiple traits within each Big Five category. For example, Extroversion contains the following: warmth, gregariousness, assertiveness, positive emotions, activity and excitement seeking.

1.5 Artistic Genres Previously Studied

Studies that investigate the relationship of personality and artistic preference examine a wide range of artistic genres. There have been numerous studies that have found a relationship with personality using various scales as discussed above. These scales are often correlated with artistic genres such as Surrealism (Furnham & Avison, 1997), Impressionism (Chamorro-Premuzic, 2009), Ancient art (Mastandrea, 2009), Cubism (Chamorro-Premuzic, 2009), Abstract (Furnham 2000; Furnham 2001; Furnham, 1988), Representational (Furnham 2000; Furnham 2001; Furnham, 1988), and even aesthetic activities, such as drawing, painting, reading, going to see films, etc. (McManus, 2006). There are many other artistic genres that have been studied in the past, for example Burt's (1933) artistic postcards, but recent literature has focussed on the genres mentioned above.

1.6 Support for Using Representational Versus Non-representational Art

Representational art encompasses all pieces of art that can be clearly understood by the viewer. If the piece of Representational art presents an object, the viewer should be able to undoubtedly recognize what is being presented. Non-representational art on the other hand, is open to interpretation and is not presented as clearly to the viewer. Furnham and Walker (2001) determined the relationship between personality and three types of art: Representational, Abstract and Pop Art. Furnham and Walker (2001) found that Disinhibition was associated with positive ratings of Abstract and Pop art, Neuroticism was positively correlated with positive ratings of Abstract and Pop art, while Conscientiousness was linked to a liking of Representational art. Openness to experience was linked to positive ratings of all three art genres. Agreeableness on the other hand, was linked negatively to a liking of Pop art. These results are a key component in the current study, which

attempts to replicate findings pertaining to Representational and Abstract art from Furnham and Walker's (2001) "Personality and Judgments of Abstract, Pop Art, and Representational Paintings". In the current study, abstract pieces are included in the Non-representational art section, but Pop art is excluded. Aside from Pop art's negative relationship with Agreeableness, the results for Pop art are similar to the Abstract results and therefore are not included in the present study. Also, in Furnham and Walker (2001), personality variables were least related to ratings of Pop art, hence not included in this study. The current study attempts to find the relationship between artistic preference and personality by using two categories that are vastly different, Representational and Non-representational art.

1.7 Demographic Variables – Gender

Demographic variables have been shown to have an impact on the relationship in an individual's artistic preference. In Furnham and Walker (2001), their Regression Analysis shows about a fifth of the variance can be accounted to personality and demographic variables. Sex has been seen as a possible variable that can provide a difference in artistic preference. McManus (2006) states "it might be expected that there will be differences in aesthetic activities and attitudes, which are related either to sex itself (in the biological sense) or to gender (in the psycho-social sense)". Although this seems to be what is expected, McManus (2006) found that sex has no relationship to aesthetic activity and no direct relationship to aesthetic attitudes. On the other hand, when looking specifically at paintings, Frumkin (1963) females have higher preference in general than males in his study. More recently, Furnham and Walker (2000) discovered that females have a higher preference for abstract art than males. This may be because females score higher in Neuroticism in the Big Five than do males (Costa & McCrae, 1992), and there has been a relationship between Neuroticism and Abstract art found in previous studies (Knapp & Wulff, 1963).

1.8 Demographic Variables – Age

Another demographic variable that has been correlated with artistic preference is the age of the participant. Furnham and Walker (2000) found that age displays a relationship with preference for Representational paintings. Chamorro-Premuzic (2009) also found that overall preferences were positively influenced by age. This study examines if the age group sampled (approximate 18-21) has a preference for Representational or Non-representational art, as well as supports the results from previous literature.

1.9 Previous Exposure to Art

Gorden (1951) found that people who display art expertise, compared to those who do not, judge paintings according to different criteria. Recent studies explore the impact of aesthetic exposure and art education on artistic preference. Furnham and Avison (1997) stated that one's familiarity with paintings is an important factor in a study that uses paintings or pieces of art by relatively well known artists. This further implies the importance of uncovering a participant's aesthetic exposure in a study like this, to see the relationship that lies with their artistic education/exposure and their preference. It is also possible that the amount of one's art education or aesthetic exposure can be related to one's personality. Much of literature does not include any connection to a participant's educational major or degree focus in relation to their artistic preference. This study attempts to see if there is an impact on one's artistic preference in relation to the participant's major or degree focus.

1.10 Hypothesis and Support From Other Sources

Many significant results have been found relating to the relationship between the Big Five Personality Inventory and preference for Representational and Non-representational or Abstract art. These findings are particularly relevant to the current study which will attempt to replicate, expand, and confirm some of these findings. The following hypothesis was tested and detailed results can be found in later sections of this paper.

1. Individuals who rate high on Openness will show a preference for art in general. They also will show a preference, specifically for Abstract art, which in this study is contained in the Non-representational art pieces (Fiest and Brady (2004).
2. Extraversion has been associated both negatively and positively with artistic preference in the past (Chamorrow-Premuzic 2004), and will likely display no significance.
3. Conscientiousness will show a relatively stable positive relationship with Representational art (Furnham & Walker, 2001).
4. Neuroticism will be positively correlated with Non-representational art, as it has been positively correlated with Abstract art in previous studies (Furnham & Walker, 2001).

5. Agreeableness will show a negative relationship with Non-representational art and a greater preference with Representational art (Furnham & Avison, 1997).
6. Females will have a higher preference for Non-representational art than will males (Furnham & Walker, 2000).
7. Females will also have a higher rating of general artistic preference than will males (Frumkin, 1963).
8. Females will score higher on the Neuroticism measure than will males (Costa & McCrae, 1992) .

1.11 *Current Study*

The current study focuses on Representational and Non-representational art forms, and uses the Big Five to explore any possible relationship between personality and artistic preference. Along with Representational and Non-representational art, general art preferences will also be examined. Since familiarity with art has been seen to play a prominent role in artistic preference, a self-rated aesthetic exposure scale will be completed by the participants. Demographic variables such as sex, age and major or degree has been collected and analyzed to see if there is any connection between these characteristics and artistic preference.

2. Methodology

2.1 *Measures & Stimuli*

As mentioned previously, the current study examines the relationship of Representational and Non-representational art preference in connection to personality. Twenty images were presented to the participants of which 10 were Representational and 10 Non-representational. Each time new participants viewed the images, they were randomized in a different order to minimize the chance of a sequence effect. The images selected were works created by significant artists and were limited to those of the 20th century. In the selection of art images there was an avoidance of works that might confound the study, such as works involving nudity or violence or religious pieces. The participant's task was to mark down their individual preference on a 5 Point Likert Scale (ranging from 1 = "strongly dislike" to 5 = "strongly like"), after viewing each image for 20 seconds. The "Big Five Personality Inventory" (BFI) was used to acquire their personality score. Specifically, the BFI used in this study was obtained from Berkley Personality Lab (John, O. P., 1991). The personality inventory contains 44 questions ranging across each of the Big Five categories:

Openness, Extraversion, Agreeableness, Conscientiousness and finally, Neuroticism. Each question was answered, once again based on a 5 Point Likert Scale (ranging from 1= “disagree” to 5 = “strongly agree”).

2.2 Participants

There were 372 participants who completed the BFI survey portion and the visual art preference rating task. Those participants who did not finish both tasks administered were not used in data analysis. These participants were tested during various lectures at Nipissing University. The participants were from 1 of 7 majors: business, fine arts, physical education, psychology, other social sciences, humanities or science. Once the participants completed the BFI inventory and their raw scores for each Big Five personality trait were calculated, they were placed categorically according to their highest scored trait. Of these participants 18% were dominantly Extroverted, 42.6 % of the participants were categorized as dominantly Agreeable, 21.2 % as dominantly Conscientious, 12.9% as dominantly Neurotic and 5.1% as dominantly Openness. The model for the participants self-rated scale of aesthetic exposure or art education was 2, which refers to “no extensive amount of aesthetic exposure”.

2.3 Procedure

Data collection for the current study took on average 20 minutes and remained constant over several data collection sessions. The same set of instructions was given to the participants in each session. Data collection consisted of two parts. First, participants filled out their demographic information which included: major, age, sex and year at university. Following this, they filled out the “Big Five Inventory” that was passed out prior to testing. The lights were dimmed and the participants viewed 20 pieces of art on a projector, each piece displayed for 20 seconds. After the two parts of data collection were completed the students began their lecture.

2.4 Analysis

Demographic variables were examined in terms of mean and standard deviation, to identify the basic parameters of the participants. To identify the differences between the males and females across various scales, independent measure t-tests were conducted, as well as a Holmes sequential Bonferonni to control for type one error. Following this, a Pearson’s correlation coefficient was conducted to determine the potential relationships between personality and artistic preference.

3. Results & Analysis

3.1 Split Plot Analysis 25.2 Results

A Split Plot 25.2 design was used with two between-subject factors (sex and personality) and one within-subject factor (art preference). The art by personality interaction was significant, Wilk's $\lambda = .958$ $F(4,362) = 3.975$, $p < .004$, $\eta^2 = .042$, as well as the between-subject interaction of personality and sex $F(4,362) = 3.292$, $p < .011$, $\eta^2 = .035$. Finally, aesthetic exposure, a between-subject variable was significant by itself, $F(4,367) = 10.614$, $p < .001$, $\eta^2 = .104$. Firstly, the simple main effects of the personality and art interaction will be analyzed.

Table 1. Cell Means Broken Down by Art Preference and Personality

	Extraversi on	Agreeablen ess	Conscientiousn ess	Neuroticis m	Openne ss
Representational Art Preference	31.403	30.862	31.331	32.542	32.474
Non-representati onal Art Preference	28.433	25.899	24.569	27.708	30.159

For those with an Extroverted personality, art preference was significant, Wilk's $\lambda = .841$ $F(1,66) = 12.432$, $p < .001$, $\eta^2 = .159$. In order to control for familywise error, with an original alpha level of 0.05, it has been adjusted according to the Holmes Sequential Bonferonni. Adjusted alpha is set at .0125 (.05/4=.0125). Since art preference is a within-subject factor, a paired sample t-test was conducted to test the differences between Representational art and Non-representational art within Extroverted individuals. The pairwise comparisons revealed that in Extroverted individuals, Representational art ($M=31.403$) was preferred significantly more than Non-representational art ($M=28.433$), $t(371)=-3.526$, $P<.001$.

Similarly, art preference was significant in individuals high in Agreeable personality, Wilk's $\lambda = .658$ $F(1,158) = 82.089$, $p < .001$, $\eta^2 = .342$. In order to control for familywise error, with an original alpha level of 0.05, it has been adjusted according to the Holmes Sequential Bonferonni. Adjusted alpha is set at .016 (.05/3=.016). Since art preference is a within-subject factor, a paired sample t-test was conducted to test the differences between Representational art and Non-representational art within Agreeable individuals. The pairwise comparisons revealed that in Agreeable individuals, Representational art ($M=30.862$) was preferred significantly more than Non-representational art ($M=25.899$), $t(158)=-9.060$, $P<.001$.

When looking at individuals high in Conscientiousness, art preference was significant, Wilk's $\lambda = .558$ $F(1,78) = 61.818$, $p < .001$, $\eta^2 = .442$. In order to control for familywise error, with an original alpha level of 0.05, it has been adjusted according to the Holmes Sequential Bonferonni. Adjusted alpha is set at .025 (.05/2=.025). Since art preference is a within-subject factor, a paired sample t-test was conducted to test the differences between Representational art and Non-representational art within Conscientious individuals. The pairwise comparisons revealed that in Conscientious

individuals, Representational art (M=31.331) was preferred significantly more than Non-representational art (M=24.569), $t(78)=-7.862$, $P<.001$.

For those with a Neurotic personality, art preference was significant, Wilk's $\lambda = .708$ $F(1,47) = 19.371$, $p < .001$, $\eta^2=.292$. In order to control for familywise error, the alpha has been adjusted according to the Holmes Sequential Bonferonni. Adjusted alpha is set at .05 (.05/1=.05). Since art preference is a within-subject factor, a paired sample t-test was conducted to test the differences between Representational art and non- Representational art within Neurotic individuals. The pairwise comparisons revealed that in Neurotic individuals, Representational art (M=32.542) was preferred significantly more than Non-representational art (M=27.708), $t(47)=-4.401$, $P<.001$. When looking for differences in Representational and Non-representational art, there was no significant interaction within Openness.

One final, subsequent analysis regarding the within-subject main effects was conducted to see what differences appear in personality differences within each art preference. Using an ANOVA, a significant relationship was found in personality when looking at Non-representational art, $F(4,367)=4.817$, $p<.001$. No Significant differences were found between personality types when looking specifically at Representational art.

To control for type one error, a Holmes Sequential Bonferonni was conducted, using the original alpha level of .05. Adjusted alpha for Extroversion is .025 (.05/2-.025), and the adjusted alpha for Conscientious is .05 (.05/1=.05). Extroverted (M=28.433) individuals were found to have significantly higher Non-representational art preferences than were Conscientious (M=24.569) individuals, $p<.025$. Also, Conscientious (M=24.569) individuals were found to have significantly lower scores than those who fall into the personality type of Openness (M=30.159), $p<.043$.

3.2 Analysis of between subject factors

Table 2. Cell Means Broken Down by Sex and Personality

	Extroversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Males	3.303	3.681	3.464	2.640	3.011
Females	3.339	3.993	3.616	3.072	2.994

As stated in the beginning of this analysis section, between-subject interaction

of personality and sex $F(4,362) = 3.292, p < .011, \eta^2 = .035$ was significant. Using independent sample t-tests, these results will be further analyzed.

Levene’s test for equality of variances was found to be insignificant across all personality types when looking at sex, thus homogeneity of variance assumption is satisfied and we can presume equal variances.

In order to control for familywise error, with an original alpha level of 0.05, it has been adjusted according to the two significant results found in this t-test. Adjusted alpha is set at .025 ($.05/2 = .025$) by using the General Bonferonni. A significant difference was found when comparing males and females across the personality scale of Neuroticism. There were significantly more Neurotic females ($M = 3.072$) than there were Neurotic males ($M = 2.640$), $p < .001$. Also, there were significantly more Conscientious females ($M = 3.464$) than there were Conscientious males ($M = 3.616$), $p < .019$.

Aesthetic Exposure

A subsequent analysis was conducted on aesthetic exposure exploring pairwise comparisons. In overall art preference scores, it was found that those who had “extensive aesthetic exposure” preferred all art significantly more than those who were “neutral” ($MD = 3.797$), “not much exposure” ($MD = 4.567$), and “none or little exposure” ($MD = 6.108$), all lying at the significance level of $p < .001$.

3.3 Correlation Analysis

Table 3. Cell Correlations for Significant Findings

	BFI Extroversion Raw Score	BFI Openness Raw Score
Amount of Aesthetic Exposure	.005 .928	.484** .000
Non-representational Art Preference	.096 .065	.346** .000
Representational Art Preference	.106* .040	.283** .000
Total Art Rating Preference	.121* .020	.382** .000
** Correlation significant at the .01 level * Correlation significant at the .05 level		

A Pearson’s correlation matrix was conducted to examine the relationship between artistic preference (including aesthetic exposure, Representational art,

Non-representation art and total art rating), and the Big Five personality traits (including Extroversion, Agreeableness, Conscientiousness, Neuroticism and Openness). This analysis indicates several significant linear positive relationships. There is a significant positive relationship between Extroversion and Representational art $r(372)=.106$, $p<0.040$ as well as Extroversion and total art rating $r(372)=.121$, $p<0.20$. When looking at the significant correlations with the Big Five personality trait Openness, there are several significant interactions; Openness and aesthetic exposure $r(372)=.484$, $p<0.001$, Representational art $r(372)=0.346$, $p<0.001$, Non-representational art $r(372)=0.283$, $p<0.001$ and total art rating $r(372)=0.382$, $p<0.001$.

Discussion of Results

4.0 Major Findings

This study examined the relationship between one's personality, using the Big Five personality inventory in relation to their preference for Representational and Non-representational art. Along with personality and artistic preference, the amount of aesthetic exposure of each individual, their gender and school concentration were also looked at to see the effects that these factors have in relation to their preference for Representational and Non-representational art. Overall results show that individuals whose dominant personality traits are Extroversion, Agreeableness, Conscientiousness or Neuroticism prefer Representational art significantly more than Non-representational art. There is no significant difference in the preference between Representational and Non-representational art when specifically looking at participants who possess a dominant personality trait of Openness. However, Openness displayed a significant positive relationship with art in general, Representational art and Non-representational art. The Openness scores of participants also displayed a positive relationship with "aesthetic exposure". Therefore, there were significantly more individuals who rated high on the Openness scale, who fell into the categories "a lot of aesthetic exposure" and "extensive exposure". When looking specifically at Non-representational art preferences, those who fell under the dominant personality trait of Extroversion or Openness have significantly higher Non-representational art preferences than did those who are Conscientious. The relationship between sex and personality is evident, females scoring higher on both Neuroticism and Conscientiousness scales than did males. Finally, it was found that those who have "extensive exposure" prefer Representational and Non-representation

art more than those who fall into the other categories of the “Aesthetic Exposure Scale”.

These findings support the notion that there is indeed a significant and strong relationship between personality and artistic preference. The statistical support that has been examined in this study provides evidence of three key relationships. Firstly, there is a stable relationship shown between personality and artistic preference. Representational art is strongly preferred across all personality domains of the Big Five inventory, with the exception of Openness. These significant findings support the view that personality can predict a wide range of characteristics in an individual. Secondly, personality not only predicts differences in individual’s art preferences, but personality differs significantly between males and females. As stated above, in this study females are significantly higher than males in Conscientiousness scores as well as Neuroticism scores. Finally, the amount of aesthetic exposure or art education pertaining specifically to visual art that one has received in their life impacts one’s view and art preference. Although this needs to be examined further, “aesthetic exposure” is a crucial part of this study, and perhaps a critical predictor in artistic preference which will be discussed further at a later point in this paper.

4.1 Similar Findings From Previous Research

There are several similarities as well as differences from previous research presented in this study. In previous research, it has been found that individuals who rate high in Openness show a preference for art in general. Individuals high in Openness also show a preference for Abstract art (Fiest & Brady, 2004). In the current study, individuals who rate high in Openness were positively correlated with art in general, Non-representational art and Representational art. Although these individuals do not show a preference for Abstract art (which would be contained in Non-representational art in this study) over Representational art, they do indeed show a significant positive correlation with general art preference. Furnham and Walker (2001) found that Conscientiousness showed a relatively stable positive relationship with art preference that was classified as Representational art. This accurately depicts the findings analyzed in the Split-Plot Design in this study, where it was found that when individuals are dominant in Conscientiousness, they prefer Representational art significantly more than Non- Representational art. While examining the same relationship of personality and artistic preference, Furnham and Avison (1997) found that Agreeableness showed a negative relationship with Non-representational art and a

greater preference for Representational art. Although there are no significant negative correlations with Non-representational art when looking at Agreeableness in this present study, it shows that individuals high on Agreeableness prefer Representational art significantly more than Non-representational art. Finally, Costa and McCrae (1992) found that females scored higher than males in Neuroticism when looking at the results of their Big Five personality factors. Similar findings are seen in this study, where females score higher than males in not only the Neuroticism measure, but also females scored significantly higher on the Conscientiousness measure.

4.2 Different Findings From Previous Research

Along with several similarities to previous research, there are variations from previous research presented in this study. Chamorrow-Premuzic and Furnham (2004) explained that Extroversion has been associated both negatively and positively with artistic preference in previous studies. However, there is a stable significant difference between Representation art and Non-representational art shown in this study. Findings reveal that when high in Extroversion, one will likely prefer Representational art over Non-representation art. Furnham and Walker (2001) found Neuroticism to be positively correlated with Abstract and Pop art in their study. In the current study, there is no significant correlation between Neuroticism and Non-Representational art, and in fact those who scored high in Neuroticism significantly prefer Representational art more than Non-representational art. This difference can be explained in the categorizing of the art images. In Furnham and Walker (2001), they examined Representational art, Abstract art and Pop art. In the current study, “pop art” would be categorized under “Representational art”. Since there is a significant relationship between pop art preference and Neuroticism in the previous study, it could explain the link between Neuroticism and Representational art preference in the current study. In past comparisons of males and females while looking at artistic preferences, females had higher preferences for Non-representational art than did males (Furnham & Walker, 2000). Also, females tend to have higher ratings of art preferences in general than do males (Frumkin, 1963). Although there are differences in personality between males and females, there are no differences pertaining specifically to art preferences in this study. This could be due to unequal sample sizes, since 33.3% of participants were male, while 66.6% of participants were female. If sample sizes between males and females had been similar, it is likely that there may have been differences in artistic preference as seen in the past.

4.3 Implications for the “Aesthetic Exposure” Scale

The Aesthetic Exposure Scale was implemented in this study to examine the effect of how one’s exposure to art, art education and/or art experience impacts an individual’s preference for Representational and Non-representational art. In the results, we see that there is a significant difference between “extensive exposure” and “neutral”, “not a lot of exposure” and “no exposure”, with those falling into the category of “extensive exposure” preferring all art significantly more than those in the other categories. The reason this scale was such an important part of this study was to see if the effects of aesthetic exposure can predict preference as much as, or even more than personality. It was found that personality has a relationship with aesthetic exposure, as we see in the correlation portion of the results. Those who rated themselves as “extensive exposure” in the aesthetic exposure scale are high in the Openness category of the Big Five personality inventory.

Chart 1. Line Plot Displaying Means for Aesthetic Exposure Art

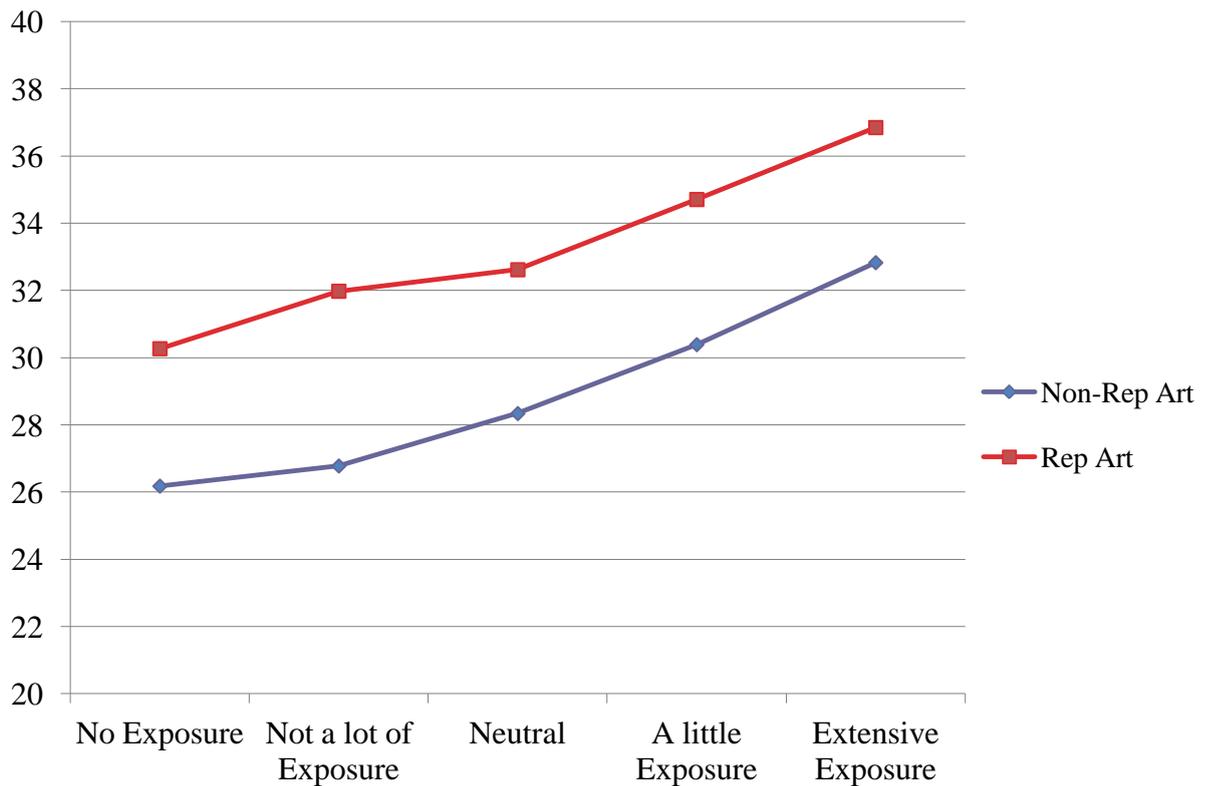


Chart 1 displays participants’ aesthetic exposure score and their corresponding preference for Representational and Non-representational art. It is seen that as an individual has more aesthetic exposure, their art scores increase for both types of art viewed. This is an example of the mere exposure effect. When one receives more exposure to a certain stimuli, liking for that specific stimuli increases as well. In this

study, only 7.2% of the participants categorized themselves as “extensive exposure”. With such a small sample number of aesthetically exposed individuals, we still see an obvious effect of aesthetic exposure and artistic preference scores increasing. It is interesting to note however, that Representational art is still preferred more within those who are aesthetically exposed.

4.4 Limitations and Future Research

Since this experiment was conducted during lectures at Nipissing University, there are clear limitations present pertaining to participants of this experiment. The age of the participants were on average 20 years of age, due to the young adult population of the university. As well as age, cultural background was likely not diverse. In total, 5.1% of participant’s concentration at Nipissing University was categorized as fine arts, which could explain the low percentage of participants with extensive exposure on the Aesthetic Exposure Scale in this study. A final potential limitation to this study would be the inherent subjectivity to selecting only ten Representational and ten Non-representation pieces of art. It is difficult to define a typical demonstration of Representational and Non-representational art. It would be beneficial to use a larger number of samples from each artistic genre.

Future research would likely benefit from a larger sample of aesthetically exposed individuals, and allow for more statistical analyses conducted on these variables. In order to closely understand the impact of aesthetic exposure, a larger sample of aesthetically exposed individuals would be beneficial. Finally, although this study attempted to gather as much data from a diverse group of students by collecting data in multidiscipline lectures, a larger range of disciplines could assist in supporting a diverse sample of participants.

4.5 Conclusion

This study illustrated the importance of defining personality, and the implications we can draw regarding the impact that personality has on many facets of our daily lives. Personality can be seen as a predictor of a variety of interests, and as shown in this study there is a strong relationship between personality and artistic interest. Art is often seen as ambiguous and difficult to categorize, which could explain differences seen in many studies regarding the relationship between personality and artistic preference. Identifying strict guidelines for certain genres of art could be helpful in strictly examining this relationship. Regardless, there lies a clear relationship between personality and artistic preference. However, further

research is needed to understand how aesthetic exposure impacts artistic preference, and why certain personality traits seem to facilitate the urge for aesthetic exposure.

REFERENCES

- Burt C. 1933. *The Psychology of Art*. In *How the Mind Works*. Allen and Unwin: London; Ch. 15.
- Chamorro-Premuzix, T. et al. (2009). Who art thou? Personality predictors of artistic preference in a large UK sample: The importance of Openness. *British Journal of Psychology*, *100*, 501-516.
- Chamorro-Premuzic, T., & Furham, A. (2004). Art Judgment: A measure related to both personality and intelligence? *Imagination, Cognition, and Personality*, *24*, 3-24.
- Eisenman, R. (2007). *Painting and Personality: An excellent study of the connection between the two*. *Creativity Research Journal*, *19*, 319-320.
- Eysenck, H. J. (1940). The general factor in aesthetic judgments: *British Journal of Psychology* *31*. 94-102.
- Costa, P. T., Jr., & McCrae, R. R. (1988). From catalog to classification: Murray's needs and the five-factor model. *Journal of Personality and Social Psychology*, *55*, 258-265.
- Costa, P. T., Jr., & McCrae, R. R. (1992). *NEO PI-R professional manual*. Odessa, FL: Psychological Assessment Resources.
- Feist, G. & Brady, T. (2004). Openness to experience, non-conformity, and the preference for abstract art. *Empirical studies for the Arts*, *22*, 77-89.

- Frumkin, R. M. (1963). Sex, Familiarity, and dogmatism as factors in painting preferences. *Perceptual and Motor Skills, 17*, 12.
- Furnham, A., & Avison, M. (1997). Personality and preference for surreal paintings. *Personality and Individual Differences, 23*, 923–935.
- Furnham, A., & Bunyan, M. (1998). Personality and art preferences. *European Journal of Personality, 2*, 67–74.
- Furnham, A., & Chamorro-Premuzic, T. (2004). Personality, psychometric intelligence, and art judgment. *Personality and Individual Differences, 36*, 705–715.
- Furnham, A., & Walker, J. (2001a). The influence of personality traits, previous experience of art, and demographic variables on artistic preference. *Personality and Individual Differences, 31*, 997–1017.
- Furnham, A., & Walker, J. (2001b). Personality and judgment of abstract, pop art, and Representational paintings. *European Journal of Personality, 15*, 57–72.
- Gordon, D. A. (1951). Methodology in the study of art evaluation. *Journal of Aesthetics and Art Criticism, 10*, 338-352.
- Knapp, R. & Wulff, A. (1963). Preferences for abstract and Representational art. *Journal of Social Psychology, 60*, 255-262.
- McManus, I., & Furnham, A. (2006). Aesthetic activities and aesthetic attitudes: Influences of education, background and personality on interest and involvement in the arts. *British Journal of Psychology, 97*, 555–587.

Schmitt, D., Allik, J., McCrae, M., & Benet-Martinez, V. (2007). The Geographic Distribution of Big Five Personality Traits. *Journal of Cross-Cultural Psychology*, 38, 173-212.

Zuckerman, M., Bone, R., Neary, R., Magelsdorff, D., & Brustman, B. (1972). What is the sensation seeker? Personality trait and experience correlates of the sensation seeking scales. *Journal of Consulting and Clinical Psychology*, 39, 308–321.

ORIENTATION OF CANONIC REPRESENTATION

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Abstract

If we are asked to draw some object which has to be laterally (left or right) oriented, what processes are of interest? Some researchers who analyze children drawings find importance of dominant hand (Di Leo, 1999) expecting that motor skill will define orientation of visual presentation (drawing). Other researchers find that visual presentation reflects relevant qualities, meaning of object (Solso, 1994) which they call canonic representation. Neuroaesthetics shows that time needed for processing of visual objects will vary according to skill of author of drawing to extract relevant characteristics of object (Lehrer, 2009).

The goal of this research is to find out how we create and laterally orient drawings. If we ask skilled participants to draw objects that are usually laterally oriented: profile, hand, shoe, eye etc. will objects be randomly oriented to the right or left, or will their orientation depend on dominant hand of author?

Questions are of interest are: Are drawings going to be randomly laterally oriented? Are there differences in lateral orientation between abstract and concrete objects? Do skilled persons, trained in drawings and visual art organize drawings as a reflection of real vision?

Stimuli used in research are presenting abstract and concrete objects: profile, eye, cup of coffee, cat, leaf, spiral, ellipse, two lines, two circles, arrow.

Procedure: students of visual arts were asked to make draft of objects. They had 20 minutes for each drawing. Research was done in two sessions, first tested lateral orientation of concrete objects and their relation with dominant hand and drawing skills.

Second session tested differences between presentations of abstract and concrete objects.

Subjects of first session were 58 students (63% female, 27% male). Subjects of

second session were 54 students (59% female, 31% male).

Chi-square was used to test frequency of lateral orientations and correlation to test relation between dominant hand and lateral orientation.

In spite of fact that we perceive visual objects from many different angles, it is demonstrated that visual presentations tend to be uniform. First research confirmed significant lateralization of drawings. Cup of coffee will almost always (93%) be presented uniformly. There is statistically significant lateral orientation of profile ($X^2 = 55.5$, $p < 0.001$, $df=2$), cup of coffee ($X^2 = 93.2$, $p < 0.001$, $df=2$), shoe ($X^2 = 53.2$, $p < 0.001$, $df=2$) and hand ($X^2 = 13.7$, $p < 0.01$) for 58 students of visual arts as subjects. In second step semantic aspects of drawings were in focus using tasks that included abstract objects.

There is also significant lateral orientation in drawing spiral ($X^2 = 15.85$, $p < 0.01$), two circles ($X^2 = 16.46$, $p < 0.01$), bird ($X^2 = 66.96$, $p < 0.001$) and leaf ($X^2 = 43.76$, $p < 0.001$).

Results lead toward conclusion that semantic (meaning) of object has strongest effects on lateral organization of drawing. Concrete objects are more laterally focused than abstract.

Impact of handedness (motor aspect) was not clearly demonstrated. Drawings are created as canonic representations (meanings) but not as reflections of visual field. Construction of visual presentation is cognitive process of extraction of relevant indicators of meaning, rather than imitation of reality, or motor skill.

Lateral orientation of drawings

If we are asked to draw some object which has to be laterally (left or right) oriented, what processes are of interest? Some researchers who analyze children drawings find importance of dominant hand (Di Leo, 1983) expecting that motor skill will define orientation of visual presentation (drawing). Observing early drawing activity, he finds that it presents the handedness of child. Right-handed early drawings are oriented diagonally from down-left to right-up, left-handed are organized in opposite direction. Motor component, minimal effort of movement during drawing activity, is seen as important factor affecting lateral orientation of drawings.

What will happen with drawing task that requires lateral presentation? Are left or right solutions going to be equally present, if not, are they going to represent handedness of author?

Semantic of drawing

When we draw something in order to represent the class of objects, cognitive component of task becomes important, the way how we extract and present relevant characteristics of objects. This cognitive task is probably based on mental elaboration of meaning of the class and is, in most of the cases, happening under the conscious thought. As it is demonstrated by psychologists of consciousness, most of current mental process flow under the conscious level of mind (Gray, 2006). Other researchers find that visual presentation reflects relevant qualities, meaning of object (Solso, 1994, 2003) which they call canonic representation. Neuroaesthetics shows that time needed for processing of visual objects will vary according to ability of author of drawing to extract relevant characteristics of object (Lehrer, 2009). Skilled, talented artist creates draft which requires shorter recognition time, compared with observation of photo of the same person, or drawing of untalented author. The artistic skill could be understood as ability of artist to extract and represent crucial (distinctive) characteristics of visual objects.

The goal of this research is to find out how we create and laterally orient drawings. If we ask skilled participants (students of visual arts) to draw objects that are usually laterally oriented (profile, hand, shoe, eye) will objects be randomly oriented to the right or left, or will their orientation depend on dominant hand of author?

Questions of interest are: Are drawings going to be randomly laterally oriented? Are there differences in lateral orientation between abstract and concrete objects? Do skilled persons, trained in drawings organize drawings as a replica of optical vision?

Procedure

Students of visual arts were asked to draw 8 objects. They were told that aesthetic value of drawings will not be evaluated. Drawing of each object lasted

approximately 20 seconds. Stimuli used in research are presenting concrete objects, such as profile, eye, cup of coffee, shoe, and abstract objects, such as spiral, arrow, ellipse and two intersected circles.

Research was done in two sessions, first tested lateral orientation of concrete objects and their relation with dominant hand and drawing skills. Second session tested orientations of abstract drawings.

Participants

Subjects of first session were 58 students (63% female, 37% male). Among them, 6% were left-handed.

Subjects of second session were 47 students (72.5% female, 27.5% male). Among participants, 10% were left-handed. Participants were students of third year, average age was 22.

Analysis

Chi-square was used to test frequency of lateral orientations and correlation coefficient for testing relation between dominant hand and lateral orientation.

Results

Lateral orientation is not randomly chosen

Concrete objects

According to initial hypothesis there are no differences between possible orientations expected (left or right with equal probability).

Results show there are statistically significant lateral orientations of drawings of all objects: profile, cup of coffee, shoe or hand.

Concrete objects	% of orientation	X ²	df
Profile	77.8% nose to the left	55.5 ***	2
Cup of coffee	93.2% to the right	93.2***	2
Shoe	77.6% top to the left	53.2***	2

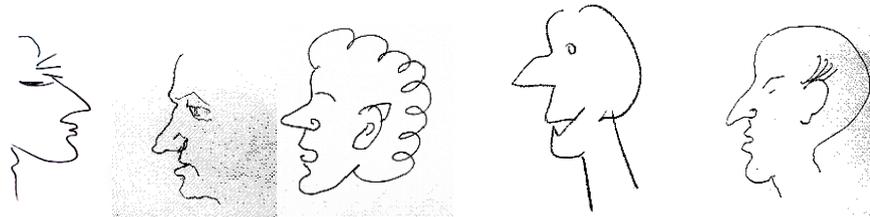
Hand	54% left hands	13.7**	2
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* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

In spite of fact that we perceive visual objects from many different angles, and in spite of four-year systematic training in drawing, it is demonstrated that visual presentations tend to be uniform among participants. First research confirmed significant lateralization of drawings. For example, cup of coffee is almost always presented uniformly (93%), as it should be taken from right side, even by left-handed among participants.



Example: Profile - nose is turned to the left in 77.8% of drawings



Correlations between orientation of drawings and handedness were not significant. It could be consequence of very small percentage of left-handed participants and their tendency to modify their responses toward dominant majority. Before we can reject hypothesis of dominant hand, we will have to include higher number of left-handed people in sample.

Abstract objects

In second step semantic aspects of drawings were excluded, using tasks of representing the abstract objects. Objects of drawings were spiral, two intersecting circles, arrow and ellipse. When participants finished drawing of spiral, they were asked to mark the starting point of drawing. This way, the directions of movements

were observed (there were two options, clockwise or reversed). After finishing drawing of two circles, participants were asked to mark the circle which has been drawn first. This way, the direction of composition was observed (there were 8 possible options). Frequencies of orientations of arrow (8 options) and ellipse (4 possible options) were observed.

According to initial hypothesis there are no differences between possible orientations expected (equal probability).

Results show significant differences between options for all abstract objects. There are one or two most frequent types of drawings used by participants. Results lead toward conclusion that semantic (meaning) of object has no influence on lateral and spatial organization of drawing. The levels of significance is high for both classes of objects.

Observing the homogeneity of responses (percentage of same drawings) it becomes obvious that concrete objects, those representing things for everyday use, show higher uniformity of drawings. It seems like concrete things show tendency toward uniformity of presentations. Regarding this question, future researches will have to include larger and well-balanced sample of items and participants.

Abstract objects	% of orientation	χ^2	df
Spiral	55% not clockwise	27.6 **	2
Two circles	41% Up - down 44% From left to right	109.9***	7
Arrow	55% Diagonal dominant 	104.8***	7
Ellipse	47.5% Diagonal dominant 	16.2***	3

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Impact of handedness (motor aspect) was not clearly demonstrated,

correlations between dominant hand and orientation of drawings were not significant.

Lateral orientation and semantic of drawing

Experience and skills in visual arts don't result in diversity in drawing activity. Students who are trained in visual arts show tendency to create uniform representations, regardless on their long and serious training. It seems like drawings are created as canonic representations (visual meanings), not as reflections of visual field. Construction of visual presentation is cognitive process of extraction of relevant indicators of meaning, rather than imitation of reality or demonstration of motor skills.

Limited number of participants, and especially, low number of left-handed among them is serious limitation of this research. In spite of that, there is evident tendency in participants to conceptualize and create drawings of objects based on assumed set of salient characteristics. Extraction of such elements is important mental activity in which aesthetic and cognitive components are interweaved.

References

- Di Leo, J. H. (1983) *Interpreting children's drawings*. Brunner/Mazel, Taylor and Francis Group.
- Gray, J. (2006) *Consciousness – creeping up on the Hard Problem*. Oxford University Press.
- Lehrer, J. (2009) *Unlocking the Mysteries of the Artistic Mind*. Psychology Today, July, 2009.
- Solso, R. (2003) *The Psychology of Art and the Evolution of the Conscious Brain*. Massachusetts Institute of Technology.
- Solso, R. (1994) *Cognition and Visual Arts*. MIT Press/ Bradford Book, Cambridge, Massachusetts, London, England.

THE CONNOTATIVE DIMENSION OF MEANING OF FLAMENCO DANCE CHOREOGRAPHIES PERFORMED IN DIFFERENT AESTHETIC MODES

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Abstract:

The aim of the research is to investigate how the spectators assess flamenco dance choreographies performed in different aesthetic modes on the instrument for measurement the connotative dimension of meaning.

Sixty-seven participants are tested for differences in assessment of choreographies of varied aesthetic modes, presented in style of bulerías of flamenco dancing. Each of the 3 choreographies shown is presented in three aesthetic modes: a harmonious (H) auditory visual presentation in which the choreography is simplified, a redundant (R) presentation in which the basis of the choreography is ornamented, and an original (D) choreography, work of a flamenco choreographer.

The task for the participants is to assess each aesthetic mode of all three choreographies (9 stimuli in total) on the seven-point bipolar scale of connotative dimension of meaning. The instrument for measurement of the connotative dimension of meaning consists of 15 seven-point, in the form of semantic differential. Cognitive dimension includes adjectives: understandable, explainable, definite, clear and sensible. Affective dimension includes adjectives: pleasant, good, attractive, relaxing and favourite. Conative dimension includes adjectives: impressive, expressive, inspiring, active and interesting. The design is repeated with all the subjects, which means that all participants watch and evaluate all the choreographies.

For data processing GLM - repeated measures is used. The statistical significance of the aesthetic mode effect is checked as well as the statistical significance of the choreography effect on the assessment of choreographies on connotative dimension of meaning. Finally, the significance of aesthetic mode x choreography interaction is checked.

The results show that all the checked effects of independent variables are

statistically significant. The participants have different assessments on connotative dimension of meaning regarding the choreographies of different aesthetic mode of performance. The choreographies of R mode are significantly more saturated with cognitive, emotional and conative dimension than choreographies H and D of aesthetic mode.

The implications of obtained results of positioning of dance stimuli within connotative space of meaning are discussed in the context of the art of flamenco dance.

Keywords: connotative dimension of meaning, flamenco dance, H, R and D aesthetic modes.

The starting point of this paper is the Cognitive model of aesthetic decision making which is based on experimental findings (Ognjenović 1991, 2003) according to which an aesthetic assessment represents a layered cognitive act organised in three levels: harmony, symmetry (H), redundancy, decoration (R), and distant, level (D). On the harmony (H) level, aesthetic decision is based on symmetry, balance of elements, figural goodness, harmony and accord, and this level takes the shortest time for decision making. On the redundancy (R) level, aesthetic decision is made according to the principal of decoration, ornamentation and wealth of detail and this level demands more time comparing to the H - level. On the distance (D) level, aesthetic decision is made in favour of semantic depth. This level demands the longest time for decision-making.

Cognitive model of aesthetic decision making with three consecutive stages (Ognjenović 1991) found its application in investigating aesthetic experience of visual and auditory stimuli in the field of different art forms: visual arts (Pejić 1999, 2004; Škorc 1994; Milićević 2005), theatre (Ristić & Radonjić 2001, 2002a, 2002b; Ristić 2006; Videnović 2007), music (Graovac 1994, Milićević & Ristić 2004). The field of dance art remained poorly investigated. Thus, cognitive model of aesthetic decision-making served as a theoretical basis for this research in the field of dance art, or more precisely, in the field of flamenco dance.

The aforementioned references showed that when an object is presented in H, R and D aesthetic modes there are different responses to preferences of these modes. Thus in this paper we suggest that stimuli of dance art will show similar outcome. Accordingly, we assume that when the certain choreography is presented in H, R and D aesthetic modes, spectators' experience of dance will be different, i.e. there will be different responses of spectators regarding connotative dimension of meaning.

In this paper, the connotative dimension of meaning refers to the subjective meaning ascribed to the certain entity, i.e. personal, emotional and implicit characteristics which are subjective in nature and derive from the subject that understands and not the entity that is understood (Janković, 2000).

The connotative dimension of meaning is measured in this research by "Connotative Differential", instrument constructed in the previous study (Janković, 2000), which serves for determining specific features of connotative space of

meaning and the position occupied by different entities in such space. The instrument consists of 15 seven-point rating scales in the form of semantic differential. Cognitive dimension includes adjectives: understandable, explainable, definite, clear and sensible. Affective dimension includes adjectives: pleasant, good, attractive, relaxing and favourite. Conative dimension includes adjectives: impressive, expressive, inspiring, active and interesting.

The aim of the research was to investigate how the spectators' assess flamenco dance choreographies performed in different aesthetic modes on the instrument for measurement the connotative dimension of meaning. The objective of this study is to provide an answer to the question how choreographies of flamenco dance presented different aesthetic modes are positioned within connotative space of meaning?

Method

The aim of the research is to determine if there are differences in assessment of connotative dimension of meaning of flamenco dance choreographies presented in various aesthetic modes.

Participants

Sixty-seven students (N= 67) from the Faculty of Philosophy, University of Novi Sad. The participants did not have direct experience with dance training.

Stimuli

The stimuli consisted of three dance choreographies of flamenco, presented in style of bulerías of flamenco dancing. Each of these three choreographies had three aesthetic modes: harmony (H), redundance (R) and distant (D). D types of choreographies are original combinations of dance movements of flamenco made in accordance with the requirements of flamenco style bulerías. The other two types of choreographies are variations of the original in the direction of simplicity and symmetry (H types of choreography), or ornamentation and redundance (R type of choreography). The original choreographies and their variations were made and

performed by a choreographer Maria Kéck. There were 9 choreographies – stimuli in total, and they were presented in random order. Each of these nine choreographies lasted for two minutes, and the time was controlled by the recordings of rhythm (compás) that accompanied choreographies while performing.

Instrument

The instrument for measurement of the connotative dimension of meaning (Janković, 2000) consists of 15 seven-point, in the form of semantic differential. Cognitive dimension includes adjectives: understandable, explainable, definite, clear and sensible. Affective dimension includes adjectives: pleasant, good, attractive, relaxing and favourite. Conative dimension includes adjectives: impressive, expressive, inspiring, active and interesting.

Procedure

The choreographies were presented by a video projector in the form of a visual and auditory recording according to the balanced order established beforehand. The participants observed the recordings in groups, and having finished watching each recording, they immediately made assessments. The time allotted to the assessment after each choreography totalled ten minutes.

Task for participants

The task for the participants was to assess each aesthetic mode of all three choreographies (nine stimuli in total) on the seven-point bipolar scale of connotative dimension of meaning.

The design was repeated with all the subjects, which means that all participants watched and evaluated all three performances. For data processing GLM - repeated measures is used. The statistical significance of the aesthetic mode effect is checked as well as the statistical significance of the choreography effect on the assessment of choreographies on connotative dimension of meaning. Finally, the significance of aesthetic mode x choreography interaction is checked.

Results

The results showed that the effect of the aesthetic mode of dance choreography on the assessment of the connotative dimension of meaning is statistically significant $F(6, 61) = 7.590a, p < .000$. Also, there is statistically significant effect of choreography on the assessment of the connotative dimension of meaning $F(6, 61) = 4.696a, p < .001$. Finally, the effect of aesthetic mode x choreography interaction on the assessment of the connotative dimension of meaning is statically significant $F(12, 55) = 2.678a, p < .007$.

The differences between participants concerning the effect of the aesthetic mode of dance choreography on the assessment of the connotative dimension of meaning will be discussed within the overview of the results that follows. Table 1 shows participants' assessments of the connotative dimension of meaning of flamenco dance choreographies presented in different aesthetic modes.

Table 1 Participants' assessments of the connotative dimension of meaning of flamenco dance choreographies presented in different aesthetic modes.

THE CONNOTATIVE DIMENSION OF MEANING						
	Cognitive dimension		Affective dimension		Conative dimension	
	$F(2,132) = 25.794, p < .000$		$F(2,132) = 18.368, p < .000$		$F(2,132) = 30.687, p < .000$	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Aesthetic mode of flamenco dance choreography						
<i>H</i>	4.63	1.032	4.71	1.111	5.24	1.179
<i>R</i>	5.20	1.116	5.25	1.069	5.99	1.088
<i>D</i>	4.63	1.041	4.72	1.148	5.22	1.254

The application of LSD post hoc test showed that assessments of the connotative dimension of meaning of choreographies of R aesthetic mode differ statistically significant from choreographies of H and D aesthetic mode. Regarding the assessments of cognitive, affective and conative dimension of meaning choreographies of R aesthetic mode are significantly higher comparing them to the assessments of the choreographies of H aesthetic mode ($p < .000$) and choreographies of D aesthetic mode ($p < .000$). Also, the application of LSD post hoc test showed that there are no statistically significant differences between

choreographies of H aesthetic mode and choreographies of D aesthetic mode regarding connotative dimensions of meaning.

Regarding statistically significant effect of choreography and effect of aesthetic mode x choreography interaction on the assessment of the connotative dimension of meaning results will not be elaborated in detail. In the case of the effect of choreography on the assessment of the connotative dimension of meaning, the differences in assessment of connotative dimension of meaning refer to the order in which choreographies are presented. As for the effect of aesthetic mode x choreography interaction on the assessment of the connotative dimension of meaning, the differences in assessment of connotative dimension of meaning refer to the order in which choreographies of different mode of processing are presented.

Discussion and conclusion

The research results have shown that among the participants there are differences in the assessments of the connotative dimension of meaning of flamenco dance choreographies presented in different aesthetic modes. The assessments of the connotative dimension of meaning of flamenco dance choreographies presented in R aesthetic mode are significantly higher than the assessments of choreographies presented in H and D aesthetic mode. Flamenco dance choreographies presented in R aesthetic mode are assessed as more pleasant and attractive, clearer and understandable, more impressive and more interesting than the choreographies presented in H and D modes. It can be said that this result which favours the choreographies presented in R aesthetic modes is somewhat expected because it had previously been suggested (Vukadinović, 2005) that flamenco dance choreographies distinguish by beauty, depending on aesthetic mode, and that the participants have a dominant preference for the choreographies of R type.

As the general formal description (by characteristics such as dance technique, dynamics, movement elegance, and complexity of movements) of different dance forms matches the subjective experience of spectators (Vukadinović, 2008), for the preference of the R types of choreographies, there are a number of elements that are in favour of such assessments, and these are the essential features of the art of flamenco. In addition, these are formal elements of dance requiring a special hand

work, by which the art of flamenco is known, then the rhythm of footwork, and the better in the rhythm the more virtuous is the artist, then typical flamenco turns, which are performed at a certain angle and curve (Candelori & Diaz 1998). In addition to these formal features of the dance, some of the basic ideas of artistic expression in flamenco can suggest that dance of flamenco hides its main "advantage" in the aesthetic mode of decoration, ornamentation, decoration. The flamenco insists on the effusive, rich emotional expression, numerous gestures, and the increased expression of emotional experience (Candelori & Diaz 1998; Vukadinović 2002; Gómez Muñoz 2008; Guerrero Pantoja 2008) and also for some flamenco artists it represents a kind of philosophy of life (Castaño Hervás 2008).

Also, the results obtained on the visual material have similar suggestions i.e., it was shown that the participants have a dominant preference of R type (Ognjenović 1994). The dominant preference of R type of stimulus Ognjenović (1994) explains with dependence of the modes of aesthetic decision-making on the level of general culture. Especially, when concerning connotative dimension of meaning the previous research (Pejić & Tomović, 2004; Tomović 2004) suggested that when it is about visual material for non-artistic population, highly preferred drawings (R) are distinguished by affective and conative dimension unlike artistic population where preferred (D) drawings are distinguished by affective dimension.

Regarding the aforementioned findings the results of this research which showed that assessments of the connotative dimension of meaning of flamenco dance choreographies presented in R aesthetic mode are significantly higher than the assessments of choreographies presented in H and D aesthetic mode were expected.

Having in mind all the limitations faced in this research, which among others include: difficulties to define stimuli, presentation of stimuli by video projector so the participants did not watch choreographies live, control of all potential confounding variables, this study has provided a better insight into the matter of positioning of dance stimuli within connotative space of meaning.

Generally, the findings of this study suggest that the participants in three-dimension space of the connotative dimension of meaning on the basis of subjective criteria categorize flamenco dance choreographies presented in R aesthetic mode as more pleasant and attractive, clearer and understandable, more

impressive and more interesting than the choreographies presented in H and D aesthetic mode. Regarding this it can be concluded that such categorization may be related to how the stimulus was presented and the level of the participants' general culture, but also such preferences for choreographies presented in R aesthetic mode confirm the basic idea of the art of flamenco.

References

- Candelori, N., & Díaz, N.F. (1998). *Il Flamenco*. [Flamenco]. Milano: Xenia.
- Castaño Hervás, J.M. (2008). Flamenco in the 21st century. In *Rutas Flamencas*, (pp.57-59). Junta de Andalucía, Consejería de Cultura: Empresa Pública de Gestión de Programas Culturales.
- Gómez Muñoz, R. (2008). Flamenco dance today. In *Rutas Flamencas*, (pp.45 – 48).Junta de Andalucía, Consejería de Cultura: Empresa Pública de Gestión de Programas Culturales.
- Graovac, S. (1994). Doslednost vizijske i muzičke preferencije. [The consistency of visual and music preference]. *Psihologija*, 3-4, 271-282.
- Janković, D. (2000). Konotativni aspekt značenja: konstrukcija konotativnog diferencijala. [Connotative Aspect of Meaning: Construction of the Connotative Differentia]. *Psihologija*, 1-2, 221-238.
- Milićević, N., & Ristić, L. (2004). Estetski doživljaj kompozicija setnog i veselog karaktera. [Aesthetic experience of the composition of sorrowful and bright character]. Paper presented at *Naučni skup: X Empirijska istraživanja u psihologiji*. Belgrade.
- Milićević, N. (2005). *Nastajanje Pikasove Gernike u svetlu kognitivnih aspekata estetskog odlučivanja*. [The creation of Picasso's Guernica in the light of cognitive aspects of aesthetic decision making]. Unpublished Master's Thesis. Belgrade University.
- Ognjenović, P. (1991). Processing of aesthetic information. *Empirical Studies of the Arts*, 9 (1), 1-9.
- Ognjenović, P. (1994). Psihologija umetnosti – istraživanja u nas. [Psychology of art – research in our country]. *Psihološka istraživanja*, 6, 53-55.
- Ognjenović, P. (2003). *Psihološka teorija umetnosti*. [The Psychological Theory of Art].

Beograd:Gutenbergova Galaksija.

- Pantoja Guerrero, D. (2008). Flamenco singing today. In *Rutas Flamencas*, (pp.29 – 34). Junta de Andalucia,Consejería de Cultura: Empresa Pública de Gestión de Programas Culturales.
- Pejić, B. (1999). Logika crteža. [Logic of a drawing]. Paper presented at *Naučni skup: V Empirijska istraživanja u psihologiji*. Belgrade.
- Pejić, B. (2004). *Tipovi crteža i modusi estetskog odlučivanja*. [The types of drawings and modes of aesthetic decision making]. Unpublished Master's Thesis. Belgrade University.
- Pejić, B., & Tomović, M. (2004). *Razlike između umetničke i neumetničke populacije u procenama crteža različitih modusa obrade*. [The differences between artistic and non-artistic population in assessment of the drawings of different aesthetic modes]. Paper presented at *Naučni skup: X Empirijska istraživanja u psihologiji*. Belgrade.
- Ristić, I., & Radonjić, A. (2001). Modusi estetske obrade u procesu stvaranja amaterske pozorišne predstave. [The aesthetic modes in the process of creating an amateur theatre performance]. Paper presented at *Naučni skup: VII Empirijska istraživanja u psihologiji*. Belgrade.
- Ristić, I., & Radonjić, A. (2002a). Modusi estetske obrade u procesu stvaranja akademske ispitne predstave. [The aesthetic modes in the process of creating academic examination performance]. Paper presented at *Naučni skup: VIII Empirijska istraživanja u psihologiji*. Belgrade.
- Ristić, I., & Radonjić, A. (2002b). Modusi estetske obrade u procesu stvaranja profesionalne pozorišne predstave. [The aesthetic modes in the process of creating professional theatre performance]. Paper presented at *Naučni skup: VIII Empirijska istraživanja u psihologiji*. Belgrade.
- Ristić, I. (2006). *Modusi estetske obrade u procesu stvaranja pozorišne predstave*. [The aesthetic modes in the process of creative theatre performance]. Unpublished Master's Thesis. Belgrade University.
- Tomović, M. (2004). Odlike procena konotativnog značenja vizuelnog materijala kod studenata FLU. [The characteristics of the assessment of connotative meaning of visual material in the case of students of the Faculty of Art]. Paper

- presented at *Naučni skup: X Empirijska istraživanja u psihologiji*. Belgrade.
- Videnović, A. (2007). *Modusi estetske obrade u glumačkom izrazu*. [The aesthetic modes in the actor's expression]. Unpublished Master's Thesis. Belgrade University.
- Vukadinović, M. (2002). *Flamenko – između tišine i usklika*. [Flamenco – Between Silence and Scream]. Novi Sad: Futura.
- Vukadinović, M. (2005). *Lepo u plesu flamenka*. [Beautiful in flamenco dance]. Paper presented at *Naučni skup: XI Empirijska istraživanja u psihologiji*. Belgrade.
- Vukadinović, M. (2008). *Subjektivni doživljaj različitih tipova umetničke igre*. [Subjective Experience of different types of artistic dance]. Unpublished Master's Thesis. Belgrade University.
- Škorc, B. (1994). Afektivne dimenzije estetske odluke. [Affective dimensions of aesthetic decision]. *Psihologija*, 3-4, 311-324.

DEVELOP COLLABORATIVE CREATION SYSTEM THROUGH THE CONSTRUCTION OF INTERACTIVE ONLINE PLATFORM AND PARTICIPATION IN SOCIAL MEDIA

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Abstract:

This article aims at forming the Internet community for public art named “Our Personal Public Art”, providing people with an easy way to create their own works by artists’ lead. With the combination of the Internet communities, “Our Personal Public Art” breaks the barrier of our traditional thinking of public art. Research method deployed in this article was case study, “Our Personal Public Art”, which was selected from invited works from eighteen famous artists in Taiwan with a view to arousing the public’s attention to create artworks online.

To find out whether the platform is easy-to-use for anyone who may be from non-design backgrounds, this study compares the usability for design background and non-design background subjects and analyzes their works to evaluate the features of this platform. According to the research, this online platform has a good usability for participants, but non-design background subjects need more help and advices. Further analysis shows that the works of the two subjects are similar in shape, color and content, but non-design background is not doing well in composition and completeness. Moreover, experts conclude that the works of the design and non-design group all have a certain aesthetics quality.

This online platform shows that social networks have certain influence on younger people’s participation. It is expected that young people will keep using this platform as for the improvement of aesthetics sense even for the non-design background people. Guided by the interactive module, people could experience the fun when creating artworks.

Key words: virtual community, digital art, interactive media design, public art

Preface

1. Background and Motivation

Public art is any works of art that are sited or displayed in the public domain. In addition, people's participation in construction process can help them understand artist's thinking and aesthetics and further develop their aesthetic sense. However, most of the public art in Taiwan are three-dimensional objects or sculptures, which lack of audience participation. Chienmin Huang, jury member of Taipei City's public art committee, said, "There are many art and design groups on the internet, everyone can share their works, and learn from others on the internet. This art form is beyond time and space constraints". Artists may have no restrictions on materials in the digital age (Acer Digital Arts Center, Lee Hsin-Ping, Lin Chu-Min, 2000). Digital art can let people try constantly, revise easily, and reduce waste of materials, besides, it has little material constraints. Therefore, in this study, we combine public art with digital art and create an online platform "Our Personal Public Art (publicart.tw)". In this platform, people can log on to the websites that have been set up and start to create and upload your own work of art using the digital bricks and share with everyone.

2. Research Objects

Research objects are first-year students, design background and non-design background respectively from National Taipei University of Technology. In this study, we hope to find out whether there are distinctive usage differences between these two groups except for background training.

3. Research Purposes and Research Methods

The research purposes are as follow:

- 1) Discuss the relation among public art, digital art and internet art. Follow the theory, we develop our creation "Our Personal Public Art"
- 2) Whether or not "Our Personal Public Art" can increase first-year students' participation in digital art creation
- 3) Understand the preference and attitude of first-year students when they are using "Our Personal Public Art"
- 4) Record the process of creation for future studies

First, we use document analysis to illustrate our theory. Next, we use survey to understand whether this platform can increase first-year students' participation in digital art creation and their preferences on bricks creation online. Last, according to

what we gather from the participants, we come to a conclusion and some suggestions for future studies.

Literature Review

1. Public Art

Taiwan issued “Regulations for Sponsorship of Art and Culture” in 1992. It states “The owners of public buildings should install works of art to beautify both buildings and environment. Moreover, the value of said work should not be less than 1% of the construction cost of the building in question (Ni Tsai-Chin, 1997)”. What constructs inside a piece of public art is “works of art”, what constructs outside is “the public”. Both the artist and the viewers work together in dialogue to produce a completely unique artwork (Lin Pao-Yao, 1997). In recent years, Council for Cultural Affairs (is now Ministry of Culture) works together with Taipei City Department of Cultural Affairs in order to expand public art in scope and application (Liao Hsien-Hao, 2004). The standards and practices applied to art work do not necessarily apply to work that in the public realm.

2. Digital Art and Internet Art

A range of artistic works that use digital technology as an essential part of the process is digital art (Lin Pey-Chwen, Wu Pei-Fen, 2002). Chen Li-Chiu (2001) believes digital art is based on traditional art work, but the techniques and tools of digital art are used extensively. A. Michael Noll, a very pioneer in art and computer animation, said “Computers have many applications in art, as well as throughout modern society, but their contribution remains helping artists get rid of techniques and tools. (Goodman, 1987)”. Lev Manovich is a theorist of new media. In his book “The Language of New Media”, he summarizes some of the key differences between new and old media, which are considered to be general tendencies of a culture undergoing computerization. All new media objects, whether they are created from scratch on computers or converted from analog media sources, are composed of digital code; they are numerical representations. Modularity can be called "fractal structure of new media.” Just as a fractal has the same structure on different scales, a new media object has the same modular structure throughout. Automation and Variability allow to automate many operations in media creation. The last, fifth principle of cultural transcoding aims to describe what in Manovich’s view is the most substantial

consequence of media's computerization. The principle of transcoding is one way to start thinking about software theory. Another way which this book experiments with is using concepts from computer science as categories of new media theory (Manovich, 2002). In Prince's point, digital art has such forms of repetition, randomness and interactivity (Prince, 1986). Cheng Mei-chin (2003) summarizes the characteristics of digital art including interactivity, multimedia, reproduction, misplaced in space and time, non-linear narrative, and she further points out these characteristics lead to new aesthetics.

Internet art is not only a form of work distributed via the internet, but also uses its characteristics to create, for example, immediacy, interactivity, feedback, experiment, voluntary performance and process-oriented. The internet's popularization and commercialization in the early 1990s provided ways to view web pages and edit web pages, leading internet art to a universal form (Wands, 2006). Steve Dietz believes that internet art puts great emphasis on the interaction between viewers and the work, viewers could only watch the works via the internet, experiences it and participate in it (Yueh Hsiu Giffen Cheng, 2007). As a form of digital artwork, internet art acts actively to reorganize information and construct messages by self cognition instead of using hearing or visual perception to receive messages. After Web 2.0, Wikipedia and Creative Commons allow users to add, modify or delete its content, that is, a concept of open source to everyone. A web 2.0 site allows users to interact and collaborate with each other in social media as creators. Through constant information gathering and organizing, users could share their knowledge with the public easily (Alexander, 2006). On the other hand, internet and media made the idea "the death of the author" real. "The death of the author" is an essay by Roland Barthes, the French literary critic, he argues that writing is not an 'expression' but a 'scription'. The birth of reader must be required by the death of author. In conclusion, no writer is original: every text is photocopy (Lin Pey-Chwen, Chuang Hao-Chih, 2002). Ippolito (2002) concludes his ideas that surfing the Internet is not a solitary experience. Online communities and listservers, along with interactive Internet artworks that trace viewers and integrate their actions into respective interfaces, prove that the Internet is a social mechanism.

“Our Personal Public Art” introduction

1. Prototype

Digital art helps artists get rid of techniques and tools. In the past, the birth of artworks are something from nothing; however, there are many elements that could be borrowed to use in artist's creation of a new work nowadays, artist has to decide which element he needs for his creation (Chang Tien-Chun, 2003). Manovich (2002) believes modularity can be called "fractal structure of new media." Just as a fractal has the same structure on different scales, a new media object has the same modular structure throughout. "Our Personal Public Art" is shown as modularity. In this online platform, people could use the digital bricks which were selected from invited works from eighteen famous artists in Taiwan, by this way; we eliminate risks of choosing materials for the public. Because of the characteristic of online creation, people are free to reproduce and create their artworks.

2. Name and Description of Work

"Our Personal Public Art" is an online platform and the real installation that could display the artworks to the public is located in MRT Nangang Line Eastern Extension. People can log on to the websites that have been set up and start to create and upload your own work of art using the digital bricks which was selected from invited works from eighteen famous artists in Taiwan and share online with everyone. Everyone is an artist. If people at MRT Nangang like the work presented, touch the sensor on the side, and instantly fireworks will be presented on the screen along with a "thumbs up" indicating the popularity of the work.



Picture 1: Logo of "Our Personal Public Art"

3. Material

(1) Scene Combination

Traditional public art emphasizes the relation between artwork and surrounding. “Our Personal Public Art” takes this characteristic into consideration; people select different scenes in the list of scenes such as Taipei Fine Arts Museum or Musée du Louvre freely.



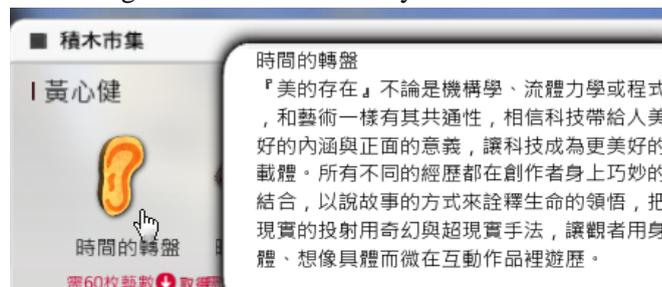
Picture 2: Scene Introduction

(2) Digital Elements

In “Our Personal Public Art”, people can borrow digital elements from eighteen famous artists to create their artworks. The eighteen artists are Lin Chung, Ku Ming-Shen, Chen Ching-Liang, Akibo Lee, Yuan Jin-Ta, Shiu Wen-Wei, Liao Hui-ying, Smmer Lei, Roan Ching-yueh, Sung Hsi-Te, Chao Tzu-Chiang, Tsai Yao-Ching, Su Hsien-Fa, Allen Tao, Lin Tay-Jou, Yang Po-Lin, Huang Hsin-Chien and Lin Jou-Min. Artists select distinctive Taiwan figures and images and turn it into digital elements.



Picture 3: Digital elements created by famous artists in Taiwan



Picture 4: Introduction to Digital Elements

4. Techniques

(1) Unity 3D

The website uses Unity 3D to display the interactive 3D. With Java Script, the website can respond immediately and to implement interactions on a web page without having to reload it.

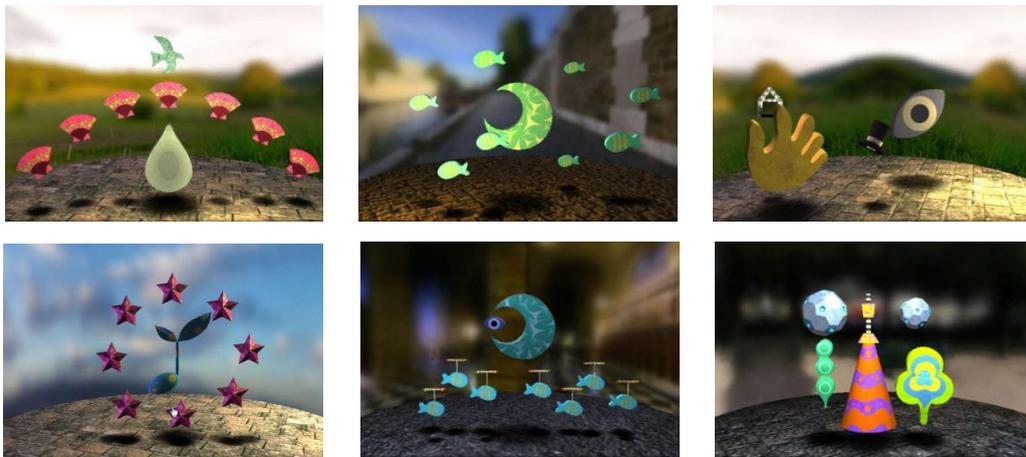
(2) Website database

Use PHP to interact with MySQL to make fully dynamic, interactive and database-driven sites and allow contents to be stored.

Display and Achievement of “Our Personal Public Art”

1. Interaction with Others

In our online platform, “Our Personal Public Art”, by reading artists’ self-introduction and thoughts of each digital element, people can try to imagine the meaning behind each element and further digest it to be his own perception. People’s digital artworks will be displayed on website’s homepage. Their role shifts from the one just walks by into the one who engages in it. Not only do people create their public artworks on this platform, people could make friends with other artists so that many different ideas will be inspired.



Picture 5: People’s artworks on the website



Picture 6: People who participate in the website and introduction to digital elements Competitions are held to stimulate more works. To stimulate more works and interaction with others, “Our Personal Public Art” allows to leave messages and using “Friend list” to make friends.



Picture 7: Message board and friend list

2. Data Processing and Analyzing

We used Google Docs to conduct a survey invited by e-mail of members of “Our Personal Public Art” from March 1, 2011 to April 30, 2011. In total, we collected 72 responses, 63 responses are effective, 33 people from non-design background and 30 people from design-background. 79% of the responses are effective. We have 2 quantitative variables from the same group of subjects; we are trying to determine if there is a relationship between the 2 variables. According to Gay’s studies on causal-comparative research in 1992, try to have 30 or more participants; this is important to increase the validity of the research. The questionnaire is based on System Usability Scale (SUS) letting users to evaluate the system through 5 rankings. A higher score means better usage.

The result shows that people from design background’s scores are higher than people from non-design background. The highest score goes to design background; the lowest goes to non-design background. Talking about the usage of this platform,

design background people rate it highly on the usage probably because design background people are familiar with design software. The average of design background and non-design background are close to each other. They have similar positive opinions about the usage of this platform; please take a look at form 1.

Form 1

Website usability between design background and non-design background

Items	Results
1. I will use this website frequently	Digital artworks are very interesting to non-design background and therefore people are willing to use it.
2. The website is too complicated to me	There is no significance between design group and non-design group. Design background people generally believe this website is easy to use.
3. The website is easy to use	Non-design background people are not clear about whether it is complicated to use. Generally, they answer it is easy to use.
4. I need someone to help me use the website.	4 out of 5 non-design background hold different opinions, which is lower than design background's 80%. Instructions and guide will be needed for non-design background.
5. The usability of the website is well organized.	Both of them believe that the website is easy to learn.
6. The website is difficult to use.	Both of them believe that the website is not difficult to use. There is no significant difference in two groups.
7. I have confident of using the website.	Both of them answer they have confident of using the website.
8. I need to gain much knowledge before using the website.	Non-design background people say there is no need for them to gain much knowledge before using the website. There is no significant difference in two groups.

As for the aesthetics for every piece of artwork, we invite experts to evaluate according to style, color, composition, content and completeness. Non-design background people get lower scores in style; however, both of them get average scores in color, composition and content. Experts hold positive attitude toward non-design background's works. As for completeness, design background people get higher scores. Experts conclude that design background's expression of ideas, completeness of the scene and focus of the image are excellent if compared to non-design

background's works.

Result and Discussion

From this study, we learn that “Our Personal Public Art” gets positive responses from different background users. When dealing with platform usage, users answer that they will expect more digital bricks or they hope foreign artists will be invited to create more bricks in the future or users could make their own bricks. Besides, users can combine their bricks freely, which could inspire them to come up with many ideas or express their emotions. Talking about public art in combination with digital art network, generally users say it is very interesting they could create works via internet and make friends simultaneously. Social network gives them an incentive to keep visiting the website. It is expected that this platform will be another social networking for people like Facebook.

From the viewpoint of arts education, “Our Personal Public Art” provides an opportunity for people to get close to aesthetics. Internet art and social networking move dominant position into users, everyone is an artist. Collage is a technique of art production for everyone; people could just borrow elements from others if they can't create their own. Internet could be seen as a public opinion space that is beyond time and space. Not only do people have mental conversation with artist by borrowing elements designed by artists, but also do they get more opportunities to create art and to interact with others by reinterpret it and share it on the internet.

Conclusion

“Our Personal Public Art” combines internet art with public art, which shortens the distance between creator and viewer. Everyone is an artist and people all work together for a public art. Because this is an online platform, people could edit and revise their artworks easily. There is no cost consideration. Many surprising artworks are created accidentally. Adding interaction and chat box to the artwork are digital age trends. Digital bricks selected from well-known artists are where creative inspiration comes from. The use of 3D computer graphics in website such as interface design, operability and effectiveness shows the abundance of multimedia data and information.

As for continuing education in arts, people can only be audience to appreciate art in the past; however, “Our Personal Public Art” lets people engage in creating and appreciating art. People feel that creating artwork is as easy as greeting and they can feel the joy in the process. Concepts, techniques and experiences of “Our Personal

Public Art” might be used in the future. The influence of internet art on public art should be considered in future studies. It is expected that recovery time concept can be used in the study in combination with new techniques such as digital curation, multidimensional dynamic visualization and strategies of online educational games.

Works Cited

- Alexander, B. (2006). Web 2.0: A new wave of innovation for teaching and learning? *Educause review*, 41(2), 33-44.
- Gay, R. L. (1992). *Educational research: Competencies for analysis and application*. (4th ed.). New York, NY: Merrill.
- Goodman, C. (1987). *Digital visions: Computers and art*. New York, NY: Harry N. Abrams.
- Ippolito, J. (2002). Ten myths of internet art. *Leonardo: Art, Science, and Technology*, 35(5), 485-498. doi:10.1162/002409402320774312
- Manovich, L. (2002). *The Language of New Media*. Cambridge, MA: The MIT Press.
- Prince, P. D. (1986) Computer aesthetics: New art experience, or the seduction of the masses. *Computer Graphics*, 21(1), 13. doi:10.1145/24548.24553
- Wands, B. (2006). *Art of the Digital Age*. New York, NY: Thames & Hudson Inc.

Linked Data: “Our Personal Public Art”

<http://www.publicart.tw/>

AN EXPERIMENTAL STUDY ON THE EFFECT OF THE DIFFERENT STYLES OF AESTHETIC EXPERIENCE ON AUTONOMIC PHYSIOLOGICAL RESPONSES

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Abstract

The aesthetic experiences must be based on certain neural physiology of humans. The extant literature shows that the orbit-frontal cortex is differentially engaged in the perception of beautiful and ugly stimuli, regardless of the category of painting, and that the perception of stimuli as beautiful or ugly mobilizes the motor cortex differentially. The evidence from Event-Related Potentials shows us: beautiful stimuli will stimulate much larger P3 than the ugly and neutral stimuli. This result is in accordance with the conclusion of the studies on pleasure emotions. Besides the neural activities, the blood circulatory system, the respiratory system, the glandular secretion system and the digestive system etc. all participate in the emotional process. So, the localizations of aesthetic brain and neural electrical activity can't provide the most comprehensive and objective description. In addition, the subjective evaluation of experience of aesthetic feeling can't reflect the differences of aesthetic emotions.

Most researches focus on the different physiological responses between the positive emotions and negative emotions. Are the physiological responses induced by aesthetic experiences similar to those by the positive emotion? This is an important question in personal psychology and positive psychology. This piece of research uses HR (heart rate) and GSR (galvanic skin response) as indexes and music and visual pictures as the stimuli through the audio-visual channel to explore whether the subjects' autonomic physiological responses are consistent in response to four different aesthetic styles of stimulus. The subjects were asked to listen to four different aesthetic types of music (including concinnity, comedy, sublime, tragedy), and evaluated their aesthetic feelings engendered by these types of music. The results show that as regards all the four types of music, over 70 percent of the subjects choose the corresponding aesthetic words to express their feelings, which illustrates that these types of music really induce the subjects' corresponding aesthetic experiences. A 2(visual and auditory channels) \times 4 (four aesthetic styles) experimental design is used to measure autonomic physiological responses. The participants were stimulated by the picture and music, and their heart rates and galvanic skin response were recorded with polygraph. Firstly, the subjects' baseline was tested for 2 minutes. Secondly, the subjects were exposed to different stimuli (seeing pictures and listening to the music) and their physiological responses were recorded. After 30 seconds, their recovery numbers were recorded for 2 minutes. Thirdly, the participants took part in other levels of experiment after 15 minutes. The results show that the four aesthetic styles of stimulus all make the heart rate and skin conductance decrease through either

auditory or visual channel. The reactions to comedy and sublime experience are more obvious than those to concinnity and tragedy. All of this indicates that aesthetic stimuli do have a very relaxing function. We made an analysis of the main effects and variance, and different aesthetic styles were independent variables, heart rate and galvanic skin response were dependent variables, sight and hearing were stimulus channels. The result is that the aesthetic style has a major effect on HR and GSR, but there is no correlation between aesthetic experience and stimulus channel. We conclude that different aesthetic styles do induce different physiological responses and they have cross-channel consistency. In aesthetic experiences, physiological responses to concinnity, sublime experience, tragedy, and comedy are different from negative emotions, but similar to positive emotions, which prove once again that aesthetic experiences belong to positive emotions.

Key words: positive emotion; aesthetic experience; autonomic physiological responses; heart rate; galvanic skin response

1 Introduction

Aesthetic appreciation is a unique cognitive faculty of human beings (Wang, Luo, & Dong, 2010). Contemporary researchers explored it by using various methods and the neurophysiologic measurement tools. FMRI experiments found that the beautiful paintings and pictures would more strongly activate the medial prefrontal brain regions (Kawabata & Zeki, 2004) and left prefrontal regions (Cela-Conde, et al., 2004; Cupchik, Vartanian, Crawley, & Mikulis, 2009). The researches of ERP showed the beautiful stimuli could evoke larger P3 amplitude (Tommaso, et al., 2008). Besides the neural activities, the blood circulatory system, the respiratory system, the glandular secretion system and even the digestive system etc all participate in the emotional process (Zhao, 1999). In fact, indexes like HR (heart rate), GSR (galvanic skin response) not only reflect people's aesthetic experience, but also sensitively distinguish the intensity of experience (Gomez & Danuser, 2004). A study of Nater (2006) demonstrated that for some musical stimuli, there was no significant difference between genders in subjective assessments such as preferences and waking up, but women were more sensitive in HR, GSR and finger temperature. (Nater, Abbruzzese, Krebs, & Ehlert, 2006). In recent years, the evaluation theory of Silvia (2005) comes up with further subdivision on aesthetic emotions, so also makes demands on sensitivity of the corresponding neural physiological index.

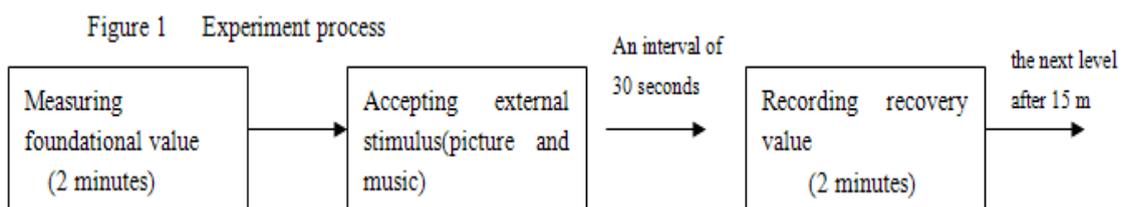
In previous studies on the emotional neural physiological responses, most of them evoked different emotions using pictures (visual stimulus) (Gomez & Danuser, 2004;

Sánchez-Navarro, Martínez-Selva, Román, & Torrente, 2006; VanOyen Witvliet & Vrana, 1995), music (auditory stimulus) (Gerraa, et al., 1998) or video material (audio-visual stimulus) (Hubert & Jong-Meyer, 1990; Palomba, Sarlo, Angrilli, Mini, & Stegagno, 2000), while there are very few studies using visual and listening materials respectively to evoke the same type of emotion for comparison (Russell, Bachorowski, & Fernández-Dols, 2003). Hess Scherer and Kappas (1988) thought sound and expression are essential approaches to disseminate the emotional information in interpersonal communication. The researchers chose expression pictures (visual) and sound (auditory) stimulus to compare their contributions to the evoked emotion. The results showed expression pictures were higher than sound in contribution rating (Hess, Scherer, & Kappas, 1988). Phillips and his colleagues (1998) employed expression and nonverbal sound to evoke fearful and disgusting emotions respectively. The consequence showed that inferior temporal gyrus was activated in all the four emotional conditions. The expression pictures which evoked the disgusting emotion activated the anterior insular and caudate putamen, but the sound stimulus did not (Phillips, Young, Scott, Calde, et al., 1998). There were similar results in the positive emotion study. PET scan showed that in the three sensory forms of the olfactory (smell), auditory (nonverbal sounds) and visual (picture), the evoked positive emotion increased the regional cerebral blood flow in the three regions: the orbital frontal cortex, temporal pole and the superior frontal gyrus of the left brain. But only the visual and olfactory stimuli increased the hypothalamus and callus next regional cerebral blood flow, and auditory stimulus did not (Royet, et al., 2000). Usually Exploring whether emotional reactions have cross-modal consistency is the effective way to identify emotional branch types and their corresponding psychological mechanism (Phillips, Young, Scott, Calder, et al., 1998). So in this study, we employ music and pictures to induce different types of aesthetic experience; with heart rate (HR) and electro dermal (GSR) as the indexes, we reveal the characteristics of physiological responses evoked by different types of aesthetic experience by measuring autonomic physiological responses to different aesthetic conditions and compare them with the physiological responses of positive and negative emotions. We verify the resemblance between aesthetic experiences and positive emotions from the perspective of physiological responses.

2 Method

2.1 Participants

Recruiting 106 paid undergraduate students from a university, and eliminating 30 participants who are inconsistent with the aim aesthetic induction. The remaining 76 participants are made up of thirty-one-people picture group and forty-five-people music group. The average age is 21 years old. We judge whether their different styles of aesthetic experience have been



evoked correspondingly by analyzing the participants' responses to the international emotional pictures and their choices of aesthetic words to describe the played music.

2.2 Materials and design

According to the criterion that can best reflect the characteristics of the four aesthetic styles, a doctor of musicology selected 4 classic melodies: Kiss the Rain(concinnity), Piano Concerto No.1 in B flat minor(sublime), Song of the Wanderer(tragedy), Gavotte(comedy). And each of them was clipped to a 2-minute fragment according to the experiment requirements, using metronome to control speed. We asked the 45 undergraduate students to assess them again. When each song ended, the students immediately described the experience by selecting words from the aesthetic vocabulary. The next fragment was played at an interval of 15 minutes. According to the statistical data on their aesthetic words, 93.3% subjects selected beautiful category words to describe the experience of Kiss the Rain, 84.5% selected sublime words to describe the experience of Piano Concerto No.1 in B flat minor, 86.7% chose comedice words to describe the experience of Gavotte, 73.3% subjects selected tragic words to describe the experience of Song of the Wanderer. This showed that the emotional experience each piece of music caused was typical. The beautiful music brought soothing emotion, the sublime music brought sonorous experience, the tragic music brought tragic experience, and the comedice music brought happy experience.

80 emotional pictures of four aesthetic styles were selected from the International Affective Picture in previous research (Chen, Zhao, Wang, & Chen, 2010), with 20 pictures in each style, plus 20 negative pictures. This study employed a composite experimental design of 2 (channels: visual, auditory) x 4 (4 kinds of aesthetic styles). The experimental process is shown in Figure 1. The playing programs of the melodies(pictures) of four aesthetic styles were kept in balance in the subjects. The subjects' physiological responses were recorded by the multiple conductance instruments. Measurement of heart rate used the corresponding II, the positive pole of the cable was connected with the left lower limb, the negative pole was connected with a right upper limb, and the reference electrode was connected to the right lower limb (experiment parameters: filter frequency:1kHz, sensitivity:1mV, time constant: 0.2S); The measuring electrodes of GSR were

positioned within the “Nei” and “Laogong” acupoint as positive and negative poles respectively, the reference electrode was attached to the right medial calf (experimental parameters: filter frequency:1kHz, sensitivity:500uv, time constant: 1s).

3.2 Results

3.2.1 The comparison of the changes of HR and GSR in the different aesthetic experiences

We made a comparative analysis of all the participants' reaction values and base values. The results showed that in all the styles of aesthetic experience with the different music backgrounds, participants' HR dropped, especially those evoked by comedic and sublime styles were significantly lower than the original foundation value(response value of comedy=74.67±14.78, p=0.00; response value of sublime=74.57±12.76 , p=0.01), the tragedy was significantly close (response value=76.75±21.16 , p=0.07). Under the conditions of visual stimulus, when they watched pictures of different aesthetic styles, their HR all dropped. While watching comedy(response value=74.68±7.36 , p=0.009) and sublime pictures (response value=75.66±5.13 , p=0.02), their HR was significantly lower than the original foundation value; changes evoked by comedy and sublime pictures were more obvious than those by tragedy(response value=77.23±6.71 , p=0.541)and concinnity(response value=77.59±7.88 , p=0.58). Compared with positive pictures, negative pictures made HR rise more dramatically (base value: HR=78.89±10.70,

response value=83.85±9.16 , t=-2.18,p<0.05). Also, there was a significant difference in HR value when it is compared with those under the other aesthetic conditions, F(4,27)= 8.64,p<0.05.

Compared with foundation value

Table 1 the main effect analysis of HR and GSR in different aesthetic styles and channel types

Source of variation	SS	df	MS	F	p
HR aesthetic style	353.81	3	117.94	6.01	0.00
Error of aesthetic style	4178.14	213	19.62		
Channel type	317.85	1	317.85	0.84	0.36
Error of Channel type	27006.90	71	380.38		
Aesthetic style×Channel type	58.47	3	19.49	0.99	0.39
GSR aesthetic style	6418.38	3	2139.46	3.06	0.030
Error of aesthetic style	146706.32	210	698.60		
Channel type	9.77	1	9.77	0.01	0.93
Error of Channel type	82436.32	70	1177.66		
aesthetic style× Channel type	410.43	3	136.81	0.19	0.90

(1.36 ± 7.84), GSR's response value all dropped whatever the music was (response value of comedy = -16.02 ± 50.95 , response value of tragedy = -1.34 ± 12.65 , response value of concinnity = -2.23 ± 14.94 , response value of sublime = 3.59 ± 23.54), there was a significant difference between the value and the original value ($p=0.03$) in the case of the pleasant music. When the pictures were presented (foundation value = 0.98 ± 6.54), GSR's response value all dropped (response value of comedy = -10.45 ± 48.17 , response value of tragedy = -2.53 ± 10.81 , response value of concinnity = -1.97 ± 8.81 , response value of sublime = -0.73 ± 20.09), but the pictures of all types were not significantly different in evoking GSR changes. But compared with the other pictures, the level of GSR evoked by negative pictures rose dramatically ($(4, 27) = 20.81$, $df=4$, $p=0.000$).

3.2.2 Comparison of HR, GSR through different audiovisual channels

The previous studies showed that stimulus materials of the same channel property influenced emotion intensity (Hess, Scherer, & Kappas, 1988). Emotions of the same type might differ in their neural base because of their different stimulus material channel property (Phillips, Young, Scott, Calder, et al., 1998). Then did the emotions evoked by the different channels have specific physiological responses? Hence we analyzed the main effect of different aesthetic styles and different types of channel on HR and GSR. The results demonstrated that the aesthetic style had simple main effect on the changes of HR and GSR. That is to say, different aesthetic experiences might have different HR responses and GSR, but the aesthetic styles and stimulus types did not have interaction on the changes of HR and GSR. Watching the different types of pictures and listening to the different styles of music would cause changes of HR and GSR.

3.3 Discussion

No matter it is music material or picture material, and regardless of aesthetic style, participants' HR and GSR were both inclined to decrease. This showed that their sympathetic and parasympathetic nerves were relaxed and proved that aesthetic experiences including the sense of tragedy have the function of relaxation. Other studies also showed tragic aesthetic experience could make teenagers properly deal with misery and pain in life, avoid accumulation of psycho toxic negative emotions, which is beneficial to their physical and mental health (Zhang & Peng,

2007). The aesthetic experience evoked by pictures make participants' heart rate drop (to a significant level in the cases of comedy and sublime experience), but negative emotion stimulus increased HR, which were consistent with the music as the stimulus material and many results from the researches in psychology of emotion (Xu, Meng, & Wang, 1995; Yang & Lin, 2005). Using emotional pictures as stimulus material, we analyzed the difference between the negative emotions and the autonomic physiological response evoked by aesthetic experience, and found that the negative emotions significantly increased heart rate, but the aesthetic experience made heart rate decrease, which was identical to the autonomic physiological response evoked by the positive emotions. It once again proved that the aesthetic experience was a type of positive emotion. It has been reported in the literature that under the condition of the negative emotional stimulus, the systolic pressure and diastolic pressure increased, and the cortical level rose; while under the condition of the positive emotional stimulus, the systolic pressure and HR both decreased, but there was no significant changes in cortical level (Yang & Lin, 2005). The reason why there was such a change was that the negative emotional stimulus could activate the sympathetic neural system, because a rise in blood pressure, also activate the HPA axis, while the positive emotion could make the sympathetic neural system activity decrease. Thus under the condition of aesthetic experience of a positive emotional type, the heart rate dropped significantly.

In addition, each of the four types of aesthetic experience, i.e. comedy, tragedy, concinnity, and sublime, had its own distinctive autonomic physiological response. For example, no matter it is musical stimulus or picture material, comedy and sublime experience both made participants' HR obviously decrease, which was more obvious than in the cases of concinnity and tragedy. What's more, the aesthetic style of stimulation (stimulus content) had the main effect on autonomic physiological responses. This was consistent with the previous study. Sánchez-Navarro et al. employed pictures as stimulus material to research the influence on GSR and HR. Their research results proved that the main effect existed(Sánchez-Navarro, et al., 2006). And the size of picture did not affect the physiological response, but the emotion pictures of the same arousal level(pleasant, unpleasant and neutral) caused difference in eyes blink reflex, heart rate and skin

conductance response; The study of Bernat, Patrick, Benning and Tellegen(2006) also found that the theme forms of picture(such as the specific object pictures and the event description pictures) would affect the eyes blink reflex, GSR, frown and zeugmatic EMG(Bernat, Patrick, Benning, & Tellegen, 2006). This also verified the theory of "Stimulus Specificity" that the specific reaction are associated with the specific stimulus, and different stimulus(content) could lead to different responses, conversely, from the different physiological autonomic responses could also prove that the aesthetic division of the four styles was reasonable.

The aesthetic experiences evoked by the picture and the music stimulus both made heart rate and skin conductance decrease (this was similar to the positive emotion response). This decline did not change because of the stimulus type (channel), which explained the physiological responses evoked by aesthetic experience were consistent through visual and auditory channels. Usually, exploring cross-modal consistency of the emotion responses was an effective approach to identifying emotional classification and corresponding mechanism, which somewhat proved that aesthetic experience can be credibly classified as positive emotion. The cross-modal studies on the emotional physiological responses showed that with reference to the same type of emotional reaction evoked by the stimuli of different channels (auditory, visual, olfactory), the activated brain regions were not identical(Phillips, Young, Scott, Calder, Andrew, Giampietro et al., 1998 ; Royet, Zald et al. 2000). They thought this might be due to the different capacities of stimulus material to induce emotions through different channels (Royet, Zald et al. 2000). In regard to physiological response, the intensity of emotion would influence each physiological index: usually the greater intensity was, the bigger physiological variation amplitude(Bernat, et al., 2006; VanOyen Witvliet & Vrana, 1995). In this study, after experiment we asked the participants to assess the intensity of their aesthetic feelings which the pictures and music stimuli evoked. Their reported intensity did not correlate with their heart rate and skin conductance response. This was likely to be the cause of the consistency in physiological responses under the conditions of pictures and music stimulus. Of course, it also suggests that in the follow-up study, we should start to observe the brain activities evoked by different aesthetic experiences. Only in this way, can we find the underlying cause. As some

researchers said that the aesthetic neural mechanisms should be taken into consideration to address the fundamental aesthetic issues, such as "the criteria of beauty", and "the causes of beauty", and to expound "the essence of beauty" eventually(Ding, 2010; Ding & Zhou, 2006). At present, the researches of the brain regions regarding the aesthetic preferences have shown that the activation of specific brain regions by the aesthetic stimuli (paintings) is the neural base accounting for different degrees of preference for paintings(Vartanian & Goel, 2004).

4 Conclusions

(1) In aesthetics, the four different types of aesthetic experience, i.e., concinnity, sublime, tragedy, comedy, can be categorized as the positive emotion: the four types of aesthetic experience and the positive emotion evoke similar autonomic physiological responses. In both cases, the evoked rises of HR and GSR are lower than those in the case of the negative emotion.

(2) The aesthetic experience and the positive emotion are different in some respects. The aesthetic experience makes HR and GSR decrease, has a higher effect of physiological relaxation, whereas the positive emotion does not necessarily have that effect. The relaxation effect is the most significant in the case of the aesthetic experience of comedy. Through the visual channel, the visual stimulating effect of concinnity is better; through the auditory channel, the stimulating effect of comedy is better.

(3) The different types of aesthetic experience evoke specific physiological responses regardless of the visual and auditory channels. Under the conditions with music and picture materials, the changes of autonomic physiological response to comedy and sublime experiences are more obvious than in the cases of concinnity and tragedy.

(4) HR and GSR can be employed as the referential physiological indexes measuring the aesthetic experience.

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References

- Ding, J. (2010). The Neural Correlates and Cognitive Meaning in Aesthetic Activities. *Journal of Huazhong Normal University (Humanities and Social Science)* 49(2), 151-158.
- Ding, X. J., & Zhou, C. L. (2006). A Neurological Study on Aesthetic Process and Its Significance to Aesthetics. *Psychological Science*, 19(5), 1247-1249.
- Wang, N. G., Lou, Y. J. & Dong, Q. (2010). Neural Correlates of Aesthetics. *Advances in Psychological Science*, 18(1), 19-27.
- Xu, J. B., Meng, Z. L., & Wang, L. H. (1995). An Experimental Study of autonomic physiological responses to Positive and Negative Emotion. *Psychological Science*, 18(3), 134-139.
- Zhang, L.L. & Peng, Y. Q. (2007). The Meaning of Tragedy Aesthetic Psychological Research on adolescents' mental health education [abstract]. Chinese Psychological Society (edit). The Psychology Abstract set of the Eleventh National Academic Conference. Kaifeng: Henan University
- Yang, H. Y. & Lin, W. J. (2005). Positive and negative emotion responses induced by internal affective picture systems. *China Journal of Behavioral Medical Science*, 14(11), 1028-1030.
- Zhao, L. L. (1999). The Biological and Psychological Bases of the power of Aesthetic Feeling research Institute of Higher Education. *Journal of Southwest University (Social Science Edition)*, 25(04), 44-49.
- Bernat, E., Patrick, C. J., Benning, S. D., & Tellegen, A. (2006). Effects of picture content and intensity on affective physiological response. *Psychophysiology*, 43(1), 93-103.
- Cela-Conde, C. J., Marty, G. I., Maestu, F., Ortiz, T. s., Munar, E., & Fernández, A. (2004). Activation of the prefrontal cortex in the human visual aesthetic perception. *Proceedings of the National Academy of Sciences of the United States of America*, 101(16), 6321-6325.
- Chen, L.J., Zhao, L.L., Wang, H., & Chen, B.Y. (2010). An Empirical Study on the Relationship of Positive Emotion and Aesthetic Experience. Paper presented at the Meeting of the 21st Biennial Congress of the International Association of Empirical Aesthetics, Dresden, Germany.
- Cupchik, G. C., Vartanian, O., Crawley, A., & Mikulis, D. J. (2009). Viewing artworks, contributions of cognitive control and perceptual facilitation to aesthetic experience. *Brain and Cognition*, 70, 84-91.
- Gerraa, G., Franchinia, A. Z. D., Palladinoa, M., Realib, G. G. N., Maestric, D., Caccavaria, R., et al. (1998). Neuroendocrine responses of healthy volunteers to 'techno-music': relationships

- with personality traits and emotional state. *International Journal of Psychophysiology*, 28(1), 99-111
- Gomez, P., & Danuser, B. (2004). Affective and physiological responses to environmental noises and music. *International Journal of Psychophysiology*, 53(2), 91–103.
- Hubert, W., & Jong-Meyer, R. d. (1990). Psycho physiological response patterns to positive and negative film stimuli. *Biological Psychology*, 31(1), 73-93.
- Kawabata, H., & Zeki, S. (2004). Neural correlates of beauty. *Journal of Neurophysiology*, 91, 1699–1705.
- Nater, U. M., Abbruzzese, E., Krebs, M., & Ehlert, U. (2006). Sex differences in emotional and psycho physiological responses to musical stimuli. *International Journal of Psychophysiology*, 62(2), 300-308.
- Palomba, D., Sarlo, M., Angrilli, A., Mini, A., & Stegagno, L. (2000). Cardiac responses associated with affective processing of unpleasant film stimuli. *International Journal of Psychophysiology*, 36(1), 45-47.
- Phillips, M. L., Young, A. W., Scott, S. K., Calde, A. J., Andrew, C., Giampietro, V., et al. (1998). Neural responses to facial and vocal expressions of fear and disgust. *The Royal Society*, 265, 1809-1817.
- Phillips, M. L., Young, A. W., Scott, S. K., Calder, A. J., Andrew, C., Giampietro, V., et al. (1998). Neural responses to facial and vocal expressions of fear and disgust. *The Royal Society*, 265, 1809-1817.
- Royet, J.-P., Zald, D., Re ´my Versace, Nicolas Costes, Frank Lavenne, Olivier Koenig, et al. (2000). Emotional Responses to Pleasant and Unpleasant Olfactory, Visual, and Auditory Stimuli: a Positron Emission Tomography Study. *The Journal of Neuroscience*, 20(20), 7752-7759.
- Russell, J. A., Bachorowski, J.-A., & Fern ´andez-Dols, J. e.-M. (2003). Facial and vocal expressions of emotion. *Annual Review of Psychology*, 54, 329-349.
- S´anchez-Navarro, J. P., Mart ´inez-Selva, J. M., Rom´an, F., & Torrente, G. (2006). The Effect of Content and Physical Properties of Affective Pictures on Emotional Responses. *The Spanish Journal of Psychology*, 9(2), 145-153.
- Silvia, P. J. (2005). Cognitive appraisals and interest in visual art: Exploring an appraisal theory of aesthetic emotions. *Empirical Studies of the Arts*, 23(2), 119-133.
- Tommaso, M. d., Pecoraro, C., Sardaro, M., Serpino, C., Lancioni, G., & Livrea, P. (2008). Influence of aesthetic perception on visual event-related potentials. *Consciousness and Cognition*, 17, 933–945.
- VanOyen Witvliet, C., & Vrana, S. R. (1995). Psycho physiological responses as indices of affective dimensions. *Psychophysiology*, 32(5), 436-443.
- Vartanian, O., & Goel, V. (2004). Neuroanatomical correlates of aesthetic preference for paintings.

NeuroReport, 15(5), 893-897.

AN EXPLORATION TO DEVELOP LOCAL ART EDUCATION CURRICULUMS BY LIVING ROOM PHOTOS

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Abstract

The Present age follows the prediction of McLuhan (1911-1980) becoming "the global village" by the medium and the World Wide Web. Taiwan is one of the developed countries with highest density of internet and widest prevalence of medium. The adolescents in Taiwan especially depend on internet to get in social life and learning. Researcher as an art teacher, and artist, who found that the students were living in an environment which was almost wrapped up by western culture, had a question to know if there are any interesting materials to teach art about Taiwanese local culture of art from their daily life space, living room. Then I made use of the theory and methods of Action research to explore the topic in about 389 cases (205female and 184male students) at the age of 16-17. They were asked to complete homework and fill basic data about their living rooms. Though it was not a threaten job for all of them, the study still collected rich data, including about 1150 photos of their living rooms, which would show in the paper to discuss some findings.

The survey also supplied an important base for more analysis to revised teaching program of curriculums in the future to plant the local cultural nutrition in Taiwan. In the process of the research, the theory about cultural capital of Pierre Bourdieu(1930-2002,French sociologist) would be discussed, and the concept of action research specially to art teacher, A/R/Tography, is also a main concept. The idea "everyday aesthetics" by Paul Duncum(2000), and the theory of grounded aesthetics are inspirations to the research too. The last part of the study will generalize the special condition from the cases to make some suggestions to all the art teachers who are working hard and tried to develop local culture in senior high schools in Taiwan, and even other eastern countries.

Introduction

In the age of global village (McLuhan, 1989), there is a trend of western culture spreading all around the world and is speeding up faster than the condition originally predicted, not except Taiwan. As a small island in eastern world, Taiwan has a special position in history and geography. In historical aspect, Taiwan has a long history about inhabitants' migration shipping by the ocean current tracking to thousand years ago because the location of Taiwan is close to Mainland China, Japan, Peninsula and Indonesia etc. Between the subtropical and temperate zone, Taiwan has fertile soil and comfortable temperature almost four seasons to grow rich agricultural products. For emigrants, it is a wonderful land to make a living. Because of the reasons, there were lots of governments dominated Taiwan or some parts of Taiwan during recent 400 years, including Spain, Holland, the Ming and Manchu dynasties of China, Japan, and Kuomintang parties after WWII (ShinMing, 1986). Therefore, Taiwan is a smelting furnace of different cultures. People in Taiwan could embrace all new or popular culture after a short time, even far before understanding the real content. Researcher of the study is teaching art in senior high school in new Taipei city in northern Taiwan, and detected the Taiwanese tradition is almost missing from the teenagers life. The teenagers are even more familiar with culture of the other nations than local culture. In 2001 Jensen estimated that people receive more than 90% of their information visually (Metros, 2008), Taiwanese teenagers are fun to search popular and interesting pictures or images which affected their development a lot. In the new era of open and democratic policy, people in Taiwan are living with popular internet and transportation appliances with visual culture from other countries or different culture, how can art teacher supply interesting curriculums of local culture to balance students' art attitude by the means of art education? How to make the curriculums naturally and effectively, not just a slogan or principle? That is the key point of the study, and the study is a beginning point to deal with the question.

Taiwanese scholar Shen-Keng Yang considered that anything which left the land will lose nutrition to death, and emphasize the importance of constructing the localization of educational knowledge to form the viewpoint base for understanding the other different viewpoint of cultures (Shen-Keng Yang, 1999:3;15). The scholar who concentrate on art education in Taiwan for a long time, Chiung Hua Chen, also took local culture as the base to appreciate multi-culture aesthetics (Chiung Hua

Chen, 2000:19). But till now, the work of local culture education is not successful in the field of art education in senior high school in Taiwan. The first survey of this research showed that there are only 3 cases present Taiwanese artists as their favorite artists, and 386 cases write down western artists, and no one write down Chinese artists. Check up the public institute, Taiwan Arts education websites, which collected arts education programs from all senior high school teachers, got not above 6% teaching programs about local culture learning from 2003 to 2012¹³. Yuan ru-yi, Taiwanese art education scholar, mentioned to that art education is “totally westernized” as only one way in Taiwan school teaching (Wang ,2008:pp153-154). How to promote local culture learning in art education of senior high school is also seldom seen in the most popular website about art education in Taiwan, even discussed, that is about presenting local condition now, not about traditional local culture¹⁴. In a word, there is a lack about traditional local culture teaching in the senior high school stage.

This research is aim to explore possible curriculum direction to make up for the lack, and make use of action research approaches to get useful information for further teaching plans to actually improve the biased art education now.

Theory and Methodology

1. Theory of Pierre Bourdieu

French sociologist Pierre Bourdieu(1930-2002) from the viewpoint of materialism to study the society as a complicated system with a reproduction process of culture. Bourdieu’s concept of “field” is a structured social space with its inner rules, schemes of domination, legitimate opinions etc. His “habitus” approximates to “habit” in English, but implies more complicated social interactive relation. He analyzed the process of the reproduction of social culture, made “cultural capital” as most concentrated concept. Not only cultural capital, but also economic, social capital, and symbolic capital, all capitals exchange and flow in the system. He brought up a famous formula:

¹³ Data gotten by 2012/6/21, from internet page :<http://1872.arte.gov.tw/teaching/award?PageControlPageNum=60&kind=senior>

¹⁴ Data gotten by 2012/6/21, from internet page :http://gnae.ntue.edu.tw/art_portal/

(habitus) (capital) +field = practice

Bourdieu defined “habitus” as a system of embodied disposition, and it followed the structure of the society to become a practice. habitus can represent as behavior, lifestyle, or permanent disposition. In his theory habitus has three layers of meanings, collective habitus, dispositional habitus, and manifest habitus. The concept of habitus is likely medium to connect structure and agent. Culture is just structure in principle, and individual is agent, not only just actor or subject. Bourdieu took “field” as a play. In a play, players make themselves into an illusion as real world so that the play continues. When people believe in the reality in all fields, then all capitals are effective in specific fields. Capitals and fields have close and complex relationship. Because all the capitals basically are with inner logic homology, they can’t reconcile to each other (Bourdieu,1984). Then cultural capital plays an important role here. The cultural capital has three forms(Bourdieu,1986:pp241-258):

- (1) Disposition of the mind and body
- (2) Objectified form
- (3) Institutionalized form

The society need to develop suitable structure to promote successful cultural reproduction for balancing the communicating of real and symbolic capitals. The achievement of Bourdieu is to understand and analyze the process of cultural capital accurately and exquisitely in the context. The goal of the paper was not to represent the rich content of the theory of Bourdieu, but made use of the formula” (habitus) (capital) +field = practice” to discuss the process of art teaching to find out more possibilities in local cultural preserving and deepening. The performance of the students in art class could be taken as “practice”, and the condition before students getting in art class can be discussed in the concept of “habitus”, the living room and decoration inside, including the religious corner as a part of “capital” to the students, then art teaching is one “field” interacting with all the other items.

2. Theory of Piaget

In the cognitive development theory of Piaget J.(1896-1980), senior high school students(aged 16-18) are behind formal operation stage(11-16) that they had developed abstract thought and can think logically in their mind (Piaget& Garcia,1974). The speed of cognitive development is not the same, and four main reasons, maturation, physical experience, social transmission, and equilibration

(self-regulation), affect. Based on the concepts of assimilation and accommodation in the self-regulation theory, the inspiration around the living environment supplied important experience to cognitive development (Piaget, 1964). In the other words, during the process of children growing up, not only the communication to the others, but also all the experience, including the sensory to the environment, like visual sensory, work upon as a basic cognitive information to understand the society and learning. The living room, as a place to communicate with family members, could be taken as a familiar and effective environment to the teenagers.

3. Concept of aesthetics

Aesthetics is a common term in the field of art education, but there is complicated meaning and concept in the history of philosophy. According to Kant (Kant, 1987), beauty is objective and universal; thus “beautiful” can be judged and has a standard to everyone. But for Bourdieu (1984), taste is a result of an education process and awareness of elite cultural values learned through exposure to mass culture.

Bourdieu examined how the elite in society define the aesthetic values like taste and how varying levels of exposure to these values can result in variations by class, education, and cultural background. Scholar Michael Parsons said:

...the capacity to have high quality aesthetic experience requires education. And because aesthetic experience is one of life’s intrinsic goods, such education should not be withheld from anyone (Michael Parsons, 2002:28).

Bourdieu concentrated on the factors how “the society” affected the taste, or presentation of aesthetics, and Parsons thought school teaching could change students’ aesthetics. Actually both is useful to art education, and the study will try to understand the society from the images in the living room decoration and setting which imply the class, cultural background, and parents’ education, etc. Then it referred to some suggestions to art education in senior high school.

4. Methodology

For Whitehead, the development of action research composed by some questions:

*What I care?

*Why I care?

*What I can do?

*How can I prove that I made some condition better?

*How I judge the conclusion is fair and correct?

*What will I do next?(Jean McNiff & Jack Whitehead,2002:7)

So the main spirit of action research lay in the empirical experience of the researcher, and the study is applicable to teaching practice. The image of action research resembles as a loop including plans, action, observation, and self-examination(Jean McNiff & Jack Whitehead,2002). Rita L. Irwin and Alex De Cosson applied the methodology of action research and focused on art education, brought up a theory, A/r/tography, which attempt to integrate theory/research, teaching/learning, and art/making (2004:28). To them, “teaching is a performative knowing in meaningful relationships with learners”(2004:31). To construct the gap between the learner and the teacher, “grounded aesthetics” supply a good reason to search teaching material from students everyday life(Paul Willis,1998). Paul Duncum in the paper, A case for an art education of everyday aesthetic experiences (1999), probed into everyday life visual experience as a general and wide definition of “cultural capital” to art education, provide a deepening discussion of “grounded aesthetics” to art teaching. **Duncum said,” Learning through modeling and the hidden curriculum have in common with the ordinary practice of language and most television viewing an involvement integrated they are with the rest of life, the more powerful they are in both informing and forming minds (1999:299)”. Learning unconsciously is powerful as Duncum said, but school teaching is often conscious to change students. How to melt them to promote teaching effect is an exploitable, and it is just what this research tried to do.**

Methods

The study is applied in art education as an action research, and the specific question of the research is:

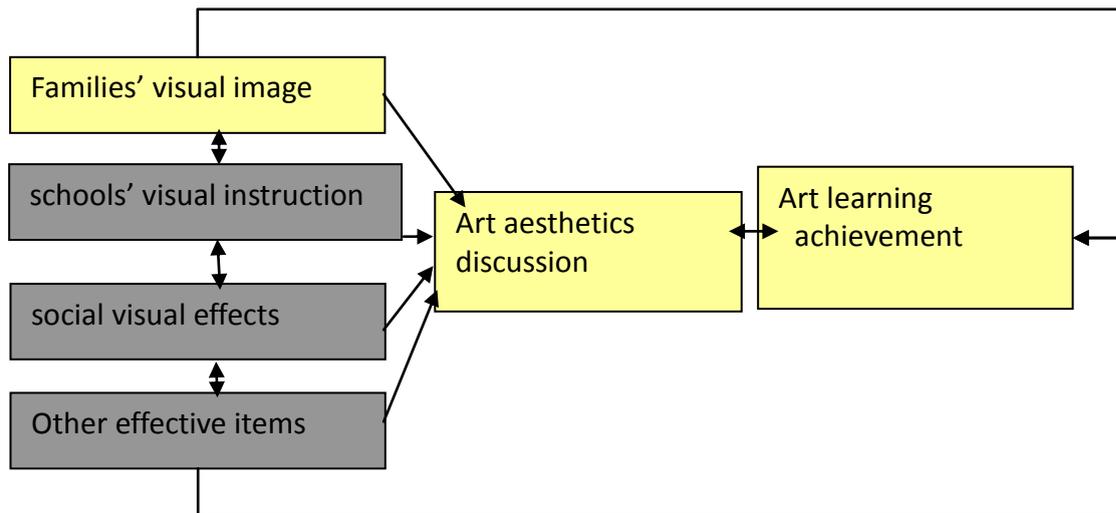
- (1) How the students act with families in the living room?
- (2) How does the living room look like?
- (3) How the images in the living rooms affect art performance or aesthetics to students?
- (4) What interesting materials found in the living rooms to further art education program?
- (5) Proceeding Q4, Are there workable art teaching materials to preserve local

culture in the living rooms?

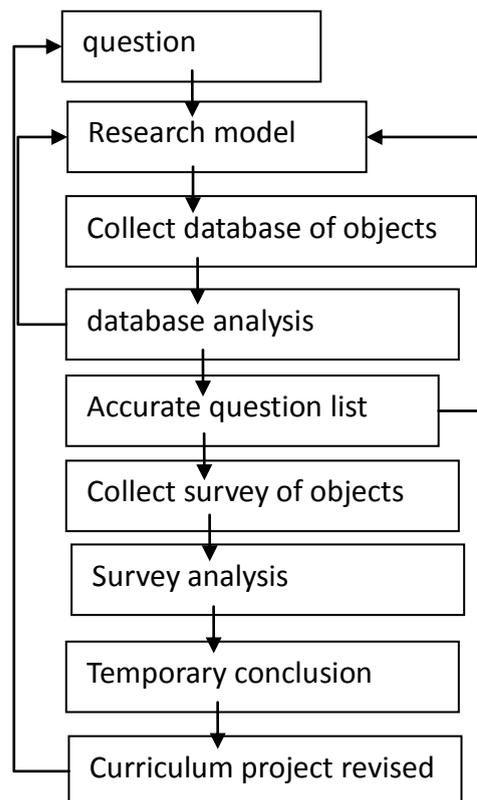
The goal includes exploring a new teaching direction, describing the data of the group, explaining the result of the action research, and suggestion to further curriculum. The data and information of observation collected by the researcher (teacher) supply the main source of the study, and the useful methods here include observational research, survey research, and experimental research.

The survey began from homework of introduction about students' living room. The data contain 230 homework copies with more than 1150 pictures of living rooms, the information about the families' activities inside, and the interviews of families members' attitude or concept to the living room. The part is the basic materials to observation and analysis to the general condition of the objects in the study. Statics results would refer to the next step to understand the effect of the visual image in their living rooms to the students. Then they filled a copy of questionnaire in the end. The study is an action research by a senior high school art teacher, and the study materials are from 389 students in their 15-16 years old in PanChiao Senior high School of New Taipei city. New Taipei city has the highest density population in Taiwan, and the citizens living inside are almost higher than 80% emigrants form other counties after Taiwanese industrialization in 1960s ([Lo Wan Ping, 2006](#)). There may be rich cultural origins and some emigrants' special cultural "habitus". PanChiao Senior high school locates besides the New Taipei City Hall with convenient traffic transports including MRT, trains, bus, and high ways. The school has a history of more than 60 years with good quality and academic performance to advance to universities, so that many junior high school students living in New Taipei city take it as one of their best choices to keep learning. The teenagers in the research could be taken as typical case to present the immigrant Taiwanese culture, and be a model case to recognize the whole through the observation of the part.

The Research model is showed below:



Research design as below:



Literature review

The theory of Bourdieu was popular and applied extensively in social science, especially education. In Taiwan, academic results devoted to Bourdieu gathered a

big amount in near decades, developing more during these few years after the death of the sociologist. For example, the Ph.D. dissertation of [Lin, Pi Fang](#) "The panel study of effects of family cultural capital and individual learning motivation on adolescent learning achievement" ([Lin, Pi Fang](#), 2011), the master's degree thesis of [Shu-fen Wu](#) "A Study on the Correlation between the Cultural Capital and the Academic Achievement of the Fifth Grade Students in Penghu" ([Shu-fen Wu](#), 2010), the master degree thesis of [Chiang Hsin-Chang](#) "Cultural capital of high school students: The data of first wave of Taiwan Educational Panel Survey" ([Chiang Hsin-Chang](#), 2010), the master's degree thesis of [Chia-wei Wang](#) "The Effects of Cultural Capital and Family Atmosphere on EFL Elementary School Pupils' English Academic Achievement" ([Chia-wei Wang](#), 2010), etc. There are also rich studies in periodicals, as "The Verification of Relationship between the Cultural Capital and Academic Achievement by Structural Equation Modeling--An Analysis of Taiwan Data in PISA 2006" (Ren-li Lu, 2012), "The Relation among Parents' Education, Cultural Capital, Self-Aspiration, Students' Interesting and Mathematics Achievement" (Fang-quan Zhang, 2011), "The Effects of Cultural Capital and Social Capital on Learning Attitude and Achievement about the Elementary Students in Yilan: Comparison between Aboriginal and Han Groups" (Yi-fen, Chen & Jing-yu, You, 2011), "Influence of Cultural Capital on Academic Performance through School Social Capital: A Study of Eighth Graders in Taitung" (Chuan-li, Su & Yi-jhyh, Huang, 2009), etc. Though the theory of cultural capital applied to education in Taiwan is too numerous to enumerate, just a few papers in art education. For example, "Bourdieu's "Cultural Capital" on Taste in Art and Its Implication on Education" (Hong-zu Syu, 2008) Between the limited papers, most important of all is "Constructing an International History of Art Education: Periods, Patterns, and Principles" (Mary Ann Stankiewicz, 2009), researcher made use of habitus, field, and cultural capital concepts from Bourdieu to discuss the constructed art education history, and tried to revise or present some bias hidden in the history. The paper was the first one which combined the theory of Bourdieu and art

education in Taiwanese publications, especially in epistemology. On the other hand, some papers studied the learning achievement from cultural capital like art-learning experience (Bi-fang Lin,2009).

In English periodicals of art education, Bourdieu's theories, especially cultural capital is popular and almost become general concepts when discuss about aesthetics, popular culture, and learning achievement, like "Theorizing a network called art education: Re-envisioning and extending the field"(Lackey, Lara M, 2003)," Attitude Towards Artwork in the Israeli Kindergarten and the Reproduction of Social Status"(Toren, Zehava,2007)," The Art of Culture War: (Un)Popular Culture, Freedom of Expression, and Art Education"(Darts, David,2008)," Youth Fantasies: The Perverse Landscape of the Media"(Smith-Shank, Deborah L,2005),"Go to the mall and get it all: Adolescents' aesthetic values in the shopping mall"(Stokrocki, Mary,2001),etc. There was also a Ph.D. thesis, "Taste in appearance: Self, cultivated dispositions, and cultural capital"(Kwon, Yoo Jin, 2007) make use of course analysis to the theory of Bourdieu to present a concept of "Taste" more delicately.

Results Discussion and suggestion

(1)How the students act with families in the living room?-focus on "worshipping"

Living rooms as a place to connect all the family members for most students, and the activities inside including watching TV, playing computers, eating meals, talking, reading, worshipping, family parties, interior sports exercise, family workshop, playing with pet, etc. by frequency order. In upper items, watching TV and using computers are overall majority to most students, but the interaction between family members is the most seldom for the two activities. Most interesting of all items is "worshipping", for students, they know the niches need to keep clear and neat, and it is a holy corner in the living room for them, but they are not exactly know what or who they worshipped. Just little students participate the worshipping actively and consciously, most of them are ignoring the meaning and did worshipping as a routine for elders order in the family. But after the researcher introduced the religion of their niches, about more than half students were curious of the curriculum, they wanted to explore more. The result indicated they are not ignoring to the traditional culture, but just did not have chance to learn. And it will be good materials to develop art

education programs. The sorted photos of family niche showed below:

Table1:(horizon items as schools or divisions of the religion, vertical items as general religions)

	Pure land	Guanyin belief	Tibetan Buddhism	Zen
B u d d h i s m				

				
T a o i s m	LandGod	Guanyin	Mazu	Other deities
				
	characters	pictures	cross	calligraphy
Ch r i s t i a n i t y				

Among Buddhist families, Pure land belief is the most popular which express Amitabha Buddha and two Bodhisattva (three saints), one of them is Guanyin , will lead the soul after death to the western paradise, if you sincerely believe in Amitabha Buddha. The second popular is Guanyin belief that the main idea is when you truly believe in and pray to Guanyin you would be saved or fulfill your will. There still be other Buddhist schools like Tibetan Buddhism and Zen Buddhism, etc. Among all the Buddhist Niches, Guanyin images exist most frequently, generally as a female figure with peaceful smile and delicate sitting or standing posture. Even in Taoist pantheistic belief, Guanyin usually presents behind the main deities (Table.1). The cases who supply the photos also indicate their belief as Buddhist-Taoism, because there are some similar thoughts and deities between the two religions, especially Guanyin image. Some students even can't recognize the difference between the two religions to take Guanyin as Taoist deity originally. A little cases rejected to take photos to Guanyin or other deities as a respectful attitude.

The religious niche in the living room in Taiwan is a serene corner (RuanChangruei, 1985). Piaget believed in that children develop moral ideas in stages and that children create their conceptions of the world. According to Piaget ,“The child is someone who constructs his own moral world view, who forms ideas about right and wrong, fair and unfair, that are not the direct product of adult teaching···” (Gallagher& Reid, 1981:26). Though it is not a direct product of adult teaching, art education is not to deliver a sermon, but from the aesthetics viewpoint to explain the normal but unknown images for them in the living room invoked good reaction to self-examination to students.

(2)How does the living room look like?

Table 2:

Western style	Hybrid style	Taiwanese(Eastern style)
		

According to the 1150 photos, though generally sorted as three styles, over 99% living rooms are decorated by hybrid style with western furniture as sofas, tables, cabins, etc. and some Taiwanese pictures or sculptures which imply good fortune, like golden

coins, calligraphy couplets, trees of wealth, etc. and souvenirs from foreign tours. Almost all families of the students took foreign tours as a good way to enjoy leisure time, and put the souvenirs at obvious corner in the living rooms to show their rich cultural experience. The students are eager to refer to the souvenirs representing the belonged countries, but they can't talk more about the meanings of the souvenirs. When the researcher share the meaning of the souvenirs, like the wooden sculptures of Indian dancing God, the doles of Japanese daughters' festival, the students show lots interest on them. Souvenirs in the living rooms should be another suitable material to develop curriculums of rich cultures, and by the same time to do comparison with local culture.

(3) How the images in the living rooms affect art performance or aesthetics to students?

It is a complicated but important question for the researcher, being useful to design art education program. And it is difficult to get specific information from the data collected. So the discussion will from the point of religion to penetrate a general condition. A totality of the survey is 389 cases, and the rate of religion belonged to them shows in Table.3:Buddhism(22%), Taoism(35%), Christianity&atholicism2(6%), Non(36%). There are some cases with more than one religion in the family, the intention of the student self was regarded, not the other family members counted. The rate of the item " Learning attitude" summed up from the numbers of the case who handed out all art homework on time and working completely in one semester. The result presented that the cases belonged to Buddhism and Christianity (Catholicism) performed better than the cases belonged to Taoism and Non religion in the aspect of homework handing in and completeness.

Table.1

religion \ item	Amount/389	Aesthetic taste(w/e)	Learning attitude
Buddhism	88(22%)	65/23	75%
Taoism	137(35%)	79/21	34%
Christianity23(Catholicism2)	25(6%)	74/26	68%
Non	140(36%)	76/24	60%

The survey chose three couple, six pictures, to be compared with western and eastern art aesthetics favor. How to pick up pictures followed below rules:

- (1) Not popular pictures to teenagers: Prevent students from choosing by fame, not their intuition.

(2) Each picture is distinctive to their eastern and western style: symbolization/ substantiation ; body/line; color/ink; complicated line/simple line; reality/illusion; graphic/literary···(Francois Jullien,2004)

(3) Each picture was almost created at the same time: To reduce the complicated history discourse, and to stress the geographic (eastern and western) factors.

The assumption that cases with more traditional pictures in the living rooms, like Buddhist or Taoist religious pictures or other Chinese and Taiwanese furniture or decoration, will present more favor to eastern style pictures is not obvious. But cases with Buddhist niche in the living room showed more favor to eastern style pictures than the other cases. In a sum, teenagers in their 16-17 ages with general art education before in Taiwan prefer to accurate shape of objects, curve lines appearance, concrete outlines, specific atmosphere, and objective description.

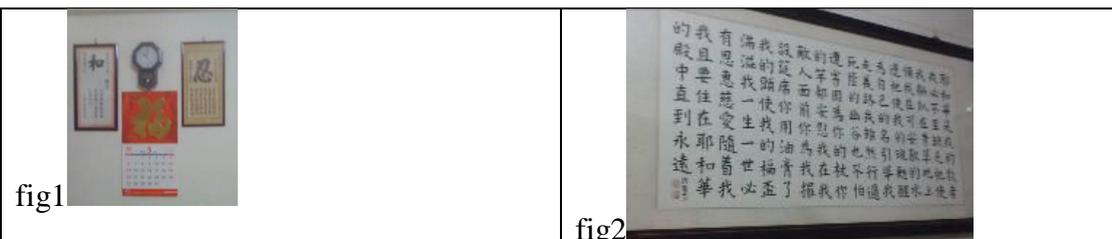
Table.2

code	picture	source	style	N
No.1 Figure Western		Greek sculpture, white Marble (about 200-0B.C.)	Curve lines, body substantiation , smooth and glossy	323 83%
No.2 Figure Eastern		Han Dynasty, Grey pottery figure of a courtlady (about 200-0B.C.)	Plain lines, symbolized figure, simple and flat	66 17%
No.3 Plant Western		Albrecht Durer,The Large Turf : Watercolor and gouache on paper, 41 x 32 cm Graphische Sammlung Albertina, Vienna(1503)	Rich green color layers, delicate and detail drawing, real and substantiation	174 45%

No.4 Plant Eastern		Shenjhong, flowers and birds album, 34.8 x 56.9cm National Taipei Palace Museum(1494)	Rich ink color layers, quick and simple strokes, symbolized, seal and calligraphy	215 55%
No.5 Landscape Western		Constable, Weymouth Bay: Bowleaze Cove and Jordon Hill, 53.3 x 74.9 cm, Oil on canvas, National Gallery, London, (1816 – 17)	Heave cloud, wide land, substantiation of ocean and mountain, rock	268 69%
No.6 Landscape Eastern		Wanghuei, peach blossoms and fishing boats, 28.5 x 43 cm, colors and ink on paper, National Taipei palace Museum, (about 1700-1717)	Light cloud, narrow land, illusion of rivers and mountain, rocks	121 31%

(4) Are there workable art teaching materials to preserve local culture in the living rooms?

According to the data, there are actually some teaching materials connected to local culture in the living room, though comparing to western culture still be much less. Especially the religious niche, including Buddhist and Taoist styles, combined woodcut craft, artifact works, Chinese painting skills, calligraphy, and thoughts inside, it may become a great material to art education curriculum to local art in Taiwan. Besides that, calligraphy works, which writing Chinese characters like “Buddha”, “As wishes”, “Good fortune”, “Patience”, “Peace” (fig1), etc. were often decorated on the wall in the living room, would related to the Chinese and Taiwanese art history for art teaching. Some Christianity families even write bible paragraph by the writing style of the Tang Dynasty calligrapher Ouyang Xun(557-641) (fig2).



Conclusion

The recent life in Taiwan is westernized, parents or elders did not pass the traditional culture to new generation, and the gap to local culture is obvious presented on the attitude to teenagers. They are expected to and want to be internationalized, but missed to construct the base of local culture. It would be a mistake to lose the local nutrition and to put the cart before the horse. In the result of the survey, the traditional religion as a cultural capital is losing the important status in modern life, the family with ancestors or deity niche is lessening. The students take the traditional religion or prey ceremony as business to adults or grand adults, their "practice" is scarcely related to the traditional culture. But when art education related the normal pictures in the living rooms to the content of local culture, the students were interested in them and got more understanding and identification to local culture. It is the impact of the "field" of art education, and it may affect the "practice" to the students. By the theory of Bourdieu, art education can play the role of "field" to build a play program, invite students to change their "habitus", to fulfill the reproduction of "practice".

Reference:

- Bi-fang Lin(2009). An Empirical Study of the Relationships between Talent Classes and Learning Achievement: A Cultural Capital Perspective. *Formosan Education and Society*,17,pp111-134.
- Bourdieu Pierre(1984). Richard Nice trans. [Distinction: a Social Critique of the Judgment of Taste](#). Cambridge, MA:[Harvard University Press](#)
- Bourdieu Pierre(1986).The forms of capital. In J.G. Richardson(ed.) *Handbook of theory and Research for the sociology of education*. New York:Greenwood Press,pp241-258.
- Bourdieu, P. (1979). *La distinction: Critique Sociale du Jugement*. Paris : Les Editions de Minuit.
- Chiang Hsin-Chang(2010) .*Cultural capital of high school students: The data of first wave of Taiwan Educational Panel Survey*. Unpublished master dissertation. National Taiwan Normal University.
- Chia-wei Wang(2010). *The Effects of Cultural Capital and Family Atmosphere on EFL Elementary School Pupils' English Academic Achievement*. Unpublished master dissertation. National Yunlin University of Science and Technology.
- Chiung Hua Chen(2000).The image of art education in 21 century(originally in

Chinese, translated by author). *Windows of Culture*:2000.3, pp14-19.

Chuan-li, Su & Yi-jhyh, Huang(2009). Influence of Cultural Capital on Academic Performance through School Social Capital: A Study of Eighth Graders in Taitung. *Bulletin of Educational Research*, 55:3, pp99-129.

Chun-fang Yu(2001). *Kuan-yin, The Chinese Transformation of Avalokitesvara*, New York :Columbia University Press.

Darts, David(2008). The Art of Culture War: (Un)Popular Culture, Freedom of Expression, and Art Education. [*Studies in Art Education*, 49. 2](#) ,pp103-121.

Fang-quan Zhang(2011). The Relation among Parents' Education, Cultural Capital, Self-Aspiration, Students' Interesting and Mathematics Achievement. *Journal of National Taichung University(Education)*, 25:1, pp29-56.

François Jullien (2004). *A treatise on efficacy : between Western and Chinese thinking*. Honolulu : University of Hawai'i Press.

Gallagher, J. M., & Reid, D. K. (1981). *The learning theory of Piaget and Inhelder*. Austin, Texas: Pro-Ed.

Hong-zu Syu(2008). Bourdieu's "Cultural Capital" on Taste in Art and Its Implication on Education. *Tzu-Chi University Journal of The Educational Research*, 4, pp105-141.

Jean McNiff & Jack Whitehead(2002). *Action research:Principles and Practice*:London:Routledge.

John Blofeld(1988). *Bodhisattva of Compassion. The Mystical Tradition of Kuan Yin*, Boston : Shambhala.

Kwon, Yoo Jin(2007). *Taste in appearance: Self, cultivated dispositions, and cultural capital*. Unpublished doctoral dissertation. Iowa State University.

Lackey, Lara M(2003). Theorizing a network called art education: Re-envisioning and extending the field. [*Studies in Art Education*, 44. 2](#) ,pp101-116.

Lin, Pi Fang(2011). *The panel study of effects of family cultural capital and individual learning motivation on adolescent learning achievement*. Unpublished doctoral dissertation. National Chengchi University.

[Lo Wan Ping](#)(2006). *The Development and Change of the Population and Industries in Banciao After 1945*. Unpublished master dissertation. Taipei Municipal University of

Education.

Marshall McLuhan, Bruce R Powers (1989). *The Global Village: Transformations in World Life and Media in the 21st Century*. New York:Oxford University Press.

Shinming (1986). Kuo-tsi Tai translated. *Taiwan's 400 Year History: The Origins and Continuing Development of the Taiwanese Society and People*. Washington, D.C.: Taiwanese Cultural Grassroots Association.

Mary Ann Stankiewicz(2009).Constructing an International History of Art Education: Periods, Patterns, and Principles. *The International Journal of Arts Education* 7:1,pp1-36.

Michael Parsons,(2002). Aesthetic experience and the construction of meanings. *Journal of aesthetic education*:36:2:pp24-37.

Paul Duncum(1999). A case for an art education of everyday aesthetic experiences. [*Studies in Art Education*, 40.4](#) ,pp259-311.

Paul Willis(1998).**Notes on common culture:** Towards a grounded aesthetics. *European Journal of Cultural Studies* :May 1998: 1: 163-176.

Piaget & Garcia,R.(1974).Weight and Its Compositions with Spatial Dimension, *Understanding Causality*. New York : W.W. Norton & Company. pp85-94. (originally published in France,1971).

Piaget & Garcia,R.(1974).Weight and Its Compositions with Spatial Dimension, *Understanding Causality*.New York : W.W. Norton & Company,pp85-94.

Piaget,J.(1930). *The Child Conception of Physical Causality* .Translated from the French by Gabain,M., Routledge & Kegan Paul, London. (originally published,1946). London: Routledge & Kegan Paul. (originally published,1927).

Piaget,J.(1964). **Cognitive development in children:development and learning.** *Science teaching and the development of reasoning*. Karplus,R. et al.(Eds.), U. of California, Berkeley.

Ren-li Lu(2012). The Verification of Relationship between the Cultural Capital and Academic Achievement by Structural Equation Modeling--An Analysis of Taiwan Data in PISA 2006. *Forum of Educational Administration* ,3:2,pp29-59.

Rita L. Irwin, Alex De Cosson(2004).*A/R/Tography: Rendering Self Through Arts-Based Living Inquiry*.Pacific Educational Press.

Ruan Changruei(1985). Folk religion and family niche. *Overseascholars*,159,pp54-57.

Shen-Keng Yang(1999). *Forms of knowledge and comparative education*. Taipei: Yang-chih book.

Shu-fen Wu(2010). *A Study on the Correlation between the Cultural Capital and the Academic Achievement of the Fifth Grade Students in Penghu*. Unpublished master dissertation. National University of Tainan.

Smith-Shank, Deborah L(2005). Youth Fantasies: The Perverse Landscape of the Media. [*Studies in Art Education*, 46. 3](#),pp 270-274.

Stokrocki, Mary(2001).Go to the mall and get it all: Adolescents' aesthetic values in the shopping mall. [*Studies in Art Education*, 54. 2](#),pp18-23.

Susan E. Metros(2008). The Educator's Role in Preparing Visually Literate Learners. *Theory Into Practice*, 47:102–109.

Toren, Zehava(2007). Attitude Towards Artwork in the Israeli Kindergarten and the Reproduction of Social Status. [*Studies in Art Education*, 48. 2](#),pp172-188.

Wang, L. Y.(2008). The Development of Art Education in Taiwan. *Taiwan arts education history*: National Taiwan arts education center,2000:pp106-161.(in Chinese)

Yi-fen, Chen& Jing-yu, You(2011). The Effects of Cultural Capital and Social Capital on Learning Attitude and Achievement about the Elementary Students in Yilan: Comparison between Aboriginal and Han Groups. *Journal of Taiwan Studies*,7,pp25-62.

Appendix:

(1) curriculum learning sheet sample(though the sheet paper was black and white, there was colorful slide in front of the classroom to show to all the cases)

Chapter3:The colorful light of life–Religious art learning sheet

class: no: name: religion: _____

1.Please choose the better picture by your instincts, and the reason is _____



2. 1. Please choose the better picture by your instincts, and the reason is _____



3. 1. Please choose the better picture by your instincts, and the reason is _____



4. What is the general subjects to religion?

birth and death sorrow and happiness love fame and profit, or _____

5. Please write down the images belonged to which religion.

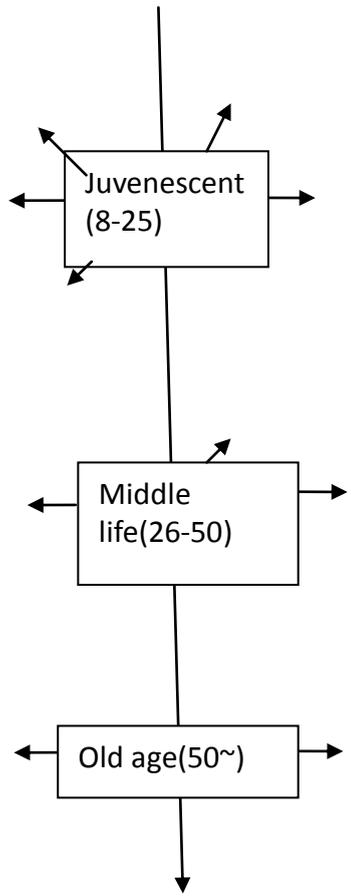


6. Please write the most trouble difficulty right now, and the way to deal with the situation.

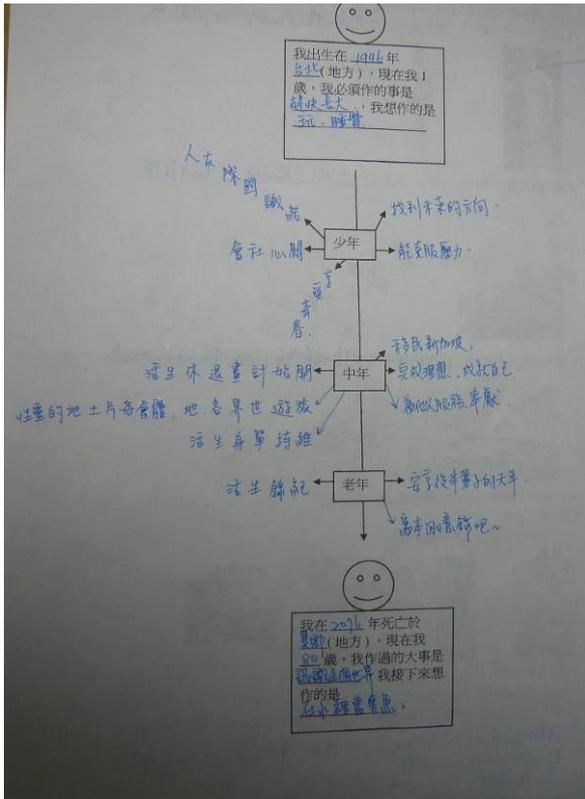
7. Draw or plan the your map to your life. (You could add or reduce the arrows which can show any possibilities, even fantastic.)



I was born at ____ (year) in ____ (place).
When I was one years old, what I need to do is _____, and what I wanted to do is _____



I will die in ____ (year) at ____ (place) when I am ____ (age). What I would have done the most important thing all my life is _____, after my death I will go to _____.



生命的光彩—宗教藝術學習單

班級: 姓名: 學號: 信仰: 圖騰: 佛 道 基督 天主 回 其它

1. 請勾選你最喜歡的一件作品, 理由是 很有不同於其他的宗教藝術

2. 請勾選你最喜歡的一件作品, 理由是 我很喜歡這幅畫, 它的氣氛

3. 請勾選你最喜歡的一件作品, 理由是 有種波畫的畫, 以及非常的禪理之感

4. 你覺得宗教共同探索的最重要議題是(單選):
 生死 苦樂 愛情 名利

5. 請填寫以下宗教藝術所屬的宗教

6. 寫出你目前生命當中最大的困難, 以及因應的辦法。

7. 上完這堂課之後, 你覺得自己比較認同哪一個宗教的觀點?

8. 畫出你的生命計劃圖(基本種類如下, 箭號表示各種可能性, 可自由增減)

我目前生命最大困難: 我目前生命最大困難是時間不夠, 雖然時間有種不同的價值, 但現在身處在忙忙的時代, 就真的很難, 勉勵自己。

我比較認同的宗教: 佛教, 畢竟是自己的宗教信仰, 一定會你, 有好多事情。

生命的光彩—宗教藝術學習單

班級: 姓名: 學號: 信仰: 圖騰: 佛 道 基督 天主 回 其它

1. 請勾選你最喜歡的一件作品, 理由是 感覺比較有生命力

2. 請勾選你最喜歡的一件作品, 理由是 能知道這幅畫的主題

3. 請勾選你最喜歡的一件作品, 理由是 龐大的景像看起來十分遼闊

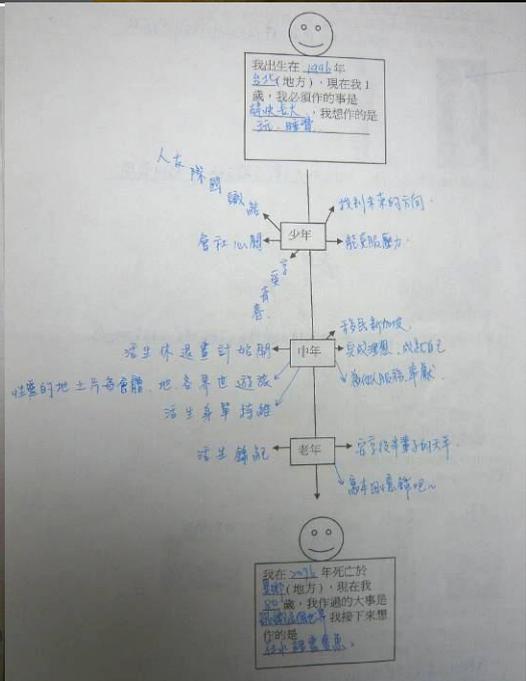
4. 你覺得宗教共同探索的最重要議題是(單選):
 生死 苦樂 愛情 名利

5. 請填寫以下宗教藝術所屬的宗教

6. 寫出你目前生命當中最大的困難, 以及因應的辦法, 無之使專於目前該做的事, 儘可

7. 上完這堂課之後, 你覺得自己比較認同哪一個宗教的觀點: 基督教 能去將一些不好的

8. 畫出你的生命計劃圖(基本種類如下, 箭號表示各種可能性, 可自由增減)



(2) Survey sample

Senior high school first grade art education-homework in advance
 class: 116 No. ** name: Wu-**

1. Take pictures to your living room, and compile neatly below.



2. Please describe your family members' activities at what time in the living room.

Ans:自己：平日放學之後,或週末,在這裡看電視,吃飯,上網

媽媽：邊看電視邊縫東西,折衣服,吃飯,上網

妹妹：看電視,吃飯,上網,睡覺

爸爸：看電視,吃飯,上網,打報告

3. Please interview family members about how they feel satisfied or not to the decoration, appearance and the reasons to living room.

Ans:媽媽：還好,跟一般家庭一樣,沒什麼特別的

自己：滿意,是休憩的好地方

爸爸：滿意,電視螢幕很大(37寸)

妹妹：滿意,沙發可以用來睡覺,邊上網邊看電視

4. Please write down the idea of the designer or the maintainer to the living room.

Ans:客廳是全家在一起活動的地方,可以在那裡一起吃飯一起聊天。

5. Please briefly describe your family members' belief and religious activities, and take a picture to the religious space in your house or the apartment.



Ans:主要是每月初一,十五及各個重大的節日在奶奶家拜神明及祭祖

6. Please write down the affection of the furnish and decoration in the living room to you.

Ans:是除了臥房之外另一個休閒場所，可以舒解一天下來的疲勞。

7. Please draw a sketch to your favorite space in your house. ◦



8. Ask for one of your family members to take a picture of you in the living room, or take a picture with your family members in the living room.



DIFFERENT KINDS OF CHRISTMAS: A COMPARATIVE STUDY ON VISUAL CULTURE OF CHRISTMAS EVENTS AND ITS IMPLICATIONS FOR ART EDUCATION (WITH THE EXAMPLES OF BANNER CHURCH AND PARK LANE CMP)

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Abstract

December is always the most splendid month in the entire year for both churches and department stores. To celebrate the birth of Jesus Christ, these two different social groups take the spotlight to lighten up the atmosphere of the city. From a visual cultural perspective, the researcher of this study has observed the cityscape of Christmas-related events in Taichung, Taiwan—both commercial and religious—and undergone a cultural comparative analysis. The goal was to situate the study of visual culture and art in the context of a real social event, and discuss their art education implications. The major theme of discussion will center on how the corporate version of visual cultural initiators embrace, decorate, and market their ideas, as well as how the church community markets its festivities and religious values. Their mutual approach is via visual as well as artistic representations, and both are value-oriented in their underlying strategies. This kind of purposeful creation of visual images and cultural codes for the sake of delivering certain cultural messages is the focus of this study of visual culture.

During the big Christmas season, the visual cultural creation by the churches and department stores are similar in their visual cultural spirits; however, their values to be marketed via visual images are different. To the churches, love, forgiveness, and caring are the main elements to be marketed via the visual images. For the department stores, fashion creation, brand name marketing and corporate image-building were the main goals. The researcher has analyzed their visual forms, styles, and representations to explore some underlying significant visual cultural implications. A lesson based on such observations was then given to 6th grade students as an action research project. The ultimate goal of this study is to establish some pedagogical guidelines for art education on teaching the intertextual relationships among pop culture, commercial art, religious art, and social values to elementary students.

Keywords: visual culture, image interpretation, story marketing, art education and

social culture

1. Introduction

During the holiday Christmas season, churches and department stores are the two key players in decorating the city—the former tries to deliver events for evangelization, and the latter attempts to market their products for the goal of increasing of end-of-the year shopping revenues. Their approach is from marketing their events and activities through visual posters, advertisements, and storytelling. In this study, the researcher observed the two players in the city of Taichung, Taiwan, specifically Christmas Village by Park Lane CMP and Banner Church of Taichung. One tried to present a village fantasy to attract people and crowds, and the other tried to present theatrical fantasy to attract the community audience. How did they attract attention from potential audiences? How did they establish visual communications with their potential viewers? How did they tell and market their stories so that the consumers of their products and religious values will buy into them? The most heavily-commercialized and religious ceremony of the year—the researcher believes—will present interesting and educationally significant lessons for those of us who are teaching visual art in school.

2. Literature Review

2-1. Marketing and branding through storytelling with Kidult

The word “kidult” refers to adults who are still child-like in personality; they love artworks and commercial products that demonstrate such qualities. Consequently, this populist taste has a large impact on how artists and designers create their works. In the consumer market, this style has a huge amount of fans whose preferences have led to the emergence of such distinct forms of visual art and literary. Wang (2008) has concluded that in the kidult style, there are five distinct qualities: cuteness, humor, rebellion, violence, and depression. From observations of the two Christmas events examples, the visual styles used were often positive in their stylistic elements to signify such kidult qualities as bravery, love, caring, and humor. The visual style uses bright and simple colors—red, white, and green—to portray the child-like mood in the happy Christmas season. When reading the images in both cases, one could feel a sense of festivity and cheerful atmosphere.

2-2. Brand-building via storytelling

Storytelling as a marketing strategy has become a popular model in the field of business management and marketing study. In fact, it has become the leading theory

of application to be elaborated in the literature of business marketing. The process of delivering the story is a process of gaining consumer attention, and establishing potential communications with them. It tells them what the story is, where the story comes from, and where the story is going to develop further. The “where to go” indicates the dream and vision of the people involved in the story, and it has proven to be the most eye-catching in earning consumers’ attentions. Loebbert (2003) proposed that a successful future story—or the vision being projected—will bring memory and desire together and create an appealing quality.

The Park Lane CMP Village and the Banner Church both utilized storytelling as their approach to communicate with their target audience. The story presented in the drama event by the Banner Church was their tool to deliver religious values such as relationship-building, returning to love and caring, and always believing in a better future ahead of us. On the other hand, The CMP Village integrated the shops around Park Lane and utilized village stories to attract consumers to find the hidden treasury, and marketed the products at the same time. The drama theme was "Let's forgive each other" and the goal was to remind people of the harmonious relationship among friends and families, that accepting oneself is as important as accepting others. The drama invited families and friends to view the show together. Whereas the theme of the CMP Village, "Wild Wish—The Most Fantastic Christmas journey," used the treasure-hunting story and kidult-style oriented works and decorations to celebrate both wild dreams and the idea of dreams coming true. Both of these two storytelling approaches were very similar and conceptually accessible to their audience.

2-3. Interpretation theory

Images are everywhere in our generation; however, they are not necessarily recaptures of the reality. Instead, they can be the opposite of the realism. This makes the reading, or interpreting of images an educational issue. Especially in art education, image interpretation is no longer purely an aesthetic practice, but a cultural one. To interpret the meaning of images properly, the viewer needs to be aware of the phenomenon on the sites where the images are presented or situated. The phenomenon is composed of codes—both visual and cultural—and together they create meaning. The viewers’ psychological responses that are derived from reading the images are often a mixture of their cognitive preferences, personal judgments, and prior experiences. This makes the interpretation actually an act of re-creating new meanings itself.

2-3-1. Iconography and interpretation

Panofsky (1955) explained that there are three kinds of layers of interpretations: icon, iconography and iconology. Icons are what you see in physical perception, including lines, colors, shapes, and groups of icons. The represented meaning is direct and straightforward. Iconography is the context of the icon which includes stories, symbols, and mythologies. They are the common grounds in the cultural meanings of icons. Iconology is a re-creation of the cultural texts in new situations, and is more complex in interpretation.

2-3-2. New approach to interpretation

The contemporary approach to interpretation is to see, understand, and then re-interpret. John Berger (1974) in his book *Ways of Seeing* proposed that seeing comes first, before language. In his study, Piaget (1980) claimed that seeing is thinking, and children communicate with others through visual thinking, and they have different ways of seeing and thinking than adults. This thinking is often based on their personal and cultural experience. Seeing is not neutral. When we see things, we already exclude what we don't want to see, consciously or unconsciously. Accordingly, People from different cultural backgrounds see things differently. From the perspective of iconography, visual culture can be seen as collective icons that are full of signal and signifiers. The signal is easy to recognize, while what it has signified is complicated and is culturally and socially dependent on the viewers. The factors on such dependency include times, locations, places and cultural backgrounds. Interpretations and meanings therefore are dependent on such factors. In our daily life, we see signals all the time, and we interpret what is being signified frequently. It is from such conception that we construct our own social as well as cultural awareness. Therefore, it is crucial for us to become well-educated in interpreting meanings of any image seen. We need to learn to analyze and interpret beyond our perceptions, and enrich our understanding of the world around us. When we choose what to see, we have already shown our learning experience and perceptual habits.

Interpretation not only derives from personal experience and cultural judgment, but also, they reflect how we think in the world over different periods of times. The more we see things and make well-thought out interpretations ourselves, the more educated we are in making proper and deeper meaning out of what we see. That is

why the idea of *Death of the Author* by Roland Barthes became very popular in the field of interpretation theory. For that, the interpretation has no limit to itself, and there is no boundary to making meaningful connections among icons. The system of interpretation is an open-ended one which accepts ever-evolving new ideas. From such mechanism, interpretation can never end—it keeps changing and evolving to respond and reflect the viewers' growing life experience. In the Christmas seasonal events, religious and business objectives were being incorporated into creative endeavor by artists, designers, and event planners. The conventional theme and visual images of Christmas were re-developed to create new meanings, or new Christmas iconography. In contemporary times, visual culture is often formed out of diverse underlying components, including cultural, economic, or sociopolitical prospects. This study will show that case studies need to be used as an important methodology to study visual culture.

2-4. Icons and consumptions

Baudrillard (1996) asserted in his books *The System of Objects* that consumption behavior is largely influenced by symbols. Objects must be turned into symbols before they become consumptive. From such an idea, one can conclude that consumption is not just merely a response to daily needs and objects' functions, but it also reveals how the consumers decode the iconography associated with the objects' physical and visual attributes. They consume the functions of the object as well as its encoding meaning, including its visual and cultural values. As the vast majority of people buy the objects that speak to them visually, ethically, or stylistically—besides physical functionality—producers and designers are injecting more relevant features to attract popularity. These features are value-added and pertain to the current ongoing trends and tastes in the society. One can say that our society is a kind of value-based consumptive generation of all time. We buy what accords to our belief system; which is derived from our personal, ethnic, generational, and collective memories and cognitions. Our aesthetic values, judgments, and preferences are often bound to these beliefs and values. In addition, our general buying behaviors in daily life are indeed reflections of our longing to seek individual and group identity. We want to claim our identity through the objects we arrange around us. We build relationships with our physical world and with others by consciously and actively select what to and not to buy. In terms of visual culture, aesthetic conception becomes how objects and

artworks communicate to their targeted audience. On the consumer side, buying functional objects becomes similar to buying artworks. The act is artistic instead of merely ordinarily mindless. It happens more often than not that people end up buying more than what they really need, just because the objects look beautiful or appealing to their taste. It is a common scenario that is worth for further probing for educational sake.

Bourdieu (1984) discussed the theory of consumption in *Distinction* in that people's decisions about what to buy in their daily life demonstrates their personal and social taste. The objects are symbols which display the typical characteristics of the social and economic class they belong to. He proposed that taste, social class, and cultural capital are intimately interwoven with each other. The cultivation of taste is formed during the formal and informal educational process as well as cultural activities. Educational and cultural processes enrich each other in enhancing one's taste development. From such perspective, during our social participation of the two cases presented in this study, we are consuming their visual and cultural iconography even if we are just window-shopping or we don't convert our religion. We consume their ideas and creative works by attending their activities, and then talking and discussing about them with our families and friends. The more people talk about the events and activities, the more potential audiences will become in future activities. The branding of these two parties became successful in attracting crowd attention and recognition.

The researcher then turned the images being collected during on-site observations and integrated the portfolio into teaching units. The 6th graders in class were amazed by such rich visual activities in the photos and videos. The iconographic methodology of analyzing visual texts/codes formulated by such theorists like John Berger was used to guide student discussions. Students were able to discriminate visual texts that are purposeful in the underlying messages. They can become smarter consumers of what they see in the mass media culture and commercial objects.

3. Implications of visual culture and teaching strategy

3-1. Significance of studying visual culture

According to Mirzoeff (1999), visual culture is embedded in our daily life. In the 1970s, French sociologist Baudrillard had anticipated such a phenomenon and proposed that simulacrum can be used to explain such social conditions. Simulacrum

is not a copy of reality, but a copy of distorted reality in its own right. The distortion is often intentionally and purposefully made, for the sake of making contextual commentaries and representations. It makes works look real but in reality it hardly exists in the physical world. It is imitation of reality in a surrealist sense. The concept of simulacrum is quite suitable in analyzing contemporary visual culture. It helps us to make distinction between reality and re-creation of reality, and also re-contemplate the properties of reality simultaneously. The value of this theory rests on how it evokes our common perceptual sense that we are often fooled by our eyes. Indeed, we see very heavy applications of simulacrum in our contemporary visual culture, such as video games, 3D movies, interactive installations, etc. Mass media also employs various forms of simulacrum into their social/economic/political commentaries about our daily life. We are exposed to all kinds of visual media, including comic art, advertisements, designs, photography, movies, and architecture, and they often have simulacrum of one another, and create new meanings. This social reality makes visual art study an interdisciplinary subject. Nowadays, visual culture's huge impact exists outside the museum and has spread into our daily life. Therefore, visual culture turns art education into cultural education, and through such learning, students will be more aware of the cultural implication behind visual languages and iconography.

3-2. Teaching and learning in visual culture

Understanding the socio-cultural background of any given artwork or object is a key approach in studying visual culture. The visual forms only serve as symbols, and the deeper messages and implications require some knowledge of cultural development in human life. When guiding students to discuss visual culture, we are helping them to see beyond what they see, and look into the underlying cultural messages. From such educational activities, we teach them how to construct meanings through making cognitive and cultural connections with the world around them. The steps to look, see, gaze, observe, and then survey can be used as guidelines in leading such learning activities. These different actions will turn into insightful understanding for students, step by step. The final surveying results—the interrelationships among objects, history, and human development—will enable students to develop more awareness about the significance of visual culture, and become able social observers and visual art interpreters.

An important concept to be taught to the students is that seeing is thinking.

Seeing is a mindful act, and there are always many different ways to look at what's happening around us. When students become inclined toward making well-thought out observations of the visual world, they gain a better understanding of the world based on their cognitive development. They should be encouraged to express what they see and think, and construct their personal experience through such practice. In the meantime, the teacher will also gain a better understanding of the individual students' personal cognition and emotional development, and respect their individual socio-cultural differences. This is why Boughton (2002) asserted that when teaching visual culture, listening to and sharing with each other's commentaries on works is not all. Teachers ought to incorporate important socio-cultural ideas and themes into discussions, and mix them together with variety of images and styles of multicultural creations, to enrich the breadth and vision of classroom discussions. The more multiple perspectives being considered and compared, the more diverse thinking capability students will develop. This will also help them build close relationships between visual understanding, micro personal identity, and macro multicultural identities. By learning others' cultural products, one will be more sensible to others' heritages.

Boughton (2002) proposed that visual culture curriculum should not merely be sharing students' daily life experiences. It should be centered with meaningful and critical themes and ideas include important social issues. Incorporating rich multimedia instructional materials into curriculum to demonstrate visual cultural works can also enhance students' aesthetic experience. Moreover, if multicultural themes and ideas are introduced through a variety of visual cultural works, students' understanding of global development will be broadened, and their individual identity will be developed with wider cultural perspectives. Therefore, an art teachers knowledge of image reading and interpretation is a necessary pre-requisite to teach visual cultural curriculum well. For the above reasons, he offered six teaching strategies for art teachers to consider:

- 1) The discussions of image symbols, visual codes, artwork responses and critique, etc., should be incorporated into course activities. They should respond to diverse disciplinary topics and social issues.
- 2) Teachers should encourage students to initiate and reflect their own responses to visual

cultural reading activities, and build up their learning experience.

3) Teachers should introduce various new visual media and their applications to students.

4) Teachers should introduce various types and categories of visual cultural works to expand students' understanding and awareness.

5) Teachers should encourage students to consider the cultural, global, and environmental issues underlying the visual works, and construct relevant cultural identities and relationships.

6) Teachers' assessment approach should expand students' responses beyond the classroom, and make connections with broader school and community. This is to help them to turn short-term learning activities into profound long-term understanding.

4. Interpreting visual culture in the Christmas seasonal events

Taking from art educational perspectives, the two events are compared by the researcher on their aesthetic and cultural presentations. Important visual properties are categorized and analyzed for their underlying messages. The impacts of such event arrangements will be recorded. This is the prior study that the research took in order to prepare writing the teaching activities later in art classroom. It is a form of action research where the researcher expands the daily teaching contexts outside the school wall, and integrates students' social experience into classroom discussion. They have seen the two events going on in the city, and the class will serve to make them think deeper into such community phenomena.

4-1. Comparing the Banner Church and the CMP Village events

The following chart is a conclusion of the two different ways of representing the story and spirits of Christmas by the two parties, and was used as the starting point to guide student observations and discussions. See Appendix for exemplary photos.

Chart 1: Visual analysis and comparison of Banner Church and CMP Village Christmas Events		
	Banner Church	CMP Village

Theme	Let's forgive each other	Wild Wish, Christmas Fantasy
Feature	Religious values and festival attendance	Business and commercial attendance
Purpose	Marketing religious beliefs	Marketing consumptive values
Origin	Bible (The birth of Christ)	Made-up stories
Content of Story	The play delivered the message of relationship building and restoring loving between family and friends to three different groups of audience: children, teenagers, and adults, in order To advocate the central value of love and care of Christian belief.	Six story characters were created by the joint effort of the CMP corporate creative department and the designing studio Phalanx. The characters portrayed different personalities to make the storyline intriguing and they were integrated with eleven different hunting spots for people to discover. The story encouraged people to have dreams and write them down on the wishing papers.
Marketing ideas	Compassion, love, peace, simplicity, relationship-building and recovering, forgiveness, tolerance	Sensory stimulation, consumption, joys, adorable, creative
Characters	Snowman	Santa Claus (Saint Lucas) Wish-collector (Benedict) , Helper (Stickt) , little boy Jingle (Johnny) , little girl Bell, flying horse (Pegas)
Personality	Innocent, kind, tolerant	Idealistic, positive, enthusiastic
Coloring	Primary colors: Red, white, green Secondary colors: Yellow, brown	Primary colors: Red, white, green Secondary colors: Pink, light blue, orange, brown
Visual Presentations	Two-dimensional designs	Three-dimensional designs
Stylistic Features	Simple costume of the characters	Delicate, complete, rich color, 3D images. Variety of visual aid displays and DM to record the event activities.
Activities	Play, musicals, group praying, winning prizes	Game-like treasure-hunting, coupons, party and Christmas fashion shows ∙ Wild Christmas Tree installations, exhibitions, wishing tickets
Staff	Church volunteers (who major in art)	Staff in corporate creative department
Funding	Limited funding (church funding)	Abundant funding (business investment in marketing)

The chart above showed that, the church used their limited funding and personnel resources to maximize what they can create and celebrate their religious values. Their visual messages conveyed notions of simplicity, warmth, peace, and enjoyment in relationship-building. This storytelling marketing approach was distinctively different from using traditional religious figures and narratives, which made this impact expandable to non-Christian audiences. A large percentage of the audience was in fact non-Christian. They shared the universal values of love and care, regardless of

personal religious beliefs. This was the proven success of Banner Church. It successfully expanded its reach into the surrounding community and the city, and embraced different religious groups. As a Christian, the researcher felt that Banner Church demonstrated a good example of creating global communication through visual culture. As people, our different religions share common human values, and this understanding will diminish the discrepancy that often prohibits global peace.

On the other hand, the CMP Village proved successful in creating crowds and exploring community awareness by facilitating innovative spaces and events through the Christmas festival. The related activities lasted for a month, and during that time, the crowds spent more of their leisure time around the village corners and consequently visited shops more. The competition of Christmas trees designs and decorations around the Village city corners attracted people than usual. Through such festive marketing, business-oriented partnerships have also contributed to community-building. In terms of visual cultural communication, CMP Village blended multiple purposes into their festival planning: corporate brand-building, community-building and business partnership developing. From such purposes, their visual cultural forms were more aggressive and boldly inviting. Their visual images also demonstrated the fashionable taste of contemporary avant-garde. The comparative results were then being showed to students as materials of discussion.

4-2. Telling the different Christmas stories in the classroom

The following presents how the observer researcher brought the visual cultural happenings outside the school into classroom, and how the researcher-teacher guided students to understand, analyze, and interpret such visual cultural phenomena. The educational approach of visual cultural education proposed by Boughton was adopted as the teaching method.

4-2-1. Teaching activities

Following the image-reading approach by Roland Barthes, the lesson began by demonstrating two different visual works to students, a Christmas event invitation brochure by Banner Church and the CMP Christmas Village treasure-hunting map, because these two pieces of visual works revealed the major spirit of visual cultural communication. They both contained rich cultural codes that were telling different kinds of stories about Christmas. It is important to integrate meaningful visual works

in teaching visual culture (Adams, 1996). Then a series of questions were raised by the teacher-researcher, what do you see? Do you find this appealing? What do you think that this work mean (and by the author)? Are they successful? Do you like them? Why? If you were the artist /designer, how will you create artworks and visual images to meet the goals of the events? Students' responses in discussion activities were recorded and analyzed for research significance.

It was found that the 6th grade students preferred the Banner Church's Christmas Party visual works more than those of CMP Village Party. They liked the simplicity of the visual images of the snowman figure and the narratives. The more well-thought designs of colorful and novel images by CMP Village Party visual works did not attract the young children's eyes as they did for college students and adults. However, through comparing and discussing the two distinctively different visual communication styles, students were able to describe the differences among them, and the intentions of the artists/designers. The second classroom activity was to have students create their own Christmas artworks, whether it be a painting of their personal Christmas fantasy, or a sculpture of innovative Christmas tree decorations (figure 1&2). The third classroom activity was to have students take photos of their works and post them on Facebook for online group discussion where they commented on others works by writing about them. The researcher reviewed the raw data of student writings and analyzed them for further art educational significance.

4-2-2. Learning outcomes and research findings

Based on text analysis, the student writings showed that (from their own words):

- 1) They become more aware of the visual features and styles of images they see in daily life;
- 2) They tried to ask about the meaning of the visual works more than before;
- 3) They have learned more words to use when talking about visual works, such as colors, shapes, compositions, backgrounds, medium and textures, and feelings and emotions;
- 4) They liked the art-making activities which respond to the seasonal festivals of the year, and have discussions about their works with families and friends;
- 5) They were surprised to see the variety of the visual styles created by their peer student-artists and the stories and meanings behind the works, even explaining the colors and textures used.

6) They enjoyed receiving comments from other students and those comments were as important to them as those from the teacher.

About educational implications, the researcher found that students were extremely motivated during the lesson activities on visual information discussion, studio art-making, and online commentary-writing on peer works. Because Christmas was a popular topic of discussion with their friends and families, and they were able to express their wishes, emotions, and feelings through their creative art-making. Their art-making was meaningful and purposeful, and they showed the final works to families and friends as a way to express oneself. This kind of visual communication has blended together students' personal and cognitive development, social relationship building, and constructive art-making. This was the main reason why students took seriously the final presentation of their works and were eager to see how others think of their creations. Art was their way to communicate with the society around them. This action research revealed art educational needs to integrate students' ongoing life experience into curriculum and instruction. The conventional art textbooks whose artists were world-famous and historically significant didn't speak to students at all, because students could hardly make sense out of their meanings. Instructional materials in art curriculum need to be cognitively, developmentally, socially, and artistically responsive to students at different ages. This is a particularly crucial point, especially in studying visual culture, as this study has shown. Visual culture does not happen in closed space such as museums, art galleries, or art classrooms only, but in the wide-open city corners, the communities, and the mass media. The cultural texts are significant only when they are presented in conceptually meaningful contexts for students.

5. Conclusions and Recommendations

The contemporary media, literary, and cultural theories are the major theoretical basis that art educators take into account when formulating and contemplating relevant educational approaches. As this study has indicated, students' developmental understanding of one's cultural experience and aesthetic expressiveness to address such understanding should be two other major issues in visual culture curriculum. The goal of visual cultural education should be both achieving cultural re-conceptualization and artistic creativity, with one empowering the other.

Further recommendations for art educators are:1) online discussion facilitation is very effective in expanding students' aesthetic thinking and critiques beyond art room space and class time, and the learning outcomes are often as important as those generated in classroom;2) when guiding visual culture discussions, the teacher needs to explain—based on students' cognitive and cultural development—the messages and meanings beyond visual presentations to enable students to look beyond what they see in their eyes. The aesthetic discussions often lead to students' discussions on their broader social experience and personal experience. From such activities, students can develop their critical thinking ability and social communication skills. In addition, they learn to appreciate and respect different opinions.

6. References

6-1. Chinese References

- Wang, Ying Fan.(1999). *The study and application of visual style of kidult on figurative design*(Unpublished master thesis). Fu-Ren Catholic University, Taipei, Taiwan.
- Wu, Hsin Ru. (2005). Translation of Michael Loebbert(2003), *Story management: Der narrative Ansatzfür Management und Beratung*. Taipei: Business Weekly Publications.
- Lee, Yuan Shun. (1997). Translation of Erwin Panofsky (1955), *Meaning in the Visual Art*, by University Of Chicago Press. Taipei:Yuan-Liou Publishing.
- Chen, Yun Yun. (2004). Translation of Nicholas Mirzoeff(1999), *An introduction to visual culture*, by Routledge. Taipei: Weber Publication International.
- Liu, Wei Gong. (2004). Translation of R. Florida (2002), *The Rise of the Creative Class*, by Basic Books. Taipei: Yuan-Liou Publishing.
- Fu, Chen Kun. (2006). Translation of R. Florida (2004), *Cities and the Creative Class*, by Routledge.Taipei: Bao Ding Publications.
- Fong, Chien Sang. (1994). Translation of Robert G. Picard(1989),*Media Economics: Concepts and Issues*, by Sage Publications. Taipei:Yuan-Liou Publishing.
- Wu, Song Lin. (2006).Competitive strategies for cities underglocalization, *Bimonth Journal of Research, Development and Evaluation Commission, Executive Yuan*, 30(5), 3-12.
- Chen, Chung Hua. (2000). *How do children and teenagers tell stories in art*. Taipei: .San Min Book.

- Bi, Hun Da. (2003). *The power of space*. Taipei: PsyGarden Publishing.
- Kuo, Chen Hsiang. (2003). Visual culture and art education—The US and Taiwan experiences. Conference proceedings of The 4th conference of exchange of Mainland-Taiwan art education. Hong Kong: The Chinese University of Hong Kong.
- Chao, Hua Lin. (2004). *Visual culture and art education*. Taipei: National Taiwan Normal University Press.
- Cheng, Ming Hsien. (2003). Children's construction of visual image interpretation. *Visual Arts*, 5, 1-22. Taipei: City Teachers College of Taipei.

6-2. English References

- Ashworth, G. J. and Voogd, H. (1994). *The Image of City: Marketing Approaches in Public Sector Urban Planning*. Belhaven Press.
- Baudelaire, C. (1983). *Les fleursdumal*. R. Howard (Trans.). Boston: David R.
- Baudrillard, J. (1996). *The System of Object*. London & New York: Verso. Godine. (Original work published 1857).
- Boughton, et al. (2002). *Art Education and Visual culture*. Advisory. Reston, VA: NAEA.
- Bourdieu, P. (1984). *Distinction: A Social Critique of the Judgement of Taste*. Cambridge: Harvard University Press.
- Duncum, P. (2001). Visual culture: Developments, definitions, and directions for arteducation. *Studies in Art Education*, 42 (2), 101-111.
- Duncum, P. (2002). Theorizing everyday aesthetic experience with contemporary visualculture. *Visual Arts Research*, 28 (2).
- Mitchell, W.J.T. (1995). *What is visual culture?* In I Levin (Ed.).
- Mirzoeff, N. (1999). *An introduction to visual culture*. London: Routledge.
- Mirzoeff, N. (2001). What is visual culture ? In N. Mirzoeff (Ed.). *The visual culturereader*, 3-13. London : Routledge.
- Parsons, M.J. (1998). Integrated curriculum and our paradigm of cognition in the arts. *Studies in Art Education*, 39 (2), 103-116.
- Wilson, B. (1997). Is art education obsolete ? In *Arts and culture identity: Aninternational symposium in art education*, 19-30. Taiwan: Taipei.

7. Appendix: Visual works by CMP and Banner Church Christmas festivals

7-1. Images of CMP visual works



Figure1: Christmas seasonal advertisement DM “WILD WISH MAP”



Figure2: “GET READY,” Saint Lucas dressed up in cowboy suit.



Figure3: Saint Lucas, uncolored.



Figure4: Click, flash. “GIFT SURPRISE”



Figure5: THE ORIGIN OF WILD WISH



Figure6: Fedex, delivering gift.



Figure7: Draft of Saint Lucas.



Figure8: Christmas tree.



Figure9: Santa Claus running race.

7-2. Images of Banner Church visual



Figure1: Theme poster.



Figure2: Christmas party invitation card.



Figure3: Party admission ticket.



Figure4: Admission gifts and lottery tickets.



Figure5: Christmas tree decoration activity.



Figure6: Christmas tree decoration activity.



Figure7: Christmas play curtain call



Figure8: Christmas play.

7-3 Artworks by students



Figure1: student work *Jesus as Superman*



Figure 2: student work *Christmas Party Gown*



Figure3: Making of Santa Claus figurine.



Figure4: Drawing of *Christmas party*.



Figure5: Drawing of *Jesus as Superman*.

IMPLICIT THEORY OF THE LITERARY CREATIVITY

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Abstract

Introduction. Subject of study is the process that governs the construction of knowledge in relation to literary creativity topic. From a theoretical point of view it focuses on the theme of the perception of artistic and creative processes (Romo,1997;2000), essentially through its constructs of the Social Cognition (Hayes,1989) placed on a theoretical broader social-constructivist background: we assume that a person actively constructs his representations of reality and he does so through the mediation of cultural practices and social interactions. (Wenger, Vallacher,1977)

Object. The aim is to define the representational processes that characterize our beliefs regarding literary creativity through the deepening of the dynamics of causal attribution and categorization that underpin the construction of reality of people. It has been analyzed, the different scientific statute of social and individual representations, obtaining with the model of Implicit Theories, as well as played by Rodrigo Rodriguez and Marrero (1993), an integration of the role taking by cultural models in individual cognitive processes.

Methodology. The possible methodological options on the specific theme of literary creativity highlight some important critical areas that prefigure both as purely

quantitative investigation that one exclusively qualitative. (Argenton, Messina,2000)
In the implementation of the Analysis Model of Implicit Theories all theoretical consideration find a concrete expression. Specific aim has been to examine the entire process of knowledge construction and evolution of social representations in their transition from the individual to the social, from history to context, from the express to implied, from the implicit to explicitation. Hereinafter it has been illustrated the process of searching in its own three phases of exploratory analysis, synthesis of knowledge and synthesis of beliefs. The content analysis on this materials and the translation of theories emerged in the items, through working with focus groups, made it possible to define a culturally shared knowledge base, identifying "five theories of literary creativity". Therefore it has been constructed the questionnaire, that allowed to explore the representativeness of these theories at the level of ordinary people's knowledge, leaving only those in the analysis actually recognized by respondents.

Finally, a beliefs' synthesis built on the four theories survived from the previous step. It has been built the second questionnaire that investigated beliefs about the literary.

Therefore, trough a factorial analysis, it has been analyzed the internal structure of implicit theories of common people.

Main results. General conclusion is that the procedural and social constructivist and the nature inherently social of the implicit theories are well established. The analysis let out the deep roots of implicit theories to two fundamental components: the individual experience and cultural models with a strongly prototype character (myths, legends, common beliefs). It has been observed how the components of aesthetic experience primarily operate in an unconscious manner in the subject: the set of findings emerged from the qualitative and quantitative survey seems to demonstrate the lack of awareness in the construction of modes of cognitive assessment used to construct a personal theory of aesthetic perception. Basically, that confirms the implicit dimension of the mechanisms related to activation of the theories put in place during the reading, understanding and appreciation of a literary work.

1. Introduction.

Subject of study is the process that governs the construction of knowledge in relation to literary creativity topic. From a theoretical point of view it focuses on the theme of the perception of artistic and creative processes (Romo,1997;2003), essentially through its constructs of the Social Cognition (Hayes,1989) placed on a theoretical broader social-constructivist background: we assume that a person actively constructs his representations of reality and he does so through the mediation of cultural practices and social interactions. (Wenger, Vallacher,1977) In fact, the implicit representations of common people are based on common knowledge intended not as a earlier, wrong or alternative than scientific or educational knowledge but as a daily epistemology. A knowledge that people use in the moment in which have to handle event or understanding phenomenon that they don't know very well. (Rodrigo, Arnay, 1997)

2. Object.

The aim is to define the representational processes that characterize our beliefs regarding literary creativity through the deepening of the dynamics of causal attribution and categorization that underpin the construction of reality of people. It has been analyzed, the different scientific state of social and individual representations, obtaining with the model of Implicit Theories, as well as played by Rodrigo Rodriguez and Marrero (1993), an integration of the role taking by cultural models in individual cognitive processes.

3. Methodology.

The possible methodological options on the specific theme of literary creativity highlight some important critical areas that prefigure both as purely quantitative investigation that one exclusively qualitative. (Argenton, Messina, 2000)

For the purposes of research, it was clarified that, for a real understanding of the literary phenomenon, one cannot adopt outright the methods of experimental psychology. It turned out, in fact, necessary to reconsider the methodological problem, starting with a substantial enhancement of the relation between text, reader and situation, in perfect line with the positions of Rosenblatt (1978) and with what he said about the contextual value of the transaction between the protagonists of literary experience.

It is for the aforesaid reasons that has privileged a methodological

approach that takes in- to account a number of cases in the literature on the study of beliefs and opinions, attitudes and values related to the experience of literature. In particular, it was essential to the adoption of a model that would allow to investigate the representational structure underlying the implicit theories. This model has been found in the proposed Rodrigo Rodriguez and Marrero already used successfully in extensive research conducted by Romo (1997, 2003) on Implicit Theories of Spanish painters, which starts from identification of two representation levels: the belief one and the knowledge one, depending on whether the demand has a pragmatic or theoretical.

These methodological approach combined qualitative and quantitative research in a joint design, which connects seamlessly with the investigation's aim, the construction of everyday knowledge, around the theme: the data which the empirical study of implicit theory start from, exactly come from the culture that produces them.

The analysis' implemented model, in particular, is structured in three distinct and strictly sequential steps, since we cannot proceed with the next without completing the previous one, because it was the information that gleaned from one that shape the content specific to the next tool. The first one, the exploratory phase, is properly qualitative hence it uses documentary techniques and group discussions (focus groups). The objective of this stage of the process is to identify the repertoire of cultural concepts that appear over time within the domain of interest (in this case literary creativity) since it postulates the isomorphism between individual dominant cultural theories and concepts. Data was analyzed with qualitative Content analysis. The second phase, the synthesis of knowledge, aims to verify whether the theories emerged in the exploratory phase is prototypically organized as mental representations. In these phase data was analyzed with a quantitative techniques to individuate typicality and polarity of each item. The last phase, finally, on the *synthesis of the beliefs*, aims to verify what are the theories of literary creativity that people take as their own and what is their internal structure, using the principal component analysis, to individuate the main factors submitted to the common people's representations.

4. The research

4.1 Historical research

In this case, in particular, a thorough exploration of historiography has been more necessary than ever, in the absence of a structured and pragmatic accommodation of cultural models known in literature. From the point of view of history and literary critic, indeed, the attention focus with respect to fees or, more generally, the conception of creativity in producing prose and poetic theme, is articulated and strongly anchored to the dominant artistic currents at in a given historical period. Consequently, in the history of Italian literature (including Greek and Latin roots) tracking of consistent models, we have identified some complex of theories with strong memetic character, because dragged- with variants functional for the adaptation - in cultural evolution from ancient Greece to the Twentieth Century surviving, whatever their merits, in our culture. Their definition considering the evolution of the construct of creativity over the centuries, without privileging one of the protagonists usually electively investigated in psychological or literary research - the author, the process, the product or the reader - but considering the literary phenomenon in their whole and the circumstances that they were leaving to tell us, from time to time, which of the elements assumed greater importance. The five theories emerged, therefore, arose from this wider goal of identification: *the theory of the author, the theory of constructor-creator, theory of sensitivity, theory of imagination and the theory of creative vitality*.

It is important to note that the theories are not mutually exclusive, it can coexist visions for a longer period, as well as an author may adopt processes related to more theories in his career: the theories are built on the dominant models, sometimes clearly spelled out by the authors themselves (or by critics), other times deductible by artists' conceptions of the art.

4.1.2 Formulation of theories starting from verbal propositions

Each of the theoretical models built in this way, was brought to the attention of a Focus Group. Five groups of 8-10 students, coming from the Humanities Faculty of the Degree Course in Education Science and that had already attended the Literature course, were formed, each one speaking about one single theory. From which discussion emerged the following items used for the construction of the questionnaire of knowledge.

During these meetings some cultural patterns came out, verbalized through impersonal body of knowledge - although anchored in personal experience - that have made possible the production of verbal expressions of the proposed models, present in the representations of each group discussion.

These statements were *the corpus* for the normative questionnaire: a set of organized statements for their typicality with respect the theories, which helped to make explicit the knowledge regarding the topic in question, calling the body to investigate in order to know the structure of the theory.

Following the model, we proceeded to assess typicality and polarity of each items, noting immediately the disappearance of the theory of creator-manufacturer. The idea of writing associated with the rhetoric, the care of the detailed construction of the verse, meticulous attention to the form, does not return into the representation that common man has of literary creativity. The "end" of the *artifex* man in the common imagination, cannot impress the careful observer of the human sciences, since if a progressive disaffection with the interpretation of the poetic art as a pure formal artifice begins to fail by the experts since Romanticism, the massification of culture, that took root with the industrialization, exacerbates this tendency in the literature of social representations, in a kind of "democratization" of culture that in order to replicate itself must almost inevitably become simpler. Reaffirming that the implicit theories have no claim to truth and that are strongly anchored to the long cultural evolution, their adaptation to social changes will depend on what the memetists define a better "fitness" and so a guarantee of survival.

4.2 Normative Questionnaire

We decided to select 25 items for each theory so that we could insert in the normative questionnaire 125 remarks rather than all the 260 items to be evaluated. As seen in the utilized model, we prepared the formulation of a "critical episode" for each scheme so that the comprehension of the formulated theoretical constructions would be mediated by an effectively implemented knowledge. The stimuli, considered as acquired conceptions, using Zeki's words (2009), activate the heredi-

tary conceptions already present in the human mind through images. In this sense the critical episode has the role of eliciting those abstract conceptions that, through image representations, become more systematic for the interviewed people.

Example of CRITICAL EPISODE	
Theory of the author	<i>A student talks to his teacher of creative writing and asks him how his wide knowledge helped him to write his books The teacher answers: "If I had not read so many books , I could never have written anything of my own".</i>

As provided in the adopted model, the five normative tests were constructed so as to differ only from the critical episode, leaving unchanged all the items to be evaluated by a five-interval scale. The tests were applied to 90 students of the course of Education Sciences at the University of Cassino. They were divided into 5 groups of eighteen students for each theory. They were asked to analyse the 125 selected items, starting from the critical episode and following the instructions. The *analysis of reliability* for each test attests the validity of the scales used that show positive indexes of internal consistency, got through the use of Alpha of Cronbach (>300) and of the Split-half, that is, through the valuation obtained from the correlation between the answers obtained by splitting the questionnaire into two parts.

The *analysis of typicality* confirms the internal structure of the theories except for the Theory of the Constructor – Creator to which positive indexes of typicality do not correspond.

The other propositions, even if they have different levels of typicality, are assembled in sets around the respective theories, forming a coherent whole, even if not independent (exactly as pre-viewed by our model) as most items share high levels of representativeness with more theories. Following the model of Rosch's natural categories, we went on with evaluating the average of the answers for each model, going back to the higher or lower representativeness of every item to the proposed ones.

First of all, we calculated the average of the answers for each group of items regarding each theory, then we compared the indexes of each item to the scores pertaining the other theories: being

5 the top score and **1** the least , the scores higher than **3** were considered indexes of positive typicality.

The analysis of these indexes allowed us to only choose the items best describing each theory on the level of knowledge, in order to postulate the questionnaire of beliefs more effectively.

4.3 *Synthesis of beliefs*

The questionnaire has been administered to the students attending the first M.A. degree year and the third year of the specialization degree of the Faculty of Arts and Philosophy at the University of Cassino in Sciences of Education, who have taken part into this research as volunteers. 75 out of over 100 administered questionnaires, are to be considered useful for our investigation, as regards their completeness and according to what suggested by the analysis of the outliers carried out by the help of the static SPSS package SPSS, by which the whole data processing has been carried out.

The people answering the questions have been prevalingly women (82.7%) aged between 21 and 26 years, 55.2% out of them were high school diploma holders and 41% had got a M.A. degree. About 40% of the interviewed people read less than five books a year (study books not included within this count), while 16% of them read about 5 books a year, followed by 12.5% of them who even read up to 10 books a year and about 10% of them do not read any book. In particular, the 64 items of the questionnaire, have been analyzed according to a Main Component Analysis, carried out by the Method of Utmost Verisimilitude with Kaiser normalization, and have been Varimax procedure processed, in order to produce polarized saturations of factor variables.

The Factor Analysis of the questionnaires of the beliefs, let out the deep roots of implicit theories to two fundamental components: the individual experience and cultural models with a strongly prototype character (myths, legends, common beliefs).

The three components emerged from the factor analysis on proposed statements have, in this sense, recognized the independent organization on three main theories: the Sensitivity, the Creative vitality and the Author. The **first factor** is made up with 11 items and explains 18.84% of the variance, thus showing an internal consistency equal to **Alpha**=,851. This first component undoubtedly gathers the enunciations belonging to the theory that we have previously called of *sensitivity*. It's a level connected to the emotions,

especially related to the sensitivity of the writer to identify themes and elements universally shared: it is indicated in the processes of empathy and identification a good interpretation's key of this recognition process. The **second factor** is made up with 8 items and explains 14,75% of the variance, thus showing an internal consistency equal to **Alpha**=,796. Appeared here peculiarly dominant memes (good): in fact, the creative vitality brings creativity in its most classic patterns of genius and madness. We were able to bring these patterns to processes that are characteristic of artistic production, the flow one (shown by Csikszentmihalyi 1996) or the long preparation one (identified by Hayes), but more generally, the fact that a total involvement in their own activities is a precondition to the generation of artistic work, although representing the features of a monomaniacal behavior naive observer's eye. The mystery of creativity remains in the common imagination an understandable event outside of an interpretation related to "extra-ordinary". Finally, the **third factor** is made up with 7 items and explains 12,31% of the variance, thus showing an internal consistency equal to **Alpha**= ,721. It's the level of recognition of the role: the theory of the author allows to limit the creative process of his literary skill domain, giving it a specific social function as a mediator of reality, demiurge of all possible worlds that are both places of escape from ordinary reality and tools to understand it. Have emerged, therefore, as organized into mental constructs of literary experience of ordinary people, three fundamental elements of the process: the emotional dimension, the cultural models and the domain component.

5. Main results and conclusions.

After remembering that the components identified in this research are not mutually independent, but that they can plausibly reciprocally integrate, general conclusion is that the procedural and social constructivist and the nature inherently social of the implicit theories are well established.

The analysis let out the deep roots of implicit theories to two fundamental components: the individual experience and cultural models with a strongly prototype character (myths, legends, common beliefs). It has been observed how the components of aesthetic experience primarily operate in an unconscious manner in the subject: the set of

findings emerged from the qualitative and quantitative survey seems to demonstrate the lack of awareness in the construction of modes of cognitive assessment used to construct a personal theory of aesthetic perception. We know that most of the implicit theories are - by nature - essentially latent and are rediscovered when we find ourselves in a real situation requiring their activation. In this sense for the ordinary man the most important level of literary creativity seems to be the emotional one, being strictly linked to emotional processes, which at more than one level involve the literary phenomenon: the interaction between author and reader and that between text and reader are undoubtedly the privileged aspects, because, by the help of one's own literary experience, it is possible to recognize in the writer's *sensitivity* the privileged key of the creative ability of expression and empathetically guide the "transaction" with the reader. As regards the second component, in the naive individual, the prototype of *creative vitality* is immediately activated - in a certain sense - in it the "*destruens*" part, typical of the psychological disorder, prevails. It is interesting to observe how the belief of the mad genius, strongly rooted in the collective imagination related to creativity, is really fundamental in the implicit theories of naive individuals, who assign an exegetic fully plausible value to this model. Beyond myths and beliefs we practically recognize in this total *devotion* what we have identified as decisive factor in the cognitive process ruling the production of creative acts. A lot of studies - among the quoted ones we remember Hayes (1989) and Weisberg (1986) - show how a long *preparation* and a deep devotion to work are an essential condition for the genesis of creation product, but this allows to reconsider legendary beliefs in the light of cognitive processes which, far from being typical of a mad man, are the essential condition of the idea generation mechanism. For the Author's role, it essentially falls within the field competence: creativity is then defined in the mind of both groups of individuals - exactly according to its etymological connotation - as generating activity, creating something that starting from existing reality (concrete reality) goes far from it, aiming at building alternative worlds, which enrich with their meaning the identity and "true" reality. In the naive representation of literary creativity, then, the writer, man of letters or poet, is an individual totally involved in his mission and in his knowledge world, which he is able to see, while the "ordinary" person cannot see. In this sense the reflection by Miall and Kuiken (1994) on the specificity of the literary style seems to be relevant, since its essence

can be found in the “ability of arousing a new perception of reality”. (Argenton, p.180) The inference and the author’s “role construction” and “higher vision”, emerge then, by his becoming within the literary experience, a mediator between true reality and all possible perspectives, which in daily life the “ordinary” individual would not be able to work out. In this component there is surely the recognition of the “range” competence that leads us to the reflection made by Csik- szentmihalyi on the necessity of modifying the terms of the problem by changing the question *What is creativity* into the question *Where is creativity*. The range within which a creative activity takes place, needs to be recognized by the *field*, which in literature will not be solely for “insid- ers”, thus involving, by nature, any readers.

The factors emerged as main theories about literary creativity guide the readers during the selec- tion of a book or its appreciation. Basically, the investigation confirms *the implicit dimension* of the mechanisms related to activation of the theories put in place during the reading, understanding and appreciation of a literary work.

Bibliografy

- Argenton, A. Messina, L. (2000) *L'enigma del mondo poetico. L'indagine sperimentale in psico- logia della letteratura*, Bollati Boringhieri: Torino
- Csikszentmihalyi, M. (1996) *Creativity. Flow and the psychology of discovery and invention*, Harper Collins: NY
- Grimaldi, D., *Implicit theory of the literary creativity*, Ph.D. unpublished Thesis on Psychology of emotion and artistic creativity, University of assino and Southern Lazio
- Hayes, J. R., (1989) *Cognitive Processes in Creativity*, in Reynolds, G.R., *Handbook of Creativity*, Plenum Press: NY
- Miall, D.S., Kuiken, D., (1994) Beyond text theory: understanding literary response, *Discourse Processes*, vol. 17, 337-52
- Rodrigo, M., Arnay, J. (1997), *La construcción del conocimiento escolar*. Editorial Paidós: Barcelona.
- Rodrigo, M.J., Rodriguez, A., Marrero, J. (1993) *Las teorías implícitas. Una aproximación al conocimiento cotidiano*, Aprendizaje Visor: Madrid.

- Romo, M. (1997) *Psicología de la creatividad*, Barcelona: Paidòs
- Romo, M. (1998) Teorías implícitas y creatividad artística, *Arte, Individuo y Sociedad*. 10. 12-28.
- Romo, M. (2003), Teorías implícitas sobre creatividad artística: estudio de las síntesis de conocimiento, *Estudios de Psicología* Jun 2003, Vol. 24 Issue 2, p. 223-239
- Romo, M., Alfonso, V. (2003) Implicit theory of spanish painter, *Creativity Research Journal* 2003, vol.15, N.4, 409-415
- Rosenblatt LM, (1978) *The reader, the text, the poem. The transactional theory of the literary work*, Southern Illinois University Press: Carbondale
- Wegner, D. M. M Vallacher, R., (1977) *Implicit psychology - An introduction to social cognition* , Nueva York, Oxford University Press.
- Weisberg, R. W. (1986), *The myth of creativity*. Newsday. Ideas, pp. 1, 10, 11. October 12
- Zeki S., (2009) *Splendori e miserie del cervello. L'amore, la creatività e la ricerca della felicità*, Le Scienze

WHEN FUNCTION FOLLOWS FORM

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Abstract

Informally, it has often been claimed that beauty is a driving force not only in the applied arts such as architecture and design, but also in the hard sciences, mathematics, and engineering. Yet there exists very little tangible evidence that aesthetic judgment improves inference in these latter domains. Indeed, apart from anecdotal indications, there is little to suggest that the drive toward the beautiful is anything but an epiphenomenon of the evolutionary process.

This paper will attempt to address this issue by showing that beauty can act as a weak but significant heuristic in game playing. Evidence will be presented showing that this heuristic aids in solving problems in two domains, the Western game of chess and the Eastern game of Go (Wei-chi). In the case of chess, it has been shown that good players agree on a number of aesthetic universals, such as capturing with a weaker piece. Evidence will be presented that these principles aid in the solving of mate problems. Go, although heavily influenced by aesthetic considerations, has been less rigorously studied. Nevertheless, as will be demonstrated, principles such as lightness of structure can also help in the solution of early game (fuseki) and capturing problems.

One difficulty with generalizing these results is the direction of causation. Do certain moves come to be thought beautiful simply because they are functional, or is their aesthetic worth conceptually independent of their utility? Two types of arguments will be presented for the latter separability hypothesis. The first comes from the fact that in Go, there is the clear recognition that moves that are “ugly” may at times also be the best ones, but that this is a clearly the exception rather than the rule. It is understood that moves that violate aesthetic dictates can be useful, although in general they are a last resort, and may have undesirable long-term consequences.

The second argument stems from the nature of the aesthetic principles in these games. They can generally be repositioned as special cases of doing more with less, i.e., as efficiency markers. This is a time-honored aesthetic principle independent of

game-playing. For example, in science, the most beautiful hypothesis is usually the one that explains the most with least number of free parameters or moving parts.

A more general argument is that there is a convergence of function and form embedded within our natures. In the case of art for art's sake, this leads to a preference for certain forms over others. However, there are a large number of domains in which the desire for beauty has practical consequences, and mastery will manifest itself not only as accomplishment in the mechanics of the given domain, but also in the development of a keen aesthetic sense as to what does and does not count as beautiful.

INTRODUCTION

Does a sense of beauty aid in cognitive processing, or is it a mere artifact of the human condition? This is perhaps one of the most fundamental questions in a field of aesthetics, but has yet to be addressed in a rigorous and empirical fashion. Certainly, there are numerous speculative attempts to give a positive response to this question. In particular, physicists have long held that beauty can act as a guide in choosing among competing theories; Feynman's well-known quote "You can recognize truth by its beauty and simplicity" is one expression among many that captures this claim. Noticeably absent from this formulation is the notion of comportment with the evidence, raising aesthetics from a heuristic among many in the search for truth to the primary driving force. Likewise, the field of mathematics has its share of proponents arguing for a prominent role of beauty. Hardy (1994) in particular championed the notion of a beautiful proof, arguing that is possessed among other things economy of scale relative to the complexity of the central claim.

This notion is echoed in more recent attempts by researchers in evolutionary psychology to link an aesthetic sense to increased fitness. That is, this sense is not a spandrel, or emergent but non-utilitarian property in Gould's (1997) sense, but genuinely helpful in the promoting survival and propagation. It potentially contributes in two senses. The first and most obvious use is in mating behavior. The male of the species, such as the peacock, expends extra energy on display, indicating a reserve of fitness, or perhaps more simply, is just trying to attract the attention of the opposite sex. There is also speculation of a more general purpose to aesthetic perception; namely, that it is a kind of register of efficient encoding (Kintsch, 2012). Thus, long before humans were engaged in higher-order behaviors such as mathematics and science, they were presented with numerous problems in the daily course of survival. Those that were able to generate efficient solutions to those problems were more likely to survive, and thus pass their genes onto succeeding generations.

None of these speculations constitute anything close to a proof of a utilitarian role for a sense of beauty, and it is not hard to see why. All involve relatively complex behaviors, and it is difficult to isolate the aesthetic sense from other heuristics

contributing to the problem solution. Furthermore, there remains the difficulty of knowing what constitutes an aesthetic-based preference, and what constitutes an “ordinary” preference. For example, is the preference for efficiency of form an aesthetic preference, a general preference, or both?

We will return to this topic at the end of the paper. For now, we note that we need to simplify the domain if we are to make progress in this area. In particular, this paper will study the role of beauty in improving the solution time for simple problems in the game of Go. Generally considered the most difficult of all board games (unlike chess, a good artificial player has yet to be constructed), Go nevertheless has a number of features that make it amenable to study in this domain. The most important of these is a well-defined sense of beauty, as will be discussed in the next section.

METHODS

A depth-first problem solver with heuristic ordering was studied in the context of two problem sets of 10 capturing problems each. The first set contained 25 kyu (very elementary) problems, and the second set contained 20 kyu (elementary) problems; simple problems were chosen for ease of study and also because they tend to be more reflective of naturally-occurring board situations than harder problems.

Three heuristics were studied, one non-beauty heuristic, and two beauty heuristics. The first (non-beauty), the liberty heuristic, states that moves that reduce the liberties of the group to be captured are rated more highly than those that do not do so. This follows directly from the fact that a group is captured when it has no outside liberties (surrounding intersections with no stones played), and thus a reduction in liberties is a step in that direction. This is illustrated in the left board in Figure 1. Here the aim is for black to capture the three marked white stones. Any of the moves marked with an “x” will reduce the liberties of this group from three to two and thus would be favored by this heuristic.

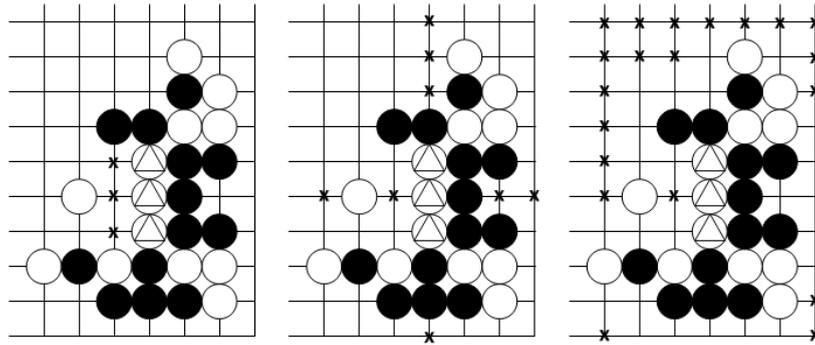


Figure 1. Black to play and capture the marked white stones. The left board shows the moves favored by the liberty heuristic, the middle board moves favored by the symmetry heuristic, and the right board moves favored by the lightness heuristic.

The first beauty heuristic, symmetry, is illustrated in the center board in Figure 1. Here the favored moves are either on the vertical axis of symmetry or the horizontal axis of symmetry of the three stones to be captured. The second beauty heuristic is illustrated in board in the right of the Figure. The lightness heuristic states that all things being equal, one should play away from one's own stones (in this case the black stones). The "x's" mark the intersections representing at least one one-point jump from any other black stone. Lightness of play is an important general notion in Go, and is often introduced to novices early on to counteract their natural tendency to play too close to their existing stones. Along with symmetry, it is one of the first things stressed to students of the game, although it is likely that an expert player's sense of beauty extends well beyond these simple notions.

Note that the only one move remains if one takes the intersection of the possible moves generated by all of the heuristics. This move, at the center and to the left of the three white stones, is in fact the correct solution. This would be an example where all three heuristics act synergistically, as discussed further in the next section.

RESULTS

The results for these experiments are summarized in Figure 2. Shown are the mean solution times over problems in the 25 kyu and 20 kyu difficulty levels relative to the solution time when the given beauty heuristic is absent (the liberty heuristic is always

operational). For example, for the 25 kyu problems, the solution time when the lightness heuristic and the liberty heuristics are both present is approximately 86% of the time when the liberty heuristic alone is present.

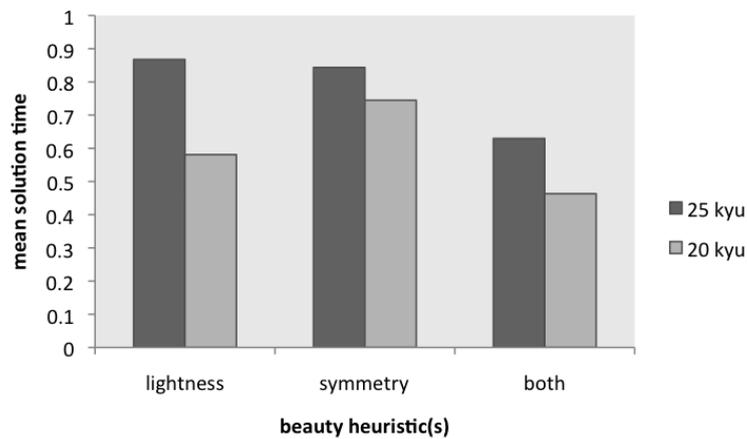


Figure 2. Mean solution time as a function of heuristic inclusion for 25 kyu and 20 kyu problems.

The most significant aspects of these results are as follows. First, and foremost, both heuristics operating separately improve performance on both sets of problems. Second, lightness has a more marked effect on the 20 kyu problems, with the heuristics showing roughly the same improvement for the 25 kyu problems. Finally and most interestingly, when both heuristics are operational in addition to the base liberty heuristic, the performance increase is better than either heuristic alone for both problem sets. This suggests a synergistic contribution by the beauty heuristics, and that they are not merely redundant markers encoding the same information.

DISCUSSION

The above results show that the beauty heuristics do indeed reduce solution time, at least for this simple class of problems. Moreover, this is an objective result, not merely an intuition, however well-grounded, that aesthetic preference can aid problem solving. However, there remains a serious problem alluded to at the start of the paper. How do we know that Go players did not evolve a sense of beauty to conform to move goodness, rather than apply it as an independent and separable heuristic? That is, how can we be sure that the concepts of beauty and goodness did not converge, perhaps without conscious intent, as Go theory evolved over the roughly

2,000 years it has been in existence. The remainder of this paper will address this issue.

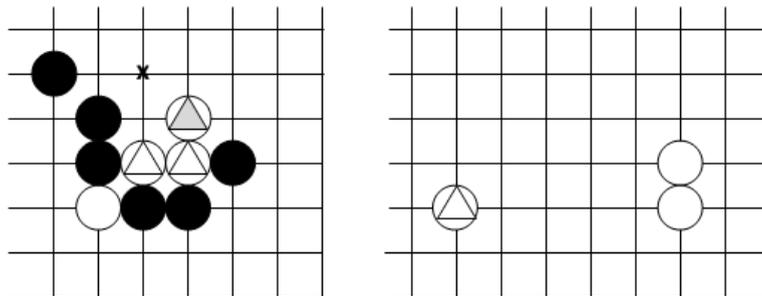


Figure 3. The left board shows an ugly but good move, and right board a move which is not ugly but bad.

The first argument suggesting separability centers on two facts; first, that ugly moves may be good, and second, that pleasing, or at least non-ugly moves are not invariably the best choice. That first claim is illustrated by the classic position on the left of Figure 3 shown to every budding Go student. The three marked stones constitute what is known as an empty triangle, an ugly clumpy shape. Yet the stone just played (the one with the shaded triangle) is in fact the correct move to save the group; the normal, elegant on the intersection marked by an “x” would be incorrect in this case because the original two stones would be captured by a play to the right of this move. Conversely, the avoidance of ugliness is no guarantee of correctness. This is illustrated by the position on the right of Figure 3. The marked stone has just been played. No Go player would claim that this is an ugly move (it does not form a clumpy shape), but at the same time it is too far from other white stones to be effective. Another way of summarizing these claims is to state that beauty in Go is a heuristic like any other, and helps processing, but is not a guarantee of success, and indeed, instances in which it is positively misleading regularly arise.

The second argument for the separability of beauty and goodness stems from the fact that beauty on the Go board is reflective of beauty in general; that is, specific beauty heuristics were not invented solely to aid to help in the training of players, but instead transferred from more general principles to the game. This is most obvious in the case of the symmetry heuristic, a principle found in one form or other in any discussion of beauty in art and other domains. But it is also true of the lightness

heuristic. A heavy shape is one with high unity between its constituent parts, but with little diversity of form, and thus violates a time-honored desideratum of theoretical aesthetics. Alternatively, the beautiful may be conceived as that which weaves seemingly unrelated strands into a conceptual whole. Go can be thought of as a direct and dynamic manifestation of this principle, albeit one disguised as a contest between competing ego-bound interests.

REFERENCES

Stephen Jay Gould (1997). The exaptive excellence of spandrels as a term and prototype. *Proceedings of the National Academy of Sciences USA*, 94, 10750-10755.

Hardy, G.H. (1994). *A Mathematicians Apology*. Cambridge University Press.

Kintsch, W. (2012). Musings about beauty. *Cognitive Science*, 36, 635-654.

THIS IS DISGUSTING! CAN ART EXPERTS REALLY APPRECIATE NON-BEAUTIFUL MODERN ART?

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Abstract

Art is a unique feature of human experience and psychology of the arts aims to understand what the psychological aspects of this uniqueness are. Art appreciation involves the complex interplay among stimuli, perceiver and contexts, which have been discussed as eliciting a special combination of rather cognitive aesthetic judgments and aesthetic emotions. Modern art has often abandoned beauty and contemporary artist sometimes produce art, which elicits negative emotions and seems hard to be appreciated. Is this kind of art made for art experts – do they have special ways to deal with these challenges? Consequently, in order to study whether and how expertise changes the way emotionally negative art is perceived we conducted a study combining aesthetic evaluations and emotional physiological responses. We employed 20th century contemporary artworks with negative and positive emotional valence and analyzed effects of expertise on aesthetic processing and/or emotional evaluations inferred by self-reports and measures of emotions indicated by facial EMG reactions over M. zygomaticus major and M. corrugator supercilii. Emotional valence of the artworks elicited expected emotional reactions in the self-reports - emotionally negative art was evaluated as emotionally negative and positive art as positive- and the facial EMG data – negative art led to stronger M. corrugator activations while positive art led to stronger zygomaticus activations within all expertise groups. Importantly, these effects varied strongly with expertise. Experts liked negative artworks more. These findings were specific for evaluating artworks only and were not found in a control condition employing IAPS pictures of differing valence. Thus, our results support the assumption that art experts base their aesthetic evaluations on factors beyond emotional reactions as revealed by their processing of negative art. Moreover, the ability to deal with emotions elicited by artworks seems an important ingredient of aesthetic appreciation of modern art, and

expertise seem to have specific capabilities for the processes involved.

The 13th dOCUMENTA opened in June 2012. Most media coverage was positively surprised after the curator in the weeks before the opening had released bewildering statements. Carolyn Christov-Bakargiev confused many people with statements like asking for a right for animals to enjoy art or strawberries to vote. The emotions elicited by provoking statements are however not all untypical for modern contemporary art. When the impressionist had their first exhibitions in 1874, the critic Louis Leroy wrote a harsh review in which coined the word impressionism as referring to the unfinished, sketchy style of Monet's paintings. No question, this was not meant positive. Throughout the twentieth century art styles developed that stretched the borders of what had been seen as art. The Dadaist movement questioned that beauty is adequate for the arts, after the terrible experiences of WWI. The war had revealed the nasty side of the human species. Marcel Duchamp questioned the role of virtuosity and skills, when he invented his "ready mades". Since then, arts developed that tested which kinds of emotions could be experienced in an art context. For example, Nitsch' performances evoke mixtures of awe and disgust, Manzoni evokes disgust and surprise in his „Merda d'Artista“ canned feces, and Sherman combined beauty through perception of beautifully colored surfaces, and disgust through the artworks content in her „vomit“ series. Often, Serrano's piss Christ is discussed as an example, in which surprise and also strong feelings of anger are elicited in some viewers, when they realize that a small sculpture of Christ was photographed in a container full of urine. Thus, art experiences today comprise many emotions, positive as well as negative. However, it is yet not understood, how the negative emotions are processed in the context of art.



Figure 1: What emotions do art perceiver experience? Photograph of visitors of an exhibition by HL

Aesthetic appreciation is influenced by emotional and cognitive factors. Thus, psychology of the arts has been described as a prototypical field of studying of how emotion and cognition work together in building human attitudes and evaluations. According to a model of aesthetic experiences by Leder, Belke, Oeberst, and Augustin (2004), aesthetic evaluations depend on a sequence of serial multilevel process. In early stages, perceptual processing takes place: stimulus features like for example symmetry, complexity, contrast and their familiarity or prototypicality are processed, and affect aesthetic appreciation. Often stimuli that are symmetrical and of medium complexity are preferred (Tinio & Leder, 2009). Later stages of higher order cognitive processes comprise processes like representations of content and style, understanding and coping with cognitive challenges and ambiguities. Parallel to these cognitive processing stages the emotional state of the beholder is continually updated. Surface features such as colors, contrast, or the like, can lead to mild emotional reactions reflecting direct pleasure while content can lead to stronger emotional reactions due to pleasing – or see the first paragraph – non- pleasing aspects. Thus, each of the processing stages can affect how the beholder feels. This is due to the serial nature of the processing stage model, which is a dynamic process that is marked by changes over time.

Accordingly, as aesthetic experiences from artworks consist of a complex

interplay of cognitive and emotional processes Leder et al. (2004) propose two different output stages – an *aesthetic emotion* and an *aesthetic judgment*. In the discussion of these two outputs, they assume that non-experts in art show a particularly strong interdependence of both. Experts on the other hand might show some dissociation among emotional and cognitive evaluations. This is because experts are prepared to expect some disturbing emotional experiences occurring when they view modern art; emotions that not necessarily have to be positive. Experts know about the history of such disturbing negative emotions that artists use and exploit to create interesting aesthetic experiences. The dissociation between *aesthetic emotion* and an *aesthetic judgment* was supported by the findings of Leder, Gerger, Dressler, and Schabmann (2011). They found that higher level of expertise came along with lower inter-correlations among emotional and cognitive variables. They had analyzed various evaluations of artworks (rating scales) using structural equation modeling. Hence, there is some evidence, that art experts and laypersons differ in the way they form their aesthetic evaluations.

In accordance with Schwarz and Clore (1983) non-experts in art might rely on the content of an artwork (“pleasing sunflower”, “disgusting vomit”) and use the emotions triggered by the stimulus to inform their aesthetic judgment. Regarding the difference between experts and non-experts, Augustin and Leder (2006) found that non-experts put more emphasize on the personal emotions when they had to sort artworks for similarity. Moreover, Cupchik and Laszlo (1992) assume a direct emotional mode of art perception based on pleasure for non-experts. For experts they proposed a more cognitive mode of processing, in which various ways of dealing with emotional content might be involved.

How could it be that negative emotions might be appreciated? Frijda and Schramm (1995) argued that in aesthetic situations negative emotions might arise but because they lack the behavioral consequences might not be experienced as negative. For example in a horror movie a kind of fear is elicited that is artificial – or aesthetically special - because it does not result in avoidance or flight (Frijda & Schram, 1995). However, in order to cope in such an aesthetics-context-specific way, art specific knowledge might be crucial. Different effects can be assumed: expertise might change the way negative emotions are evaluated through changes in perceptual fluency (Reber, Schwarz, & Winkielman, 2004), reappraising and/or coping (Leder, et al., 2004; Ray, McRae, Ochsner, & Gross, 2010; Scherer & Ellgring, 2007).

Experienced fluency might counter the negative emotion and slowly induce a more positive feeling (Leder, 2003). A cognitive reappraisal a positive interpretation can be gathered from understanding why the artists chose to evoke a negative emotion (Leder et al., 2004).

Leder, Gerger, Welleditsch and Schwarz (submitted) conducted a facial EMG study to capture emotional processing in aesthetic episodes of artworks with positive or negative emotional content. Moreover, they asked participants, experts and non-experts to indicate liking as a general indicator for the aesthetic evaluation and valence judgments as an indicator for the emotional valence. Facial EMG reliably allows to measure changes in the emotional responses to pictures with positive or negative valence (Dimberg, 1990; Lang, Greenwald, Bradley, & Hamm, 1993). Emotional responses are reflected in higher activity over the “smiling” muscle (*M. zygomaticus major*) when stimuli with positive valence are evaluated compared to higher activity over “frowning” muscle (*M. corrugator supercilii*) when stimuli with negative valence are evaluated. Recently it had been shown, that beautiful stimuli produce stronger *M. zygomaticus major* activations (Gerger, Leder, Tinio, & Schacht, 2011) while non-beautiful stimuli produced stronger activations of the *M. corrugator supercilii* (Gerger, et al., 2011; Principe & Langlois, 2011). As a control condition we included a non-art visual stimuli set of varying levels of positive and negative valence (IAPS picture set; Lang et al., 1993). The comparison between artworks and IAPS allows testing the specificity of effects for the domain of art. In the experiment we tested participants of the University of Vienna studying either psychology or art history. Importantly, three levels of expertise were assigned according to responses on a specific questionnaire (asking for explicit information regarding e.g. artistic style, familiarity of painters and their paintings - Belke, Leder, & Augustin, 2006). Stimuli consisted of 40 IAPS pictures (Lang, et al., 1993) and 64 contemporary artworks systematically varying in their emotional valence. Half the artworks were emotionally negative (median rating below 4) and the other half emotionally positive (median rating higher than 4) were selected.

In order to conceal the purpose of measuring emotional responses participants were told that skin conductance responses would be collected. The experiment consisted of three blocks. First, we tested artworks. In each trial a fixation cross (3 seconds) was followed by the artwork (7 seconds). After the artwork disappeared participants gave their ratings (1 do not like, 7 – like it very much). The second block

employed the IAPS pictures. Artworks had also been rated according to emotional valence and familiarity.

Analyses of the valence ratings revealed that the IAPS pictures clearly differed with regard to their evaluated emotional valence – positive pictures were evaluated as positive and negative pictures as negative. Expertise had no influence on the valence ratings for the IAPS pictures. Also, the artworks differed clearly with regard to their perceived emotional valence in all expertise groups. However, the ratings of the experts were less extreme meaning that the difference between pictures of positive and negative valence was reduced in experts.

Analyses of the liking values showed distinct effects of expertise (see Figure 2). Artworks of positive valence were liked more than artworks of negative valence but this was only the case for the low and medium expertise group. The high expertise group rated the positive and negative artworks more similar. Most interesting, the high expertise compared to the low expertise group liked artworks with negative valence more. This suggests that art experts partly discard the emotional information in forming aesthetic evaluations. This was also supported by the correlations between liking and valence ratings. Only within the low expertise group valence did explain the liking ratings to considerable extent. Specifically, significant and strong correlations between the valence and liking ratings were only found among the participants with low expertise. These correlations were weaker (and non-significant) the higher the expertise level was (especially for artworks with negative valence).

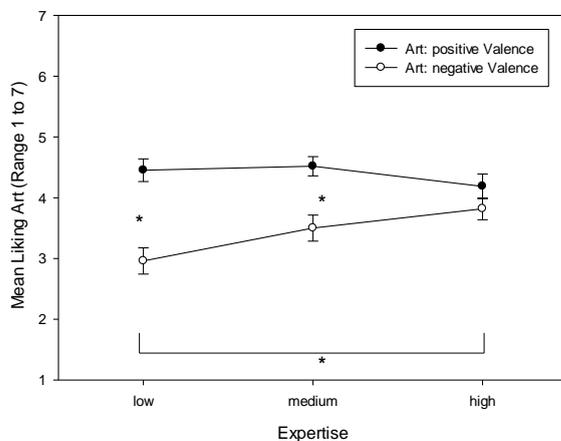


Figure 2: Expertise effects on liking. * indicate significant differences on a .05 level (data from a study by Leder, Gerger, Welleditsch & Schwarz, *subm*)

The facial EMG data were separately analyzed for each stimulus category (IAPS, artworks) and muscle region (*M. corrugator supercilii*, *M. zygomaticus major*). In line with the valence ratings, positive IAPS pictures elicited higher *M. zygomaticus major* whereas negative IAPS picture elicited higher *M. corrugator supercilii* activity. Expertise had no effect on the activity of either muscle while viewing IAPS pictures. Artworks' positive and negative valence also resulted in distinct muscle activity patterns. The response of *M. zygomaticus major* was stronger for positive artworks, particularly within an early time interval. In contrast to the IAPS pictures, for artworks we found a significant interaction between time and expertise: art experts showed stronger *M. zygomaticus major* activation in the 2nd second. In sum, facial EMG activations clearly reflected the valence of artworks. Expertise, on the other hand, only had small effects on facial muscle activity, restricted to the *M. zygomaticus major*. Taken together, these results show that art expertise modulates the behavioral evaluations of art stimuli; Expertise also influences emotional responses, as inferred by facial EMG, but to a small amount only.

Do experts in art experience art different? We discussed this question by presenting results from an experiment (Leder et al., *subm*). In the study we tested the hypotheses that expertise affects aesthetic evaluations of modern artworks differing along emotional valence, in particular for artworks that elicit negative emotions. We found effects of expertise on behavioral ratings and affective changes inferred by facial EMG. Specifically, experts liked negatively valenced artworks more than laypeople. This finding supports the hypothesis that art expertise allows to appreciate challenging artworks eliciting negative emotions. Moreover, art experts showed higher *M. zygomaticus major* activations in early time intervals, suggesting the art experts react with positive emotions when viewing art. Importantly, these effects were only found in the domain of evaluating artworks not when IAPS pictures differing in valence were shown as a control condition suggesting domain specific processing when experts evaluate artworks. These results demonstrate that expertise can change the way emotional information is used in evaluative judgments.

Thus, Leder, Gerger, Welleditsch and Schwarz (subm.) have shown, how the combination of behavioral measures and physiological measures can shed light on the complexity of aesthetic processing. Hence, expertise can change the way we cognitively process our emotions. For experts, in art, even negative emotional states can be experienced positive. Experts in art seem to be experts for doing this, and even more, they can get pleasure from coping with the emotional challenges of contemporary art. However, whether experts all do the same things, and how their capabilities develop, remains a question for future research.

Acknowledgements

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References

- Belke, B., Leder, H., & Augustin, D. (2006). Mastering style. Effects of explicit style-related information, art knowledge and affective state on appreciation of abstract paintings. *Psychology Science*, *48*(2), 115-135.
- Cacioppo, J. T., Petty, R. E., Losch, M. E., & Kim, H. S. (1986). Electromyographic activity over facial muscle regions can differentiate the valence and intensity of affective reactions. *Journal of Personality and Social Psychology*, *50*(2), 260-268. doi: 10.1037//0022-3514.50.2.260
- Cupchik, G. C., & Laszlo, J. (1992). *Emerging visions of the aesthetic process. Psychology, semiology and philosophy*. New York: Cambridge University Press.
- Cupchik, G. C., Vartanian, O., Crawley, A., & Mikulis, D. J. (2009). Viewing artworks: Contributions of cognitive control and perceptual facilitation to aesthetic experience. *Brain and Cognition*, *70*(1), 84-91. doi: 10.1016/j.bandc.2009.01.003
- Delorme, A., & Makeig, S. (2004). EEGLAB: An open source toolbox for analysis of single-trial EEG dynamics. *Journal of Neuroscience Methods*, *134*, 9-21. doi: 10.1016/j.jneumeth.2003.10.009
- Dimberg, U. (1990). Facial electromyography and emotional reactions. *Psychophysiology*, *27*, 481-494. doi: 10.1111/j.1469-8986.1990.tb01962.x

- Fridlund, A. J., & Cacioppo, J. T. (1986). Guidelines for human electromyographic research. *Psychophysiology*, *23*, 567-589. doi: 10.1111/j.1469-8986.1986.tb00676.x
- Frijda, N., & Schram, D. (1995). Emotions and cultural products + Psychological reaction to the arts and literature *Poetics*, *23*, 1-6. doi: 10.1016/0304-422X(95)90009-W
- Gerger, G., Leder, H., Tinio, P. P. L., & Schacht, A. (2011). Faces versus Patterns: Exploring aesthetic reactions using facial EMG. *Psychology of Aesthetics Creativity and the Arts*, *5*(3), 241-250. doi: 10.1037/a0024154
- Istok, E., Brattico, E., Jacobsen, T., Krohn, K., Muller, M., & Tervaniemi, M. (2009). Aesthetic responses to music: A questionnaire study. *Musicae Scientiae*, *13*(2), 183-206. doi: 10.1177/102986490901300201
- Kirk, U., Skov, M., Christensen, M. S., & Nygaard, N. (2009). Brain correlates of aesthetic expertise: A parametric fMRI study. *Brain and Cognition*, *69*(2), 306-315. doi: 10.1016/j.bandc.2008.08.004
- Lang, P. J., Greenwald, M. A., Bradley, M. M., & Hamm, A. O. (1993). Looking at pictures: Affective, facial, visceral and behavioral reactions. *Psychophysiology*, *30*, 261-273. doi: 10.1111/j.1469-8986.1993.tb03352.x
- Leder, H. (2003). Familiar and Fluent! Style-related processing hypotheses in aesthetic appreciation. *Empirical Studies of the Arts*, *21*, 165-175.
- Leder, H., Belke, B., Oeberst, A., & Augustin, D. (2004). A model of aesthetic appreciation and aesthetic judgments. *British Journal of Psychology*, *95*(4), 489-508. doi: 10.1348/0007126042369811
- Leder, H., Gerger, G., Dressler, S., & Schabmann, A. (2011). How art is appreciated. *Psychology of Aesthetics, Creativity, and the Arts*. doi: 10.1037/a0026396
- Leder, H., Gerger, G., Weleditsch, D. & Schwarz, N. (subm). What makes an art expert? Emotion and evaluation in art appreciation.
- Principe, C. P., & Langlois, J. H. (2011). Faces differing in attractiveness elicit corresponding affective responses. *Cognition and Emotion*, *25*, 140-148. doi: 10.1080/02699931003612098
- Ray, R. D., McRae, K., Ochsner, K. N., & Gross, J. J. (2010). Cognitive Reappraisal of Negative Affect: Converging Evidence From EMG and Self-Report. *Emotion*, *10*(4), 587-592. doi: 10.1037/a001901533

- Reber, R., Schwarz, N., & Winkielman, P. (2004). Processing fluency and aesthetic pleasure: Is beauty in the perceiver's processing experience? *Personality and Social Psychology Review*, 8(4), 364-382. doi: 10.1207/s15327957pspr0804_3
- Scherer, K. R. (2005). What are emotions? And how can they be measured? *Social Science Information*, 44(4), 695-729. doi: 10.1177/0539018405058216
- Scherer, K. R., & Ellgring, H. (2007). Are facial expressions of emotion produced by categorical affect programs or dynamically driven by appraisal? *Emotion*, 7(1), 113-130. doi: 10.1037/1528-3542.7.1.113
- Schwarz, N., & Clore, L. C. (1983). Mood, Misattribution, and Judgements of Well-Being: Informative and Directive Functions of Affective States. *Journal of Personality and Social Psychology*, 45(3), 513-523. doi: 10.1037/0022-3514.45.3.513
- Silvia, P. J. (2005). Emotional responses to art: From collation and arousal to cognition and emotion. *Review of General Psychology*, 9, 342-257. doi: 10.1037/1089-2680.9.4.342
- Smith, J. D., & Melara, R. J. (1990). Aesthetic preference and syntactic prototypicality in music. [Article]. *Cognition*, 34(3), 279-298. doi: 10.1016/0010-0277(90)90007-7
- Winkielman, P., & Cacioppo, J. T. (2001). Mind at ease puts a smile on the face: Psychophysiological evidence that processing facilitation elicits positive affect. *Journal of Personality and Social Psychology*, 81(6), 989-1000. doi: 10.1037//0022-3514.81.6.989

GENERATION AND GENDER DIFFERENCES IN BEAUTY AND PREFERENCE ASSESSMENTS TO POPULAR ILLUSTRATION

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Abstract

This study aims to explore the differences between generations and between genders in the assessments of beauty and preference to popular illustration. A total of 254 subjects were recruited, and the ratio of adolescents to adults was about 50:50, as was that of males to females. Thirty illustrations were selected as the experimental stimuli from three popular graphic design magazines. The properties of these illustrations can be classified into two dimensions including six themes and five styles. After viewing each illustration, the subjects rated beauty and preference assessments on the 7-point scales. The results showed the general trend of popular illustration and indicated there were several differences between generations and between genders. However, the difference between generations was not as obvious as expected and even against the initial hypothesis. The key to generation and gender differences seems to depend on not only the society cultivation but also the innate conditions.

Key words: beauty, preference, generation, gender, popular illustration

In the past, researches on aesthetics and cognitive abilities mainly discussed viewers' reactions toward some famous historical works of art or objects of daily life (e.g., Chen, 2000; Cupchik & Gebotys, 1990). There have been few systematic researches discussing viewers' reactions to popular images from everyday life (Chao, 2005). Due to the emphasis on visual culture orientation, related researches began study on the viewing model toward daily images in different populations. Therefore, this research is intended to extend the discussion to the aesthetic differences between generations and between genders in popular illustration. Adolescents nowadays have frequent contacts with visual culture objects. Would they have the ability of higher aesthetic assessments for popular illustrations as compared to the adults? The present study was also proposed to verify this hypothesis by providing an examination.

Most studies in search of aesthetic differences between adults and adolescents are concentrated in the view of cognitive development. Different individuals seemed to have specific stage-like transitions in terms of the aesthetic development. In other words, it appeared that there was a development that went from a chiefly semantic (content-related) to a mainly aesthetic (style-, emotion-, and interpretation-related) orientation (e.g., Piaget, 1952/1963; Housen, 1983; Parsons 1987; Winner, 1982; Hargreaves & Galton, 1992; Van Meel-Jansen, 2006). Feldman (1980) critiqued the concept of developmental stages. His basic argument is that many realms of human activity are developmental in a meaningful sense. Lin and Thomas (2002) believed that although aesthetic comprehension has some correlation with people's ages, it is not a one-way development with stages. Instead, it is a development with branches moving in different directions. We believe that there should be some necessary stages of development before individuals mature. However, progress would vary when individuals mature due to the influences of the cultural factors and education.

New imaging studies have revealed that the adolescent brain is not a finished product but a work in progress (Giedd, Snell, Lange, Rajapakse, Casey, Kozuch, Vaituzis, Vauss, Hamburger, Kaysen, & Rapoport, 1996; Giedd, Blumenthal, Jeffries, Castellanos, Liu, Zijdenbos, Paus, Evans, & Rapoport, 1999; Gogtay, Giedd, Lusk, Hayashi, Greenstein, Vaituzis, Nugent, Herman, Clasen, Toga, Rapoport, & Thompson,

2004). More than twenty years ago, traditional psychologists believed that the blossoming and pruning process in the brain is already completed in early childhood. Now, it seems that there is a second wave of brain development that extends into the teenage years and is strongly sculpted by genes and environments (Walsh, 2005). Therefore, we can infer that changes in the visual environment influence the brain development of individuals, and that daily life experience shapes the brain structure. Neurophysiologists have suggested that the environment in which teens live, events they experience, and activities in which they engage change their neural connections during adolescence (Strauch, 2003). The torrent of images in today's world is overwhelming adolescents' lives, which are characterized by exposure to a variety of media. Thus, the structure of teenagers' brains may have changed in order to enable them to cope with increasingly difficult cognitive and emotional challenges.

In contrast to the aesthetic studies of generation differences, there have been abundant findings in the differences between genders over the past decades. Boys' preferences for drawing monsters, dinosaurs, vehicles, and spaceships, as well as girls prefer to draw kings and queens, landscapes, domestic scenes, people, and animals (Feinburg, 1979). Moreover, girls draw more happy faces on people and animals than do boys (Majewski, 1979). Research has shown that most females are attracted to facial expressions in pictures (Calkins, 1900). They also tend to draw calm rivers and oceans, while boys tend to draw storms at sea. Further, while boys draw angular, geometric shapes, girls are likely to produce curvier, organic forms (Kawecki, 1994). It has been noted that boys prefer masculine elements and girls, feminine ones. Characters drawn by boys are placed further apart, in profile, and in motion. Girls, on the other hand, typically draw static images with facial and bodily details in frontal view (Boyatzis & Eades, 1999).

In general, the action-packed, asymmetrical compositions made by boys dynamically contrast with the figure-centered symmetrical drawings of girls (Tuman, 1999). Boys tend to draw mobile or mechanical objects below six dark or cold colors and often use bird's-eye view composition. In contrast, girls like to draw human motifs (especially girls and women), flowers, and butterflies, using more than ten light and warm colors. Moreover, they tend to arrange motifs in a row on the ground (Iijima, Arisaka, Minamoto, & Yasumasa, 2001). Cupchik and Gebotys (1990) invited male and female subjects to rate paintings individually on a series of scale. The result is

consistent with the description of McGuinness (1976). Females generally tend to search pictorially, producing a broader field with less depth; in contrast, males are inclined to search spatially, producing a narrow field with greater depth. There is evidence to show that infant boys are more interested in a simple dangling mobile, while infant girls prefer looking at a young woman's face (Connellan, Baron-Cohen, Wheelwright, Batki, & Ahluwalia, 2001). Therefore, it can be said that girls draw nouns and boys draw verbs (Tuman, 1999; Sax, 2005).

Numerous experimental aesthetics researches adopted "form (or style)" and "content (or topic, theme)" as the index when classifying a stimulus. In some research, "form" was simply considered to be a synonym for "style", and the influence of "content" was not discussed. For example, Worringer (1908/1953) proposed that art includes geometric and naturalistic styles, and Wölfflin (1915/1950) proposed there should be a distinction between linear and painterly artistic styles. Simon (1992) further described the existence of two styles: linear-massive and archaic-traditional, which meant linear painterly style and geometric structure, as well as lively surrealistic form and serene detailed management.

In other cases, some researches made observations with the combination of style and content. For example, King, Meganathan, Nagahara and Boscolo (1998) believed that the painterly styles could be classified into two main streams: neoclassicism and expressionism, and there were many kinds of style between them. Researchers usually adopted this instinct-oriented mode such as the method of expert classification. For instance, Chen (2000) divided paintings into three kinds of styles, realistic, expressive, and abstract, to understand how children and adolescents would describe artworks and rate their degree of liking.

It seems that the general viewpoint was "form" and "content" were regarded as two separate features. For instance, Tversky (1977) described the salience of feature and characterized it into two elements: intensive and diagnostic salience. Intensity belongs to the perception factors, such as brightness, loudness, and strength. As for diagnosticity, it relies on the classification of objects. Cupchik and Gebotys (1990) divided stylistic dimensions into representation and abstraction, and thematic dimensions into sex, aggression, social alienation, and social communication

according to emotional evocation. Woods (1991) believed that aesthetic parameters of objects included form and content, and were generally accepted as the arousing properties of aesthetic objects. Polzella, Hammar and Hinkle (2005) differentiated the forms of aesthetic stimuli into tradition and modern, and the topics into landscape and portrait. As far as “form” is concerned, the aesthetic experience is aroused by the specific features of aesthetic objects. Beauty exists in form. A “good” form makes a beautiful object. On the other hand, “content” refers to stories or messages released by an artwork, which can arouse aesthetic responses such as interest and appreciation. In fact, “ugliness” still counts as a kind of content. If we use a good (or beautiful) form to express an “ugly” message, the ugliness will still be considered to be a kind of beauty.

The used index to measure aesthetics in daily life is the description of beauty. The other researches mostly focused on topics such as figural goodness, pleasantness, liking, and preference (Bornstein, 1989). This is because emotional responses about aesthetic were usually considered positive, and pleasure could seldom be found when a negative viewpoint was presented to an aesthetic object (Veryzer, 1993). Although Read proposed that art does not necessarily mean beauty (Valentine, 1968), we know that aesthetics does not totally equal to art and there is a close relationship among the preference judgment, liking, and beauty. In the empirical researches of aesthetics, a subject may be asked to rate the stimuli on these assessment scales. Some researches used Berlyne’s (1974) hedonic tone scales, which included pleasingness, pleasantness, goodness, and beauty. Other researches used non-Berlyne’s ones, especially the preference (e.g., Viz, 1966), and liking (e.g. Martindale, Moore, & West, 1988). Actually, it is hard to differentiate preference and liking. These two scales have a strong positive correlation and a very similar mode on the judgment of paintings’ content and style (Russell & George, 1990). From the above-mentioned discussions, this research used beauty and preference as dependent variables when valuating the aesthetics of popular illustrations.

Method

Subjects

A total of 254 subjects, including 126 adults and 128 adolescents, were recruited to the present study in the Taipei area. The adult subjects, with 64 males and 62 females, were 35-50 years old. The average age of them was about 40 ($M = 39.60$, $SD = 3.90$). They were X generation with good mental condition. Most of them were white-collar workers and had academic degrees. On the other hand, the adolescents, with 64 males and 62 females, were first grade students of a public high school in the eastern district of Taipei City. The average age of them was about 16 ($M = 16.38$, $SD = .49$). Late adolescence was chosen as the testing group in order to shorten the age gap between generations to effectively decrease the interference of immaturity. In addition, considering the possible influence caused by different genders, the ratio of male to female was also about 50:50. Most of the subjects were from families of middle socio-economic status, and their school performance was above average.

Materials

The stimuli used for this study collected as follows: First, three popular graphic design magazines, *International Designers' Network (IDN)*, *Design Popular Innovation (dpi)*, and *X fun*, were selected as the sources of the visual stimuli. These Taiwan-published magazines were popular and famous, had high market shares, and displayed the works of well-known global illustration designers. All "character" illustrations which appeared most frequently in these magazines were picked. There were more than 2,000 illustration samples collected. Next, three experts who have engaged in arts education and graphic design for over 10 years classified these illustrations into two dimensions: six themes (violent combat, sneering irony, sporty athletics, magic mystery, sweet romance, and modern fashion) and five styles (realism, deformity, ornament, comic, and 3D figure). Thirty illustrations that fell into these categories were selected as the experimental stimuli. The chosen illustrations were then scanned from the magazines, and were processed by Photoshop to remove the texts on them and modify the size into 768 pixels in length.

Procedures

All the subjects were tested individually in a laboratory room. They were asked to sit about 75cm away from the monitor, and were instructed to start a short trial after a brief instruction. Cake 6.0, which was written by the Lingo language of multi-media design software Director MX, was used to produce the questionnaire. The stimuli were randomly displayed on a 17" LCD monitor, the background screen of which was set on the full model with light gray. The observation time was unlimited, so the subjects could browse through the illustrations at their own pace. After viewing each illustration, the subjects were required to rate it on the two 7-point scales: unpreferable (1)–preferable (7), and ugly (1)–beautiful (7). The entire experiment lasted for about 15-30 minutes for each subject.

Results

Relationship between Assessments

The mean score of beauty ($M = 4.20$, $SD = 1.52$) was slightly higher than the median score ($M = 4.00$). The mean score of preference ($M = 4.21$, $SD = 1.61$) was also a bit higher than the median and almost equal to that of beauty. These two scales were highly correlated ($r = .77$, $p < .01$). The results indicated the positive evaluation of popular illustration, and the highly interchangeability between beauty and preference assessments.

In addition, all beauty and preference assessments of the illustration categories were strongly positively correlated. Most of the correlation coefficients between beauty and preference were above .70, except for those of “sneering irony” ($r = .62$, $p < .01$), “comic” ($r = .67$, $p < .01$), and “3D figure” ($r = .64$, $p < .01$), qualified for a high correlation. The highest correlation coefficient were in the “violent combat” theme and “deformity” style ($r = .76$, $p < .01$). The results revealed that the more beautiful the illustration is, the more it would be liked, especially in the negative matters.

Beauty Assessment

Theme analysis. A significant main effect of beauty assessment was found, $F(1, 253) = 624.85, p < .001$. The rating of themes, from high score to low score, was: sweet romance ($M = 4.99, SD = 1.42$), modern fashion ($M = 4.92, SD = 1.37$), violent combat ($M = 4.08, SD = 1.45$), sporty athletics ($M = 4.03, SD = 1.43$), magic mystery ($M = 3.76, SD = 1.51$), and sneering irony ($M = 3.45, SD = 1.28$). The LSD post hoc test showed that most beauty assessments between thematic categories were significantly different, except for “violent combat” and “sporty athletics”, and “sweet romance” and “modern fashion”.

Style analysis. A significant main effect of beauty assessment was found, $F(1, 253) = 184.97, p < .001$. The rating of styles, from high score to low score, was: realism ($M = 5.01, SD = 1.38$), comic ($M = 4.33, SD = 1.46$), ornament ($M = 4.12, SD = 1.41$), 3D figure ($M = 3.98, SD = 1.45$), deformity ($M = 3.95, SD = 1.54$). The LSD post hoc test showed that all beauty assessments between style categories were significantly different,

Preference Assessment

Theme analysis. A significant main effect of preference assessment was found, $F(1, 253) = 113.71, p < .001$. The rating of themes, from high score to low score, was: modern fashion ($M = 4.67, SD = 1.50$), sweet romance ($M = 4.60, SD = 1.55$), sporty athletics ($M = 4.20, SD = 1.60$), violent combat ($M = 4.10, SD = 1.58$), magic mystery ($M = 3.89, SD = 1.66$), sneering irony ($M = 3.82, SD = 1.58$). The LSD post hoc test showed that most preference assessments between thematic categories were significantly different, except for “violent combat” and “sporty athletics”, and “sweet romance” and “modern fashion”.

Style analysis. A significant main effect of preference assessment was found, $F(1, 253) = 31.05, p < .001$. Most preference assessments between style categories were significantly different, according to the post hoc test. The rating of styles, from high score to low score, was: realism ($M = 4.79, SD = 1.49$), comic ($M = 4.32, SD = 1.59$), 3D figure ($M = 4.14, SD = 1.62$), ornament ($M = 4.08, SD = 1.52$), deformity ($M = 3.74, SD = 1.65$). The LSD post hoc test showed that most preference assessments between style categories were significantly different, except for

“ornament” and “3D figure”.

The results reflect the universality of human mentality: people tend to not only pursue comfort and ease, as in the “sweet romance” and “modern fashion” themes, but also prevent disasters and uncertainty, as in the “magic mystery” and “sneering irony” themes. As regards styles, the results indicate that the “realism” and “comic” styles were the most popular ones, and the artistic expression, as in the “deformity” style, received the lowest assessments.

Generation Difference

Two-way ANOVA was conducted with generation and gender as between-subject variables. Nonsignificant generation \times gender was found in beauty and preference assessments.

Beauty assessment. The mean score of the adults ($M = 4.27$, $SD = 1.46$) was significantly higher than that of the adolescents ($M = 4.14$, $SD = 1.57$), $F(1, 250) = 4.80$, $p < .05$. With regard to the thematic categories, the mean score of the adults in “sneering irony” ($M = 3.54$, $SD = 1.28$) was significantly higher than that of the adolescents ($M = 3.35$, $SD = 1.27$), $F(1, 250) = 4.54$, $p < .05$; The mean score of the adults in “modern fashion” ($M = 5.15$, $SD = 1.18$) was significantly higher than that of the adolescents ($M = 4.70$, $SD = 1.51$), $F(1, 250) = 30.61$, $p < .00$. With regard to the style categories, the mean score of the adolescents in “deformity” ($M = 3.94$, $SD = 1.58$) was significantly higher than that of the adults ($M = 3.70$, $SD = 1.48$), $F(1, 250) = 5.41$, $p < .05$.

Preference assessment. The mean score of the adolescents ($M = 4.22$, $SD = 1.54$) was almost equal to that of the adults ($M = 4.21$, $SD = 1.68$). With regard to the thematic categories, significant generation \times gender interactions was found only in “sweet romance”, $F(1, 250) = 4.52$, $p < .05$). However, nonsignificant simple main effects of generation and gender were obtained in this theme. In addition, the mean score of the adolescents in “magic mystery” ($M = 4.12$, $SD = 1.77$) was significantly higher than that of the adults ($M = 3.65$, $SD = 1.50$), $F(1, 250) = 11.81$, $p < .01$; the mean score of the adults in “modern fashion” ($M = 4.96$, $SD = 1.53$) was significantly higher than that of the adolescents ($M = 4.17$, $SD = 1.62$), $F(1, 250) = 45.71$, $p < .00$. With regard to the style categories, nonsignificant differences were found.

From the perspectives of the whole illustrations, the beauty assessment of adults was significantly higher than that of adolescents, but the preference assessment between generations was not significant. Let us extend the observations into the idea of various categories. The beauty and preference ratings between generations got very similar orders. However, the adults scored higher assessments of beauty and preference in the “modern fashion” theme, and higher beauty assessments in the “sneering irony” theme and “deformity” style. The preference assessment of adolescents in the “magic mystery” theme was significantly higher than that of adults, but the preference assessments of other styles were no significant differences between generations.

Gender Difference

Beauty assessment. The mean score of the females ($M = 4.25$, $SD = 1.46$) was higher than that of the males ($M = 4.13$, $SD = 1.68$), but the difference was not significant. However, with regard to the style categories, the mean score of the males in “violent combat” ($M = 4.18$, $SD = 1.39$) was significantly higher than that of the females ($M = 3.98$, $SD = 1.49$), $F(1, 250) = 4.50$, $p < .05$; the mean score of the females in “magic mystery” ($M = 3.88$, $SD = 1.54$) was significantly higher than that of the males ($M = 3.63$, $SD = 1.47$), $F(1, 250) = 4.38$, $p < .05$; the mean score of the females in “modern fashion” ($M = 5.14$, $SD = 1.29$) was significantly higher than that of the males ($M = 4.71$, $SD = 1.42$), $F(1, 250) = 29.43$, $p < .00$. With regard to the style categories, the mean score of the females in “ornament” ($M = 4.15$, $SD = 1.44$) was significantly higher than that of the males ($M = 4.09$, $SD = 1.38$), $F(1, 250) = 9.08$, $p < .01$; the mean score of the females in “comic” ($M = 4.39$, $SD = 1.51$) was significantly higher than that of the males ($M = 4.27$, $SD = 1.42$), $F(1, 250) = 5.93$, $p < .05$.

Preference assessment. The mean score of the females ($M = 4.25$, $SD = 1.58$) was higher than that of the males ($M = 4.17$, $SD = 1.64$), but the difference was not significant. With regard to the thematic categories, the mean score of the males in “violent combat” ($M = 4.32$, $SD = 1.55$) was significantly higher than that of the females ($M = 3.87$, $SD = 1.58$), $F(1, 250) = 14.48$, $p < .00$; the mean score of the males in “sneering irony” ($M = 4.33$, $SD = 1.55$) was significantly higher than that of the

females ($M = 4.07$, $SD = 1.64$), $F(1, 250) = 4.97$, $p < .05$; the mean score of the females in “modern fashion” ($M = 4.90$, $SD = 1.45$) was significantly higher than that of the males ($M = 4.45$, $SD = 1.53$), $F(1, 250) = 21.97$, $p < .00$. With regard to the style categories, significant main effect of gender was obtained only in the “3D figure” style, $F(1, 250) = 9.17$, $p < .01$. Mean rating of the males ($M = 4.30$, $SD = 1.54$) was significantly higher than that of the females ($M = 3.99$, $SD = 1.68$) in this style.

As far as gender is concerned, several beauty assessments of females were significantly higher than those of males, while several preference assessments of males were significantly higher than those of females. The males’ preference assessments in the “violent combat” and “sporty athletics” themes and the “3D figures” style were higher than the females’ assessments; the females’ beauty assessments in the “modern fashion”, “magic mystery” and “ornament” themes and the “comic” style were higher than the males’ assessments. The beauty and preference assessments of males in the “violent combat” theme were higher than those of females; both assessments of females in the “modern fashion” theme were higher than those of males.

Discussion

The results provided considerable insights into the aesthetic assessments of generations and genders for popular illustrations. They can be divided into three main issues for further discussion. The first deals with the subjects’ general valuations of popular illustrations; the second handles the aesthetic assessments in the various illustration categories; the final part concerns the differences of aesthetic assessment between generations and between genders.

First, the results presented the general thoughts of aesthetics. Most people preferred warm and tender matters in conjunction with styles of realism and comic, as well as disliked uncertainty content and twisted expression. The more beauty the illustration is, the more it would be liked. Furthermore, it also matched the general understanding of generation and gender differences. For example, although the

adults preferred soft themes such as “modern fashion”, they had higher aesthetic assessments in the deeper and humorous themes such as “sneering irony” when compared to the adolescents. On the other hands, the adolescents preferred dark and ugly topics such as “magic mystery”. This reflects the curiosity and disquiet qualities in adolescents. As far as gender is concerned, the males preferred “sporty athletics” and “3D figure” which emphasize the individual characters. On the other hand, the females preferred “magic mystery”, “ornament”, and “comic” which were soft or stressed on atmosphere or decoration. The most obvious difference was that the males valued “violent combat” significantly more highly than the females did, and that the females valued “modern fashion” significantly more highly than the males did in both beauty and preference assessments. This result was in accordance with the general understanding of gender differences.

However, some results were not in keeping with the original hypothesis. Generation differences were not as much obvious as the authors expected, and many assessments of adolescents were not higher than those of adults. Nevertheless, the results still revealed some useful points. As compared to the adults, the adolescents labeled fewer “magic mystery” theme and “deformity” style illustrations as ugly, thus indicating a unique observation pattern of adolescents. They had a more open attitude and even gave their approval to fantasy topics and ugly forms. On the other hand, the adults had higher assessments in the “modern fashion” theme, revealing that they enjoyed comforting ideas more than the adolescents did. In addition, the adults preferred the “sneering irony” theme more than the adolescents did, probably because this kind of illustration has deeper meanings that can be better interpreted by mature individuals who had been training appropriately. That the adult subjects of this research were white-collar metropolitans with higher education could be the main cause for the abovementioned differences between generations.

The present study was intended to enhance previous findings by providing a further examination. However, the results go against the prior hypothesis: adolescents nowadays have frequent contacts with objects of visual culture, so that they would have higher aesthetic assessments for popular illustrations as compared to the adults. There might be some misunderstandings regarding adolescents’ visual interpretation abilities. If adolescents only had a surface understanding of popular

illustrations, their reading skills would not count as having actually increased. The “sneering irony” technique of expression is frequently used in art, commercials, and graphic designs. It requires better mental ability to interpret its meanings; it is also considered to be an important basis for creation. With regards to this ability, adults seem to be superior to the adolescents. This is accordance with the theory of aesthetic development, but against the popular thinking that young people are more creative. In modern society surrounding with abundant visual information, adolescents have more opportunities to experience media, as do adults. Although some adults cannot instinctively operate certain high-tech devices, as far as aesthetic assessments are concerned, these influences were not significant between generations. Hence, the key of generation and gender differences seems to depend on not only the cultivation of the society and culture but also the innate conditions. Nevertheless, these results still need to be further explored. For instance, the researchers could consider extending the diversities of visual stimuli, or focusing on audiences with different socio-economic status and various age groups.

References

- Berlyne, D. E. (1974). *Studies in the New Experimental Aesthetics: Steps toward an Objective Psychology of Aesthetic Appreciation*. Washinton, DC: Hemisphere.
- Bornstein, R. (1989). Exposure and affect: overview and meta-analysis of research, 1968-1987. *Psychological Bulletin*, 106(2), 265-289.
- Boyatzis, C., & Eades, J. (1999). Gender differences in preschoolers’ and kindergartners’ artistic production and preference. *Sex Roles*, 41(7-8), 627-638.
- Calkins, M. (1990). An attempted experiment in psychological aesthetics. *Psychological Review*, 7(6), 580-591.
- Chao, H. (2005). A study of the response toward visual images among children and adolescent in Taiwan. *Research in Arts Education*, 9, 33-70.
- Chen, C. (2000). *How Children and Adolescents Talk about Art: Children and Adolescents’ Conceptions in Designing, Preferring, and Judging Works of Arts*. Taipei: San Min Book.

- Connellan, J., Baron-Cohen, S., Wheelwright, S., Batki, A., & Ahluwalia, J. (2001). Sex differences in human neonatal social perception. *Infant Behavior and Development, 23*(1), 113-118.
- Cupchik, G. C., & Gebotys, R. J. (1990). Interest and pleasure as dimensions of aesthetic response. *Empirical Studies of the Arts, 8*(1), 1-14.
- Feinburg, S. G. (1979). The significance of what boys and girls choose to draw: Explorations of fighting and helping. In J. Loeb (Ed.), *Feminist collage: Educating women in the visual arts* (pp. 185-195). New York: Teachers College Press.
- Feldman, D. H. (1980). *Beyond universals in cognitive development*. Norwood, N.J.: Ablex.
- Giedd, J. N., Blumenthal, J., Jeffries, N. O., Castellanos, F. X., Liu, H., Zijdenbos, A., Paus, T., Evans, A. C., Rapoport, J. L. (1999). Brain development during childhood and adolescent: A longitudinal MRI study. *Natural Neuroscience 2*, 861-863.
- Giedd, N. J., Snell, J. W., Lange, N., Rajapakse, J. C., Casey, B. J., Kozuch, P. L., Vaituzis, A. C., Vauss, Y. C., Hamburger, S. D., Kaysen, D., & Rapoport, J. L. (1996). Quantitative MRI of the temporal lobe, amygdala, and hippocampus in normal human development: Ages 4-18 years. *Journal of Comparative Neurology, 366*, 223-230.
- Gogtay, N.; Giedd, J. N.; Lusk, L.; Hayashi, K. M.; Greenstein, D.; Vaituzis, A. C.; Nugent, T. F. III; Herman, D. H.; Clasen, L. S.; Toga, L. S.; Rapoport, A. W., & Thompson, J. L. (2004). Dynamic mapping of human cortical development during childhood through early adulthood. *Proceeding of the National Academy of Sciences, USA, 101*(21), 8174-8179.
- Hargreaves, D. J., & Galton, M. J. (1992). Aesthetic learning: psychological theory and educational practice. In B. Reimer & R. A. Smith (Eds.), *The Arts, Education and Aesthetic Knowing* (pp. 124-150). Chicago: National Society for the Study of Education.
- Housen, A. (1983). *The Eye of the Bachelor: Measuring Aesthetic Development*. Unpublished Doctorial Dissertation. Harvard Graduate School of Education.
- Iijima, M., Arisaka, O., Minamoto, F., & Yasumasa, A. (2001). Sex differences in children's free drawings. *Hormones and Behavior, 40*(2), 99-104.
- Kawecki, I. (1994). Gender differences in young children's artwork. *British Educational*

Research Journal, 20(4), 485-490.

- King, R., Meganathan, J., Nagahara, J., & Boscolo, M. (1998). Individual differences in complexity preference and artistic style: neoclassical versus expressionistic aesthetics. *Empirical Studies of the Arts*, 16, 15-23.
- Martindale, C., Moore, K., & West, A. (1988). Relationship of preference judgments to typicality, novelty, and mere exposure. *Empirical Studies of the Arts*, 6, 79-96.
- Lin, S. F., & Thomas, G.V. (2002). Development of understanding of popular graphic art: A study of everyday aesthetics in children, adolescents, and young adults. *International Journal of Behavioral Development*, 26(3), 278-287.
- McGuinness, D. (1976). Sex differences in the organization of perception and cognition. In B. Lloyd & J. Archer (Eds.), *Exploring sex differences* (pp. 25-47). London: Academic Press.
- Majewski, M. M. (1979). Female art characteristics: Do they really exist? In J. Loeb (Ed.), *Feminist collage: Educating women in the visual arts* (pp. 197-201). New York: Teachers College Press.
- Parsons, M. (1987). *How We Understand Art*. Cambridge, England: Cambridge University Press.
- Piaget, J. (1963). *The origins of intelligence in children* (M. Cook, Trans.). New York: W. W. Norton. (Original work published 1952)
- Polzella, D. J., Hammar, S. H., & Hinkle, C. W. (2005). The effect of color on viewer's ratings of paintings. *Empirical Studies of the Arts*, 23(2), 153-163.
- Russell, P.A., & George, D. A. (1990). Relationship between aesthetic response scales applied to paintings. *Empirical Studies of the Arts*, 8, 15-30.
- Sax, L. (2005). *Why gender matters: What parents and teachers need to know about the emerging science of sex differences*. New York: Doubleday.
- Simon, R. M. (1992). *The Symbolism of Style: Art of Theory*. London: Routledge.
- Strauch, B. (2003). *The primal teen*. New York: Anchor Books.
- Tuman, D. (1999). Sing a song of sixpence: An examination of sex differences in the subject preference of children's drawings. *Visual Arts Research*, 25, 51-62.
- Tversky, A. (1977). Features of similarity. *Psychological Review*, 84, 327-350.
- Valentine, C. W. (1968). *The Experimental Psychology of Beauty*. New York: Barnes & Noble.

- Van Meel-Jansen, A. (2006). The magic number five in art appreciation. *Empirical Studies of the Arts*, 24(1), 107-118.
- Veryzer, R. W. J. (1993). Aesthetic response and the influence of design principles on product preferences. *Advances in Consumer Research*, 20, 224-228.
- Viz, P. C. (1966). Preference for different amounts of visual complexity. *Behavioral Science*, 11, 105-114.
- Winner, E. (1982). *Invented Worlds: The Psychology of the Arts*. Cambridge: Harvard University Press.
- Wölfflin, H. (1950). *Principle of Art History: The Problem of the Development of Style in Later Art* (M. D. Hottinger, Trans.). New York: Dover. (Original work published 1915).
- Woods, W. A. (1991). Parameters of aesthetic objects: applied aesthetics. *Empirical Studies of the Arts*, 9(2), 105-114.
- Worringer, W. (1953). *Abstraction and Empathy: A Contribution to the Psychology of the Style* (M. Bullock, Trans). New York: International Universities Press. (Original work published 1908).

A NARRATOLOGICAL APPROACH TO AUTOMATIC NARRATIVE DISCOURSE GENERATION

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Abstract

Automatic narrative generation system is a challenging theme in AI. It has a close relationship to topics such as problem solving, story grammar, natural language generation, creativity, and moreover new types of contents. And, in recent years, interdisciplinary approaches with narratology are also appearing. Our study also has adopted this kind of mixed method since early 1990s.

Proposed system in this paper is a part of our integrated narrative generation system architecture, which consists of three stages: story, discourse and expression. Story is the content or a temporal sequence of events to be narrated and discourse means how to organize a story or a narrated structure of events. They are generated in conceptual representation form.

This paper introduces the implementation of an automatic narrative discourse generation applying Genette's narrative discourse theory and Jauss's reception theory. Genette comparatively clearly categorized various discourse types, and using it, we define a computational model of structural discourse processing. Jauss's theory is an origin of reader oriented criticism, and is introduced into the system to control the generation and transformation of discourse structure.

We explain the system's overview. Each category in Genette theory is elaborately formalized as a discourse technique for transforming a story structure into a discourse structure, and Jauss theory is simplified as a mechanism for controlling discourse construction process through the interaction between narrator with generative parameters and narratee with expectation parameters. Here, narrator and narratee do not mean real existences but virtual agents in the system. Current implementation using Common Lisp includes 13 kinds of discourse techniques and common 10 kinds of parameters for goal and expectation.

Following cycle continues through the interaction. Narrator mechanism performs discourse generation and transformation using discourse techniques and rules for controlling the application based on generative parameters. Narratee evaluates the

result by the comparison of expectation parameters and generative ones. In next cycle, referencing the narratee's evaluation, narrator tries to do generation that is nearer the narratee's expectation or has high degree of satisfaction in the narratee. But, there is a point where narratee's satisfaction turns to fall from rise (Np). In the timing, narrator abandons a part of old generative parameters and moves to discourse generation under new strategy, and narratee's expectation is also changed.

For evaluation, first, we analyzed the aspect of logical structure of generated representations and discovered some problems in the combinatorial use of several discourse techniques. Following evaluations relate to the concept of generation diversity that is not arbitrary. First experiment showed changing generative goals result in the diversity of generated texts. Next experiment analyzed the diverse generation through the cycle by the interaction between narrator and narratee. As the result, we confirmed that there are micro level changes in the cycle based on same generative parameters and macro level ones influenced by Np. In last evaluation, we quantitatively confirmed rough correspondence relations between used parameters and generated texts.

The future work is the system's revision according to the evaluation and experiments for narrative generation based contents creation.

Automatic narrative generation system is a challenging theme in AI, which has a close relationship to topics such as problem solving, story schema, natural language generation, creativity and new types of contents. Moreover, in recent years, interdisciplinary approaches with narratology and literary theories are also emerging. For the related researches, refer to Akimoto & Ogata (2012b). Our narrative generation system architecture also adopts this kind of mixed methods. As AI and IT technologies must deal with artistic and aesthetic knowledge beyond logical and pragmatic one, the knowledge of narratology and literary theories contributes the improvement. At the same time, although literary studies have been doing conceptually and individually, AI and information technologies gave the experimental methodology for each the literary theory and the combination among different literary theories for literary studies. This paper is a brief summary of this research. For the detailed and specified description, refer to Akimoto & Ogata (2011, 2012a).

In addition, the proposed system in this paper is a part of our integrated narrative generation system architecture (Ogata, Hori, & Ohsuga, 1994; Ogata, & Kanai, 2010; Akimoto, & Ogata, 2012b), which consists of three stages: story, discourse and expression. Story is the content or a temporal sequence of events to be narrated and discourse means how to organize a story or a narrated structure of events. They are generated with a common conceptual representation form. The proposed system is an approach for the discourse phase.

Two Literary Theories

We introduce the narrative discourse theory by Genette (1972) and the reception theory by Jauss (1970) into the system. Genette comparatively clearly categorized a variety of discourse types. We define them as a set of computational techniques of structural discourse processing. On the other hand, we apply the Jauss's idea to the system to control the generation and transformation of discourse structures. In this manner, we integrate the different theoretical frameworks into an organic system.

The Overview of a Proposed System

The narrative discourse categories in the Genette theory are elaborately formalized as discourse techniques for transforming a story structure into a

variety of discourse structures and the Jauss theory is simplified as a mechanism for controlling discourse construction processing through the interaction between a narrator mechanism with generative parameters and a narratee mechanism with expectation parameters. The narrator and narratee do not mean real existences but modules cooperated in the system. The current implementation using Common Lisp includes 13 kinds of discourse techniques and common 10 kinds of parameters for generation and expectation. Specifically, the former contains the next techniques: External analepsis, Complementary analepsis_ellipsis, Complementary analepsis_paralipsis, Repetitive analepsis, External prolepsis, Complementary prolepsis_ellipsis, Complementary prolepsis_paralipsis, Repetitive prolepsis, Achronie, Pause, Implicit ellipsis, Repeating, and Paralipsis. And the latter has the following ones: supplement, complexity, suspense, length, hiding, descriptiveness, repetition, diffuseness, implication, and temporal-independency.

The following cycle continues through the interaction between the narrator and narratee. The former performs generation and transformation using the discourse techniques and rules for controlling the application based on the generative parameters. The discourse techniques are actually definitions for structural transformation as shown in Fig. 1. On the other hand, the latter evaluates the result by the comparison between the expectation parameters and generative ones. In the next cycle, referencing the narratee's evaluation, the narrator tries to generate a discourse that is nearer the narratee's expectation or has higher degree of satisfaction for the narratee. However, the process reaches to the point, N_p , where the narratee's satisfaction turns to fall from rise. In the timing, the narrator abandons a part of the old generative parameters and moves to the process under the new strategy. And the narratee's expectation is also changed. Fig. 2 shows the control processing by the two mechanisms, a narrator and a narratee.

A Text Generated and Preliminary Evaluation

Table 1 shows a generated example which contains an input story, generative parameters and a generated discourse. Both input/output are also described in natural language. In the discourse, 13 kinds of discourse techniques are applying. In addition, the input story directly uses a result generated by a

story generation system of Ogata & Terano (1991) which uses a story grammar based on Propp theory (Propp, 1969). This shows an actual case this proposed system can be combined with other components in the narrative generation system.

As a preliminary evaluation, we have investigated the generation diversity that is not arbitrary. The first evaluation showed changing generative parameters results in the diversity of generated texts. The second evaluation quantitatively confirmed rough correspondence relationship between parameters used and texts generated. The last experiment analyzed the diverse generation through the cycle of interaction between a narrator and narratee. Fig. 3 shows a part of the result. As the result, we discovered micro level changes through the cycle according to a same set of generative parameters and macro level ones influenced by the above N_p . Although the system basically repeats regular changes in this way, we experimentally confirmed that the intentional adjustment of a specific parameter enlarges only a specific narrative feature.

Conclusion

This paper proposed a narrative discourse system as a part of the integrated narrative generation system by introducing two literary theories and the combination. And we showed the effectiveness of literary knowledge for the narrative generation system and the possibility of the use by fusing literary theories using the method of AI. The future issues are the revision/expansion and the cooperation of the mechanism into the integrated system.

References

- Akimoto, T., & Ogata, T. (2011). A consideration of the elements for narrative generation and a trial of integrated narrative generation system. *Proc. of the 7th International Conference on Natural Language Processing and Knowledge Engineering*, 369-377.
- Akimoto, T., & Ogata, T. (2012a). A narratological approach for narrative discourse: Implementation and evaluation of the system based on Genette and Jauss. *Proc. of the 34th annual meeting of the Cognitive Science Society*. (to appear)
- Akimoto, T., & Ogata, T. (2012b). Macro structure and basic methods in the integrated narrative generation system by introducing narratological knowledge. *Proc. of the 11th IEEE international conference on cognitive informatics & cognitive computing*. (to appear)
- Genette, G. (1972). *Narrative discourse: an essay in method*. Transl. Lewin, J. E. (1980). New York: Cornell University Press.
- Jauss, H. R. (1970). *Toward an aesthetic of reception*. Transl. Bahti, T. (1982). Minneapolis: University of Minnesota Press.
- Ogata, T., Hori, K., & Ohsuga, S. (1994). Towards narrative text generation based on narrative techniques and strategies. *Proc. of International Federation for Information and Documentation*, 296-300.
- Ogata, T., & Kanai, A. (2010). *An introduction of informatics of narratology: On the thought and technology of narrative generation*. Tokyo: Gakubunsha. (in Japanese)
- Ogata, T., & Terano, T. (1991). Explanation-based narrative generation using semiotic theory. *Proc. of Natural Language Processing Pacific Rim Symposium 91*, 321-328. Propp, V. (Пропп, В. Я.) (1969). *Морфология сказки*, Изд.2е, Москва: Наука, 1969. (Transl. Scott, L. (1968). *Morphology of the Folktale*, University of Texas Press, 1968.)

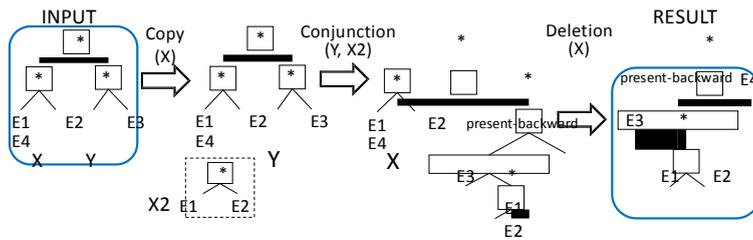


Figure 1: The transformation process with a discourse technique (an example of “complementary analepsis_ellipsis”)

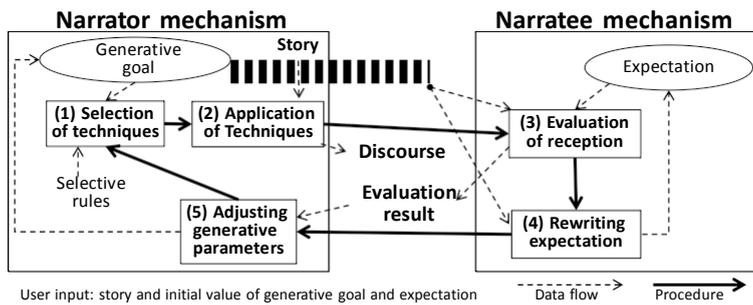


Figure 2: The overview of control mechanism between mechanisms of narrator and narrate

Table 1: An execution example

Input story						
A snake abducted a princess. An older woman sang a grief-stricken song. Ivan resolved at searching the princess. Ivan departed from the town. Ivan battled with the snake. Ivan got arm wounded by the snake. Ivan won against the snake. Ivan abducted the princess. Ivan departed from the snake's country. The snake flew in the air to the snake's country. The snake followed Ivan. Ivan hid himself to a rock. The princess found Ivan's wound. Dwarfs built a palace. Ivan lived in the palace. Ivan married with the princess.						
Generative goal						
supplement:3,	complexity:2,	suspense:3,	length:1,	hiding:1,	descriptive-ness:2,	repetition:2,
diffuseness:2,	implication:3,	temporal-independency:2				
Generated discourse						
An older woman sang a grief-stricken song. The woman was born. (And) the woman grew in a town. (Now,) Ivan battled with a snake in the snake's country. Ivan got arm wounded by the snake. (But) Ivan won against the snake. (And) Ivan departed from the snake's country. The snake followed Ivan. (A few years later,) the older woman will get weak and die. (By the way,) the snake prophesied that dwarfs will build a palace. Ivan hid himself to a rock. A princess found Ivan's wound. The snake's country is slightly dark. Ivan's wound is bleeding. The princess is beautiful. (Soon after,) Ivan lived in a palace. (A short time ago,) dwarfs built this palace. Dwarfs built this palace. Ivan married with the princess. (Go back to the time of beginning,) the snake abducted the princess. The older woman sang a grief-stricken song. Ivan abducted the princess. Ivan departed the snake's country. (At that time,) Ivan prophesied that dwarfs will build a palace, (and) dwarfs will build a palace. (By the way,) somewhere a bear went to farming village. The bear attacked a farmer.						

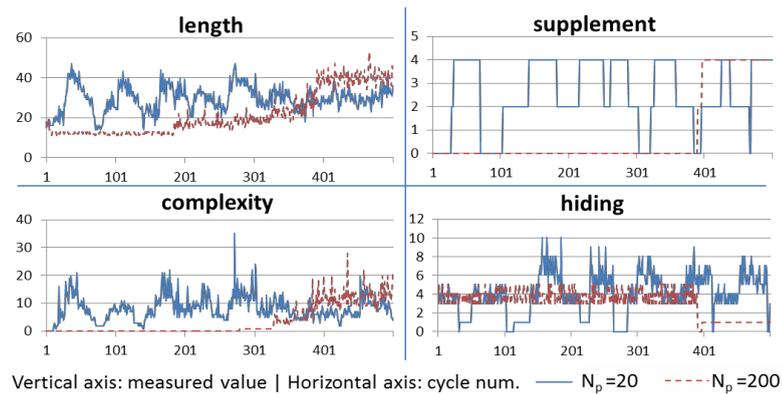


Figure 3: Changing parameters through a generation cycle

A PROGRAM OF ART EDUCATION EXPLORING LIFE ISSUES— BY TWO NUDITY ARTWORKS

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Abstract

The purpose of this essay is to design an art education program based on post-modernist concepts to lead students to philosophically examine some issues of life, and to contemplate the meaning of life by looking at two pieces of artwork—Edward Munch’s “Puberty” and Frida Kahlo’s “The Broken Column”.

The program will look at metaphors and the significance of life in these two artworks. It will have a concrete practical content to help students build a powerful sense of, and healthy attitude towards, life through their appreciation of these two works. Over and above exploring relative philosophical, aesthetic, historical, hermeneutics, and semiotics, domains the program will be designed in such way that the intrinsic quality of art will be emphasized.

The research method is a visual narrative approach, including image interpretation. Its purpose is to encourage students to consider how they experience life, the emotional elements of life, as well as the spiritual progression, physiological development, anxiety and suffering of life, etc. The program will also provide students with diverse information and potential ways of thinking about and discussing the issues of life by using questions in a learning list.

This program will be employed and executed over two hours of class time. It could become the general education teaching material or art curriculum.

1.Preface

In this essay, two nudity artworks, Edward Munch's (1863 -1944) "Puberty" and Frida Kahlo's (1907-1954) "The Broken Column" are chosen for study in an art program to emphasize the significance about life. The purpose of this art program is to build the students' insight about visual imagery of artworks, and influence individual students to rearrange his or her attitude to be more contemplative, perceptive and healthy.

This program will be employed and executed over two hours of class time. It could become the teaching material for the general education curriculum in the university. The basic epistemology integrates the theory of some post-modernist concepts, Gadamer's (Hans-Georg Gadamer, 1900-2002) hermeneutics theory, and is inspired by other relative theories to contribute to the design of the art curriculum program.

There're two questions that must be settled in this essay. The first is; what kind of content should be considered and included when we teach these artworks ? The second is; what method of interpretation will be used to lead students to think about these two artworks ?

For the first question, this essay will probe into what the vital life issues in art are. What could the contents of the art program focus on? It will look at the inspiration of artistic feeling and critical thought about life, metaphors of life and our critical attitude about images. The program will contain the details of these two artists' life experience, to show how artists connect their experiences with images in their art, and also contain multiple messages and diverse questions, which could lead students to contemplate life issues philosophically.

For the second question, we probe how these approaches could lead students to philosophically examine life issues in artworks. On the one hand, we give some framework to help students to seek the multiple meanings within artworks, on the other hand, we believe students' free self-interpretation is also important, and this method of personal interpretation can grow students' ability to feel, and think creatively.

The following part of this essay will start to explore the relative theory more deeply for the above two questions. And it will offer some principles for designing art curriculum to develop a practical art program. The purpose is to help students build a

powerful sense, a positive attitude towards life, and image insight about art through their appreciation of these two works.

2.The background theory

Contents -Life issue in the artworks

The significance of life issue

German hermeneutics philosopher Gadamer reminds us to think about the inspiring ideas of life in works of art. He claims that experiencing art could stimulate our soul to think about our life. Works of art are not just formed with aesthetic quality. Art has meaning and content, and it can't be isolated from its real-life inspiration (Gadamer, 1989). Roberts (2005, p. 2) says "the history of art was replete with individuals, like myself, who experienced their lives intensely, thought deeply about all manner of things."

What might be the appropriate approach of an art program for inspiring our life value and attitude? Gadamer believes that if art had no social significance, religious meanings, moral implication, or any humanities purpose, it would become something that has no meaning, and something that cannot be understood (Chan, 2011). He indicated further that "art as a religion of culture" or "art as a provocation" has its background in Western history. In the nineteenth century, great artists proclaimed that they were only artists for the sake of art, and trying to solve the problems they experienced and observed (Gadamer, 1986, pp. 7-10). As for Michel Foucault (1926-1984), he also commented that a real artist would fight with the represented system that was already established within a society. Also, artists will not just follow and copy the rule of image, but include social symbols in their artwork (Chalumeau, 1996). Maurice Merleau-Ponty's (1908-1961) philosophy has similar comments about art as well. Merleau-Ponty recognized the connection between artists and their work. He believes that the life of an artist "follows" the life of his art. He noted that modern arts in painting does not invalidate the old, but challenges the past and the tradition (Adam, 1996, pp. 141-142).

Consequently, all of these perspectives conclude that features of worthy art can evoke philosophical thinking about life. Even in Barthes' (Roland Barthes, 1915-1980) Post-Structuralism, his thinking is different from his opinion in earlier Structuralism. His values become more directed towards caring about human life when talking about

art. (Adam, 1996)

We don't necessarily just adore the great artists and their work. In fact we admit that some great creative achievements of art really affect our thoughts and life. Gadamer (1986, p. 17) suggested us to see art with the concept that "the arts of language may well play a special part in solving the problems that we have set ourselves". Although every individual has his or her own problems in their life, they could search for some potential inspiration in the infinite possibility of artistic imagery by the life issue of artists to think about their lives more profoundly.

Thus, three dimensions should be considered for the contents of an art program: 1) It should examine artists' life experience, that has influenced artists' imagery of pleasure, anger, lament, sublime, splendor, love, sympathy, beauty, suffering, fear, etc. 2) It should examine artists' critical view against traditional image or thought. 3) From the opposite aspect of spectator, it should lead participants to examine the ideology, which may exist within the artwork itself. Under the considerations we mentioned above, the chosen images must have some moving inspiration, which can contribute to students' thought, insight, and ability of visual interpretation of art.

Metaphor of life

How artists use their images to express meaning in life is another vital content of an art course. The communicative model of image metaphors possesses incalculable power that is different from language.

Adams (2006, p. 20) illustrates that "most attempts to define the origins of art emphasize visual metaphor as a significant source of creative thinking." To Sullivan, Macleod and Holdridge, "artists are theorists; they question, observe, analyze, synthesize, and hypothesize as scientists do and shape thought into conceptual images, which are often metaphorical (Marshall, 2007, p. 32)."

Stewart and Walker suggest that art curricula must foster students' ability of "metaphorical understanding" and "link academic subject matter with life-focused issues" (Stewart, & Walker, 2005, pp. 25, 111).

Adams demonstrates that "In visual metaphor, form rather than words inspire imagery and associations are made between one image and another" (Adams, 2006, p. 20). Consequently, an art program's curriculum must lead students to seek how artists create association or similarity between image and their intended message to

imply meanings. Thus, learning how to catch intended messages and metaphors about life is vital content in the art program as well.

When the art program focuses on the inspiration of artistic feeling and critical view about life, metaphors of life and our critical attitude about images, we believe it will contribute to students' insight about life.

Interpretation

Barrett (2000, p. 7) points out that "works of art present us with views of the world and experience that can provide us with insights, information, and knowledge, but we can only access these through interpretation." And interpretation can come from many approaches or activities that we use to understand the artworks.

In this essay, the art program will interpret two artworks by a visual narrative approach, using a group of ways to help students to consider the life issues in artworks. These methods include images descriptions, story narratives, exploration of metaphors, direct questions, discussing, writing activities, art creation, and researching information, which could lead students to think about the topic. Below are basic descriptions of the approaches suggested and theories used.

Using questions

Gadamer suggested we use questions to deepen our experience of artworks and he called the process of experiencing art "fusion of horizons" (Chan, 2011, p. 219). When we experience art, we should try our best to use our cognitive thought, plunge our sensation, and open our mind to catch the true meaning in art itself for procuring inspiration. However, we are still affected by our "prejudices" and can only achieve the limited realization, and when we change our perception our understanding change again. This idea denotes that there is no standard experience from art. Thus, "fusion of horizon" is a mental act of exploring meaning in an artwork. Gadamer suggested that in the process of experiencing art is asking questions about the art and we answering them by ourselves through art itself (Chan, 2011; Gadamer, 1989).

By this way, the approach of using question to interpret the artwork will make art program be more effective by giving students cues for imaginative thinking, feeling, and creative interpretation using their personal perceptions.

Seeking the meaning in artworks and respect the experience of audiences (students)

Barthes(1981) conceived the notion of "studium" and "punctum" in his book "Camera Lucida: Reflections on Photography" (Lin, 2006, p. 4). It could be used to explain the process of experiencing art and culture activity. Barthes claimed that although "studium" encompasses our knowledge and nature which causes our interest in art creation, it is not the pivotal factor that evokes love of artwork. When we are touched by an artwork, "Punctum" is the real reason that causes us to be emotionally moved by that art. "Punctum" is built by different viewer's basic life experience. This opinion reflects Barthes' concept of "death of the Author" (Lin, 2006, pp. 4-5).

"Death of the author" means individuals will have various reactions when they face an artwork, because of their different life backgrounds. Also, "punctum" corresponds to Gadamer's point about "fusion of horizons", that viewers have inherent "prejudices". They both claim that the audiences' background life experience is the crucial factor when experience art. Although Barthes and Gadamer give dissimilar theories of the progress of viewing art, they still propose the same ultimate goal behind seeing art, i.e. to search for an inspirational meaning in artwork.

According to above opinions, this is the direction for interpretation. On the one hand, art interpretation must include revealing how to discover the marvel and fascinating side in art, to lead students to catch the sense and perspective in art with enthusiasm. On the other hand, art interpretation should consider students' self-identifying as well.

Terry Barrett suggests that "We can think of acts of interpreting as having two poles, one personal and individual, and the other communal and shared" (Barrett, 2000, p. 8). Communal interpretation could guide students to seek the historical past and meaning of artwork itself. Individual interpretation could help students to identify themselves. So the principle of interpretation is "seeking balance between the personal and communal" (Barrett, 2000, p. 11). In the other words, we should be seeking the meaning of artworks together and respecting the experience of individual students.

Story Narrative

Using story narrative is another important concept for designing art curricula. Post-modernist remind us to concern individual phenomena instead of seeing things with grand principle. Pearse (1997) recommend us to look at the features that belong to every single thing and individual, which cannot be simplified by the formula of

“one-size-fits-all”. Under this idea, two notions are created, 1) Every matter, and everyone has its story that can’t be fully analyzed by broad categories. Relating to art and artist, the art curricula should be designed on a specific issue, and discussed deeply. 2) When art curricula leads students to seek the sense in artworks, keep in mind that helping students to raise awareness is the goal, so every single student’s self-experience must be considered.

Many educated scholars regard narrative as a valuable way for “ helping students understand different perspectives and complexities involved in problem-solving and social relationships” (Zander, 2007, p. 192). According to Zander (2007), narrative could include students’ own art, teachers’ experiences with art, the stories of artists, and interpretations of art works. Through storytelling, narratives could lead students to consider meanings, messages, and various values about life. Narrative also can help students to identify themselves. So, this is why this art curriculum has just chosen two pictures and focuses on the topic of life issues. And this is one of the approaches to use stories narrative to provide students some basic messages about artists and the artworks.

Therefore, the approach of interpretation should include historical information, stories, student narrative about artworks and artists, giving questions, and supplying direction to encourage students to think, discuss, write, or paint encouraging students to think about themselves.

3.The Art Program Exploring Life Issues— by Two Nudity Artworks

To sum up the idea we discuss above, this art program here will give image description, communal stories, discussing questions and exploring metaphors of life about these two artworks first. Then synthesize these to go to the developing potential instruction and activities. It’ll include sense of significance about life, critical thinking about naked figure image, and self-identifying by activities.

3-1. Edward Munch's "Puberty"

Original interpretation- image description with no judgment

A naked, long hair, young girl seated on the edge of a bed. Her body doesn't relax. With eyes opening wide, seeing the spectator outside the artwork directly, but her eyesight doesn't focus on us, and her two arms cross before her body and firmly fastened legs seem longer than normal. There's a strange shadow like another giant girl's long hair on the back. The shadow and the body seem connected tight. The colors of sheet and pillow are white, and others places are all bleak and dark. The texture and lines are dynamic.....



Edward Munch,

《Puberty》,1895, oil on canvas, 150 × 110 cm ,
Nasjonalgalleriet (National Gallery), Oslo.
From:

<http://www.ibiblio.org/wm/paint/auth/munch/>

Communal story about artwork

(1)Munch's story

"Any biographical account of Munch cannot fail to mention the incidences of illness and death in his immediate family" (Cordulack, & Munch, 2002, p. 23).

Munch's (Edward Munch, 1863 -1944) Families' sickness and death affect him deeply. Munch was born in Norway. His father was a doctor, but his family was poor, because his father worked for poor people, and usually worked with no payment. More than that, when Munch was five years old his mother died due to transmission of a patient's pulmonary tuberculosis. Nine years later, his sister died from the same illness. And his father was so sad and became violent. These factors in his life brought him a lot of suffering experiences (Ho, 1996 ; Hu, 2005).

Munch said:

My whole life has been spent walking by the side of a bottomless chasm, jumping from stone to stone. Sometimes I try to leave my narrow path and join the swirling mainstream of life, but I always find myself drawn inexorably back towards the chasm's edge, and there I shall walk until the day I finally fall into the abyss (Edvard Munch Art Quotes, 2012, April 4).

(2) Story of Munch's art

Munch's artworks reflect the anxiety and emotion inside his heart. He insisted on exploring the suffering in life for the sake of seeking the reason of life existence. His artworks examine the systematic themes about life, such as life, death, love, sex, illness, pain, suffering, isolation, and finally expiation (Gariff, Denker, & Weller, 2009).

Munch talk about his art by himself:

In my art I have tried to explain to myself life and its meaning. I have also tried to help others to clarify their lives.

Just as Leonardo da Vinci studied human anatomy and dissected corpses, so I try to dissect souls.

The way one sees is also dependent upon one's emotional state of mind. This is why a motif can be looked at in so many ways, and this is what makes art so interesting.

(Edvard Munch Art Quotes, 2012, April 4)

Munch's exuberant brushstrokes and his interest in conveying mood were inspired the Expressionists. From the effects of industry, which led to a new urban iconography, Munch like many other early-twentieth-century artists would find a new way to subvert the classical tradition. His dynamic lines and colors express "a new depth in conveying states of mind. Affected by a series of personal tragedies. Munch's art has an overtly autobiographical flavor" (Adams, 2006, p. 507).

Furthermore, Munch gave a lot attention to the subject of physiology. He developed an awareness of physiology in his artworks. Physiology is the branch of biology that deals with the function of the vital processes of living, including reproduction, growth, circulation, respiration, and metabolism (Cordulack, & Munch, 2002). For Munch, he wanted to recognize the real significance of life through physiology in his art. For example, "Puberty" is such a theme to concern humans' process of life.

Discussing Questions

- (1) What imagery does Munch express in the work? Is there any metaphor or symbol about life? Please describe in detail.
- (2) What kind of feeling or reason may have lead Munch to draw this image? What could be the relevant story?

(3) How is the use of nudity related to life?

(4) How does Munch use expressionism? Could this art work express the agonizing feeling of life? How are the functions of texture, colors, and lines used in this case?

(5) Do you have any agonizing experiences? Imagine a situation and describe how you faced it?

Metaphor of life

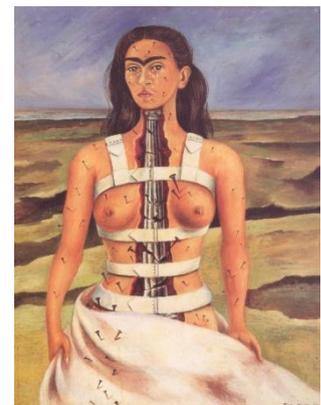
The goal is to lead students to understand how artists use metaphors to express their abstract feelings about life, encourage students to seek the diverse possibility of metaphors in this artwork by themselves first, and give appropriate help such as the following.

- The posture of sitting on the edge of bed with naked body: the position of pubescent physical and mental features, the period of development in life.
- Opening wide eyes, not focusing her eyesight: being perplexed and anxious
- Seeing the spectator outside the artwork directly: self-consciousness, feeling of existence
- Not relax: the position of anxiety, misgiving
- White sheet and pillow, the ambiance of light: pure, innocent, future
- Dark backward and the strange showdown: dark side in heart, desire
- The shadow and the body seem connected tight: an situation in heart of agonizing between desire and morality

3-2. Frida Kahlo's "The Broken Column"

Original interpretation- image description with no judgement

Kahlo stands before a desolate and cracked plain that is arid and lifeless. Kahlo's countenance sees a spectator outside the artwork with no focus. Her body is broken and tied tight with steel strip. An artificial Column made of steel penetrates through her body from her jaw to the waist, and a lot pins are piercing her body.....



Frida Kahlo, 《The Broken Column》,1944, oil on canvas, 40×30.5cm, Museo Dolores Olmedo Patiño, Mexico City.

From:

http://www.all-art.org/art_20th_century/kahlo4.html

Communal story about artwork

(1) Kahlo's story

Kahlo (Frida Kahlo, 1907-1954) was born in Mexico, her father was a photographer of Hungarian Jewish descent, and her mother was Spanish and Native American. She was bright and well educated. In 1925, due to a bus accident that nearly killed her, Kahlo suffered serious injuries, and was never again free of pain. After that Frida began to take up painting and expressed her suffering that comprised 32 operations in 29 years (Esaak, 2012, April, 8 ; Lucie-Smith, 1999). She said, "My painting carries with it the message of pain." (Kahlo Art Quotes, 2012, April 4).

The pain in Kahlo's life is not only the results of the injuries but also the experiences between her and her husband Diego Rivera (1886-1957). She adored Rivera, and said, "His capacity for work breaks clocks and calendars" (Kahlo Art Quotes, 2012, April 4).

She met Rivera when she was in the Preparatoria (National Preparatory School), the most prestigious educational institution in Mexico, when Rivera had just returned home from France and had been commissioned to paint a mural there. Rivera was a communist militant and his artistic reputation was expanding in the United States in 1930 (Lucie-Smith, 1999).

However Rivera didn't really fulfill his duty as a husband, and Kahlo was hurt and said, "I cannot speak of Diego as my husband because that term, when applied to him, is an absurdity. He never has been, nor will he ever be, anybody's husband" (Kahlo Art Quotes, 2012, April 4).

(2) Story of Kahlo's art

A critic of Kahlo's exhibition wrote: "It is impossible to separate the life and work of this extraordinary person. Her paintings are her biography". Some critics categorized Kahlo with surrealists, and she was invited to participate in some activities with them, but she said, "They thought I was a Surrealist, but I wasn't. I never paint dreams or nightmares. I paint my own reality" (Lucie-Smith, 1999). "I paint self-portraits because I am so often alone, because I am the person I know best" (Kahlo Art Quotes, 2012, April 4). For Kahlo, she painted her life as she saw it, none were surreal (Watt, 2012, April 9).

"Kahlo's themes were almost exclusively about women: women's bodies, birth, death and survival." Originally, Kahlo was known as Diego's wife, but now she has her own "iconic status in feminist and Hispanic culture" (Esaak, 2012, April 8).

Discussing Questions

- (1) What imagery does Kahlo express in the work? Is there any metaphor or symbol about life? Please describe in detail.
- (2) What kind of feeling or pain may lead Kahlo to draw this image? What is the relevant story?
- (3) Why does Kahlo express her using nudity? How is it related to life?
- (4) How does Kahlo express her own life? Can art express the anguish of life? Describe the functions of texture, colors, and lines in this case.
- (5) Do you have any experience of anguish in your life? Imagine a situation and think about how you faced it?

Metaphors of life

Let students seek the diverse possibilities of metaphors of life in this artwork by themselves first, and give appropriate help like:

- Broken body: broken heart, pain of body, anguish in life
- Pierced with pins: tears, pain, and suffering in life
- Desolate and cracked plain: alone, bleak feeling
- Steel column and strip that ties her body : limitation, being constrained
- Calm countenance: artist's self-consciousness, feeling of existence

3-3. Developing Potential Instruction and Activities

- (1) Sense of significance of life

Existentialist philosopher Heidegger (Martin Heidegger, 1889-1976) reminded us to think about our existence. He tried to find an authentic mode of our being that facilitates the experience of "concern" when we face some difficulty and pain in life. In other words, the consciousness of life existence comes from our reflection. And concern comes from some kind of difficult experience (Magee, 1998). These essay's two art examples were both created by artists who had experiences of anguish in their life and both wanted to express their life and make meanings about life by their art. This fact supports the theory of Heidegger.

Munch's art "Puberty", though inspired by physiology, is not about science of biology, it's about the consciousness of life. "The Broken column" also has the same focus. We can examine the colors, lines, texture, metaphors and symbols etc. and how they are used in these artworks to see how they reflect the theme of life.

(2) Critical thinking about naked figure image

Maurice Merleau-Ponty recognized the relationship between our body, perception, and art expression. He theorizes, “The experience of our own body, reveals to us an ambiguous mode of existing.” It is “always sexuality and at the same time freedom, rooted in nature at the very moment when it is transformed by cultural influences, never hermetically sealed and never left behind.” Our “body is substantial, how is it possible for us to experience in ourselves a pure soul from which to accede to an absolute Spirit?” (Adam, 1996, pp. 141-142)

When leading students to think about the issue of naked images, and its relation with life, there are some questions that could be considered.

- Do these two artworks properly use naked figures to express their intended meaning, and do they express some critical provocation in the images?
- How do these two artists express the existence of life by using images of the naked figure? Do they really express a more profound sense about life?
- Everybody owns their bodies. Do you recognize the physiological phenomena of your body, accept your body, and have enough confidence to express yourself like a dancer or performance artist?
- Is there a difference between expressing yourself confidently and pleasuring others but losing yourself? What is the concept of self-consciousness of existence?
- Does these two artworks differ from the sexual images in media? If they are distinguishable, how different are they?

(3) Self- identifying by activities

Every student’s individual body goes through different physiological phases during various periods of life development. There are some inevitable phenomena, suffering, and emotions that happen to each of us during our lives. Here are two activities for students.

(3)-1. Write a 1000 words report: please ask a question about this two pictures, and answer it by yourself.

(3)-2. Draw a picture about your painful experience in life, using two metaphors of life at least, and talk about it to share with others.

Conclusion

The purpose of this art curriculum program is to allow students to consider how these two artworks we’ve chosen express experiences about life, how students could identify themselves

by examining these two artworks. It includes some possible approaches to help students think deeply, creatively, and diversely to help each student establish a diverse and profound insight about life issues. According to the post-modernist, we need to not only adore the authority of art; we also need some critical views. However, this art program can always lead students to feel, think, and develop the open mind by examining art. We cannot deny the powerful magic of art, and the life issues embedded in art, and these are an important element to include in our approaches to teaching art.

Reference

- Adams, L. S. (1996). *The methodologies of art: an introduction*. Boulder, CO: Westview Press.
- Adams, L. S. (2006). *The making and meaning of art*. London: Laurence King Publishing Ltd.
- Barrett, T. (2000). About art interpretation for art education. *Studies in Art Education*, 42(1), 5-19.
- Barthes, R. (1981). *Camera lucida: reflections on photography*. NY: Hill and Wang.
- Chalumeau, J.-L. (1996). *Lectures de L'art*. (Wang, Yu-Ling, & Huang, Hai-Ming Trans.) Taipei: Yuan-Liou Publishing Co., Ltd.
- Chan, Wing-Wah (2011). *Introduction to Gadamer's Hermeneutics: "Truth and method"*. Taipei: San Min Book Co., Ltd.
- Cordulack, S. W., & Munch, E. (2002). *Edvard Munch and the physiology of symbolism*. London: Fairleigh Dickinson University Press.
- Edvard Munch Art Quotes (2012, April 4). The painter's keys.
Retrieved from: http://quote.robertgenn.com/auth_search.php?authid=415
- Esaak, S. (2012, April 8). Artists in 60 Seconds: Frida Kahlo. [About com. art history].
Retrieved from: <http://arthistory.about.com/cs/nameskk/p/kahlo.htm>
- Gadamer, H. G. (1986). *The relevance of the beautiful and other essays* (Walker, N. Trans.). New York: Cambridge University Press. (Original work published 1977).
- Gadamer, H. G. (1989). *Truth and method*. (Weinsheimer, J., & Marshall, D. G. Trans.). New York: Seabury Press. (Original work published 1960).
- Gariff, D., Denker, E., & Weller, D. P. (2009). *The world's most influential painters and the artists they inspired* (Jiang, Ling-Qing, & Chen, Mei-Xuan Trans.). Taipei: New

generation.

Ho, Cheng-Kuang (1996). *Munch: The pioneer of Scandinavia Expressionism*. Taipei: Artist.

Hu, Yung-Fen (Ed.). (2005). *Art Gallery* (Vol. 47, The scream of life: Munch). Taipei: Greenland International Book Co., Ltd.

Kahlo Art Quotes (2012, April 4). The painter's keys.

Retrieved from: http://quote.robertgenn.com/auth_search.php?name=Kahlo

Lin, Po-Hsien (2006). Foundation of art appreciation (VIII): Structuralism,

Post-structuralism, and Deconstructionism. *Art Appreciation*, 2(11), 22-27.

Lucie-Smith, E. (1999). *Lives of the Great 20th-Century Artists*. London:Thames & Hudson.

Marshall, J. (2007). Image as insight: Visual image in practice-based research.

Studies in Art Education, 49 (1) , 23-41.

Magee, B. (1998). *The story of philosophy*. New York: DK Publishing, Inc.

Pearse, H. (1997). Doing otherwise: art education praxis in a postpadigmatic world.

In J. W. Hutchens & M. S. Suggs (Eds.), *Art education: content and practice in a postmodern era*(pp.31-39). Reston, VA : The National Art Education Association.

Roberts, T. (2005). Teaching real art making. *Art Education*. 58(2), 40-46.

Stewar, M., & Walker, S. (2005). *Rethinking curriculum in art*. Worcester, MA: Davis Publications.

Watt, G. (2012, April 9). Frida Kahlo. [The British Journal of General Practice].

Retrieved from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1463226/>

Zander, M. J. (2007). Tell me a story: the power of narrative in the practice of teaching art. *Studies in Art Education*, 48(2), 189-203.

AN INVESTIGATION INTO STRATEGIES FOR THE MEANING MAKING WITH ARTWORKS

A Preliminary Result's Presentation¹

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Abstract

What takes place when we undergo what is referred to as aesthetic experience? What is the educational value of such experience? How does aesthetic experience prompt meaning making? Our presentation addresses these questions.

The presentation consists of two parts. Our particular interest rests in the relation between aesthetic experience and its capacity for meaning making. Thus in the first part we address some current literature linked to our focus. This discussion provides a theoretical framework for the second part.

One challenge to aesthetic education is to be able to demonstrate that, within encounters with artworks, some form of learning is taking place. We maintain that the amassing of historical or technical information is not the primary benefit of aesthetic encounters. What then is the particular nature of aesthetic learning? Some research suggests that aesthetic encounters complement and help articulate earlier experiences. This counts as learning because it provides us with greater understanding of that to which we have been previously introduced. In the second part of our presentation we present examples of just such learning. Other research suggests that, because aesthetic encounters require a reciprocal interaction between viewer and the object or event experienced, the interaction is a form of dialogue in which one comes to empathize with the other while at the same time gaining increased self-understanding. Our study also supports this thesis.

In the second part of our presentation we provide examples of how such learning takes place. Our examples derive from an ongoing research project involving 24 Portuguese subjects (artists and non artists) in a meaning making process with artworks from Modern Art Centre of Calouste Gulbenkian Foundation in Lisbon. This paper is the first public presentation of the collected data during the last months (written texts and visual diagrams) ; a preliminary categorical content analysis will be displayed. We will be looking for possible differences in meaning making processes across the two

groups as well as on how the subjects created meaning.

We will introduce one investigative strategy that involves the use of visual maps (which we call “aesthetigrams”) of the individual moments of participants’ encounters with artworks. These provide permanent records of what would otherwise be evanescent and often inchoate experiences. The records provide a basis for comparisons between one experience and others for an individual and between individuals’ experiences.

Keywords: museum mediation, meaning making, aesthetic experience, aesthetic learning, aesthetigram

Introduction

The research on the topic of meaning making within visual arts has been an enduring one in recent years theoretically and empirically by different authors within differing contexts—philosophy, visual culture, museum and art education (Carroll, 2003, Parsons, 1987; Barret, 2010; Émond, 2010; White, 1998; Fróis & White 2012). The topic of meaning making within visual arts has direct implications for the improvement of communicative activities in art museums. In that sense the development of theoretical frameworks that allow the understanding of the human behaviour in interaction with the arts in museum context is an important issue for the training of art museum educators and teachers. Our contribution emerges from an ongoing research project started in 2009 in the University of Lisbon that follows and improves the meaning making approach developed by Boyd White since 1998. This paper is a part of the overall project and its importance is twofold: first it develops the understanding of how people respond to art and secondly to develop an approach for the teacher training and preparation of art museum educators. The overall purpose of the research project is to provide a better understanding of how meaning making is achieved in relation to experiences with artworks and to examine the extent to which aesthetically derived meaning making is determined by educational, cultural and personality characteristics of the subjects involved in the research.

Research questions

This research intended to clarify the way different groups of adults (teachers) with and without training in the visual arts make meaning through the use of specific tools for that purpose. For now we pretend to find some answers for the three following research questions:

- 1.) To what extent appreciation of an artwork is determined by academic training of the individuals?
- 2.) How the individuals deal with meaning making tools used in this research for capturing the meaning making process with artworks?
- 3.) How the dimensions and categories used and generated by the subjects helped the organization of different semantic spaces for the artworks?

Method—Participants, Artworks, Mediation Tools and Process

Participants

The study was carried out with a sample of 24 subjects: 22 women and 2 men. The

overall age for the group is $M=33.8$ ($SD=4.98$) for Artists $M=32.2$ ($SD=4.95$) and non-Artists $M=33.5$ ($SD=5.8$). The 24 subjects were categorized as artists ($N=12$) and non-artists ($N=12$); half of them were categorized as artists due to their background in visual arts which means that they have a BA in painting, sculpting, design, or architecture. The majority of the artists group (58%) as well as the non-artists group (68%) are teachers. In the artists group there are subjects with art museum education experience, the non-artist group has a formation background in the educational sciences. The sample is composed mainly by former students of the Faculty of Fine Arts and the Institute of Education of Lisbon University.

Artworks

In our research we are using three artworks: two paintings and an artwork video (Figure 1). The reasons that underlie the artworks' choice were: 1.) To be emphatically depicted by the subjects; 2.) To be contrasted within each other by the used art medium; 3.) To be available to the viewers in an art museum. The fact that the three artworks were accomplished by Portuguese artists was not decisive but is important for the study. The warm-up painting named *The Gift* (1982), oil on canvas (46.5cm X 38.2) that will be here discussed was painted by Martha Telles (1930-2001). The two other artworks are an art video work done by Rui Calçada Bastos (1972) named *The Mirror Suitcase Man* (2004) and an oil on canvas painting by Sarah Affonso (1899-1982) *Portrait of Matilde* (1932) (80 cm X 55.5cm). All artworks belong to the Modern Art Centre collection (Calouste Gulbenkian Foundation).

Figure 1. Artworks



The gift (1982)
Martha Telles



The Mirror Suitcase Man (2004)
Rui Calçada Bastos



Portrait of Matilde (1932)
Sarah Affonso

Mediation Tools for systemic exposure to artworks

We are reliant upon records of the layered and linked moments of the individual participants' experiences. The results presented here result from the first approach to data collection outputs with the painting that served as warm up step of the experience. Once initial data was collected we submitted it to both qualitative and quantitative analysis. We will address here the qualitative part as well as the quantitative. The involved dynamics of our research, across an organized workshop into meaning making, comprehended a four-step continuum of direct encounter with the artwork. This included different moments that constitute the mediation's process of meaning making:

1.) **Note writing**—a free written record of the first contact with the artwork. The note writing records are defined as the first impressions, thoughts, free associations and descriptions about the artwork. These records might also describe the context where the artwork was seen and the feelings of the viewer. The note writing is an exercise that should follow the meaning making process flow.

2.) **Aesthetigram design**—this is a term that results of the combination of two words aesthetics and diagram and was coined by Boyd White (1998). It is a concept map that the subject constructs and helps him to note visually the main moments of his meaning making process. Its elaboration is based on the note writing and the use of categories. It also uses the viewer's memories that result from the encounter with the artwork. The purpose of these visual records is to provide a permanent source of data for the study of otherwise evanescent phenomena—art-generated meaning making processes.

3.) **R. L. Jones Quadrant**—comparison to phenomenological aesthetic experience model as proposed by R. L. Jones (1979) which includes four main dimensions—Cognitive-Intellectual, Intrinsic-Formal, Affective-Emotional, Extrinsic-Instrumental. This model is a visual way for the comprehension of the aesthetic experience.

4.) **Text writing**—it is a final written record that combines the previous meaning making steps i.e. the note writing, the aesthetigrams, the R. L. Jones quadrant as well as post encounter thoughts on the meaning making process.

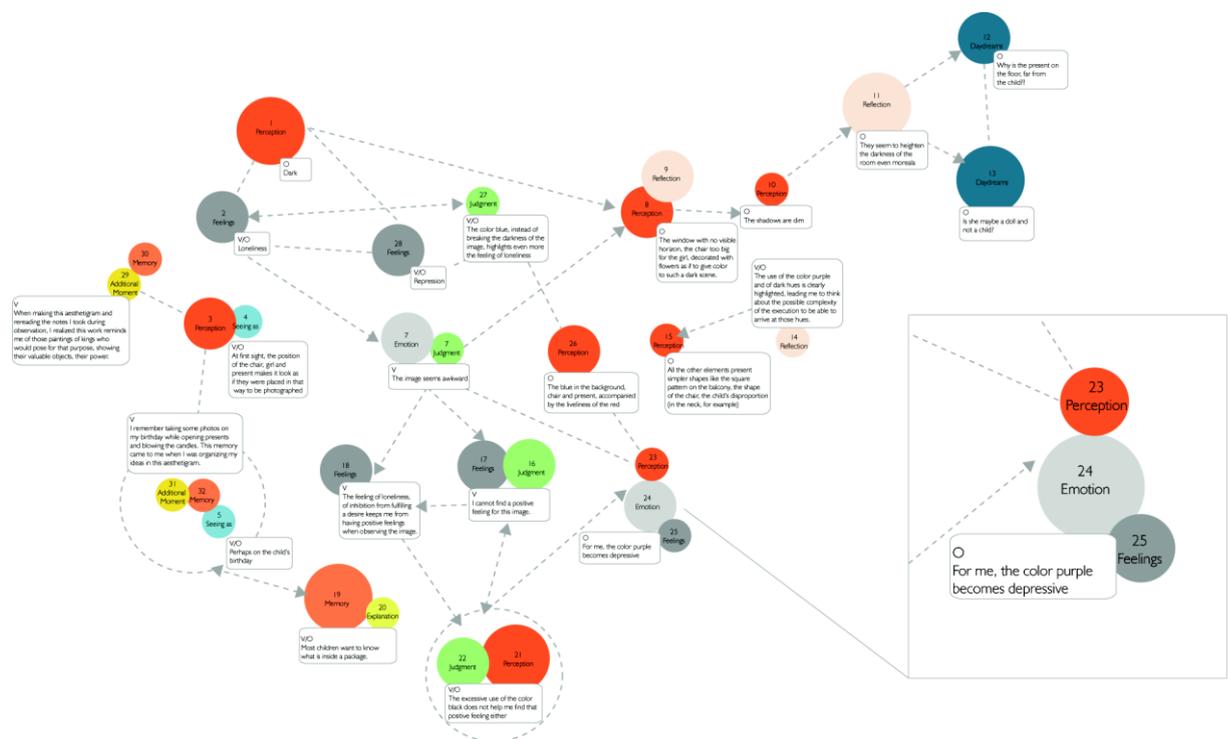
Main Steps of meaning making imaginative process

The warm-up artwork was shown (slide projection) firstly in classroom and latter it was shown in a museum context. Generally we asked our participants to follow a systemic exposure to the artwork including two visits to each of the proposed artworks. Thus we hoped to see changes in the participants' capacities for heightened awareness of their

responses, and an understanding of how those responses synthesized into their own personalized meaning making processes. We asked the participants to “sit in front” of the artworks and to try to be aware of their moment-to-moment responses to them and we stipulated that any and all responses were acceptable—from perceptions, to feelings, to reflections, memories, fatigue, etc.. In the case of Martha Telles painting almost all of the work took place in the classroom with the exception of the text writing that was produced after the subjects visited the original artwork in the museum context. The overall time spent by the subjects was: 24 hours on a training workshop (for each group of 12 subjects), about 3 hours on the encounters with the artworks’ in the museum context and 12 to 15 hours on autonomous-mentoring work.

On the basis of their notes participants then had to assign the individual moments to various categories of experience. The purpose of this part of the activity was to highlight viewing tendencies. Ideally one would engage multiple orientations in a single encounter, both affective and, intellectually oriented. Through the exercise of assigning categories to their individual moments, participants began to see patterns to their meaning making, patterns that can usually be enlarged upon. Our participants assigned categories to their individual experiential moments with the help of a list developed in earlier research (White, 2009). After participants made tentative allocations of their individual moments to some categories, their next task was to show these moments in a visual form (Figure 2).

Figure 2. Aesthetigram



Just as every person is unique in some regard, so too the aesthetigrams differ from one another. In a standard teaching situation, the purpose of these maps is to provide the mediator—teacher, museum educator—with a record of what would otherwise be fleeting and often wordless moments that characterize most encounters with artworks. On the basis of such records the teacher is then in a position to suggest alternative perspectives and approaches to the work; or an individual may use the aesthetigram as a self-teaching device.

Results

Creating Semantic Spaces

In this section we will present the results of the meaning making processes and the organization of semantic spaces. The materials elaborated by the participants were produced through the manipulation of the meaning making tools – note writing, aesthetigrams and text writing.

In the content analysis we will be comparing the data produced by the two groups—artists and non-artists, based on the textual segments produced by them about the painting *The Gift* in each of the three tools. The text fragments from both groups were analysed together although separated by tool. From that analysis emerged a structure that organized the content in Dimensions, Categories and Indicators. The text fragments were categorized by the subjects only in the aesthetigrams. Based on the data imported from the qualitative analysis we made a Multiple Correspondence Analysis (MCA) with the intent of mapping the association of the identified categories between themselves and the proximity of the two groups – artists and non-artists – towards them for each of the mediation tools.

For a better understanding of the usage of the categories by each group they were trichotomized. We classified their presence in three levels—less relevant, relevant and very relevant. The criterion used for the trichotomization of each category was the finding of extreme values of the scale – less relevant and very relevant. Those values allow us to better discriminate the differences between the individuals. When the absence of a category was equal or superior to 25% of the total of presences the value zero was associated with its less relevant usage and in those cases they were not

represented in the figures generated by the MCA. On another hand, when the usage of a category has a reduced frequency that category is only dichotomized and its presence is defined as less relevant or relevant.

Content analysis of Note writing

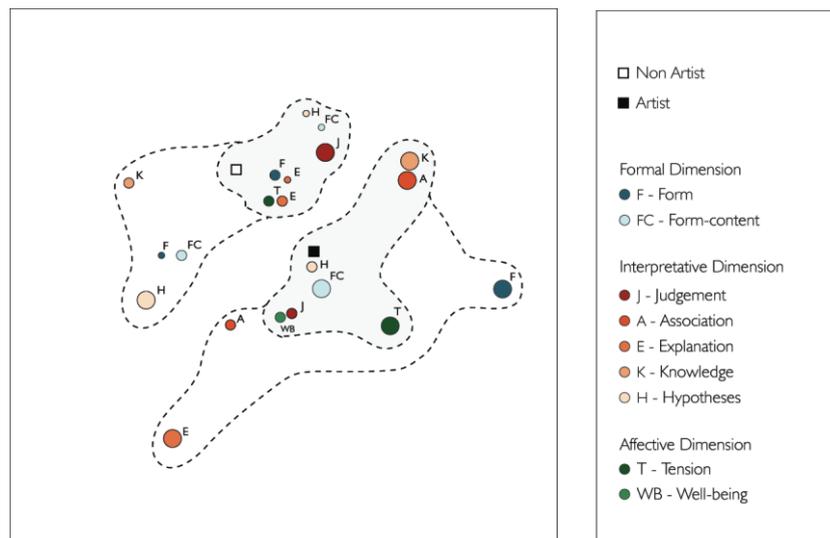
We analysed twenty four texts resulting of the first contact with the work of art *The Gift* (1982). Nine categories emerged from this qualitative analysis, grouped in three dimensions. The first, designated as Formal, regards the references produced about the use and combination of the formal elements integrating the work of art. In the second, the Interpretative, are gathered the reflections leading to a personal meaning involving a judgement of the work of art. In the third, called Affective, there are explicit references to emotions or feelings evoked by the formal elements and the content of the work of art.

Figure 3 shows the proximity of the categories identified in the content analysis of the notes written by the group about the work of art. The association of categories to the group of artists and non-artists allowed identifying two main clusters where the three dimensions are present— Formal, Interpretative and Affective. What distinguishes these two groups is, in part, the degree of relevance in the use of the categories. In the main cluster of artists, we find closer categories of a higher degree of relevance—Form-Content, Tension, Well-being, Association and Knowledge.

In the category Form-Content, there are references to the formal elements of the work of art, as well as to what is represented therein. Importance is given to the contrast between the interior/exterior space portrayed in the painting, described on the basis of its opposite formal characteristics (darkness-luminosity, geometric-organic, inside-outside). Allusions to other elements portrayed in the painting are also made, by identifying their formal characteristics. Linguistic markers describing the objects and figure are organized from the use of terms such as scale, space, light, colour, and texture. The note writing produced by the artists is, in this category, more complete than those by the non-artists. However, both mention the same elements. In the group of artists, the link between the description of the elements portrayed and the linguistic markers is more present as exemplified in this sentence—“The doorway to the balcony, rigid and with a masculine line, seems to oppose the sinuous delicateness of the chair (more feminine

line)”. In the note writing by the artists, the names of artists and art movements are more frequently mentioned. In the category Association, where the individuals make associations between the objects portrayed in the work and their personal experience, both groups behave, in terms of content, rather similarly, associating the portrayed elements with symbolic attributes (purity, innocence, childhood, punishment).

Figure 3. Note writing. Multiple Correspondence Analysis (MCA). Proximity of categories by artists and non artists for the artwork *The Gift* (1982) by Martha Telles.



In what regards the production of

○ Less relevant ○ Relevant ○ Very relevant
 (---) Main Cluster (---) Secondary Cluster

notes

in the Affective dimension, there are statistically significant differences between the average of notes produced about affective questions in artists and non-artists. The Affective dimension is organized around two generic poles: Well-being and Tension, to the point that in relation to the work *The Gift* both groups highlighted the category Tension. Although the focus of affective attention is oriented towards the inside of the image, it triggers in the observer the principal feelings of disquietude and tension.

The verbal-written feature of the category Tension is revealed by the phrase fragments—”Emptiness. A great feeling of emptiness, not only spatial but also psychological, owing to the lack of elements, the rigid posture, the stiff, troubled, expectant position of the figure”; “The black-aubergine focalizes and oppresses”; “Dark, claustrophobic space wrapped in a tissue of deadly hues and velvet texture. This place can convey protection, comfort or morbidity”. Artists, when compared to non-artists, evoke more this category although both use similar adjectives. The category Well-being

is the positive assessment of the work of art. Although the focus of affective attention is oriented towards the inside of the image, it triggers in the observer the principal feeling of pleasure. In that case the examples of subject sentences are—”This place can convey protection, comfort or morbidity”; “The weather outside brings calm and light to the inside, a cold and dark place”; ”There are no sounds. Everything in the painting conveys calm, silence.” The artists express the idea of well-being conveyed by the work of art through the words: “calm”, “tranquillity”, “silence”, “liberation”.

In the cluster of non-artists, in the Interpretative dimension, the category Judgment appears as very relevant, in the critical and judicative evaluative thoughts of the individuals about the formal and narrative content of the work of art. The verbal-written feature of the category judgement is revealed by such subject sentences as—”Staged action, forced and unnatural composition”; “Does not satisfy me, neither conceptually nor plastically”; “Somber beauty”. Here the non-artists, when compared to the group of artists, manifest a greater depth in this category when elaborating contents to assess the work of art and emphatically refer to the quality of the painting. Besides two main clusters, two other secondary clusters are represented in the figure. In these clusters, organized around the group of artists and non artists, we find categories whose position doesn’t characterize, in a discriminate manner, any of the groups.

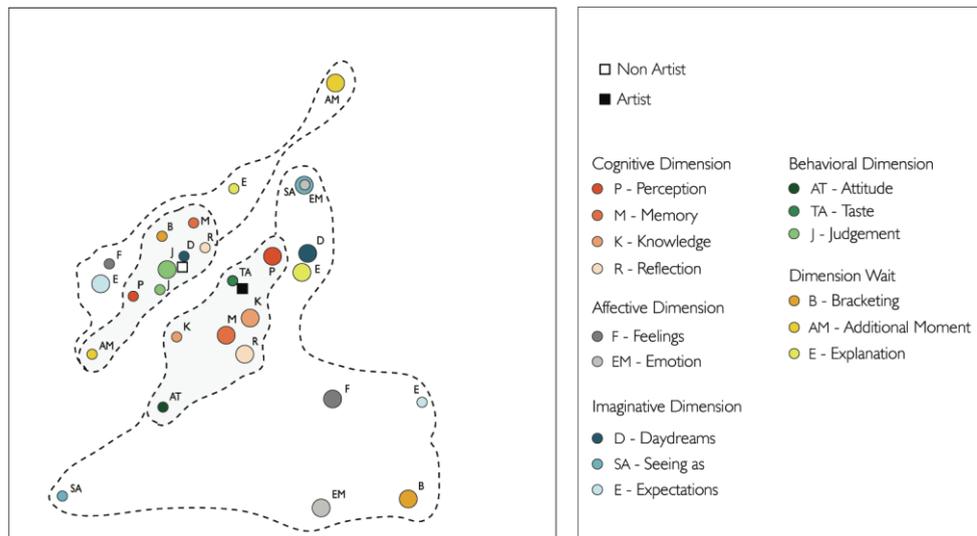
Content analysis of the Aesthetigrams

For the construction of the aesthetigrams, the individuals used fifteen categories defined *a priori*, organizing them in a visual map aimed at representing the process of meaning making, resulting from the encounter with the artwork *The Gift*. In the aesthetigram (Figure 2), are identified the experiential moments constituting the process of meaning making to which the individuals associate a commentary and use one or more categories.

Besides these two elements—commentaries and categories—individuals point out the focus of each experiential moment—Viewer, Context, Object. These indicators can be used separately or articulated with one another. For the preparation of the aesthetigram and understanding the process of meaning making, the dimension of the circles that identify each of the experiential moments is also important, concomitant with the importance it had for the individual (smaller circle = less important; bigger circle =

more important). The connections between the circles indicate the influence (unilateral or bilateral) and the sequence of the different moments, also registered by the individuals.

Figure 4. Aesthetigrams. Multiple Correspondence Analysis (MCA). Proximity of categories by artists and non artists for the artwork *The Gift* (1982) by Martha Telles.



In figure

4, we

can see the proximity of the categories organized from the content analysis of the commentaries associated to them in the aesthetigrams, produced by the two groups. The categories utilized by the subjects are grouped into five dimensions—Cognitive, Behavioral, Imaginative, Affective and Wait. In both groups, the cognitive dimension is, among all, the most outstanding in terms of occurrences. The cognitive dimension includes the categories of Perception, Memory, Knowledge and Reflection. In what concerns the differences between the two groups, in the cognitive, affective, imaginative, behavioral and wait dimensions, no statistically relevant differences were found.

However, in the main cluster of the artists group, we highlight the presence of the cognitive dimension represented by the categories Perception, Memory and Reflection, very relevant, and Knowledge, relevant and very relevant. Together with the difference, among artists and non artists, in the proximity of the category Perception very relevant, there is also a difference in content. We define the category Perception as—“a gaze without a specific aim or focus; a visual path with or without connection to the work of art in presence. It could also be a generalization of form, a tendency to summarize”. The

use of this category in the group of artists and non artists allowed identifying and describing the formal elements and of content, and it is on the level of description that the artists group is clearly set apart from the non-artists.

Although there are common denominators in the groups, such as the description of elements— light, scale and colour, the artists also make reference to the space represented in the painting, highlighting the contrast between interior and exterior, as well as the axis of the composition, as demonstrated in these two excerpts: “A space illuminated by a light entering through an open window which has no door. In the distance, the line of the horizon separates the blue of the sky from the blue of the sea. Some iron bars separate us from that landscape. The bars are composed by a horizontal line and several vertical lines, on a surface that shows us a set of squares, blue and white, suggesting tiles. On this side of the bars, an almost empty space”; ”The axis represented (up/down and left/right). The door stave: vertical axis; the footer: horizontal axis”.

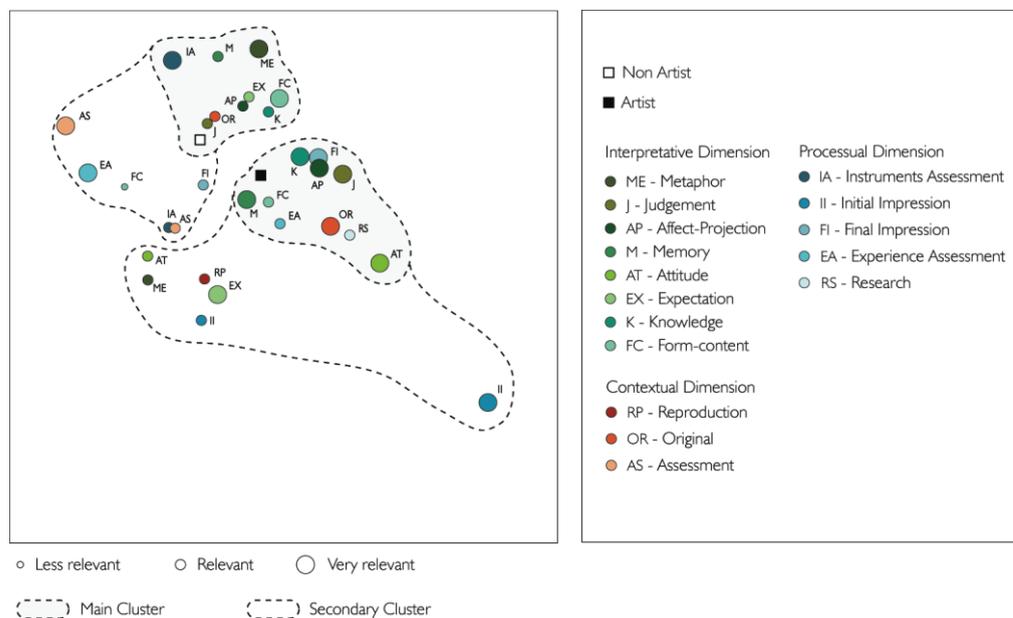
Regarding the non artists group, the only dimension represented, in the main cluster, with a very relevant presence, is the behavioral dimension, stressed by the utilization of the category Judgment defined as being a provisional assessment: a questioning or confirmation of the initial response, a change of opinion; a definitive final assessment; or to deliberately abstain from manifesting any type of assessment. Along with the difference, among artists and non artists, in the proximity of the category Judgment very relevant, there’s also a difference of content, more significant in the provisional assessment than in the final assessment. The verbal-written indicator of this feature can be revealed by these two sentences: “The image appears embarrassing”; “The girl looks sad and imprisoned”. Globally, considering the secondary clusters, we observe that the dispersion of categories inside the secondary cluster of artists in relation to the non artists is greater, which indicates more heterogeneity.

Content analysis of Text writing

Figure 5 represents the proximity of the categories identified in the content analysis of the texts produced by the group about the artwork. Three dimensions emerged from this analysis— Interpretative, Contextual and Procedural, in which are included categories (finer indicators) discriminating the incidence of the analysed discourse. In both groups, artists and non artists, there aren’t any statistically significant differences regarding the

use of the dimensions, however, the most frequent dimension is the Interpretative dimension, corresponding to the greater complexity of content, also obviated by the categories that it comprises—Projection-Affections, Memory, Expectation, Attitude, Metaphor, Judgment, Knowledge, Form-Content. The Interpretative dimension is defined as an open possibility of understanding and fruition of the artwork. The Contextual and Procedural dimensions deal with phrase fragments denoting instrumentality, centered whether on the context in which the work is visualised, whether in the learning process itself.

Figure 5. Text writing. Multiple Correspondence Analysis (MCA). Proximity of categories by artists and non artists for the artwork *The Gift* (1982) by Martha Telles.



Observing the main clusters in the two groups, artists and non-artist, we verified that the three dimensions were present and that the Interpretative dimension was the most represented. In the main cluster of the artists group, the presence of the categories Memory, Knowledge, Projection-Affections, Judgment and Attitude is very relevant. However, if we consider the overall frequency of each of these categories, in their different degrees—less relevant, relevant and very relevant the most frequent categories in the artists group, within the Interpretative dimension, are: Knowledge, Projection-Affections, Attitude, Metaphor and Expectation. The content analysis allowed detecting qualitative differences among artists and non artists in the use of the categories Metaphor and Knowledge. For example, in Metaphor, one of the individuals wrote: “The canvas seemed to work as a scale, sometimes leaning towards a happier,

lighter and more optimistic composition, and at others to a darker side, bitter and ghastly, where a strange expectation remained immortalized in time, with no foreseeable happy ending.”

In the category Knowledge, there are no differences in the kind of knowledge used, since both groups make reference to previous knowledge and knowledge acquired after the encounter with the work of art, through researches about the artwork and the artist’s context. The artists, however, make more references to previous knowledge, particularly in history of art, associating it to artists such as Frida Kahlo, Helena Almeida, Francis Bacon, René Magritte, or artistic movements. The way artists make reference to a context in the history of art is also more complex. Those references are not merely based on the formal affinities but extend to conceptual affinities, as in the following examples of two individuals of the artists group: “The outline reminded me of other works, the slashes of Lucio Fontana and Helena Almeida”; “It is certain that these comparisons have in the background some paintings by Bacon, which inevitably, helped establishing the most significant poles of the tension at play.”

Regarding the Procedural dimension, the most relevant category in the main cluster, in the artists group, is Final Impression. This category emerged from the content analysis of the texts by the fact that, in both groups, a first impression was produced, that is, an instinctive record of the first contact with the piece. However, there was a second encounter, in the context of a museum, leading, in most cases, to a change of attitude regarding the artwork, in the positive sense. The category Final Impression, includes, therefore, the individual’s finished idea about the artwork, a conclusion originated in the process of meaning making and the different stages contained wherein: “I arrived at a conclusion that turned out to be a trap. I thought the observer is in a crucial position to disclose the message of the work. From that moment on, the fruition of the artwork revealed to be unbearable because I, as observer, did not know the answer.”

In the main cluster of the non-artists group, we find close categories, mostly in the Interpretative dimension. Although with a relevant use, the categories Judgement and Memory are, in this dimension, the most used categories by this group, compared with the artists group. As judgment, we find the expression: “This is a work with great passivity, motionless. It was, without a doubt, a flash of a camera.”; “The way the light

is rendered gives the painting an interesting perspective and depth.”

The category Memory is, along with Attitude, scarcely used by both groups. In terms of the content associated with this category, we find, for artists and non-artists, references to childhood memories, directly or indirectly associated with their own experiences, associations between the formal elements and specific knowledge: “The first sensation I had transported me to an infantile universe, not related to my family, but perhaps with the world of fairy tales (but not the happy ones). The girl, the gift, the red shoes, the flowers, the giant room.”

Still in the main cluster of non-artists group, the category Assessment of Tools in the Procedural dimension appears as very relevant. In this dimension, are included references to the instrumentality of the process of meaning making, implying the assessment of the tools used—Notes, Aesthetigrams, R. L. Jones Quadrant and Text writing; further observations on the experience, engagement and learning, and activities after the encounter, such as the research for information about the artwork, seen as a complementary process in the creation of meaning.

In terms of assessment of the experience, individuals regarded it as positive, making reference to the acquisition of new knowledge, greater self-awareness and the individualized process of creation of meaning: “It was the first time I had to organize my thoughts about a painting in this manner. I’ve done it many times with literature and I still do it, consciously and unconsciously, when I read literary texts. I need to organize my thoughts, to turn the feelings and the emotions into something else, transmissible to others, to the students”; “(...) The various stages developed around this painting have created a much closer relationship with the work.”

Generally, in the assessment categories—assessment of context, of experience, of the tools used – the non-artists group used them more frequently, almost always in a relevant degree. In both groups, artists and non-artists, the Contextual dimension was the less present. In this dimension are included references to the context where the artwork was viewed, the reproduction or the original, and the description and assessment of its influence in the process of meaning making and attitude of the viewer towards the work.

Conclusions and Future Research

From the data collected in the workshop, and from its preliminary analysis (qualitative and quantitative) it can be affirmed that there are differences in the way the two groups (artists and non-artists) create meaning when they dialogued with the artwork. Although the differences between the two groups in the majority of the dimensions are not statistically significant, each group has a distinct position in the figures that resulted from the Multiple Correspondence Analysis. This feature indicates a differentiated attitude towards the artwork by the groups and their use of the mediation tools. The specificity of each group in meaning making process is unveiled by a much more detailed content analysis of the textual fragments produced by the individuals in all three tools that were used.

The influence of the individual's academic background in the appreciation of Martha Telles's painting is revealed in the presence of indicators communicated by the individuals in written language. It is possible to verify that individuals with artistic training use, more adequately, terms and concepts when describing the formal elements of the artwork, resorting much more often to examples in the art world as auxiliaries in referencing their own process of creation of meaning.

In what concerns the utilization of the tools, some differences were found between the two groups. In the Notes, non-artists were more succinct in the use of words than artists, who, although having also organized this first written record in topics, were more extensive in its development. This pattern of a greater complexity of records was also present in the making of the *Aesthetigrams*, where the artists recorded a larger number of experiential moments than non-artists. Finally, in Text writing, non-artists were more concerned in the instrumental aspects of the process of meaning making, whereas artists were more focused in the interpretative dimension.

In the Multiple Correspondence Analysis, developed for each tool, individuals were grouped by *status*—artist and non-artist—defined *a priori* by the individuals' academic background. From the analysis of clusters, in a proceeding stage, we will map the individual's affinities in what concerns the use of meaning making categories. We expect that this analysis will allow identifying profiles for observers and groups in which individuals are organized through common experiences with the work of art, indicated by the presence and frequency of the categories. To characterize these profiles,

they will be cross-checked with the analysis dimensions, which will allow describing the behavioral predominance in each profile: formal, affective, interpretative and instrumental.

As future research in the context of the project, we will carry out a compared analysis of the processes of meaning making, based on the textual and visual elements produced by the individuals about two other works of art. One of them, a piece of video art, is in contrast to the two paintings used. Other variables of analysis, related to the individual's cultural *habitus*, some of the personality dimensions assessed through NEO PI, will also be cross-checked with the results of the meaning making process about the works of art. The individual's attitudes towards the three works of art will also be assessed through a Semantic Differential scale, with thirty-four pairs of adjectives. Self-evaluation data on the process of creation of meaning will also be analysed.

References

- Barret, T. (2010). Aesthetics, Conversations, and Social Change. In Tracie Costantino & Boyd White (Eds.) *Essays on Aesthetic Education for 21 st Century* (pp.123-142). Rotterdam: Sense Publishers.
- Carroll, N. (2003). Aesthetics and the Educative Powers of Art. In Randall Curren (Ed.) *A Companion to the Philosophy of Education* (pp. 365-383). Malden, MA: Blackwell Publishing.
- Émond, A-M (2010). Positive responses of adult visitors to art in a museum context. In Tracie Costantino & Boyd White (Eds.) *Essays on Aesthetic Education for 21 st Century* (pp.43-62). Rotterdam: Sense Publishers.
- Fróis, J. P., White, B. (2012). Words for artworks: The aesthetics of meaning making. *The International Journal of Art & Design Education*. (in print).
- Parsons, M. (1987). *How we understand art. A cognitive developmental account of aesthetic experience*. New York: Cambridge University Press.
- White, B. (1998). Aesthetigrams: Mapping aesthetic experiences. *Studies in Art Education*, 39 (4), 321-335
- White, B. (2009). *Aesthetics Primer*. New York: Peter Lang Publishing.

THE RELATIONSHIP BETWEEN READABILITY, AESTHETIC PREFERENCES AND APPROPRIATENESS OF VISUAL ILLUSTRATIONS IN A DEVELOPMENT COMMUNICATION SETTING

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Abstract

The first part of the paper discusses the process of collecting empirical data in a rural community of the Qwa-Qwa region of South Africa in order to establish the community's views and opinions about different types of visual illustration approaches. The information was subsequently used to guide the production of visually illustrated soy-related nutrition education messages, which were distributed free of charge in the community as part of an integrated nutrition education programme. In the second part of the paper, the discussion of the data collected during three separate data collection events (n=75, n=67 and n=92) focuses on the relationship between (1) image readability, or the absence of readability barriers; (2) the visual aesthetic preferences of the members of the target group, based on the respondent's choices and verbal explanations when presented with a range of different visual illustration options for comment, and (3) the overall appropriateness of an illustration.

Keywords: Visual communication, aesthetic preferences, development communication

Introduction

The present paper deals with issues and concerns relating to the process of pre-testing visual illustrations used in educational material meant for a development communication setting. In the field of development communication, pre-testing educational messages in the target community before they are disseminated on a large scale is generally considered a *sine qua non*. As discussed in the work of Mody (1991), Boeren (1994), Brouwer (1995) and many others, pre-testing typically involves presenting a provisional version of the educational material to a sample of the target group and canvassing their reactions, views and opinions with a view to identify any possible barriers to effective communication. Pre-testing procedures fall into two broad

categories, namely those that focus on the comprehension of the message, as opposed to those that concern the appeal of the message (Mody, 1991, p. 197).

As far as the visual communication dimension of development communication is concerned, visual images such as pictograms, drawings, graphs or photographs are frequently included in the educational material in order to raise both comprehension and appeal. In other words, the intention is that the images will primarily perform a mnemonic function, or assist with the comprehension and retention of information, as well as phatic function, i.e. to attract and retain the attention and interest of the target group (Peters, 1978, p. 58; Watson and Hill, 1993, p. 139). That is not to say that the images do not perform other communicative functions and roles as outlined by Sachs-Hombach (2006, p. 262) as well, but these are generally regarded as less crucial.

Methods and procedures

Empirical data was collected in the rural Thibela community of the Qwa-Qwa region of South Africa, which borders on Lesotho. The aim was to establish the community's views and opinions about different types of visual illustration approaches. The information was subsequently used to guide the production of visually illustrated soy-related nutrition education messages, which were distributed free of charge in the community as part of an integrated nutrition education programme. The integrated nutrition education programme was funded by the South Africa Netherlands Research Programme on Alternatives in Development (SANPAD). The purpose of the programme was to explore to what extent food production and nutrition education training programmes, complemented by the implementation of soy home gardening initiatives and innovative household soy processing equipment as interventions, impact on household food security, dietary intake and food procurement patterns. A total of 212 Qwa-Qwa households participated in the programme, or a total of 1018 people, with a mean of 4.8 people per household.

The pre-testing of the visual illustrations involved the voluntary and anonymous participation of community members preceded by their informed consent. During three separate data collection events (n=75, n=67 and n=92), each participant held a ten to fifteen minutes long conversation with a field worker conducted in the home language of the participant. The three data collection events took place in the local community hall on days selected by the community leaders. The events were timeously announced by sending all participating households SMS messages, followed up by reminders on

the community radio station. During data collection, the field worker completed a short questionnaire in the presence of the respondent. The first part of all three questionnaires dealt with basic demographic information about the participant (age, home language, gender). Taken together, the second part of the three questionnaires aimed to measure (1) whether the illustrations shown to the respondents were clearly understood, i.e. whether the meaning that the respondent attached to the image was the same as the intended meaning, and (2) where the aesthetic preferences of the respondent lay. This was achieved by showing the participant a range of different illustration options, ranging from highly abstract pictograms on the one end of the spectrum to clip art, to realistically rendered shaded line drawings, to a 'straight' colour photograph on the other end of the spectrum.

The questionnaire was designed to accommodate low-literate respondents and to avoid a situation where the ability of the participant to verbally articulate complex pictorial meanings was essential. This was achieved by restricting the pre-formulated questions to the following: (1) What does this image show? and (2) The illustration style of the two (in some cases three) images is different. Which one of these do you prefer? In both cases the participant was invited to make general comments or to explain further. The field workers were trained to remain as neutral as possible during data collection, regardless of the responses encountered. At the end of the data collection day each participant received a hamper with some food as a gesture of thanks.

Results

The main finding that emerged from the questionnaire data is that clip art images as found in most standard software programmes were poorly understood in the target group and yielded a wide range of unintended meanings and interpretations. For example, when shown a clip art style image depicting soy beans together with the pod and asked 'What does this image show?', only a small percentage of the respondents (9.3%) answered either with 'soy beans' or just 'soy' or simply 'beans'. The remaining participants responded with a variety of unintended interpretations, such as apples, potatoes, eggs and even footballs. Such an unacceptably wide visual representational latitude (see Pauwels, 2005) was also the case with clip art images rendered with a cartoon-like quality. For example, a clip art style cartoon image of a salt seller with the word 'salt' written on it was not well comprehended (28% of the respondents supplied

the envisaged answer). Unintended responses included ‘it looks like a hat with the word salt written on it’, or ‘a hamburger with salt written on it to indicate that hamburgers are high in salt content’. In contrast, pictograms, shaded line drawings and colour photographs were as a general rule well comprehended.

The aesthetic preferences of the target community lay with realistically rendered shaded line drawings, as well as with cartoon-type illustrations. For example, in one of the questionnaire items the respondents were shown two images side by side illustrating the washing of hands under a tap and asked the question ‘The illustration style of the two images is different. Which one of the two do you prefer?’ The first image was rendered as a black and white pictogram with minimal detail, whereas the second illustration contained considerably more image detail (such as the thread at the end of the tap where a hosepipe can be attached) and was drawn and shaded with a high degree of realism. In this particular instance, 86.7% of the respondents chose the realistically rendered shaded line drawing.

Concluding discussion

In the light of the results obtained, the basic pre-testing categories of message comprehension and message appeal (Mody, 1991, p. 197) mentioned in the introduction of this paper do not adequately describe the actual state of affairs in this particular target community. As summarised in Table 1, and as contained in the data collected, the readability of a visual illustration, or the ease with which the viewer comprehends the intended meaning on the one hand, and the extent to which the chosen illustration approach fits with the aesthetic preferences of the target community on the other hand, do not necessarily co-vary.

Table 1. *Overview of the relationship between aesthetic preferences, image readability and appropriateness*

		Comprehension, or absence of readability barriers	
		High	Low
Appeal, or degree of fit with the aesthetic preferences of the target group	High	Appropriateness High	Appropriateness Low
	Low	Appropriateness Low	Appropriateness Low

Stated differently, the majority of members of the target community (1) indicated that their aesthetic preferences lie with cartoons, yet the intended meaning of those cartoon-style images presented to them for comment was poorly understood; (2) easily understood the intended meaning of pictograms, yet opted for realistically rendered shaded line drawings as their preferred choice as far as illustration style is concerned when asked to choose between a pictogram and a sparingly shaded line drawing; and (3) easily understood the intended meaning of realistically rendered shaded line drawings and also indicated that their aesthetic preference lies with this type of illustration approach when asked to choose between a sparingly shaded line drawing and a photograph. This means that even though the target community was pleased with cartoons, these were poorly understood, as summarised in a response along the lines of 'I don't know what it is [or what is being shown here], but to me these types of pictures are more beautiful than those'. Due to their low readability, however, the inclusion of cartoon-style images in the educational material was inappropriate. The reverse was also the case: even though the data suggest that the readability of pictograms in this particular community was high, their appeal was low and thus their appropriateness was also low.

In short, the findings of this study suggest that appropriateness requires both readability and a high degree of fit with the aesthetic preferences of the target community, but the one is not necessarily a predictor of the other.

References

- Boeren, A. (1994). *In other words... The cultural dimension of communication for development*. The Hague: Centre for the Study of Education in Developing Countries.
- Brouwer, H. (1995). Communicating with pictures: The role of pictures in health education in outpatient clinics in rural African hospitals. *Visual Sociology*, Vol. 10(1-2), 15-27.
- Mody, B. (1991). *Designing messages for development communication: An audience participation-based approach*. New Delhi: Sage Publications.
- Pauwels, L. (2005). Scientific discourse and visual representational literacy: elements and dimensions of an integrated theoretical framework. In *Visual literacy and development*. Edited by R.E. Griffin, S.B. Chandler and B.D. Cowden. Loretto,

PA: International Visual Literacy Association, 1-10.

Peters, J.M. (1978). *Pictorial Communication*. Cape Town: David Philip.

Sachs-Hombach, K. (2006). *Das Bild als kommunikatives Medium: Elemente einer allgemeinen Bildwissenschaft*. Köln: Herbert von Halem Verlag.

Watson, J. and Hill, A. (1993). *A dictionary of communication and media studies*. London: Edward Arnold.

PROJECT UMA: TOWARDS A UNIFIED MODEL OF AESTHETICS

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Abstract

In October 2011, representatives from five schools of design and psychology (Cambridge, Delft, Folkwang, Melbourne, and Vienna) came together in Delft for the launch of project UMA. With the participation of six professors from diverse backgrounds, two postdoctoral students and seven research students, this project promises to become the most comprehensive and largest of its kind.

In this project, we aim to develop a comprehensive model of aesthetics that bridges aesthetic responses at the perceptual, cognitive and social level. Central to this project is the claim that aesthetic preferences involve striking a balance between two evolutionary rooted, and complementary pressures. One pressure is directed towards safety and protection, and favours choices that facilitate perceptual understanding, efficient processing and group membership. The other pressure involves a need for learning and accomplishment, leading to preferences for variety, novelty and uniqueness. Following from this model, the battles between these impulses operate in all sensory domains, as well as cross-modally.

The model will be developed to explain aesthetic findings from a diverse range of disciplines, and allows us to formulate a new set of predictions. These predictions will be thoroughly tested on designed products, because they are multi-modal, can be systematically varied, and are ecologically valid and socially significant objects of aesthetic preference.

The proposed work brings together several branches of study, including (cognitive and social) psychology, consumer- and neuroscience, philosophy, HCI and design research. Along with its major theoretical contribution, the envisaged model aids designers in

making deliberate aesthetic decisions, and the industry to properly adapt their products to individual, cultural and universal standards of aesthetic quality.

Introduction

Most cigarette packages these days carry the message that smoking is bad for your health and fertility, or worse, that it will actually kill you. Despite – or should I say, to stress – the clear communicative character and strong negative connotation the message carries, its graphic design is aesthetically pleasing. The message, and the way it is framed, contrasts heavily with the rest of the packaging: the black type clearly stands out against its white background, the lettering is perfectly outlined (or centred) and all the letters are of the same (font) size, with just enough space between each to facilitate reading. The complete picture looks balanced and orderly. A smoker may not enjoy a confrontation with the message, but may certainly appreciate its design.

Issues of aesthetics are not confined to the arts: any object can be aesthetically appreciated, and designers tend to make everything aesthetic (Postrel, 2003), even the health warnings on cigarette packages. Despite this fact, and its long academic tradition in both philosophy (e.g. Kant, 1952) and psychology (e.g. Fechner, 1876), the concept of aesthetics still causes much confusion in scholarly writings and everyday communication.

Since the seminal work of Berlyne in 1971, project UMA is the first attempt to develop a comprehensive model of aesthetics explaining why people like to perceive things in the world around them the way they do. In line with the original Greek meaning of the concept, we define “aesthetics” as the pleasure attained from sensory-motor understanding (Hekkert, 2006; Hekkert & Leder, 2008). Through the sensory-motor system and brain, people understand the world around them. This understanding is guided by aesthetic qualities (e.g. Dewey, 1934; Johnson, 2007). People *feel* the quality of things or situations, and immediately know if they are to their liking.

Artefact aesthetics

The model that we propose is concerned with the pleasure that people obtain in perceiving the things around them. These things include all man-made artefacts that have been – deliberately or not – (partly) designed to give people sensory pleasure. These may be works of art, buildings, products, or various forms of entertainment (e.g.

games, television programs). The model will, however, not (automatically) apply to other domains where aesthetic pleasure is often witnessed, such as landscapes, bird songs (“acoustical behaviour of nonhuman animals”; Thornhill, 2003), human faces and bodies, food or ideas. Preferences in each of these domains have unique and specific evolutionary purposes, and such preferences cannot be simply transferred to other domains (cf. Tooby & Cosmides, 1992; Thornhill, 2003). Preferences in these latter domains are often considered specific adaptations, i.e. goal-directed, functionally designed (brain) mechanisms that have been selected by human evolution (e.g. Symons, 1995). For example, people like particular facial features, such as symmetry, because these signal health and reproductive fitness (see e.g. Thornhill & Gangestad, 1993), and people attain pleasure from seeing savannah-type landscapes with cues for water sources, animal presence, and shelters (Orians & Heerwagen, 1992). From an evolutionary point of view, human artefacts are, however, very novel (Kanazawa, 2004). For artefacts, humans have not (yet) developed specific adaptations, and people’s preferences in this domain must therefore be understood and explained differently, for example as a by-product of other adaptations (see Hekkert, 2006; Pinker, 1997). The model introduced here is a new attempt to offer such an explanation.

Everyday aesthetic preference: a battle of impulses

Underlying our aesthetic attraction to things are two evolutionary pressures that operate simultaneously. Following most evolutionary claims, the primary tasks for any organism are the preservation of life and the furtherance of conditions for growth (e.g. Damasio, 1994). On one hand, humans seek that which is safe to approach, offers security, and makes little demand on their limited processing capacity. On the other, humans are motivated to take risks and engage in exploratory behaviour, to extend their capabilities, and promote learning. This dichotomy of motivational pressures can be observed in many theories of motivation and development (e.g. Bowlby, 1969; Gray, 1987; Higgins, 1997) sharing the “general assumption that individuals seek both safety and accomplishment” (Shah et al., 1998, p. 286).

The model proposed here begins with the claim that these two opposing forces affect people’s aesthetic preferences on all levels of aesthetic processing: perceptual, cognitive and social. In brief, at each level, aesthetic choices are based on a trade-off –

a 'battle' – between safety needs and accomplishment needs, and people seek for an optimum between the two forces (see Figure 1). We will further argue that these balances are sought in each sensory domain, as well as across domains. Furthermore, conditions involving risk (e.g. perception through our proximity senses) will drive preferences towards the 'safe side' and, *ipso facto*, safe conditions (e.g. perception via the distant senses) will relatively favour risky alternatives. This model promises to unify existing aesthetic theories across several disciplines, accounts for most findings in the literature and leads to a range of new research avenues that will be proposed. Let us first take a closer look at the 'battle of impulses' found on each level.

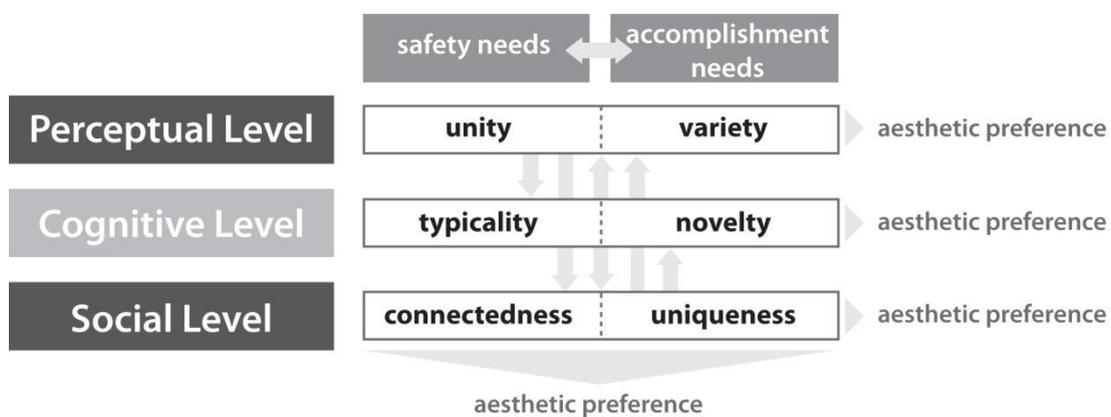


Figure 1. Model of aesthetic preference for artefacts. Horizontal arrows on a level represent the trade-off between the opposing forces at each level, vertical arrows represent interactions between the levels.

The Perceptual Level: Unity vs. Variety

Historically, much research has been conducted into formal determinants of aesthetic pleasure: harmony, proportion, balance, symmetry, etc. Only recently, with the advent of evolutionary psychology, has the question been posed as to why we have an aesthetic sense at all (see e.g. Thornhill, 2003; Whitfield, 2005).

The perceptual theory of aesthetics presented elsewhere (Hekkert, 2006; Hekkert & Leder, 2008) goes back to the roots of aesthetics: sensory-motor understanding.

Over millions of years of evolution, sensory systems have evolved to aid survival; they have enabled our ancestors to perceive and recognize (and avoid) predatory animals, to identify edible berries, and safely navigate through savannahs. In the modern world,

people have few natural enemies, the grocer tells them which berries are safe, and maps, way finding, and car navigation systems help people find their way. Importantly, however, the sensory systems that were originally 'designed' for these purposes have hardly changed. The functional architecture of the mind has been formed as a result of problems our ancestors had to solve under the conditions of our ancestral environment, not by the kind of problems modern humans are dealing with today (e.g. Kanazawa, 2004; Tooby & Cosmides, 2005).

Central to our perceptual theory of aesthetics is the idea that people like anything that facilitates understanding: people have come to derive pleasure from things that support the effective functioning of our sensory systems, including our brain (cf. Ramachandran & Hirstein, 1999; Johnston, 2003 for similar views). For example, people like to perceive things that belong together as similar in shape, size, or colour, they like to perceive different things as highly contrasted, and they like 'peak shift' because it emphasizes crucial information (see Hekkert, 2006). Since all the senses play a role in stimulus identification and recognition, predictions can be made about which unifying sensory properties are pleasing (Schifferstein & Hekkert, 2011).¹⁵

However, as much as humans like to perceive unity and order, they are also attracted to diversity, complexity, and variety (Berlyne, 1966, 1971). The most beautiful gardens are those that exhibit a variety of flowers of various heights and colours. Diversity feeds our drive for exploration, and bears the prospect of learning. The battle between these two forces results in a preference for patterns that simultaneously maximize the two. Hence, we like "unity-in-variety". This well-known principle of aesthetics has been demonstrated using visual patterns (e.g. Boselie & Leeuwenberg, 1985) and in some non-visual domains, including music (Brattico et al., 2009) and food (Lawless, 2000). As the battle (between unity and variety) at this level is primarily rooted in sensory experience, and because our sensory systems do not differ across humans of various

¹⁵ Infants, and higher and lower animals share most of the sensory organs. It could thus be predicted that young children and these other animals have similar aesthetic preferences as adult humans have. And indeed, there is supporting evidence from human infants, monkeys, and birds that they for example have similar preferences for music (e.g. Hauser & McDermott, 2003), suggesting these preferences are 'side effects' of more general features of perception and cognition.

cultures and races, it can be predicted that the effects at this level are cross-culturally consistent. People can, however, due to domain-specific training, differ in their sensitivity to unifying elements in a stimulus. People can simply “fail to see” the (hidden) order in a pattern (e.g. artwork, musical piece, etc.). Therefore it could further be predicted that interindividual differences at this level are due to domain-expertise.

The Cognitive Level: Typicality vs. Novelty

There is a growing body of evidence that so-called ‘higher’ cognitive processes, such as categorization, reasoning, and concept formation, are intrinsically sensory-motor based, or “embodied” (e.g. Barsalou, 1999; Gibbs, 2003; Johnson, 2007). In order to form categories, we need repeated experiences with the objects of categorization, and these experiences are inherently embodied and multimodal. Each time we see or interact with a cat or car, we do this through most/all of our senses. Our image schemas or categories of car-ness (a typical car) or cat-ness (a typical cat) are thus also embodied. When we encounter a new object, we do not compare it to a mental representation to assess its typicality. Rather, we re-enact previous experiences, a process that is mediated by these image schemas, recurring structures and patterns of sensorimotor experience (e.g. Barsalou et al., 2003; Gallese & Lakoff, 2005). For this reason, preferences based on meaningful qualities (e.g. typicality) are as much aesthetic judgments as preferences based on formal/perceptual properties.

Several studies have demonstrated that people prefer typical or familiar instances of a category, such as furniture (Whitfield & Slatter, 1979), colour patches (Martindale & Moore, 1988), and paintings (Hekkert & van Wieringen, 1990). This relationship is consistent with the “mere exposure” effect (Zajonc, 1968) and is often explained by the fact that something typical/familiar is safe to approach (Bornstein, 1989) and easy to process (Reber et al., 2004). Similar effects have also been found in music (Gaver & Mandler, 1989) and odours (Distel et al., 1999), suggesting the relationship is sensory-domain independent, as our model would predict.

Simultaneously, however, we are also drawn towards the new (Martindale, 1990): something novel is interesting and offers the promise of discovery and learning (e.g. Bornstein, 1989). We (Hekkert et al., 2003) have shown that both typicality and novelty predict people’s aesthetic preference for a number of consumer products, such as cars

and sanders. Although the two variables are clearly negatively correlated, it is possible to optimize novelty while preserving typicality: people like things that are most advanced, yet acceptable (MAYA; Hekkert et al., 2003).

Striking an optimal balance between novelty and familiarity does seem to be the most effective strategy. Yet, what is novel to one person may be very familiar to another (and vice versa). One's subjective assessment of a stimulus' novelty or familiarity depends on a range of context variables (e.g., frequency of appearance) and background variables (e.g., previous experiences). Thus, people differ to a large extent on what objects they see as novel or typical for a particular product category. As a result, predictable differences in aesthetic preference arise at a group (culture, expertise, etc.) or individual level (Hekkert, 2006).

The Social Level: Independent (uniqueness) vs. Interdependent (connectedness)

Judgments of aesthetic preference rarely take place in isolation; much of people's interaction with the world involves interacting with other humans. People's preferences and possessions find their social roots and implications in the attempt to show others how unique they are (i.e. autonomy seeking) or in reflecting the desire to belong to a group (i.e. "affiliation seeking", cf. Markus & Kitayama, 1991; Kleine et al., 1995). Whereas stressing one's independence or uniqueness entails a certain risk (of social exclusion), interdependent choices secure the safety of group membership (and social inclusion). Being drawn towards one or the other is not a fixed personality trait, but a reflection of self-construal that can vary over time and situations (Reed, 2004). People can have an independent or an interdependent orientation (Cialdini et al., 1999). While interdependent people tend to maintain *connectedness* and harmony, independent people pursue *uniqueness* and try to stand out from the group (e.g. Markus & Kitayama, 1991).

Analogous to the battles at the other levels, we expect a trade-off to operate at this social level: people like things that present them to others as unique, but simultaneously make them part of a social group (connected).¹⁶ If, however, we

¹⁶ The question must be raised as to whether such preference judgments based on connectedness/uniqueness can still be considered aesthetic preferences, i.e. are these also rooted in sensory-motor experiences? Johnson (2007, p. 147) provides a compelling argument

consider the trade-off at this level predominantly in terms of self-construal – as is common practice in social psychology – instead of in terms of stimulus qualities we can predict the effects of an independent/interdependent orientation on the trade-offs at the other levels. For example, and consistent with my model, Freitas et al. (2005) demonstrated that those who are motivated to avoid negative events – so-called “prevention-focused” participants – prefer fluently processed (typical) stimuli. The dimension of independence vs. interdependence is also considered as one of the most important dimensions on which cultures differ. Whereas independence is the dominant self-construal in individualistic cultures, interdependence dominates in collectivist cultures (e.g. Nisbett, 2003; Oyserman et al., 2002). Such contrasting values and beliefs lead to different biases in information processing (Nisbett et al., 2001) and evidence is increasing that such biases affect neural structure and function (Park & Huang, 2010). Cultural comparative studies could thus be employed to test the effect of this dimension on aesthetic preferences at the perceptual and cognitive level. In line with this approach, Zhang et al. (2006) showed that logos from countries with predominantly collectivist cultures (e.g. Japan, Korea) were seen as more rounded than those from individualistic countries (e.g. the United States, Germany). Such studies support the view that everyday aesthetic preferences result from a predictable interaction between universal psychological mechanisms and situational/cultural specifics (e.g. Takahashi, 1995; see also Tooby & Cosmides, 1992; Richerson & Boyd, 2005).

Conditions affecting the trade-off between safety and accomplishment

The question arises as to whether humans always seek an optimum between typicality and novelty (or unity and variety, or connectedness and uniqueness) or does one of the two prevail in people’s affective responses? For example, it has been clearly demonstrated that infants and young children prefer exploring and inspecting novel stimuli to familiar ones (e.g. Fantz, 1964; Hunter et al, 1983; Uehara, 2000). In general,

that this is actually the case: “For humans, a very large and distinctive part of such engagement [i.e. bodily interactions with the world] involves interacting with other humans. In other words, human understanding and thinking are social.” This argument resonates with the prevalent view in evolutionary psychology saying, “The social and cultural are not alternatives to the biological. They are aspects of evolved human biology [...]” (Tooby & Cosmides, 1992, p. 86).

we predict that people tend towards typicality (unity/conformity) in important or 'risky' conditions, and towards novelty (variety/interdependence) when there is little risk involved. These conditions can for instance be construed in various ways.

Proximity versus distant senses

Whereas touch and taste are often called 'contact senses' or 'proximity senses', because they require closeness to the perceived object in order to perceive its properties, vision and audition are usually called 'distant senses' because they do not require direct contact (Sekuler & Blake, 1994). It is easy to see that making wrong inferences on the basis of our proximity senses is more risky than doing so on the basis of our distant senses: making the wrong choice when putting something in the mouth or touching an unknown creature has more immediate consequences than just looking at or listening to an unfamiliar event. It can therefore be predicted that the balance between unity (typicality) and variety (novelty) tends towards the former in the case of tactile stimuli and towards the latter when (the same) stimuli are presented visually.

Public versus private consumption

When people expect that their preferences to be evaluated by others – a situation characterized as 'public consumption' – aesthetic choices entail more risk (of exclusion). By contrast, when people do not expect such an evaluation, it is referred to as 'private consumption' (Ratner & Kahn, 2002). It is hypothesized that people relatively prefer typicality (unity/connectedness) to novelty (variety/uniqueness) in a public consumption situation. To test this prediction, participants will be primed for one of these two situations (see Ratner & Kahn, 2002).

Promotion versus prevention goals

According to regulatory-focus theory (Higgins, 1997), people can differ in approach motivation. The basic distinction is one between nurturance and security needs. Nurturance-related regulation involves a promotional focus, where people aspire to accomplishments, whereas security-related regulation involves a prevention focus and a drive towards safety and responsibility. Both types of regulatory focus can be induced

by framing conditions (e.g. Liberman et al., 1999; Shah et al., 1998). For example, participants in a promotion priming condition can be asked to (first) describe their current hopes and goals, whereas participants in a prevention priming condition are asked their current sense of duty and obligation (Liberman et al., 1999). Analogous to the previous conditions, we expect individuals with promotion goals to (relatively) favour novelty (variety/uniqueness) in comparison to people induced to have prevention goals.

Conclusion

Most research in aesthetics has limited itself to studying people's aesthetic responses to simple, artificial stimuli, such as polygons and dot patterns, or works of art. Although works of art are interesting artefacts, in that they are often (but not exclusively) created to evoke aesthetic experiences, we consider them limited because they usually stimulate only one sensory modality (e.g. paintings > vision, music > audition).

Moreover, art is generally designed to achieve various emotional effects (e.g. fascination, awe, disgust, interest) that go beyond the scope of aesthetics.¹⁷

When it comes to multimodal aesthetic preference *per se*, without additional emotional effects, designed products are a much more appropriate object of study. Cars, for example, are visual objects, yet they make a range of sounds, can and will be touched on various areas/surfaces, and have various smells. Moreover, designers are used to designing objects in all kinds of variations to see what works best: systematic variation of stimulus material is a designer's natural methodology. Project UMA will therefore investigate the above aesthetic predictions in the field of product design.

Project UMA aims to test a series of research questions that are based on one, unifying

¹⁷ Confusingly, the kinds of emotions evoked by works of art are often referred to as "aesthetic emotions" (e.g. Armstrong & Detweiler-Bedell, 2008; Silvia, 2005). Clearly, these emotions can also be evoked by other, non-artistic events, such as people, natural phenomena, etc. Also, works of art, like any artefact, can in principle evoke any emotion, from sadness and despair to happiness and desire. Given this context, what then does the adjective 'aesthetic' mean in "aesthetic emotions"? It leads to confusion and endless discussion on whether aesthetic emotions are 'real' emotions (see e.g. Frijda, 1989; Lazarus, 1991).

theoretical framework. The most important questions are:

1. At each level of aesthetic processing, are people's preferences driven by needs related to safety and accomplishment, and do they strive for an optimum between these two impulses?
2. Are these balancing principles present in all sensory domains?
3. Do these balancing principles operate across sensory domains?
4. Do conditions involving 'risk' drive people towards the safe side and, correspondingly, do 'safe' situations make people prefer more challenging alternatives?
5. Given the three levels at which people balance their aesthetic preferences, which principle dominates aesthetic preference under what conditions?

Taken together, project UMA will allow us to explain and predict our aesthetic preferences for everyday objects. And beyond.

References

- Armstrong, T. & Detweiler-Bedell, B. (2008). Beauty as an emotion: The exhilarating prospect of mastering a challenging world. *Review of General Psychology*, 12, 305-329.
- Barsalou, L.W. (1999). Perceptual symbol systems. *Behavioral and Brain Sciences*, 22, 577-609.
- Barsalou, L.W., Simmons, W.K., Barbey, A.K., & Wilson, C.D. (2003). Grounding conceptual knowledge in modality-specific systems. *TRENDS in Cognitive Science*, 7, 84-91.
- Berlyne, D. E. (1966). Curiosity and exploration. *Science*, 153, 25-33.
- Berlyne, D. E. (1971). *Aesthetics and psychobiology*. New York: Appleton-Century-Crofts.
- Biederman, I. & Vessel, E.A. (2006). Perceptual pleasure and the brain. *American Scientist*, May-June, 249-255.
- Bornstein, R. F. (1989). Exposure and affect: Overview and meta-analysis of research, 1968-1987. *Psychological Bulletin*, 106, 265-289.
- Boselie, F., & Leeuwenberg, E. (1985). Birkhoff revisited: Beauty as a function of effect and means. *American Journal of Psychology*, 98, 1-39.
- Bowlby, J. (1969). *Attachment and loss: Attachment* (Vol. 1). New York: Basic Books.

- Brattico, E., Brattico, P., & Jacobsen, T. (2009). The origins of the aesthetic enjoyment of music – A review of the literature. *Musicae Scientiae, Special Issue*, 15–37.
- Cialdini, R.B., Wosinska, W., Barrett, D.W., Butner, J., & Gornik-Durose, M. (1999). Compliance with a request in two cultures: The differential influence of social proof and commitment/consistency on collectivists and individualists. *Personality and Social Psychology Bulletin*, 25, 1242-1253.
- Damasio, A. (1994). *Descartes' error: Emotion, reason, and the human brain*. New York: G.P. Putnam's Sons.
- Dewey, J. (1934). *Art as experience*. New York: Berkley Publishing Group.
- Distel, H., Ayabe-Kanamura, S., Martínez-Gómez, M., Schicker, I., Kobayakawa, T. Saito' S. & Hudson, R. (1999). Perception of Everyday Odors—Correlation between Intensity, Familiarity and Strength of Hedonic Judgement. *Chemical Senses*, 24, 191-199.
- Fantz, R.L. (1964). Visual experience in infants: Decreased attention to familiar patterns vs. novel ones. *Science*, 146, 668-670.
- Fechner, G. T. (1876). *Vorschule der Ästhetik*. Leipzig: Breitkopf und Härtel.
- Freitas, A.L., Azizian, A., Travers, S., & Berry, S.A. (2005). The evaluative connotation of processing fluency: Inherently positive or moderated by motivational context? *Journal of Experimental Social Psychology*, 41, 636-644.
- Frijda, N. H. (1989). Aesthetic emotions and reality. *American Psychologist*, 44, 1546-1547.
- Gallese, V. & Lakoff, G. (2005). The brain's concepts: The role of the sensory-motor system in conceptual knowledge. *Cognitive Neuropsychology*, 22, 455-479.
- Gaver, W.W. & Mandler, G. (1989). Play it again Sam: On liking music. *Cognition and Emotion*, 1, 259-282.
- Gibbs, R. (2003). Embodied experience and linguistic meaning. *Brain and Language*, 84, 1-15.
- Gray, J.A. (1987). *The psychology of fear and stress*. New York: Cambridge University Press.
- Hauser, M.D. & McDermott, J. (2003). The evolution of the music faculty: A comparative perspective. *Nature Neuroscience*, 6, 663-668.
- Hekkert, P. (2006). Design aesthetics: Principles of pleasure in design. *Psychology Science*, 48, 157-172.

- Hekkert, P. & Leder, H. (2008). Product aesthetics. In H.N.J. Schifferstein & P. Hekkert (Eds.), *Product experience* (pp. 259-285). Amsterdam: Elsevier Science Publishers.
- Hekkert, P., Snelders, D., & van Wieringen, P. C. W. (2003). 'Most advanced, yet acceptable': Typicality and novelty as joint predictors of aesthetic preference in industrial design. *British Journal of Psychology*, *94*, 111-124.
- Hekkert, P., & van Wieringen, P. C. W. (1990). Complexity and prototypicality as determinants of the appraisal of Cubist paintings. *British Journal of Psychology*, *81*, 483-495.
- Higgins, E.T. (1997). Beyond pleasure and pain. *American Psychologist*, *52*, 1280-1300.
- Hunter, M.A., Ames, E.W., & Koopman, R. (1983). Effects of stimulus complexity and familiarization time on infant preferences for novel and familiar stimuli. *Developmental Psychology*, *19*, 338-352.
- Johnson, M. (2007). *The meaning of the body: Aesthetics of human understanding*. Chicago: The University of Chicago Press.
- Johnston, V.S. (2003). The origin and function of pleasure. *Cognition and Emotion*, *17*, 167-179.
- Kant, I. (1952). *The critique of judgement*. (J.C. Meredith, Trans.). Oxford: Clarendon Press. (Original work published 1790).
- Kanazawa, S. (2004). General intelligence as a domain-specific adaptation. *Psychological Review*, *111*, 512-523.
- Kawabata, H., & Zeki, S. (2004). Neural correlates of beauty. *Journal of Neurophysiology*, *91*, 1699-1705.
- Kleine, S.S., Kleine III, R.E., & Allen, C.T. (1995). How is a possession 'me' or 'not me'? Characterizing types and an antecedent of material possession attachment. *Journal of Consumer Research*, *22*, 327-242.
- Lawless, H.T. (2000). Sensory combinations in the meal. In H.L. Meiselman (Ed.), *Dimensions of the meal: the science, culture, business and art of eating* (pp. 92-106). Gaithersburg, MD: Aspen.
- Lazarus, R. S. (1991). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist*, *46*, 819-834.

- Liberman, N., Idson, L.C., Camacho, C.J., & Higgins, E.T. (1999). Promotion and prevention choices between stability and change. *Journal of Personality and Social Psychology, 77*, 1135-1145.
- Markus, H. & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224-253.
- Martindale, C. (1990). *The clockwork muse: The predictability of artistic change*. New York: Basic Books.
- Martindale, C. & Moore, K. (1988). Priming, prototypicality, and preference. *Journal of Experimental Psychology: Human Perception and Performance, 14*, 661-670.
- Postrel, V. (2003). *The substance of style*. New York: Harper Collins.
- Nisbett, R.E., Peng, K., Choi, I., & Norezayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review, 108*, 291-310.
- Orians, G. H., & Heerwagen, J.H. (1992). Evolved responses to landscapes. In J. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind* (pp. 555-579). New York: Oxford University Press.
- Oyserman, D., Coon, H.M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*, 3-72.
- Park, D.C. & Huang, C.M. (2010). Culture wires the brain: A cognitive neuroscience perspective. *Perspectives on Psychological Science, 5*, 391-400.
- Pinker, S. (1997). *How the mind works*. New York: Norton.
- Postrel, V. (2003). *The substance of style*. New York: Harper Collins.
- Ramachandran, V. S. & Hirstein, W. (1999). The science of art: A neurological theory of aesthetic experience. *Journal of Consciousness Studies, 6*, 15-51.
- Ratner, R.K. & Kahn, B.E. (2002). The impact of private versus public consumption on variety-seeking behavior. *Journal of Consumer Research, 29*, 246-257.
- Reber, R., Schwarz, N., & Winkielman, P. (2004). Processing fluency and aesthetic pleasure: Is beauty in the perceiver's processing experience? *Personality and Social Psychology Review, 8*, 364-382.
- Reed, A. (2004). Activating the self-importance of consumer selves: Exploring identity salience effects on judgments. *Journal of Consumer Research, 31*, 286-295.
- Richerson, P.J. & Boyd, R. (2005). *Not by genes alone: How culture transformed human*

- evolution*. Chicago: The University of Chicago Press.
- Schiffstein, H.N.J. & Hekkert, P. (2011). Sensory aesthetics in product design. In F. Bacci and D. Melcher (Eds.), *Art and the senses* (pp. 529-555). Oxford: Oxford University Press.
- Sekuler, R. & Blake, R. (1994). *Perception* (3rd edition). New York: Alfred A. Knopf.
- Shah, J.Y., Higgins, E.T., & Friedman, R. (1998). Performance incentives and means: How regulatory focus influences goal attainment. *Journal of Personality and Social Psychology, 74*, 285-293.
- Silvia, P. (2005a). Cognitive appraisals and interest in visual art: Exploring an appraisal theory of aesthetic emotions. *Empirical Studies of the Arts, 23*, 119-133.
- Symons, D. (1995). Beauty is in the adaptations of the beholder: The evolutionary psychology of human female sexual attractiveness. In P.R. Abramson and S.D. Pinkerton (Eds.), *Sexual nature/sexual culture* (pp. 80-118). Chicago: University of Chicago Press.
- Takahashi, S. (1995). Aesthetic properties of pictorial perception. *Psychological Review, 102*, 671-683.
- Thornhill, R. (2003). Darwinian aesthetics informs traditional aesthetics. In E. Voland and K. Grammar (Eds.), *Evolutionary aesthetics* (pp. 9-35). Berlin: Springer.
- Thornhill, R. & Gangestad, S.W. (1993). Human facial beauty: Averageness, symmetry and parasite resistance. *Human Nature, 4*, 237-269.
- Tooby, J. & Cosmides, L. (1992). The psychological foundations of culture. In J. Barkow, L. Cosmides and J. Tooby (Eds.), *The adapted mind* (pp. 19-136). New York: Oxford University Press.
- Tooby, J. & Cosmides, L. (2005). Conceptual foundations of evolutionary psychology. In D.M. Buss (Ed.), *The handbook of evolutionary psychology* (pp. 5-67). Hoboken, NJ: Wiley.
- Uehara, I. (2000). Transition from novelty to familiarity preference depending on recognition performance by 4-yr.-olds. *Psychological Reports, 87*, 837-848.
- Whitfield, T.W.A. (2005). Aesthetics as pre-linguistic knowledge: A psychological perspective. *Design Issues, 21*, 3-17.
- Whitfield, T. W. A., & Slatter, P. E. (1979). The effects of categorization and prototypicality on aesthetic choice in a furniture selection task. *British Journal of Psychology, 70*, 65-75.

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology Monograph Supplement*, 9, 1-27.

Zhang, Y., Feick, L., & Price, L.J. (2006). The impact of self-construal on aesthetic preference for angular versus rounded shapes. *Personality and Social Psychology Bulletin*, 32, 794-805.

THE ARTFUL MIND MEETS ART HISTORY: A PSYCHO-HISTORICAL FOUNDATION FOR EMPIRICAL AESTHETICS

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Abstract

Research seeking a scientific foundation for the theory of art appreciation has raised controversies at the intersection of the social and cognitive sciences. Though equally relevant to a scientific inquiry into art appreciation, psychological and historical approaches to art developed independently and lack a common core of theoretical principles. Historicists argue that psychological and brain sciences ignore the fact that artworks are artifacts produced and appreciated in the context of unique historical situations and artistic intentions. After revealing flaws in empirical aesthetics, which belongs to the psychological approach to art, we review the psycho-historical framework for the science of art appreciation (Bulot & Reber, 2012). This framework demonstrates that a science of art appreciation must investigate how appreciators process causal and historical information to classify and explain their psychological responses to art. Expanding on research about the cognition of artifacts, we identify three modes of appreciation: basic exposure to an artwork, which is the mode most often investigated by empirical aesthetics; the artistic design stance, which is an attitude whereby appreciators develop their sensitivity to art-historical contexts by means of inquiries into the making, authorship, and functions of artworks. The design stance, in turn, is a prerequisite for artistic understanding, which is based on proficiency in art-historical contexts and allows theory-based reasoning about the causal history of an artwork. We defend and illustrate the psycho-historical framework with an analysis of existing studies on art appreciation in empirical aesthetics, such as research on pictorial balance. Finally, we argue that the fluency theory of aesthetic pleasure, which by itself is not relevant to art appreciation, can be amended to meet the requirements of the framework. By providing new foundations for empirical aesthetics, scientists can tackle fundamental questions about the nature and appreciation of art within the psycho-historical framework.

In this paper, we first provide an extensive summary of the psycho-historical framework developed by Bullot and Reber (Bulot, 2009; in press), which proposes a new contextualist foundation for empirical aesthetics and the science of art. We then review empirical studies that adopt contextualist principles compatible with the psycho-historical framework.

1 Psychological and neuroaesthetic theories of art appreciation

A number of scientists in the behavioural and brain sciences argue that experimental studies of the perceptual, hedonic, and cognitive responses to works of art are the building blocks of an emerging science of aesthetic and artistic appreciation. This

science is referred to with terms such as *psychobiology of aesthetics* (Berlyne, 1971), *neuroaesthetics* (Zeki, 1999), *science of art* (Ramachandran & Hirstein, 1999), or *aesthetic science* (Shimamura & Palmer, 2012). Proponents of this scientific approach to art often defend a *psychological approach to art theory*, whereby we denote methods that attempt to explain aesthetic and artistic phenomena by means of the reference to mental, biological, and brain mechanisms.

Numerous theories that adopt the psychological approach search for laws (Martindale, 1990) or universals of art. Zeki (1999) and Ramachandran and Hirstein (1999) introduce their research in neuroaesthetics as an inquiry into the ways art “obeys” the “laws of the brain,” or as a search for neurobiological laws that explain *artistic universals*. Advocates of the quest for aesthetic universals sometimes argue that methodologies stemming from brain and behavioural sciences should be capable of explaining art appreciation without the need to investigate the contingency and particularity of art-historical contexts and the appreciators’¹⁸ *sensitivity* to such contingent art-historical contexts.

2 Contextualism, ahistorical theories, and the argument from the tracking of agency and functions

In contrast to the ahistorical theories of psychological universals, numerous scholars in the humanities and social sciences employ historiographical and contextualist methods in their inquiries into the arts. Bullo and Reber (in press) use the term *historical approach to art theory* to refer to methods that analyse art-historical contexts or actions of intentional agents in art-historical contexts to explain artistic phenomena. In contrast to theories in empirical aesthetics, these contextualist methods treat historical contexts as the most relevant variables (*explanantia*) for explaining artistic phenomena (*explananda*). The historical approach encompasses studies that apprehend art appreciation in the context of the history of art, styles, and particular oeuvres. According to *aesthetic contextualism* (e.g., Danto, 1981; Dickie, 1997 [1984]), scholars in aesthetics need to refer to historical and societal contingencies in artistic contexts (artworlds) to account for the production of art and the appreciation of particular artefacts as works of art.

Proponents of contextualism stress the importance of historical factors and context-specificity in art and its appreciation. Consequently, their view predicts that scholars who seek to explain art appreciation need to investigate art appreciators’ *sensitivity to art-historical contexts*. Because numerous defenders of the psychological approach have often investigated art appreciation without analysing the appreciator’s sensitivity to art-historical contexts, many scholars who adopt contextualism express doubts that psychological and neuroscientific theories can succeed in explaining art appreciation (see Bullo & Reber, in press). Contextualists have discussed a variety of objections against a purely psychological approach. Bullo and Reber (in press) proposed a novel formulation of an objection, which derives from the concept of sensitivity to context-specific functions. Here, we will refer to this objection as the *argument from the tracking of artistic agency and functions*. The objection may be

¹⁸ The term *appreciator* refers to the person who is making the appreciation, regardless of whether this person is the artist or the member of an audience.

expressed as follows:

First, the appreciator’s competence in artistic appreciation of an artwork is a form of *sensitivity to*—or, an ability to track—characteristics of the art-historical context of this work such as the context-specific functions of the work and the agency of its maker. Second, most theories in empirical aesthetics do not explain the appreciator’s *sensitivity to* characteristics of the art-historical context of the work. Therefore, most theories in empirical aesthetics do not explain the appreciator’s artistic appreciation. This objection is sound when directed at ahistorical theories in the empirical aesthetics that investigate psychological or neural responses to art without a theory of the neural or mental basis of the appreciator’s sensitivity to art-historical contexts. Examples include studies that use reproductions of artworks as stimuli (prototypically paintings) without manipulating the participants’ knowledge of the art-historical contexts relevant to appreciation of the works presented as stimuli (e.g., Kawabata & Zeki, 2004; Locher, Gray, & Nodine, 1996; Martindale, Moore, & Borkum, 1990; Vartanian & Goel, 2004). While an increasing number of such psychological studies reveal interesting effects, the neglect of art-historical contexts so typical in empirical research about the arts makes it unlikely that these effects are essentially connected to artistic feelings and understanding of the arts.

3 A psycho-historical research program for the integrative science of art appreciation

As an alternative to radical forms of psychologism or historicism, Bullot and Reber (in press) proposed a psycho-historical research program on art appreciation that combines historical contextualism and psychology: the *psycho-historical framework for the science of art appreciation* (‘psycho-historical framework’ henceforth). This framework aims at providing contextualist principles for the development of experimental research within the psychological approach.

Figure 1 (adapted from Bullot & Reber, in press) depicts the historical concepts of the theory and their relations (section 3.1) and the appreciation of the work through three modes of information processing (section 3.2).

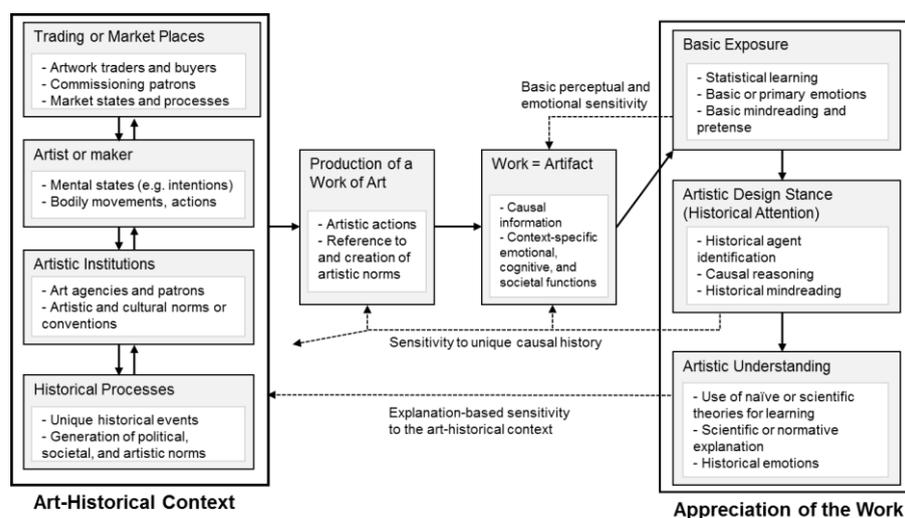


Figure 1 The psycho-historical theory of art appreciation. Solid arrows indicate relations of causal and historical generation. Broken arrows indicate information-processing and representational states of the appreciators' mind that refer back to earlier historical stages in the production and transmission of a work.

3.1 Historical hypotheses and concepts

We use the term *art-historical context* to refer to the complex of human agents, artistic and trading institutions, and historical and political processes that govern the production of artistic artefacts and their subsequent evaluation, trade, and conservation. Artists, patrons, sellers, politicians, and audiences are agents who build this context through deployment of their individual and collective agency.

An *artwork* is an artefact that has context-specific functions. Bulot and Reber (in press) used the term *artefact* in a broad sense that refers to an object or a performance intentionally brought into existence through causal intervention of human action. Artefacts in this sense have functions (e.g., Parsons & Carlson, 2008). Referring to particular historical contexts is indispensable in elucidating the functions of artefacts because many of such functions are context-specific, and knowing the historical context of an artefact can help investigators elucidate its functions.

The artwork is a *carrier of causal and historical information* about agents, agency, and other elements in art-historical contexts. As stressed by Berlyne and other psychologists, an information-theoretic conception of the artwork can account for the different sources of knowledge that its appreciation can provide (Berlyne, 1974); the characteristics or features of an artwork can be sources of syntactic, cultural, expressive, and semantic information. However, Berlyne's conception is missing an important aspect of the ontic status of artworks because it is *ahistorical*. It fails to make clear that the information carried by a work is the end product of a causal history and the way appreciators extract information about the work is driven by inquiries about the past. Art appreciation is driven by the appreciator's sensitivity to the present states and the causal history of observable properties of the work (Figure 1). In the psycho-historical account, this aspect can be captured by conceiving of each of the intrinsic features of a work as a *trace* or *carrier of causal information* that can be processed to acquire knowledge about relevant art-historical contexts.

3.2 Psychological hypotheses

When appreciators perceive a work or some of its representations, they are exposed to the causal-historical information it carries. The psycho-historical theory makes three basic hypotheses about the processing of this information.

3.2.1 Basic exposure

An elementary mode of appreciation is *basic exposure* to the work or one of its reproductions (Figure 1). Basic exposure is the variety of processes that spontaneously occur when appreciators perceive an artwork without having knowledge about its causal history and art-historical context. The direct experience of an artwork depends on a variety of processes and biases of perception, focused awareness and attention, illusion, memory systems and recollection, imagination, symbolic interpretation, and exploratory action. Many of such processes are necessary conditions of the appreciators' exposure to and immediate preferences for particular works of art. Instead of attempting a comprehensive exploration of these numerous basic processes

and biases, we will focus on three examples.

(1) Because artworks carry causal-historical information, repeated exposure to a work may nonetheless allow its appreciators to develop their sensitivity to historical facts or rules, even if such appreciators are deprived of knowledge about the original artistic context. Perceptual exposure to an artwork may lead to implicit forms of causal-historical learning of style. However, as even pigeons can learn to classify artworks according to stylistic features (Watanabe, Sakamoto, & Wakita, 1995), there is reason to doubt that artistic understanding is a prerequisite of basic stylistic classifications. Such understanding is more likely to derive from inferences based on historical theories rather than similarity (Murphy & Medin, 1985).

(2) The sensory exposure to form and content of an artwork can elicit a variety of non-historical *emotional* responses (see Bullot & Reber, in press). These may include the emotions that are sometimes described as *basic* (Ekman, 1992) or *primary* (Damasio, 1994)—such as anger, fear, disgust, and sadness—and other responses such as startle, erotic desire, enjoyment, or feeling of empathetic engagement. The historical knowledge that appreciators gain from the elicitation of these basic emotions through basic exposure to a work is shallow at best.

(3) The appreciator's basic perceptual exposure to the work can prompt processes aimed at representing mental states, so-called *mindreading* (e.g., Nichols & Stich, 2003). Philosophical arguments provide reason to think that mindreading is essential to art appreciation (see Bullot & Reber, in press). This is because, in responding to an artwork in the mode of basic exposure, appreciators often elaborate on free imaginative games and pretence involving the attribution of fictional beliefs or desires to characters. Though these games may be stunning constructions of the appreciators' imagination (Harris, 2000; Nichols & Stich, 2003), they do not entail sensitivity to the history of artworks.

Basic perceptual exposure to artworks is the mode of art appreciation most frequently investigated by advocates of the psychological approach. As demonstrated by the argument from the tracking of agency and functions in art-historical contexts (section 2), research restricted to basic exposure cannot account for the artistic understanding that stems from the appreciators' sensitivity to art-historical contexts and to art functions in such contexts and is therefore too narrow. This kind of understanding requires adoption of an artistic design stance.

3.2.2 *The artistic design stance*

Once appreciators are exposed to an artwork, they may engage in an investigation of the causal history that has led to the production and transmission of the work understood as an exemplar that can be traced over time. This mode of appreciation is what Bullot and Reber (in press) termed the *artistic design stance* (see Figure 1). The concept of design stance has been introduced by Dennett (1971), who used it to denote a strategy aimed at explaining and predicting the behaviour of an artefact by means of reference to its mechanisms and functions. In contrast to basic exposure, this mode of appreciation is no longer historically shallow because it relies on the processing of information as information related to past causal facts. It is a process by means of which appreciators become sensitive to and track over time artistic agency and functions in the art-historical context of the work.

Empirical research supports the hypothesis that understanding of artefact concepts

relies on the adoption of a *design stance* (Dennett, 1971; Kelemen & Carey, 2007), which is necessary when appreciators reason about artefacts and attempt to understand their functions.

What are characteristics of an *artistic design stance*? Dennett does not address this question, and Bullock and Reber's (in press) target article did not go far enough in the investigation of this question. If the design stance is a means whereby appreciators develop artistic understanding, we can conjecture that the artistic design stance should involve at least three kinds of processes (Figure 1); only the third one would be exclusive to art appreciation. (1) In adopting a *causal stance*, art appreciators would inquire into causal information to support the premises of their reasoning about the causal origins of the observable properties of the work. (2) In adopting an *individuation stance*, appreciators would expand the causal stance to refine hypotheses about the unique causal history of the work understood as unique exemplar, the genealogy of its functions, and the particular agents who produced it. (3) In adopting an *intentional stance*, appreciators would use their mindreading abilities to establish that the artwork under consideration was designed to meet context-specific *artistic* intentions and artistic aims.

(1) Works of art carry diverse sorts of information. When an appreciator begins to infer from observable features of the work the causal history of unobserved actions that have led to these observable features, this appreciator begins to engage in the *causal stance* necessary to the design stance. This claim is supported by evidence that humans spontaneously try to track down the cause of an event especially if the event is surprising or salient. Because the exhibit of artworks often confer on them the statuses of salient beautiful, majestic, surprising, intriguing, thought-provoking, or even offending objects, appreciators who draw their attention to them will be led to a search for causal and historical information.

(2) Once appreciators have begun to adopt the causal stance, they are in a position to process information as causal information and adopt an *individuation stance* in an attempt to answer the questions that need to be addressed to determine authorship of the work and causal processes that underlie its nature and identity. For instance, who were the persons involved in the making of the work? When and where was this work made and transmitted? What are its boundaries in space and time? The ability to *reliably* answer these ontological questions has its roots in an ability to track the history and distinctness of the artwork over repeated exposure by means of inferences and theory-based reasoning. Identification and localisation of agents and events important to the history of the work can be refined through the careful study of the work, with different methods or identifying narratives. For instance, one may identify and track an artwork by means of perceptual recognition, analysis of its chemical constituents, scrutiny of its stylistic features, and, more generally, abductive inferences about its conditions of production. These are epistemic processes that investigate clues to the identity of a work and its distinctness from forgeries and lookalikes.

(3) In addition to triggering causal attribution, the adoption of the causal and individuation stances may also prompt mindreading, and therefore lead to an *artistic intentional stance*. In basic exposure, appreciators use mindreading to represent the mind-related contents of a work without investigating its art-historical context. In contrast, the artistic intentional stance leads appreciators to inquire into the mental states of important agents in the original art-historical context of the work (e.g.,

intentions of the artist or patron) and therefore grasp the reason why the work has art status and artistic functions in this art-historical context. Appreciators may use simulation or reasoning based on relevance and optimality to interpret the intentions of agents and artistic functions in bygone art-historical contexts (e.g., an artist's intention aimed at producing a work the function of which is to elicit a specific kind of emotion in appreciators' mind).

In contrast to basic exposure, where appreciators focus on present and observable aspects of the finished product, the persons who take the design stance can also imagine alternative solutions to the artistic problem and hence use imagination, counterfactual reasoning, or thought experiments to infer the genealogy of the artistic function. This kind of mindreading would refine an appreciator's sensitivity to the causal history of the work and might therefore enable artistic understanding (see Figure 1).

3.2.3 *Artistic understanding*

If appreciators of a work take the design stance for guiding their interpretation of the work, they will increase their *sensitivity to* and *proficiency with* the art-historical context and contents of this work, which in turn enables a third mode of art appreciation, *artistic understanding*. Appreciators have *artistic understanding* of a work if art-historical knowledge, acquired as an outcome of the design stance, provides them with an ability to explain the artistic status and significance of the work.

Because there are multiple forms of understanding and explanation, we need a pluralistic approach to artistic understanding. At a minimum, there is a need to distinguish two modes of artistic understanding. The *normative mode* of artistic understanding aims to identify and evaluate the artistic merits of a work, and more generally its value. It is often based on contrastive explanations that compare the respective art-historical values of sets of artefacts. These evaluations are often viewed as essential to the practice of art critics and art historians. In contrast, the *scientific mode* of artistic understanding attempts to explain artistic *explananda* using scientific methods. In a way that parallels the combination of normative and scientific aspects in folk-psychology (e.g., Keil, 2006), the normative and scientific modes of understanding are often intermingled in common sense thinking about art and scholarly writings about art and need to be separated.

4 The psycho-historical framework as a conceptual tool for designing experimental research on appreciation of the arts

Bulot and Reber (in press) began to explore the implications of the psycho-historical framework for empirical aesthetics and the integrative science of art. Because the framework derives from the hypothesis that the identification and appreciation of artworks are context-dependent mental phenomena, it implies that empirical investigations of art appreciation need to provide models of the relations between appreciators and art-historical contexts. Beyond measuring dependent variables that are simply presumed relevant to the appreciation of art-historical contexts, researchers have to use designs that manipulate the historical context as independent variables. In a first type of design, researchers may attempt to manipulate laboratory models of art-historical contexts, as Takahashi (1995) did in her study (see Bulot & Reber, in

press). Alternatively, and as a substitute to manipulating the art-historical context directly, experimenters may manipulate the appreciators' knowledge about art-historical contexts. For example, Kruger et al. (2004) found that participants presented with artworks provided higher ratings of quality and liking if they were told that the artist invested more effort in its production. Using a similar approach, Russell (2003) and Silvia (2005) provided their participants with contextual information relevant to the history of the creation of an artwork, which led to enhanced aesthetic appreciation in comparison with a control group without this information.

A few studies have assessed the effects of the addition of titles and other semantic contexts to investigate the appreciators' sensitivity to contexts and the effects of expertise. Studies on the addition of titles of artworks are similar to studies on providing additional information about the art-historical context. However, some studies used metaphorical titles (Millis, 2001), and others used titles whose relevance to art-historical contexts remains unclear (Belke, Leder, & Augustin, 2006; Leder, Carbon, & Ripsas, 2006).

In another design aimed at manipulating the semantic context of appreciation, Kirk et al. (2009) found that when the identical painting was presented as being shown in a gallery, the centres of the brain indicating hedonic pleasure were activated. This design could be interpreted as a manipulation of information about the art-creative context of an artefact. However, the authors were influenced by study on how the price of wine increases hedonic pleasure, which suggests that their focus was a manipulation of aesthetic appreciation broadly understood rather than an assessment of the appreciators' sensitivity to specifically artistic contexts. Consequently, the effects they found could be explained by people attributing higher monetary value to paintings from a gallery than to computer-generated paintings, resulting in higher activation of the reward centres.

Studies on expertise are interesting because experts are supposed to have the knowledge and interest about art history that would enable them to provide informed judgments (Belke, et al., 2006). However, experts are often asked to provide judgments of liking or aesthetic appreciation, and it not evident that such judgments are reliably mediated by art-historical knowledge. For example, Bourdieu (1987 [1979]) demonstrated that such judgments may be driven by enactment of the aesthetic norms of one's own class and therefore be unrelated to the understanding of the artwork. However, and similarly to effects of semantic context, if it could be shown that effects of expertise on aesthetic appreciation were mediated by artistic understanding, such studies would contribute to the psycho-historical framework.

Beyond contributing to the study of art by manipulating the art-historical context, empirical aesthetics may examine, within the psycho-historical framework, critical feeling, a concept akin to critical thinking (see Reber, in press). Critical thinking is the use and control of reasoning capacities to improve judgments and decisions. In a similar vein, critical feeling is the use and control of emotion and phenomenological experiences in order to improve judgments and decisions. Reber (in press) distinguished three different modes of critical feeling:

First, critical feeling as critical thinking about feelings, a notion put forward by musicologist Paul Haack (1990). This means that an appreciator could step back and think about the feelings an artwork provides.

A second mode of critical feeling is learning to differentiate feelings by discrimination

learning. The prototypical example for discrimination learning is learning that leads to feeling the different tastes of wine. As noted above, differentiation of styles can be learned implicitly. Empirical aesthetics has much to offer in examining how implicit learning of styles is related to improved hunches about different styles, and how the ability to differentiate an ever bigger variety of styles correlates with aesthetic feelings about the artwork. The psycho-historical framework would predict that people implicitly learn such styles faster and more accurately when an audience is given accurate style-related information about the art-historical context before they are exposed to paintings of different styles (see also Leder, Belke, Oeberst, & Augustin, 2004). Such explicit instruction about the art-historical context probably does not replace repeated exposure to artworks (Bourdieu, 1987 [1979]), and the question of how much it helps is an empirical one.

The final mode of critical feeling is the strategic use of processing fluency, the ease with which a mental operation is performed. Bulot and Reber (in press) discussed—though not under the name of critical feeling—how artists can strategically use disfluency, which is the feeling of processing difficulty, to express meaning or to elicit analytical thinking. However, it is not only artists who can use fluency or disfluency strategically. As Reber (2012, in press) outlined, people can expose themselves to artworks they want to develop a taste for and strategically avoid artworks they do not want to like. Such a strategy could be informed by art history if, for example, one tries to come to like art in the service of political freedom and to dislike Fascist or Stalinist monumental art. Moreover, by approaching an understanding of artworks, people may gain proficiency which increases conceptual fluency and therefore aesthetic pleasure (Bulot & Reber, in press; see Leder, et al., 2004 for a similar analysis).

In sum, empirical aesthetics and the integrative science of art not only can be done within the art-historical framework, but can also contribute to finding ways to educate critical feeling in art by examining how information about the art-historical contexts results in fuller aesthetic appreciation.

5 Conclusion

Most research in empirical aesthetics has disregarded the theoretical consequences of historical and contextualist approaches of the arts. Based on a mistaken conflation of aesthetic science with the integrative science of art, this research often assumes that using works of art as stimuli is sufficient to explain the appreciation of the arts. In Bulot and Reber (in press), we argued that this narrow approach is incomplete. The psycho-historical framework suggests, at a minimum, two additional requirements for productive experimental research on art appreciation in the integrative science of art: First, instead of focusing exclusively on mental processes related to basic exposure, investigators might instead measure dependent variables that track processes specific to other modes of appreciation, such as adoption of the design stance and acquisition of context-specific artistic understanding. Second, researchers have to consider sensitivity to art-historical contexts when they choose the independent variables in their studies. We provided some examples of research that are at least partly compatible with the principles of the psycho-historical framework and added a novel aspect by showing how empirical aesthetics could improve artistic understanding and art appreciation through critical feeling.

6 Works cited

- Belke, B., Leder, H., & Augustin, D. (2006). Mastering style - Effects of explicit style-related information, art knowledge and affective state on appreciation of abstract paintings. *Psychology Science*, 48(2), 115-134.
- Berlyne, D. E. (1971). *Aesthetics and Psychobiology*. New York: Meredith Corporation.
- Berlyne, D. E. (Ed.). (1974). *Studies in the New Experimental Aesthetics: Steps Toward an Objective Psychology of Aesthetic Appreciation*. Washington, DC: Hemisphere Publishing Corporation.
- Bourdieu, P. (1987 [1979]). *Distinction: A Social Critique of the Judgment of Taste* (R. Nice, Trans.). Cambridge, MA: Harvard University Press.
- Bulot, N. J. (2009). Material anamnesis and the prompting of aesthetic worlds: The psycho-historical theory of artworks. *Journal of Consciousness Studies*, 16(1), 85-109.
- Bulot, N. J., & Reber, R. (in press). The artful mind meets art history: Toward a psycho-historical framework for the science of art appreciation [target article]. *Behavioral and Brain Sciences*.
- Damasio, A. R. (1994). *Descartes' Error: Emotion, Reason, and the Human Brain*. New York: G. P. Putnam.
- Danto, A. C. (1981). *The Transfiguration of the Commonplace: A Philosophy of Art*. Cambridge, MA: Harvard University Press.
- Dennett, D. C. (1971). Intentional systems. *The Journal of Philosophy*, 68(4), 87-106.
- Dickie, G. (1997 [1984]). *The Art Circle: A Theory of Art*. Evanstone, IL: Chicago Spectrum Press.
- Ekman, P. (1992). An argument for basic emotions. *Cognition & Emotion*, 6(3-4), 169-200. doi: 10.1080/02699939208411068
- Haack, P. (1990). Beyond objectivity: The feeling factor in listening. *Music Educators Journal* 77, 28-32. doi: 10.2307/3397878
- Harris, P. L. (2000). *The Work of the Imagination*. Malden, MA: Blackwell.
- Kawabata, H., & Zeki, S. (2004). Neural correlates of beauty. *Journal of Neurophysiology*, 91, 1699-1705.
- Keil, F. C. (2006). Explanation and understanding. *Annual Review of Psychology*, 57(1), 227-254. doi: 10.1146/annurev.psych.57.102904.190100
- Kelemen, D., & Carey, S. (2007). The essence of artifacts: Developing the design stance. In E. Margolis & S. Laurence (Eds.), *Creations of the Mind: Theories of Artifacts and Their Representation* (pp. 212-230). Oxford: Oxford University Press.
- Kirk, U., Skov, M., Hulme, O., Christensen, M. S., & Zeki, S. (2009). Modulation of aesthetic value by semantic context: An fMRI study. *Neuroimage*, 44(3), 1125-1132. doi: 10.1016/j.neuroimage.2008.10.009
- Kruger, J., Wirtz, D., Van Boven, L., & Altermatt, T. W. (2004). The effort heuristic. *Journal of Experimental Social Psychology*, 40(1), 91-98. doi: 10.1016/s0022-1031(03)00065-9
- Leder, H., Belke, B., Oeberst, A., & Augustin, D. (2004). A model of aesthetic appreciation and aesthetic judgments. *British Journal of Psychology*, 95(4), 489-508. doi: 10.1348/0007126042369811
- Leder, H., Carbon, C.-C., & Ripsas, A.-L. (2006). Entitling art: Influence of title

- information on understanding and appreciation of paintings. *Acta Psychologica*, 121(2), 176-198. doi: 10.1016/j.actpsy.2005.08.005
- Locher, P. J., Gray, S., & Nodine, C. (1996). The structural framework of pictorial balance. *Perception*, 25(12), 1419-1436.
- Martindale, C. (1990). *The Clockwork Muse: The Predictability of Artistic Change*. New York, NY: Basic Books.
- Martindale, C., Moore, K., & Borkum, J. (1990). Aesthetic preference: Anomalous findings for Berlyne's psychobiological theory. *American Journal of Psychology*, 103, 53-80.
- Millis, K. (2001). Making meaning brings pleasure: The influence of titles on aesthetic experiences. *Emotion*, 3, 320-329.
- Murphy, G. L., & Medin, D. L. (1985). The role of theories in conceptual coherence. *Psychological Review*, 92(3), 289-316.
- Nichols, S., & Stich, S. P. (2003). *Mindreading: An Integrated Account of Pretence, Self-Awareness, and Understanding Other Minds*. Oxford: Oxford University Press.
- Parsons, G., & Carlson, A. (2008). *Functional Beauty*. Oxford: Clarendon Press.
- Ramachandran, V. S., & Hirstein, W. (1999). The science of art: A neurological theory of aesthetic experience. *Journal of Consciousness Studies*, 6(6-7), 15-51.
- Reber, R. (2012). Processing fluency, aesthetic pleasure, and culturally shared taste. In A. P. Shimamura & S. E. Palmer (Eds.), *Aesthetic Science: Connecting Minds, Brains, and Experience* (pp. 223-249). Oxford: Oxford University Press.
- Reber, R. (in press). Critical feeling: The strategic use of processing fluency. In C. Unkelbach & R. Greifeneder (Eds.), *The Experience of Thinking*. Hove, UK: Psychology Press.
- Russell, P. A. (2003). Effort after meaning and the hedonic value of paintings. *British Journal of Psychology*, 94(1), 99-110. doi: 10.1348/000712603762842138
- Shimamura, A. P., & Palmer, S. E. (Eds.). (2012). *Aesthetic Science: Connecting Minds, Brains, and Experience*. Oxford: Oxford University Press.
- Silvia, P. J. (2005). What is interesting? Exploring the appraisal structure of interest. *Emotion*, 5, 89-102. doi: 10.1037/1528-3542.5.1.89
- Takahashi, S. (1995). Aesthetic properties of pictorial perception. *Psychological Review*, 102(4), 671-683.
- Vartanian, O., & Goel, V. (2004). Neuroanatomical correlates of aesthetic preference for paintings. *NeuroReport*, 15(5), 893-897.
- Watanabe, S., Sakamoto, J., & Wakita, M. (1995). Pigeons' discrimination of paintings by Monet and Picasso. *Journal of Experimental Analysis of Behavior*, 63(165-174). doi: 10.1901/jeab.1995.63-175
- Zeki, S. (1999). *Inner Vision: An Exploration of Art and the Brain*. Oxford: Oxford University Press.

THE COMPUTATIONAL AESTHETICS OF TACTILE SENSE AND ITS SIGNIFICANCE FOR PHILOSOPHICAL AESTHETICS

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Abstract

In this paper, we consider the computational aesthetics of human tactility. In investigating the process of massage, we find that a massage involves pressure, the area of touch, and the velocity of hand movements. In order to describe the massage process, we apply the musical scoring method and create a kind of “tactile notation (tactile score).” By using this score, we analyze the standard *Face Therapy* massage (Suzuki, Watanabe, & Suzuki, 2012). Using the results of principal component analysis we classified 42 kinds of basic components into six groups: I (light pressure), II (middle pressure), III (heavy pressure), IV (light flow), V (keen flow), and VI (soft flow). Using these basic components we synthesized these massages given to customers and found the characteristics common to the comfortable ones. The result can be expressed as *Const.* = $SxPxV$. Finally we briefly discuss the significance of the computational aesthetics of tactility for philosophical aesthetics. Using the formula proposed in section 3, we can throw fresh light on some of its ideas—Herder’s concept of beauty.

Keywords: computational aesthetics, massage, tactile score, Face Therapy, philosophical aesthetics

Computational Aesthetics of Tactile Sense

The study of computational aesthetics has so far focused on visual and auditory perception. In this paper, we consider the computational aesthetics of human tactility.

Tactile Score

In investigating the process of massage, we find that a massage involves pressure, the area of touch, and the velocity of hand movements. In order to describe the massage process, we apply the musical scoring method and create a kind of “tactile notation (tactile score).” In our staff notation, we define the third line as “basic pressure,” the degree of pressure used when we very carefully hold a baby or expensive jewel. Thus, basic pressure is not an absolute value, but it may change depending on the people involved and the purpose of the massage. Notationally, pressure differences are

we classified 42 kinds of basic components into six groups: I (light pressure), II (middle pressure), III (heavy pressure), IV (light flow), V (keen flow), and VI (soft flow).

This characterization of the basic components corresponds to a sketch of the basic massage motifs, of the kind used in painting. However, while the beauty of a painting can be judged by the form composed by its materials, tactile stimuli do not have forms by which their beauty can be judged. Therefore, we define the beauty of a massage according to the comfort provided to its customers. A beauty salon must provide massages that improve the skin or other physical attributes to attract customers. We therefore define the massage that earns high client satisfaction over ten years as a “beautiful massage.” We have developed a number of massages and have found that the comfortable ones are the beautiful ones.

How to Create a Beautiful Massage?

Having created a method of describing massages, we may now use it to “compose” massages using their basic components. We have created various tactile scores and have performed them to examine whether the massages composed through the scores were comfortable. We synthesized these massages given to customers and found the characteristics common to the comfortable ones. The result can be expressed as $Const: = SxPxV$, where S is the area of touch, P is the massage pressure, and V is the hand movement velocity. A problem occurs, then, if a circle is strongly drawn on the back of a hand with fingertips and if a circle is then drawn as strongly on the back of the hand with a palm: a massage using equal pressure on both areas will not be comfortable, while a softer pressure on the latter area will be. This is because S becomes small while V does not change; if P increases, then, $Const: = SxPxV$ is preserved, generating a comfortable massage.

The Significance of Computational Aesthetics for Philosophical Aesthetics Remedying Misunderstanding

Some may believe that computational aesthetics seems mere reductionism. This is to misunderstand it, however. The aim of the tactile score is not to divide full-blooded experience into pieces, but to indirectly “operate” or “harness” (Suzuki, 2009, p. 52) the full-blooded experience we cannot capture. It is not, therefore, mere reductionism.

The Significance of Computational Aesthetics for Philosophical Aesthetics

What then is the significance of the computational aesthetics of tactility for philosophical aesthetics? Using the formula proposed in section 3, we can throw fresh light on some of its ideas—Herder’s concept of beauty. Herder (1995) assigns each

sense a specific genre of beauty with its own media. He assigns area and space to vision, tone and time to hearing, and body and power to touch (257f.). Of course, this idea is naïve, but it can be interpreted more meaningfully through the formula proposed above because it (*Const.* = $SxPxV$) contains his idea expressed differently. Moreover, given that Herder endorsed the initial touch over the mere tactile sense as the origin of the senses, we can interpret *Const.* as the existence of that initial touch. This formula may thus offer empirical evidence that a comfortable massage, like Deleuze's *haptique*, exceeds the limited domain of each of the senses. The ability of computational aesthetics to allow the ideas of philosophical aesthetics to be reinterpreted more scientifically is its true significance for the latter discipline.

References

- Deleuze, G. (2003). *Francis Bacon: The logic of sensation* (D. W. Smith, Trans.). University of Minnesota Press.
- Herder, J. G. (1995). Plastik. In J. Brummack & M. Bollacher (Eds.), *Werke in zehn Bänden*, Bd. 4, Deutscher Klassiker.
- Suzuki, Y. (2009). Self-organization is computation. In *Handbook of self-organization*, S.D.N., 51–53 (in Japanese).
- Suzuki, Y., Watanabe, J., & Suzuki R. (2012). Tactile score, knowledge media of tactile sense for creativity, *Proceedings of the 5th international conference on intelligent interactive multimedia systems and services (IIMSS 2012)*, Springer, 579-587.

SEEING RED

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Abstract

Can color evoke emotional “affordances” (Gibson, 1979)? In Northern mythology, for example, the red Aurora Borealis is seen as foreboding. In my own and my students’ research using drawings, paintings and colouring books, the emotions most often depicted with red are anger, love and embarrassment. In another example from painting, Picasso’s artwork “The Lovers” shows a man dressed in reds and pinks embracing a woman wearing blues and greens on her upper body and yellow on her lower body. The man in red could be showing, aggression, love or embarrassment (or perhaps all of these). Blue, green, and yellow, as used in the woman’s depiction, have been used to express sadness, disgust and happiness. (eg. Humphrey, 2011). Based on these associations, Picasso is portraying the woman with sadness and disgust in her upper body, but happiness in her lower body. In artwork then, colour can be used to portray emotions expressed by characters in a social relationship. What the perceiver, both depicted in the artwork and outside the artwork, experiences might be considered as emotional “affordances”. Red can express anger, or love, or embarrassment, but affords avoidance of a threatening situation in the viewer. A lover’s advances depicted in red and a red sky can both evoke affordances of avoidance. It is the meaning of the colour that evokes the emotional “affordance”,

Introduction

The ubiquity of the expression “Seeing Red” underscores the importance of red as a colour with meaning. In *Seeing Red* (2006) Nicholas Humphrey describes his earlier research with monkeys in which they showed anxious, fidgety behaviour when the cage was bathed in red light, but were relatively calm in green light. Humphrey also recalls the experience of film director Antonioni who painted a prison wall red for filming, but returned it to green to avoid the fighting that had increased with the red walls. In this paper I will argue that the emotional significance of colours gives credence to the view of emotional perception as situated cognition (Griffiths & Scarantino, 2009). I will report on studies using colouring books, the most recent

study depicting male or female characters in emotional situations, in which younger and older adults used coloured crayons to depict emotion-colour associations. I will also report two studies in which emotional and aesthetic ratings of colours have been taken; in one study with photographs of houses and in the other study while wearing coloured glasses. In the latter study, cognitive fluency tasks were also done while wearing coloured glasses. These studies variously demonstrate the role of colour in social-emotional expression, in preferences for objects (houses) and in the effect of the ambient environment on emotional associations and on cognitive tasks. The results indicate that the most salient role of colour is in social-emotional situations and judgments. The emotional “affordances” of colours, then, must be considered as situated in a social context, with “Actor” and “Cause” of an emotion differing in both expressive and negotiating displays of emotion as Griffiths and Scarantino (2009) have suggested.

Social-emotional perception, according to Reed & McIntosh (2008) has sensorimotor roots. Both facial expressions and body postures in others are understood as similar to one’s own through mechanisms of imitation in the mirror neuron system (Rizzolatti & Craighero, 2004). Artists have understood the visual-kinaesthetic correspondence between other and self-perception even before Meltzoff and Moore (1977) demonstrated that newborns will imitate (eg Arnheim 1949, Laban, 1948) Scientists continue to rediscover the basis of our knowledge of others in a variety of domains. Predictions of others’ actions and feelings is examined as situated cognition by Griffiths and Scarantino (2009) who suggest that emotions are perceived in a social context as strategic moves in an ongoing transaction, not just as expressive. These emotional acts are skillful and not necessarily conceptual or propositional. Even social emotions have non-conceptual content. Emotional behaviours lie on a continuum between expressing and negotiating. The situated perspective on emotion gives a theoretical focus on interpersonal dynamic contexts for emotional behaviours.

Previous studies have found that social emotions have common colour associations in freehand drawings of characters in emotional scenarios. Reds are most often used to depict love and embarrassment, orange is used for drawings of pride, and purple portrays guilt and empathy. (Carey, 2008; Vandewiel, 2010) Vandewiel further found that the social role of the character in the drawing affects the use of expressive colour. An analysis of CIE variables (proportions of primary colours) in Carey’s results reveals that the portrayed “Actor” in the drawing often

carries the colour of some emotions while the portrayed “Cause” of the emotion carries the colour in other drawings. Only the drawings of love used the expressive colour of red primarily in objects, not in characters. Portrayals of anger, fear, pride and guilt used respectively red, black, orange and purples expressively in the drawing of the Actor. On the other hand, embarrassment and empathy drawings showed use of red and purples in the portrayal of the Cause of the emotion. Surprise, disgust and sadness are expressed with the use of orange, green and blue respectively, in both the Actor and the Cause of the emotion.

In a study using colouring books to depict characters in emotional situations eight volunteers (one male) in a convenience sample 9 to 43 years of age used crayons to colour human and animal figures. (Humphrey, 2011). Differences between the Actor and the Cause showed more red components (in CIE variables) were used to depict the Cause of the emotion while higher luminance and more yellow components were used to depict the Agents . Colours typically used are similar to those used in previous studies of freehand drawings.

In a study by Hermsen (2012) the context for emotional meanings of colours was explored using colouring books depicting human male or female characters reacting to each other in named emotional situations of anger, surprise, happiness, disgust, sadness ,fear, embarrassment, pride, guilt and empathy. (Two examples are shown in Figure 1.) Participants coloured 22 drawings of 11 emotions with male or female characters depicting either the Actor or the Cause of the emotion. The most revealing colours seemed to be used in the body and the clothing of the characters and differed somewhat for some emotions between the Actor character and the Cause character , although for some other emotions use of colour was similar for the two characters. For example in drawings depicting anger, both characters were most often depicted in red colours, while drawings of surprise, embarrassment and pride often showed use of bluer clothes for the Cause than for the Actor. If Griffiths & Scarantino’s (2009) hypothesis is correct the depiction of Actors should show more expressive emotional colours while colours used to depict the Cause might show the colours of negotiating emotions. The average crayon colours on a scale from 1 to 24 (reds to blues and black) used to depict the various features of the characters by older (10 males and 10 females- mean age 56.6 years)and younger (5 males and 14 females- mean age 23 years) participants were analyzed. Generally, the colours used to depict both Actor and Cause in the drawings were similar to those used in previous studies with colouring

books (Humphrey, 2011) and with freehand drawings (Vandewiel, 2010). Anger was most often depicted in red, and more often in the Cause by older male participants. Perhaps the Cause here was seen as a more negotiating emotional expression. Surprise drawings were often coloured in oranges and yellow. Happiness drawings were most often coloured in yellow and orange. Disgust drawings were most often in greens and browns. Sadness drawings most often depicted the Actor in blues, while the Cause was more often depicted in yellows and oranges. Fear drawings most often used blues in the older groups, and yellow-greens in the younger groups. Love drawings used red, yellow and orange hues. Red hues were used in drawings of embarrassment, especially by older males, Pride drawings used yellow and oranges. Guilt drawings used blues, except those by younger males, who used warmer colours. Empathy drawings showed use of blues and purples. In most of the drawings the expressive colours were seen in the clothing of the characters, but in some drawings the body features (faces, hands, arms) also showed use of expressive colours, especially in drawings of anger, surprise, happiness, love, embarrassment and pride. The use of body features to show expressive emotional colours was more often done by males than by female participants. Female participants also used more colours than did males, as has been found previously in freehand drawings (eg. Humphrey,1997). There were few consistent differences in colours used to depict emotions in male and female characters in the drawings except perhaps in drawings of empathy where blues were more often used to depict male characters. There were very few sex differences between male and female participants in the use of colours in the drawings. Older adults in this study and in previous studies use a lower number of colours and in drawings smaller numbers of features and sometimes no drawing at all. A better method of examining the colour-emotion associations of the elderly might be to present already coloured figures in an emotion naming or matching task, rather than in a colouring task.



Figure 1. Examples of female and male characters showing empathy and love respectively, used in a colouring task by Hermesen (2012). Original drawings used also had backgrounds of trees, flowers and grass details.

Dupuis and Humphrey (2012) looked at colour preference and emotional ratings of photographs of houses in four different styles by architects/designers and others. Fourteen participants rated traditional and modern styles (see Figure 2) in ten different colours shown in randomized orders in Power Point Displays on a laptop computer screen on scales of anger, surprise, happiness disgust, sadness, fear, complexity, livability, likability, and pleasingness . The architect/designers preferred the Colonial style in yellow, the Georgian style in brown, the Modern style in white, and the Tudor style in white. The non-architect/designer group preferred the Colonial style in brown, the Georgian style in brown, the Modern style in brown and the Tudor style in black. If architects/designers and others differ in colour preferences in buildings, in this particular sample, it is not by much. Most participants liked buildings in yellow, brown white and black. While all of the colours used were at .75 luminance, some participants commented that brightness seemed to vary across the colours. It is likely safe to conclude here that the colours that appeared to be brighter (except white) were the least preferred. Future studies should control for perceived brightness of the colours used. Emotional ratings of the colours were at least partly in keeping with previous findings of colour-emotion associations in drawings of people (eg. Hermsen, 2012, as discussed above). Anger ratings were higher for red, black, and purple houses; surprise for purple, pink, yellow and green houses, happiness for brown, yellow, red, purple, and orange houses; disgust for green, pink, yellow, purple, pink and blue houses; sadness for green, black, blue, and brown houses; and fear for purple and black, houses. The apparent brightness of these colours may have also affected emotional ratings differentially. Ratings of surprise, for example may have been ratings of the participants' own surprise to see a brightly coloured house, uncommonly seen in urban North American architecture. Surprising also, is the finding that the architects/designers differed so little from the other group in preferences and associations. Many previous findings indicate that architects and their clients differ widely in their visual preferences (eg. Gifford, Hine, Muller-Clemm, Reynolds & Shaw, 2000). Perhaps we need to reexamine this issue. Another surprising result in this study is that photographs of houses do not carry the same emotion-colour associations as do drawings of people. It appears that emotional meanings are strongest in depictions of people, although objects can carry some of the emotional connotations, but these are not identical.



Figure 2. Example of a Colonial Style House shown in Dupuis and Humphrey (2012). Humphrey and Garrison (2012) examined the effects of wearing coloured glasses (see Figure 4) on emotional ratings and cognitive tasks. Ten participants (6 females) recruited from undergraduate classes wore six different coloured glasses while ratings of emotions and pleasingness were given and two fluency tasks were administered, all in randomized orders. Ratings of emotion were found to differ only for pink, green and the no-colour glasses conditions. Under all of the coloured glasses conditions surprise was the most highly rated emotion. Perhaps participants were rating their own feelings at seeing a uniformly coloured environment. There were no effects of the coloured glasses on the fluency tasks. Thus, very little effect of colouring the entire environment with glasses is seen in these emotional, aesthetic, or cognitive tasks. Except that participants seemed surprised by the colour of the glasses.

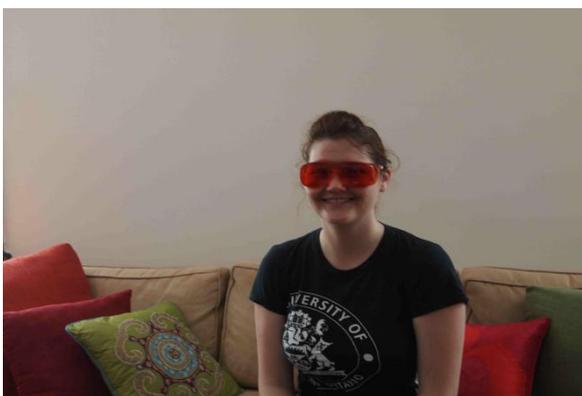


Figure 3. Example of coloured glasses worn in Humphrey & Garrison (2012). Taken together these studies suggest that the expressive quality of colours is the most salient in drawings of people and the least salient in the overall colour of the

environment, with effects on emotional and aesthetic qualities of objects (in this case houses) being somewhere in between. Especially expressive seem to be the colours of clothing depicted in drawings of people. The alert reader will of course ask why, if the colour of clothing in drawings is expressive, all of our own closets are full of black clothing. The answer might be that we do not live in drawings, but must navigate a real social world where emotional displays are used to negotiate, perhaps more than to be expressive. Most of the time most people wear uniforms, not costumes. We do not wear our hearts on our sleeves. Apparently we do not usually display our feelings in our houses either. Given that humans are capable of a broad range of emotions and that these differ widely with the social situation that might be for the best. The job of the artist then becomes a safe expression of art in a depiction that is fictionalized but reveals the universal truths of emotional experiences. Seeing red constantly in the environment might not yield the desired expressive outlet. Seeing red in a work of art, on the other hand, affords the opportunity to observe the emotional experience without the negative consequences of some real emotions. The emotional “affordances” of colours, then, depend on the social context in which they are used, and in works of art, on the emotional context that is depicted. Further research will reveal more specific aspects of emotional situations that colour our feelings.

References

- Arnheim, R. (1949). The priority of expression. *Journal of Aesthetics and Art Criticism*. 8, 106-109.
- Carey, J. (2008). Creating friendships: The examination of emotions through colour in drawings Honors Thesis. Department of Psychology, King's University College at The University of Western Ontario: London, Canada.
- Dupuis, T. & Humphrey, D. (2012, June). Colour preferences in buildings Poster presented at the Canadian Society for Brain, Behaviour and Cognitive Science. Kingston, Canada.
- Gibson, J. (1979). *The ecological approach to visual perception*. Boston: Houghton Mifflin.
- Gifford, R., Hine, D.W., Muller-Clemm, W., Reynolds, D.J., & Shaw, K.T. (2000). Decoding modern architecture: A lens model approach for understanding the differences of architects and laypersons. *Environment and Behaviour*, 32, 163-187.
- Griffiths, P. & Scarantino, A. (2009). Emotions in the wild: The situated perspective on emotion pp. 437-453 in P. Robbins and M. Aydede (Eds.) *The*

Cambridge handbook of situated cognition. Cambridge: Cambridge University Press

Hermesen, C. (2012). Colour and Emotion in Colouring Books. Honors Thesis. Department of Psychology, King's University College at The University of Western Ontario: London, Canada.

Humphrey, D. & Garrison, K. (2012, June). Effects of Coloured Glasses on Performance and Emotional Associations. Poster presented at The Canadian Psychological Association. Halifax, Canada.

Humphrey, D. (2011, July). The Colour of Happiness: Colour and emotion associations. Poster presented at Wellbeing2011. Birmingham, England.

Humphrey, D. (1997). Preferences in symmetries and asymmetries in drawings: Asymmetries between ages and sexes. *Empirical Studies of the Arts*, 15, 41-60.

Humphrey, N. (2006). *Seeing red. A study in consciousness*. Cambridge, MA. The Belknap Press of Harvard University Press.

Laban, R. (1948). *Modern educational dance*. London: MacDonald and Evans.

Meltzoff, a. & Moore, M. (1977). Imitation of facial and manual gestures by human neonates. *Science* 198, 75-78.

Reed, C. & McIntosh, D. (2008). The social dance: Online body perception in the context of others pp 79-111 in R. Klatzky, B MacWhinney and M. Behrmann (Eds.) *Embodiment, ego-space, and action*. New York: Psychology Press.

Rizzolatti, G. & Craighero, L. (2004). The mirror neuron system. *Annual Review of Neuroscience*, 27, 169-172.

Vandewiel, T. (2010). Colour and social emotions. Honors Thesis. Department of Psychology, King's University College at The University of Western Ontario: London, Canada.

AESTHETIC COMMUNICATION BETWEEN CHINESE AUDIENCES AND MARTIAL ARTS FILMS: AN EMPIRICAL RESEARCH FROM RECEPTION AESTHETICS PERSPECTIVE

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Abstract

This article expands the aesthetic communication model using in-depth interviews to portray Chinese audiences' ideal martial arts film style, aesthetic responses, and narrative expectancies.

The reception aesthetics paradigm emphasized that every appreciator has an aesthetic horizon, and their pre-understanding of genre knowledge and narrative expectancy affects their aesthetic experience. An aesthetic horizon has two parts, orientated and innovative expectation. Oriented expectation refers to an audience interpreting a martial arts film with routine or conventional thinking. Innovative expectation refers to an audience using inventive and unique style to interpret a film.

The interaction between audience and text evokes audience aesthetic horizons. Ways of interaction include identification, admiration, cathartics, association, navigation, and irony. Iser thought that an audience used their imagination to fill gaps, arranging events to construct meanings belonging to them.

The study findings show that a Chinese audience's aesthetic horizon is fused with a local culture view, and ancient Chinese history cultivated their cognition of swordsmen. The inviting structures of martial arts films include visual parts, especially fluid movement designs and magnificent spectacles. Music-accompanied fighting movements allow the audience more involvement and immersion in the story's theme: the spirit of chivalry.

In summary, audience aesthetic horizons, imagination, and image texts play important roles in aesthetic communication. This paper portrays aesthetic expectations and responses based on cultural communities, and uses martial arts films as examples to apply reception aesthetics to local cultural contexts.

Keywords: aesthetic communication, aesthetic experience, martial arts film, narrative expectancy, reception aesthetics

I. Research topic and motivation

Generally, “aesthetic experience” includes emotional responses and external behaviors. For emotional responses, an appreciator derives aesthetic pleasure and enjoyment without interests in daily life. For external behaviors, an appreciator interacts with art works accompanied by expressions, such as “encore” or “bravo,” which are also aesthetic responses. Aesthetic activity emphasizes spiritual aspects such as satisfying audience aesthetic needs or harmony with non-interest judgments.

At first, philosophers thought aesthetic responses came from the ideal world and that people should move away from the perception level to find the aesthetic core. Plato agreed with this, but Aristotle did not. Aristotle thought that visual forms or objective events constructed aesthetic experiences. In other words, features of objective events decided aesthetic experiences; therefore, people’s feelings were not key elements to aesthetic judgments. Following from Aristotle, Kant and Shiller thought that aesthetic experiences came from harmony between natural laws and the audience. Even if scholars exclude people’s perceptions or emotions, aesthetic forms also exist in the world. This theoretical perspective ignores the possibility of audience participation and focuses only on objective forms (Gadamer, 1986).

Gadamer integrated hermeneutics and Wittgenstein’s concept of “play” into the aesthetic paradigm. Gadamer (1986) felt that aesthetic responses came from interactions between objects and an audience. The audience should build on their aesthetic horizon to understand artist intentions until achieving a “horizon fusion” during dialogs between an audience and art works. Gadamer (1986) focused on equal status between people and art works and thought that audiences represented the spiritual level of art works to identify the aesthetic value of art works. Gadamer (1986) defined a “horizon” as a pre-understanding from people’s backgrounds and highlighted that people use their subjective experiences to construct the meaning of texts (Storey, 1999). These dialogic processes based on audience horizons and interpretations of texts mean that if the audience could find artists’ authentic meanings, they would gain aesthetic pleasure from horizon fusion (Gadamer, 1986). Audience subjective activities and agency challenge Gadamer’s theory and dispute that audiences can derive aesthetic pleasures only from horizon fusion. Audiences also derive enjoyment from their interpretations, which are different from author intentions.

Since 1970, researchers have considered aesthetic responses from interactions between audiences and texts and focused on audience subjectivity in producing new meanings for literary works (Berger, 1997). Reception aesthetics' broad discussion of audience agency stated that audiences construct new art work values, but contexts or text structure limit audience interpretation (Tsang & Tsai, 2001). In other words, the reception aesthetics paradigm considered aesthetic experiences the results of the interaction between audience internal structures and text structures (Tan, 1987). Four facets form aesthetic responses: audience horizon, text structure, interaction between an audience and texts, and aesthetic effects (Chu, 2005).

Jauss (1982a) extended Gadamer's horizon concept and merged horizon with aesthetic experience. His "aesthetic horizon" concept refers to narrative expectancy and a pre-understanding of the text structure, style, or genre (Jauss, 1982a). From this perspective, reception aesthetics emphasize audience activity and life experiences.

Jauss (1982a) noted the importance and functions of horizon during reading actions in his renowned book "Toward reception aesthetics." Jauss (1982a: 20) inherited Gadamer's refusal of objectivism and highlighted that a pre-understanding impacted reading actions. He elaborated on audience pre-understanding, including elements such as genre hypothesis, special forms and themes in artistic works, and narrative expectancy of rhetoric (Jauss, 1982a). This pre-understanding, the aesthetic horizon, made audience expectations the basis of aesthetic experiences (Jauss, 1982a). For example, traditional literature can be expressed in poetic language that is different from everyday language (Jauss, 1982a).

Jauss responded to issues such as why audiences have aesthetic responses during appreciation processes and which factors affect audience aesthetic understanding. According to Jauss, two facets decided aesthetic responses: audience and text structure.

1. Audience

Jauss (1982a) thought that audience aesthetic horizons constructed aesthetic distances between appreciators and art works, but audiences could build on familiar experiences to gradually understand the world expressed by texts. When audiences changed their horizons or negated previous thoughts, they could generalize new horizons or expectations to obtain different visions during reading actions (Jauss, 1982).

When audiences felt something new, integrated their thoughts, or became coauthors, they could possibly acquire aesthetic experiences from negativity (Jauss, 1982a; 1982b).

2. Text structure

Word, semantic, rhetoric, genre, and theme constructed text structure invite audiences to immerse themselves in fantastic worlds. As Ingarden (1973a) explained, there are four levels of inviting structure: the first level is phonetics; the second level is semantic units; the third level is represented objects; and the fourth level is schematic plots.

The first level, *phonetics*, refers to rhymes or sounds, similar to Saussure's "signifier" concept of mental images during people's speech (Ingarden, 1973a; Saussure, 2002). The second level, *semantic units*, refers to combinations of rhetoric and sentences where vocabulary sequences could form different meanings (Ingarden, 1973a: 94). The third level, *represented objects*, refers to something authors want to portray, such as spatial and historic backgrounds of characters (Chu, 1989). The fourth level, *schematic plots*, refers to schemes in the text to lead audiences to wander their points of view to immerse into contexts (Chu, 1989).

Iser used Ingarden's perspective, and emphasized audience imagination (Holub, 1984). Iser felt that text structure was a scheme that included blanks and indeterminacy, encouraging audience imaginations to interrelate details (Chu & Chang, 1999). While audiences complete blanks during reading actions, their horizons might shift to author constructed text worlds. Figure 1 shows the process of aesthetic understanding.

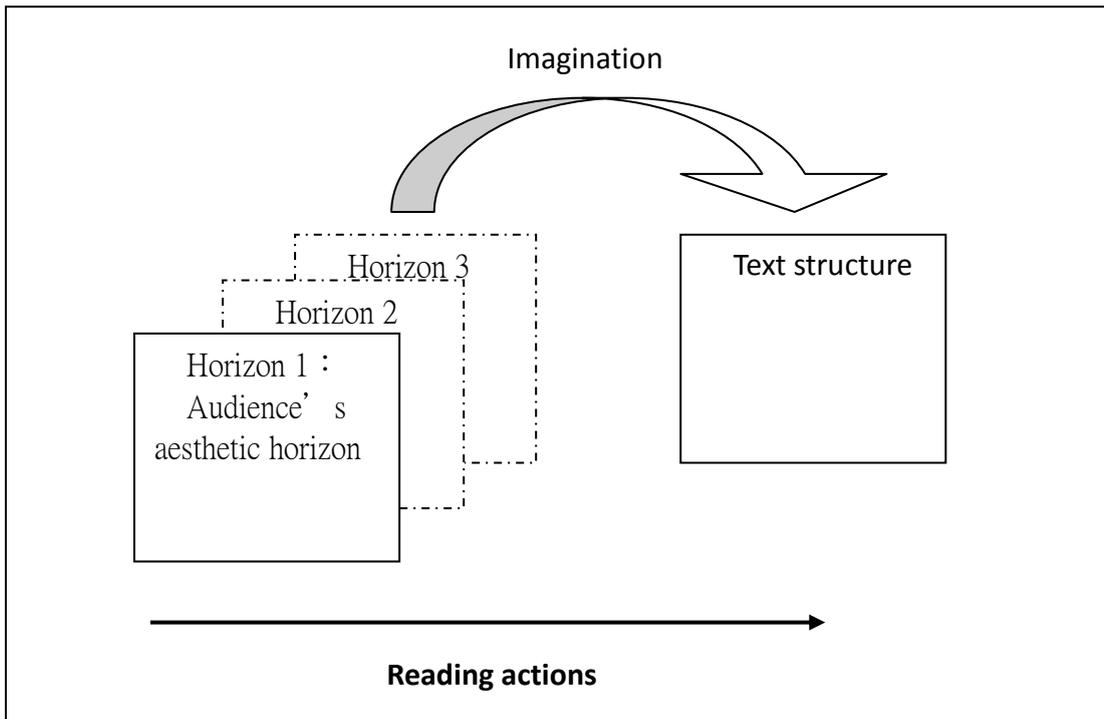


Figure 1. Aesthetic interpretation of the reception aesthetics paradigm

3. Interaction between audience and works

Audiences can build on their aesthetic horizons to interaction with text structure. Audiences also perceive phonetics, semantic units, and represented objects and schematize these aspects to transfer them into mental images and objective knowledge. Audiences can also complete blanks or overcome uncertainty and conflicts with imagination to obtain aesthetic pleasure.

The reception aesthetics paradigm defines aesthetic experiences as a result of dialogs between audience understanding and interpretation. While audiences interact with works, they can adjust or tune their original cognitions to follow text contexts and obtain aesthetic pleasure (Chu, 1989).

In summary, aesthetic paradigms shift from objective forms with audience interpretation and recreation and emphasize audience subjectivity (Tsang & Tsai, 2001). From this perspective, audiences can immerse themselves in text worlds using their imaginations to transfer words, sentences, and interpretations. Audiences can also select or ignore features to invoke different aesthetic experiences (Tsang & Tsai, 2003).

From the historical development of aesthetics paradigms, aesthetics researchers have discussed the ontology of audience, objective forms and features of art works, and the interaction between people and text structure. At first, aesthetics thinkers saw

audiences as passive with no ability to judge actively. Aristotle emphasized order or harmony in the real world and deemed objective artwork as featuring an essential element of beauty. Kant and Shiller considered that beauty existed in objective events and ignored participant feelings. Gadamer, Jauss, and Iser mentioned the importance of audience participants and confirmed that audiences can interpret actively. Considering the ontology of audience, aesthetics researchers cannot overlook the importance of subjectivity. When audiences watch movies, they experience emotions and interpret plots or details that authors may not consider (Berger, 1997).

Ingarden (1973a; 1973b) analyzed the text structure of literature and divided text structure into four facets, but these observed units were based on literary works. This paper uses martial arts films to explore audience aesthetic horizons, martial arts film texts, and interactions between appreciators and image texts.

4. Text structure of image rhetoric

Reiley (2004) discussed aesthetic judgment processes that occur while people appreciating images. These processes included visual perception of images in movies and people's schema and evaluation. Images represent objects concretely; therefore, the audience does not use their imagination to integrate words and construct mental images gradually (Iser, 1978; Ingarden, 1973a; 1973b). Reception aesthetics can revisit definitions of the text structure of image rhetoric, and expand processes of how audiences perceive images and evaluate beauty.

5. Fit local contexts into the reception aesthetics paradigm

This study chose local cases to explain aesthetic judgments, thereby expanding reception theory to a local cultural context. Sword culture is significant in Chinese martial arts films. Therefore, this article discusses three topics:

- (1) The visuals from image text in martial arts films.**
- (2) The audience's aesthetic horizon of appreciating martial arts films.**
- (3) The aesthetic responses to interactions between the aesthetic horizon and image-text of martial arts films.**

II. Literature review

1. Text structure of martial art films

Reception aesthetics states that aesthetic experience is the result of interactions

between text structure and the aesthetic horizon (Chu, 1989). This paper examines image structure using phenomenological reduction. From Ingarden's perspective, image structure consists of two parts: visual and audio elements.

(1) Visual elements

Visual elements consist of visual forms, syntax relationships and units of meaning, represented objects, and schematized aspects.

(A) Visual forms

Visual forms are essential elements of image rhetoric. Visual forms are settings, clothes, action, lights, actors, and camera languages (Nelmes, 2001; Hansen et al., 1998).

(B) Syntax relationships and units of meaning

Methods of combining visual elements are not linear or sequential as in lexical systems, but constructed in whole pictures by audience census and everyday knowledge. For example, in 1967 King Hu constructed ancient Chinese and Jianghu images (江湖) using abacuses, ancient letters, announcements, bottle gourds, and the calligraphy in "Dragon Inn" (Chen, 2000). People believed that abacuses, bottle gourds, and calligraphy belonged to an ancient period; therefore, they projected their pre-understanding onto images represented in the movie, finally producing the atmosphere of ancient China.

(C) Represented objects

Visual codes assemble represented objects. These mechanisms allow the audience to pay attention to some aspects of implements and actors and *gestalt* episodic memory into complete images. For example, in "Dragon Inn", the director often sets locations in the "Dragon Inn" and in the desert. During the process of aesthetic judgments, the audiences integrate different visual forms into whole pictures and feel the atmosphere of desolation in ancient times.

(D) Schematized aspects

Directors use different camera techniques, including camera movements and angles, to improve plots. Directors also cut different frames and combine them to provide the audience with a sense of a continuous narrative. Distinct settings and locations feel strange and inconsistent to an audience. The audience should interact with a martial arts film more actively to fill blanks in image segments to interpret the

core concept of the story. Therefore, the use of camera techniques or frame linkages may create gaps in the text and bring uncertainty to an audience. An audience should complete blanks to follow schematized aspects and understand rough plots in martial arts films.

2. Audio elements

There are four audio elements to movies: phonetic formations, meaning units, represented entities, and schematized aspects. The types of martial arts sound effects are foley, natural, technique, and special sounds. Sound effects assist the audience to experience an atmosphere of special locations and time. For example, foley sound allows the audiences to associate fighting voices with fantastic themes in swordsman films. In other words, sound effects can support visuals in establishing a sense of space and realistic illusions. Figure 2 shows image text from a swordsman film from a reception aesthetics perspective.

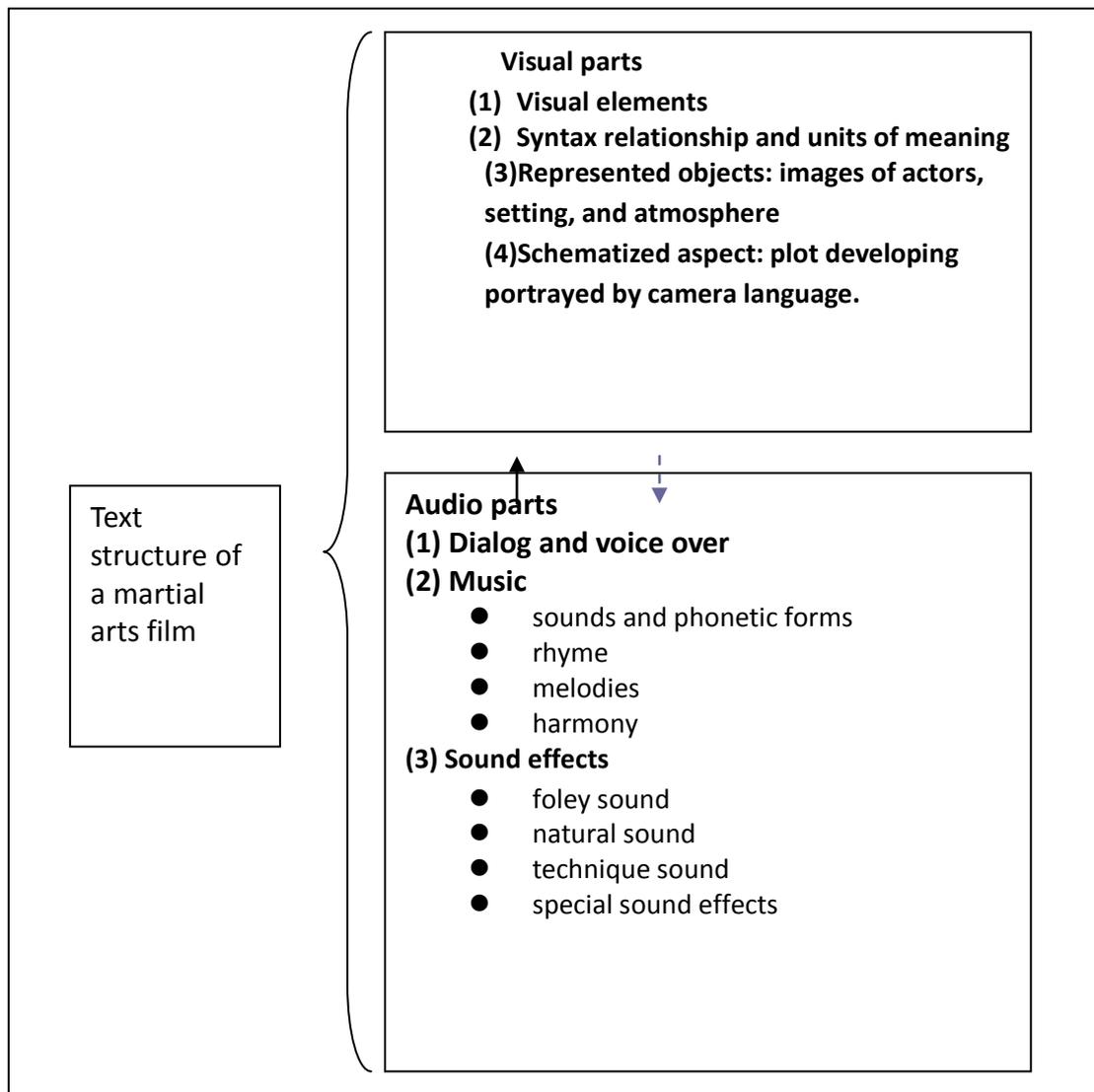


Figure 2. Image text of a swordsmen film

From Ingarden’s phenomenological perspective, martial arts film image text consists of visual and audio parts. In the visual parts, the audience integrates different images into meaningful, causal plots. In the audio parts, dialog, voiceover, music, and sound effects evoke narrative expectancy in the audience and are fantastic or realistic.

3. The audience’s aesthetic horizon

In the reception aesthetics paradigm, Jauss and Iser examined the concept of audience and concluded that an audience’s activity and agency gave new meanings to text with interpretations. Jauss (1982a) agreed with Gadamer’s theatrical perspective, who stated that audience horizons interpret text. Jauss held that historical contexts, rituals, and genre knowledge in a cultural community shape aesthetic horizons.

Jauss (1982a) stated that aesthetic horizons affect audience reading actions and

shape narrative expectation. He thought that the aesthetic horizon consisted of two parts: a narrowly defined part and a broadly defined part (Jauss, 1982a). The narrow definition of aesthetic horizon focuses on how genre knowledge guides audience aesthetic expectations (Jauss, 1982a). The broad definition of aesthetic horizon focuses on how life experiences and associations merge into reading processes to affect audience aesthetic expectations (Jauss, 1982a). Audiences view aesthetic objects with their subjective perspectives, but audiences only focus on some attributes and ignore others because of limited attention capacity.

Audience aesthetic horizons only focus on some representations because of limited attention capacity; foregrounding horizon processes might frame audience reception of themes, genres, and storytelling styles.

The narrowly defined aesthetic horizon is observed in audience genre expectations (Jauss, 1982a). Text attributes and hints can influence audience interpretation and help people recall memories and emotions when explaining storylines (Jauss, 1982a).

Genre is the ritual forms and styles present in certain work. It also refers to types of texts that have shared features (Feuer, 1987; Rosmarin, 1985; Tsai, 2000). The narrowly defined aesthetic horizon is often important when appreciating art works (Wu, 2005). For instance, Chinese operas are renowned and popular in China; thus, local culture cultivates the audience aesthetic horizon. Chinese opera audiences sense [the male](#), [female](#), painted face, [and comic role](#) meanings, and follow the gong and drum spot rhymes (Wu, 2005). As the gong and drum spot begins, traditional Chinese opera characters perform in ritual ways (Wu, 2005). These are aesthetic responses that express genre expectations. Audience genre expectations, conventions, and familiar text resemblances influence how the audience and text interact.

The narrowly defined aesthetic horizon consists of orientated and innovative aesthetic expectations (Chu & Cheng, 1999; Jauss, 1982a). Orientated aesthetic expectation is an audience's schema of genre knowledge affecting aesthetic judgments. Innovative aesthetic expectation emphasizes the audience desire to see something new in reading actions and repelling cliché (Chu, 1989).

The aesthetic horizon concept is an audience's narrative expectancy. During the aesthetic judgment process, the audience's orientated aesthetic horizon guides their

attention to determined representations (Jauss, 1982a). If the text representations mismatch an audience's oriented aesthetic horizon, they may ignore or negate some facets and only pay attention to aesthetic objects that match their oriented aesthetic horizon (Jauss, 1982b). When an audience is familiar with expressions of facets and styles, they construct certain aesthetic expectations easily, thereby only obtaining aesthetic pleasure from art works with familiar styles. In other words, if artworks do not fit an audience's oriented aesthetic horizon, the audience may negate aesthetic values (Wu, 2005).

Interactions between text and audience use the audience's imagination to construct plots. Interactions between text and audiences bring aesthetic pleasure or a sense of disinterest, which are highly correlated with subjective creation, emotions, and horizon fusion (Jauss, 1982a; 1982b).

This study reviews central reception aesthetics paradigm research to explain the historical developments and core concepts of the paradigm. It draws on the views of Jauss, Ingarden, and Iser to explain core concepts including text structure, audience aesthetic horizon, interaction, and aesthetic effects in reception aesthetics.

After reviewing the reception aesthetics literature, this study operationalizes the concept of aesthetic horizon. In discussing research methods and design, martial arts films are used to explain processes of appreciating swordsmen films and analyze aesthetic effects.

III. Research methods and design

1. Elaborate on the concept of the aesthetic horizon using in-depth interviews

The hermeneutics paradigm states that researchers and observed respondents construct knowledge, and that narrators or respondents should represent social reality (Smith, 2003). Hermeneutics cycles reflect the spirit of this perspective, and state that researchers interpret data with dialogistic and tuning methods. Researchers ground themes with data and revisit foregrounding thoughts in hermeneutics cycles (Fink & Gantz, 1996).

Researchers could quickly obtain meanings expressed by observed respondent hermeneutics cycles to comprehend their pre-understanding, culture communities, and historical texts (Blaikie, 1993). In other words, researchers should ground research

in visible evidence to interpret social phenomenon and acquire inter-subjectivity from the perspective of the observed (Blaikie, 1993; Singleton, & Straits, 1999).

In this manner, interaction frequencies between researchers and observed respondents increase and long conversations maintain intimate and confidential cooperation (Singleton, & Straits, 1999). Thus, researchers can use in-depth interviews to gain inter-subjectivity and empathize with observed respondents (Liu, 1992; 1994).

In-depth interviews based on interactions between researchers and respondents co-construct knowledge (Moran, 2001). Respondents express experiences, feelings, and imagination and supply observers (or researchers) with rich information (Wimmer, & Dominick, 1994). Therefore, in-depth interviews are processes of exchanging information and researchers must understand respondent thoughts to contextualize their beliefs in deep social context structures (Wimmer, & Dominick, 1994).

2. Research design

This study defines the audience aesthetic horizon when watching a martial arts film and explores how audiences involve their imagination to interpret works by using in-depth interviews.

(A) To choose respondents:

From a hermeneutics paradigm perspective, researchers focus on certain objects to explore ideographic knowledge (Liu, 1992; 1994). One aim of in-depth interviews is to describe social reality in special cases (Blaikie, 1993; Chen, 1995). Therefore, researchers search for observed respondents using principles of assimilation, theoretical thinking, or research strategy (Blaikie, 1993; Chen, 1995; Smith, 2003). In other words, qualitative research does not consider sample size.

This study chose respondents according to cognitive developments, field of education, and experience appreciating martial arts films.

According to cognitive development processes, people 18-35 years of age have better memories and story comprehension (Tulving, 1985, 1995, 2005). Before 18 years, people memorize better, but may not have developed comprehension to understand deeper meanings or storytelling structures (Tulving, 1985, 1995, 2005). After the age of 40, people have mature social experiences, but their memories gradually decline (Tulving, 1985, 1995, 2005). This study explores people's aesthetic horizons, including how an audience interprets text structure and why an audience completes blanks in

their own ways. Thus, respondents must have good systems of semantic development and the ability to memorize events. Therefore, people between the ages of 18 and 35 were chosen as observed respondents.

(B) Implementation processes and in-depth interview questionnaires:

The in-depth interview questionnaires were divided into three parts: the respondent aesthetic horizon, the processing of filling in blanks with imagination, and respondent aesthetic responses.

IV. Discussion

This article analyzes aesthetic communication between a Chinese audience and martial arts films, such as *“Crouching tiger, hidden dragon”*, *“Hero”*, and *“House of flying daggers”*, by interviewing the audience on their aesthetic experiences to expand the aesthetic communication model from a local knowledge view of the reception aesthetics approach.

1. Audience aesthetic horizon

(A) The narrowly defined aesthetic horizon

According to respondents, images, atmosphere, and artistic style construct swordsmen films.

(i) Visual parts

Respondent 1 used *“Crouching tiger, hidden dragon”* as an example. She mentioned that Lee and Yu fighting in a bamboo forest impressed her. She also stated that *“Hero”* combined martial arts with the rhetoric of colors to enrich visual pleasure. The image composition of swordsmen fighting was magnificent, especially the yellow leaves falling from golden trees.

Respondent 2 also remembered the composition of *“Hero.”* Its graphic design focused attention on visual parts. Respondent 5 thought that Cheng Yi-Mou expressed symbols and metaphors with pure colors. He also emphasized composition, such as balance and symmetry. Respondent 8 agreed that aesthetic experiences came from spectacular images, which consisted of colors and settings.

This shows that color, composition, and art design of fighting scenes play important roles in image rhetoric to invoke audience participation.

(ii) Audio parts

As respondent 1 stated, music is an important element that immerses audiences in films. At intense fighting moments, directors could use fervent melodies, such as quick drum drops. In sad parts, directors could express emotions using erhu to describe tragedies.

Dialog in swordsmen films also encourages audience participation. Respondent 6 recalled when Lee's master discusses the Zen of kung-fu, "you handle nothing inside the grips, you will get all with grips' release". The dialogs led respondent 2 to conclude that swordsmen attitudes were most important and martial arts performances were secondary.

As respondents 1 and 6 stated, music and dialog enhance emotions and themes in swordsmen films. They felt that audio parts allowed them to experience ancient Chinese rhymes and Zen Buddhism more deeply.

(B) The broadly defined aesthetic horizon

The broadly defined aesthetic horizon of martial arts films was affected by audience historical knowledge of ancient Chinese. Respondent 1 paid attention to swordsmen's clothes, habits, and settings. Respondent 2 analyzed the differences between *petitsigillaire* and *grandsigillaire*.

Local knowledge of the Chinese community also guided audience expectations. Respondent 3 mentioned that he could empathize with Yu because of his knowledge of politeness and the Chin dynasty.

Several respondents discussed the word *jianghu*. Respondent 4 thought images of *jianghu* represented swordsmen spirits. He emphasized that *jianghu* only belongs to Chinese traditions and it is difficult to find foreign words to portray spirits. Respondent 10 also considered cross-cultural issues, such as ethics, benevolence, and righteousness. Benevolence and righteousness were identified as core values of swordsmen.

2. The process of filling blanks using imagination

Audiences can use sound effects and imagination to identify with the real world. During some fighting scene sound effects, respondent 1 immersed herself in the world of fighting swordsmen. Respondent 1 also identified with a hero because they had similar personalities.

3. Audience aesthetic experiences

Broadly defined audience aesthetic experiences include visual and audio expressions. Respondent 7 saw beauty in beautiful colors and visual spectacles. Respondent 1 also focused on visual forms, such as fighting performances.

The audience has an aesthetic response to film audio, such as music and swordsmen dialog, which emphasize core concepts of benevolence and righteousness.

The Zen atmosphere also appealed to the audience. Respondent 9 said that bamboo could be a metaphor for modesty because of its hollow center. Respondent 9 experienced the ancient Chinese style in “Crouching tiger, hidden dragon” and “House of flying daggers.”

Figure 3 shows a model of aesthetic communication in a martial arts film.

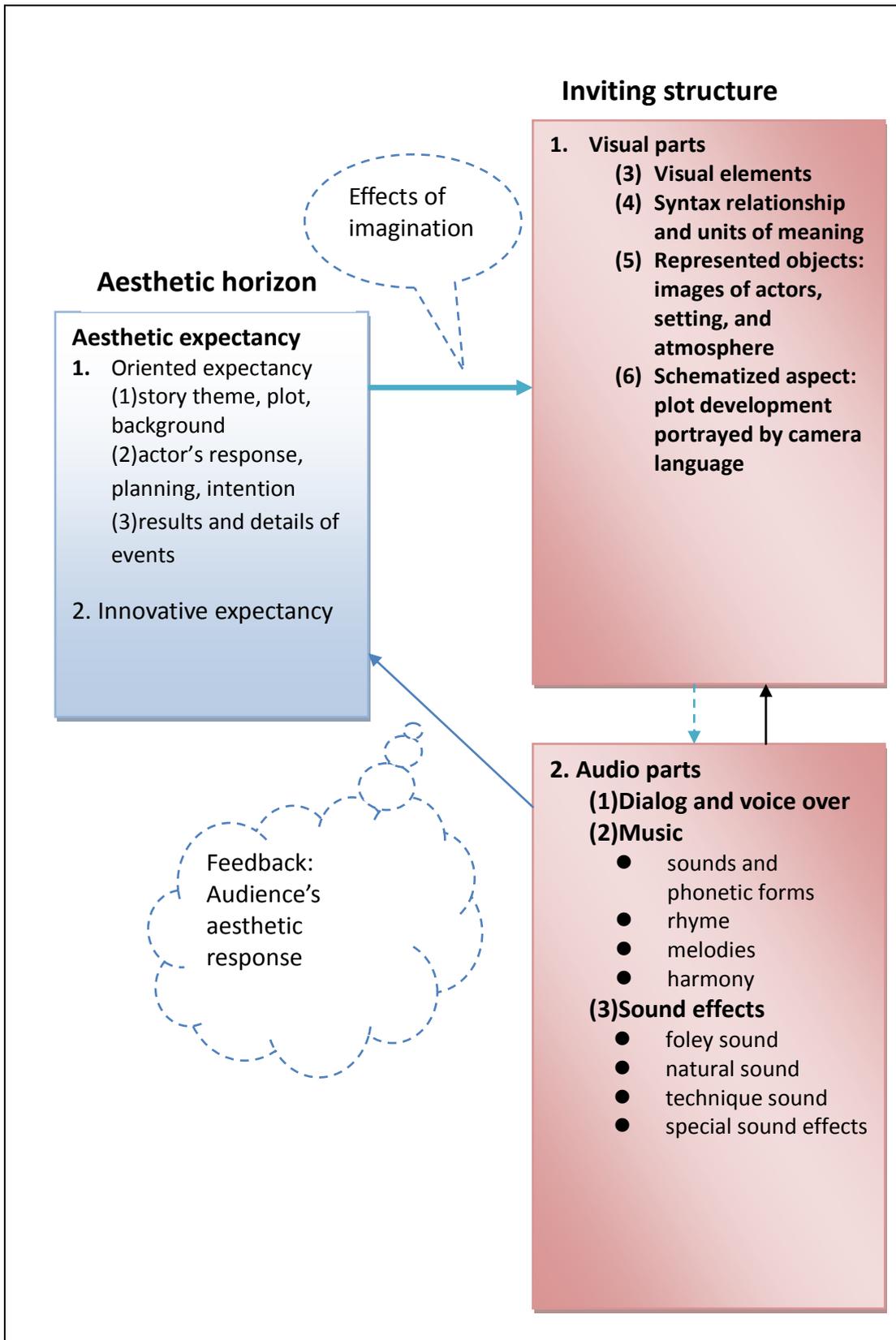


Figure 3. Aesthetic communication of appreciating a martial arts film

V. Conclusion

This article expands the aesthetic communication model using in-depth interviews to portray Chinese audiences' ideal martial arts film style, aesthetic responses, and narrative expectancies.

Since 1980, the aesthetics paradigm has shifted to reception aesthetics that emphasizes audience horizons, text structure, interaction between the work and audience, and aesthetic effects. Reception aesthetics scholars from the Constance School, including Hans Robert Jauss and Wolfgang Iser, supported their theory using the concepts of "aesthetic horizon" and "inviting structure."

As Iser stated, aesthetic communication was from the interaction between artistic pole which includes narrative strategies, point of view, plot, and implied reader. Iser, following Ingarden's view, saw plots as schematized structures. Iser called this "inviting structure," creating hidden blanks to encourage the audience to fill gaps. Another pole, reception pole, focused on audience horizon, imagination, and how to finish wandering point.

From a reception aesthetics perspective, inviting structure produced by writers was a stable schematic system with historical and cultural meaning that encouraged readers to participate. Image structure, including that of martial arts films, consists of two integral parts: visual and audio. Visual parts include visual elements, syntax systems, represented objects, and schematized levels. Visual element syntax relationships are based on visual grammar and rooted in everyday contexts. Represented objects develop plots through visual languages, such as camera shots, angles, montages, and continuous narrative. Audio parts of martial arts films include sounds and phonetic formations, meaning units, represented entities, and schematized aspects. Iser developed Ingarden's phenomenologic view, and saw image frames as approximate schemes. Moving image frames have blanks that invite audiences to use their imaginations to fill gaps. When inviting structure evokes audience participation, there is interaction between image texts and the audience. The inviting structure of audio consists of dialogs, music, and sound effects. Music consists of sounds and phonetic forms that form higher level contexts, rhymes, melodies, and harmony. Sound effects are also phonetic forms, which include foley, natural, technique and special effects sounds. An audience focuses on phonetic forms, finding image and sound causality, interpreting semantic hints, or choosing special parts with their intention to

demonstrate audience activities.

The reception aesthetics paradigm emphasized that every appreciator has an aesthetic horizon, and their pre-understanding of genre knowledge and narrative expectancy affects their aesthetic experience. An aesthetic horizon has two parts, orientated and innovative expectation. Oriented expectation refers to an audience interpreting a martial arts film with routine or conventional thinking. Innovative expectation refers to an audience using inventive and unique style to interpret a film.

The interaction between audience and text evokes audience aesthetic horizons. Ways of interaction include identification, admiration, cathartics, association, navigation, and irony. Iser thought that an audience used their imagination to fill gaps, arranging events to construct meanings belonging to them.

Aesthetic effects come from interactions between an audience and the text structure of a martial arts film. Aesthetic experience is equal to spiritual and not interest pleasure. Reception aesthetics emphasizes aesthetic experiences that relate to horizon fusion. This means that audience empathized artistic poles' narrate strategies through the interface of image and text.

The study findings show that a Chinese audience's aesthetic horizon is fused with a local culture view, and ancient Chinese history cultivated their cognition of swordsmen. The inviting structures of martial arts films include visual parts, especially fluid movement designs and magnificent spectacles. Music-accompanied fighting movements allow the audience more involvement and immersion in the story's theme: the spirit of chivalry.

In summary, audience aesthetic horizons, imagination, and image texts play important roles in aesthetic communication. This paper portrays aesthetic expectations and responses based on cultural communities, and uses martial arts films as examples to apply reception aesthetics to local cultural contexts.

Reference

- Berger, A. A. (1997). *Narrative in popular culture, media, and everyday Life*. Thousand Oaks, CA: Sage.
- Blaikie, N. (1993). *Approaches to social enquiry*. London: Polity Press.
- Chen, P. C. (1995). *Oriental sociology. I., theory of sociological epistemology*. Tonshan Publications.
- Chen, R. S. (2000). *Chinese Imagination and Imagies in Taiwan Cinema*. National science council research project.
- Chu, L. Y. & Chang, T. S. (1999). *History of western aesthetics: Vol. XI*. Shanghi: Wenyi.
- Chu, L. Y. (1989). *Reception aesthetics*. Shanghi: Remin.
- Feuer, J. (1987). Genre study and television. In R. C. Allen (Ed.), *Chanel of discourses* (pp. 113-133). Chapel Hill: The University of North Carolina Press.
- Fink, E. J., & Gantz, W. (1996). A content analysis of three mass communication research traditions: Social science, interpretive studies, and critical analysis. *Journalism & Mass Communication Quarterly*, 73(1), 114-134.
- Gadamer, H. (1986). *Truth and method*. New York: Continuum.
- Hansen, A., Cottle, S., Negrine, R., & Newbold, C. (1998). *Mass Communication Research Method*. Washington Square, New York: New York University Press.
- Holub, R. C. (1984). *Reception theory: A critical introduction*. New York: Methuen.
- Ingarden, R. (1973b). *The cognition of the literary work of art*. Evanston, IL: Northwestern University Press.
- Iser, W. (1978). [*The act of reading: A theory of aesthetic response*](#). Baltimore: Johns Hopkins University Press.
- Jauss, H. R.(1982a). *Toward an aesthetic of reception*. Minneapolis: University of Minnesota Press.
- Jauss, H. R.(1982b). *Aesthetic experience and literary hermeneutics*. Minneapolis: University of Minnesota Press.
- Liu, C. C. (1992). Differences between qualitative and quantitative researches. *Mass communication research*, 46, 95-129.
- Liu, C. C. (1994). A review of three methodological paradigm: Positivism, critical theory, and hermeneutics. *Mass communication research*, 48, 153-167.

- Moran, D. (2000). *Introduction to phenomenology*. London; New York: Routledge.
- Nelmes, J. (2001). *An introduction to film studies*. New York: Routledge.
- Riley, D. (2004). Perceptual modes, semiotic codes, social mores: A contribution towards a social semiotics of drawing. *Visual communication*, 3(3), 294-315.
- Rosmarin, A. (1985). *The power of genre*. Minneapolis: University of Minnesota Press.
- Saussure, F. (2002). *Course in general linguistics* (R. Harris, Trans.). Chicago and La Salle, IL: Open Court.
- Singleton, R. A., & Straits, B. C. (1999). *Approaches to social research*. New York: Oxford University Press.
- Smith, J. A. (Ed.). (2003). *Qualitative psychology: A [practical guide to research methods](#)*. London, Thousand Oaks and New Delhi.
- Tsai, Y. & Tsang, K. J. (2003). News aesthetics: A call for a different approach to news research. *mass communication research*, 74, 95-119.
- Tsai, Y. (2000). *Television dramas*. Taipei, Taiwan: Sanmin.
- Tsang, K. J. & Tsai, Y. (2001). News as aesthetic narrative. *Mass communication research*, 66, 29-60.
- Tulving, E. (1985). How many memory system are there? *American Psychologist*, 40, 385-398.
- Tulving, E. (1995). Organization of memory: Quo vadis? In Gazzaniga, M. S. (Ed.), *The cognitive neurosciences* (pp. 839-853). Cambridge: MIT Press.
- Tulving, E. (2002). Episodic memory: From mind to brain. *Annual Review of Psychology*, 53, 1-25.
- Wimmer, R. D., & Dominick, J. R. (1994). *Mass media research*. Belmont, CA: Wadsworth.
- Wu, S. J. (2005). *The psychology of appreciation of poetry*. Taipei, Taiwan: Yang Chih.

REGRESSIVE IMAGERY IN VERBAL PROTOCOLS OF VISUAL ARTISTS AND COMPUTER PROGRAMMERS

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Abstract

One of the most comprehensive theories of aesthetics and creativity is the evolutionary model of Martindale (1990), which describes how artistic and literary styles change over time. A main source of support for the theory comes from computer-based analyses of texts using Martindale's "Regressive Imagery Dictionary" (RID), which identifies about 3,000 English words relating to "primary process" and "secondary process" cognition, as well as emotion-related words. Primary process cognition is irrational, free associative, and dream-like, and in Martindale's view is responsible for the emergence of novel ideas; secondary process cognition is abstract, logical, and reality-oriented, and occurs when ideas are elaborated into finished products. RID-based measures have mainly been applied to finished literary texts, which only indirectly inform creators' cognitive processes; the RID has rarely been applied to laboratory data to assess cognitive processes more directly.

In the present study, we extended the use of the RID to concurrent verbal protocol data (Ericsson & Simon, 1984) from participants engaged in creative problem solving tasks. The protocols came from two different open-ended, hour-long laboratory tasks, each of which was performed by groups of experts and non-experts in the respective domains. In one task, 23 artists and 23 non-artists created original drawings from a set of objects (Fayena-Tawil, Kozbelt, & Sitaras, 2011). In the other task, 14 experts and 9 novices in computer programming revised a poorly-written computer program to make it function better. All participants verbalized continuously throughout the sessions. Verbatim transcriptions of the protocols were analyzed using Word Stat 4.0, a text analysis program which counts words falling into the three main RID categories (primary process, secondary process, and emotion words).

Three 2 (expertise level) x 2 (domain: art or programming) factorial ANOVAs were conducted, one for each main category of the RID; the dependent measure was the percent of total words in each category. A reliable effect of domain was found for emotion, $F(1, 65) = 24.9, p < .001, \eta^2 = .28$, $M(SD)$ percent of emotion words in art

and programming respectively = 1.08 (0.48) and 0.53 (0.27). A reliable effect of domain was also found for primary process cognition, $F(1, 65) = 82.2, p < .001, \eta^2 = .56$, $M(SD)$ percent of emotion words in art and programming respectively = 5.30 (1.42) and 2.43 (0.48). No other reliable effects or interactions were found; grand $M(SD)$ for secondary process cognition = 7.33 (1.62). Results suggest important differences in the extent to which different domains engage emotional and primary process thinking, and, interestingly, suggest only minor expertise effects in the two domains.

One of the most comprehensive theories of aesthetics and creativity is the evolutionary model of Colin Martindale (1990), which describes how artistic, musical, and literary styles change over time. Martindale's universalist perspective, which he applied to a stunning range of artistic media, forms, and styles, argues that artistic styles change in highly predictable ways. Essentially, artistic works must be ever more attention-grabbing; creators typically achieve this by producing work of greater and greater novelty and complexity, either by producing more and more unusual combinations of thoughts or by changing styles. This perspective, developed from the work of Daniel Berlyne (1971), is strongly informed by and grounded in the psychology of the creators and their audiences (rather than, say, socio-cultural variables), and it boasts considerable empirical support (see Martindale, 1990).

A fundamental aspect of the creative dynamic in Martindale's model involves the distinction between primary process cognition and second process cognition. This distinction is central to many contemporary accounts of creativity, which identify two fundamental regimes of creative thought (e.g., Getzels & Csikszentmihalyi, 1976; Simonton, 1984; Ward, Smith, & Finke, 1999). While different theoretical models characterize each phase somewhat differently, there is reasonable consensus that primary process cognition is irrational, free associative, and dream-like; in Martindale's view, it is responsible for the emergence of novel ideas, a process that is often regarded as *the engine of creativity* (Kozbelt, 2009). In contrast, secondary process cognition is commonly held to be abstract, logical, and reality-oriented, and occurs when ideas are elaborated into finished products.

Martindale (1990) distinguished between primary process and secondary process cognition on theoretical as well as empirical grounds, bringing to bear a number of laboratory methodologies to understand each construct. However, perhaps the strongest source of support for his theory comes from computer-based analyses of texts using his "Regressive Imagery Dictionary" (RID). The RID identifies about 3,000 English words

relating to primary process and secondary process cognition, as well as emotion-related words. A main advantage of the RID is its objective quality: computer text analysis programs can be fed any text, and instances of words falling into various categories of the RID can be identified and then subjected to statistical analysis. RID-based measures are thus not susceptible to methodological criticism of studies in which, for instance, college sophomores fill out paper-and-pencil surveys providing their subjective assessments of paintings or musical themes.

Measures using the RID have mainly been applied to finished literary texts. This enables researchers to understand how, say, British or French poetry evolved over the course of several centuries. However, finished texts only indirectly inform creators' cognitive processes, since they are subject to repeated revision and reworking. Thus, Martindale's claims about the importance and roles of primary versus secondary process cognition have not yet been tested direct. Indeed, to our knowledge, the RID has rarely (if ever) been applied to laboratory data to assess cognitive processes in direct ways.

A useful and detailed repository of information about a person's cognitive processes can be garnered through the laboratory technique of concurrent verbal protocol analysis (Ericsson & Simon, 1984), in which a person engaged in solving a complex problem provides a real-time report of the current contents of their conscious mind. While historically there has been some debate about the validity of verbal protocol (see Ericsson & Simon, 1984; Nisbett & Wilson, 1977), there is a fair consensus that for many kinds of tasks, having a person provide a verbal protocol does not materially interfere either with performance or with the nature of the thoughts that are reported – provided the person has been properly instructed in how to provide a protocol. Typically, individuals are told simply to continually report what they are thinking, and not to interpret, censor, or otherwise distort the information. The protocol is usually recorded and then transcribed verbatim, and the resulting transcript is examined by researchers to try to understand the individual's goals, plans, attempts to solve the problem, evaluative processes, and so on. Often the protocols are parsed into clauses, which are then categorized according to some coding scheme of interest by independent raters, who ideally achieve an adequate level of inter-coder reliability. In one such study, Fayena-Tawil, Kozbelt, and Sitaras (2011) compared the protocols of artists and non-artists engaged in an open-ended drawing task on the frequency of various categories of cognition, metacognition, and evaluation derived from the categorization of parsed clauses. These authors found that artists made more goal

statements, more positive evaluations, more metacognitive statements having to do with monitoring the progress of the emerging drawing, and fewer negative evaluations than did non-artists.

The analysis of by-hand, category-based coding of participants' cognitions and metacognitions is useful, but it does not directly inform the nature of primary versus secondary process cognition during the act of creation. However, there is no reason why verbal protocol data cannot be analyzed using well-validated computer-based methods such as the RID. Doing so circumvents the issue of needing to establish adequate inter-coder reliability, and it conceptually maps onto theories like Martindale's in a very direct way. Our goal in the present study was to extend the use of the RID to analyzing concurrent verbal protocol data from participants engaged in two different kinds of creative problem solving tasks. Our analyses here are largely exploratory, to determine if RID-based analyses of verbal protocol data represent a viable direction for future research, which could inform the nature of creativity in a range of domains.

Method

Our protocols came from two different open-ended, hour-long laboratory tasks, each of which was performed by groups of experts and non-experts in the respective domains. In one task, 23 artists and 23 non-artists created original drawings from a set of objects (Fayena-Tawil, Kozbelt, & Sitaras, 2011). In the other task, 14 experts and 9 novices in computer programming revised a poorly-written computer program to make it function better. All participants verbalized continuously throughout the sessions. Verbatim transcriptions of the protocols were analyzed using Word Stat 4.0, a text analysis program which counts words falling into the three main RID categories (primary process, secondary process, and emotion words).

Results

Three isomorphic 2 (expertise level) x 2 (domain: art or programming) factorial ANOVAs were conducted, one for each main category of the RID; the dependent measure was the percent of total words falling into each category.

First, a reliable effect of domain was also found for primary process cognition, $F(1, 65) = 82.2, p < .001, \eta_p^2 = .56, M (SD)$ percent of primary process cognition words in art and programming respectively = 5.30 (1.42) and 2.43 (0.48). There was no reliable main effect of expertise and no interaction. Individuals engaged in drawing reported

more than double the proportion of words involving primary process cognition, compared to persons engaged in revising software code – and this was the case regardless of level of expertise.

For secondary cognition, no main effects and no interaction were found; grand $M (SD)$ for secondary process cognition = 7.33 (1.62). Thus, individuals appear to engage in about the same amount of secondary process cognition in both tasks, and regardless of expertise level.

For emotion-related words, a reliable main effect of domain was found, $F (1, 65) = 24.9, p < .001, \eta_p^2 = .28, M (SD)$ percent of emotion words in art and programming respectively = 1.08 (0.48) and 0.53 (0.27). There was no reliable main effect of expertise and no interaction. Thus, individuals engaged in drawing reported more than double the proportion of emotion-related words, compared to persons engaged in revising software code – again, regardless of level of expertise.

Correlations between proportions of total words involving primary process cognition, secondary process cognition, and emotions were also examined, for each of the four groups of participants (expert artists, novice artists, expert programmers, and novice programmers) separately. Most of these correlations were near zero, but several others were suggestive. For instance, artists and non-artists in the drawing task both showed trends for a negative relation between primary process cognition and emotion words: for artists, $r (21) = -.313, p = .146$; for non-artists, $r (21) = -.373, p = .080$; when the two groups were pooled, $r (44) = -.318, p = .031$. The negative trend in the relation between primary process cognition and emotion-related words is doubly striking, given the relatively high frequencies of both categories of words among both artists and non-artists, compared to individuals engaged in the software code revision task. In any case, the negative trend of these correlations, whereby individuals verbalizing more primary process cognition verbalized less emotion-related words (and vice-versa) was somewhat unexpected and argues against a facile identification of creative ideation with strong emotionality in the domain of visual art. The only other statistically reliable correlation was for novice programmers, and it involved a negative relation between secondary process cognition and emotion-related words, $r (12) = -.613, p = .034$; in the absence of a clear theoretical rationale to expect such a result, we simply note it and exercise due caution in interpreting it, especially given the small sample size.

Discussion

In this study, we sought to explore the application of the Regressive Imagery Dictionary to concurrent verbal protocol data in two tasks, each of which had both experts and novices as participants. The initial results are encouraging. They suggest important differences in the extent to which different domains engage emotional and primary process thinking, and, interestingly, imply only minor expertise effects in the two domains, at least in terms of the overall frequency of different categories of RID-based measures. The divergence of relations among the RID categories across different tasks and sets of participants suggests that the three categories of RID-derived measures do not operate in simple ways, but rather vary according to task, and to some extent, by the expertise level of participants. We also note that this variability may also be due partly to the fact that participants in the drawing task had to create a rendering from scratch, while participants in the code revision task only had to modify an existing artifact, rather than creating it *de novo*.

In any case, the results suggest that the RID can be profitably applied to verbal protocol data, even in domains as different from each other (and from traditional literary domains) as artistic drawing and computer programming. Future work should refine the categorization of the RID-based categories, distinguishing, for instance, positive versus negative emotion words, as well as the numerous subcategories of primary process and secondary process cognition detailed by Martindale (1990).

Author Note

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References

- Ericsson, K.A., & Simon, H.A. (1984). *Protocol analysis*. Cambridge, MA: MIT Press.
- Fayena-Tawil, F., Kozbelt, A., & Sitaras, L. (2011). Think global, act local: A protocol analysis comparison of artists' and non-artists' cognitions, metacognitions, and evaluations while drawing. *Psychology of Aesthetics, Creativity, and the Arts*, 5, 135-145.

- Getzels, J. W., & Csikszentmihalyi, M. (1976). *The creative vision: A longitudinal study of problem finding in art*. New York: Wiley.
- Kozbelt, A. (2009). Ontogenetic heterochrony and the creative process in visual art: A précis. *Psychology of Aesthetics, Creativity, and the Arts*, 3, 35-37.
- Martindale, C. (1990). *The clockwork muse*. New York: Basic Books.
- Nisbett, R. E., & Wilson, R. D. (1977). Telling more than we know: Verbal reports on mental processes. *Psychological Review*, 84, 231-259.
- Simonton, D. K. (1984). Creative productivity and age: A mathematical model based on a two-step cognitive process. *Developmental Review*, 4, 77-111.
- Ward, T. B., Smith, S. M., & Finke, R. A. (1999). Creative cognition. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 189-212). New York: Cambridge University Press.

AUTOMATIC NARRATIVE GENERATION THROUGH THE CIRCULATION BETWEEN MUSIC AND NARRATIVE

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Abstract

Many AI based narrative generation systems automatically generate narrative text using theories and techniques such as planning, story grammar and script. Our narrative generation system architecture also uses such knowledge, but at the same time it has other unique characteristics, for example, the use of narratological method and the fusion with music and language based narrative. This paper focuses on the latter.

The mechanism explained in this paper is places in our narrative generation system architecture. The system consists of three macro elements of story, discourse and expression. “Story” is the content of a narrative and a temporal sequence of events, and “discourse” means the structure that a story is actually narrated. Both are described with conceptual representation in this system. Music mechanism is contained in expression part, but music is not only the accompaniment for narrative. In the mechanism, music and conceptual representation of story and discourse are transformed each other through circular process to generate narrative by not only narrative methods but also musical methods. This paper shows the newest version of the music mechanism associated with other elements in the narrative generation system.

First, we structurally map music to story. Specifically, the hierarchical tree structure in a story, which is a set of events, is mapped to a musical tree structure. And a narrative event containing agents, objects, location and so on in a story are corresponding to a musical event which is a basic musical unit. Main idea about the mapping is that each narrative relation binding events and sub structure in a story structure is corresponded to parameters of musical elements: melody pattern, rhythm, musical instrument and so on. And each musical event is generated according to the parameters. Based on the same pattern’s structures, musical variation is corresponded to narrative discourse.

For musical variation, we commonly use Genette’s narrative discourse theory in narratology for both of musical variation and narrative discourse. Genette theory has techniques such as order changing, speed adjustment and others. They are applied to

musical variation processing. The system has nine kinds of musical variation techniques and ten kinds of narrative discourse techniques. But we also think about the expansion for applying musical variation techniques to both musical variation and narrative discourse. The extreme purpose of this mechanism is the methodological fusion of music and narrative.

In the current implementation, we have developed next eight modules: [Story to Original-music], [Original-music to Story], [Story/Discourse to Discourse], [Original-music/Variation-music to Variation-music], [Discourse to Variation-music], [Variation-music to Discourse],

[Original-music to Original-music], and [Variation-music to Original-music]. In the first step, user inputs a story or an original music. Output data from each module can be always become the input data for next module in the circular generation process.

We have completed a prototyping system to allow flexible circular transformation of music and narrative based on above idea. As the main future work, there are the confirmation of flexibility and validity in mutual transformation and the evaluation of the improvement of interestingness or impression in music and narrative.

Many of AI-based narrative generation systems automatically generate narrative texts using theories and techniques such as planning, story grammar and script. Although our narrative generation system architecture also uses such knowledge, at the same time our approach introduces narratology and literary theories into the mechanism. Moreover, it is based on the concept of a kind of cross media. Especially, music is not just the accompaniment for narrative. By the medium of music, we extremely aim at using musical knowledge & techniques and language-based or concept-based knowledge & techniques in fusion. Although two kinds of conceptual representation for story and discourse are usually transformed by the conceptual level of knowledge and techniques in the narrative generation system, musical knowledge and techniques is also be able to applied to the processing. To materialize this concept, we have implemented some systems on music generation that execute circular narrative generation based on the blending narratological knowledge/techniques and musical ones. This paper proposes the newest version. In addition, for more detailed description, refer to Kobayashi & Ogata (2004) and Akimoto, Endo & Ogata (2012).

The system is placed in the above narrative generation system architecture (Ogata, Hori & Ohsuga, 1994; Ogata & Kanai, 2010). The system consists of three macro elements: story, discourse and expression. “Story” is the content of a narrative and a temporal sequence of events and “discourse” means the structure that a story is actually narrated. Both parts are described with a common conceptual representation form. The music mechanism is corresponding to a part of the expression phase. Music and conceptual representation of story and discourse are transformed each other through a circular process to generate narratives by not only narrative methods but also musical methods.

The Overview of Musical Mechanism

First, both a musical structure and a story structure are mutually corresponded. Specifically, the hierarchical tree structure in a story, which is a set of events, is mapped to a musical tree structure constructed by introducing GTTM theory (Lerdahl & Jackendoff, 1983), which is sometimes used in contemporary musical informatics. And a narrative event containing agents, objects, location, etc. in a story are corresponding to a musical event which is a basic musical unit. Main idea about the mapping is that each narrative relation binding events and a sub

structure in a story structure is corresponded to parameters for describing musical elements such as melody pattern, rhythm, musical instrument, and so on. And each musical event is generated according to the parameters. We show the correspondence in Fig. 1. Based on the same pattern's structures, the musical structure of a variation is corresponded to the narrative structure of a discourse.

We commonly use Genette's narrative discourse theory (Genette, 1972) for both musical variation and narrative discourse. The theory has categories such as order changing, speed adjustment and others, and they are computationally defined as structural operation techniques to apply to the musical variation processing. The system has musical variation techniques according to the narrative techniques based on Genette as shown in Table 1. The literary techniques are reorganized as the musical techniques or introduced into the musical processing. However, the extreme purpose of this mechanism is to implement a more flexible methodological fusion of music and narrative including the application of musical methods to narrative conceptual generation.

In the current implementation, we have developed eight modules as shown in Fig. 2. In the first step, the user inputs a story or an original music and the output data from each module are always able to be the input data for the next module in a circular generation process. For example, Fig. 3 shows the flow of the transformation from a story structure to an original music's structure. First, after several initial settings, the mechanism transforms each internal node in the story into a musical internal node according to "correspondence rules for internal nodes". Second, it decides the harmony as a function for each musical event based on the transformed internal nodes. Third, the mechanism generates motifs for each element in the story and inserts them into the corresponding tracks in the musical events. Last, a text file in MML (music macro language) format is generated.

Fig. 4 shows an execution example in a circular generation process in which all transformation modules were used. The input information is a small story. Although the actual data of story and discourse are represented with each conceptual representation, we show the English texts that we translated by hand the Japanese texts transformed using a simple Japanese sentence generation program we have developed. In the circular generation process, music and narrative are gradually changing through the various types of transformations.

Conclusion

One of the current issues is the evaluation. Before evaluating the quality of music generated, we must confirm the correspondence between a narrative and the corresponding music. For example, in the point that we can see a great change in a narrative, the corresponding musical place must also show a great change. This means the problem of correspondence or homology between two different types of semantics: conceptual semantics in narrative and formal semantics in music.

References

- Akimoto, T., Endo, J., & Ogata, T. (2012). The expansion of paths in the mutual transformation mechanism of music and narrative. *Proc. of the 11th IEEE international conference on cognitive informatics & cognitive computing*. (to appear)
- Genette, G. (1972). *Narrative discourse: an essay in method*. Transl. Lewin, J. E. (1980). New York: Cornell University Press.
- Kobayashi, F., & Ogata, T. (2004). Narrative and music as variation: transformation of musical structure based on narrative discourse theory. *Proc. of the ninth international symposium on artificial life and robotics, 1*, 170-173.
- Lerdahl, F., & Jackendoff, R. (1983). *A generative theory of tonal music*. The MIT Press.
- Ogata, T., Hori, K., & Ohsuga, S. (1994). Towards narrative text generation based on narrative techniques and strategies. *Proc. of International Federation for Information and Documentation*, 296-300.
- Ogata, T., & Kanai, A. (2010). *An introduction of informatics of narratology: On the thought and technology of narrative generation*. Tokyo: Gakubunsha. (in Japanese)
New York: Cornell University Press.
- Kobayashi, F., & Ogata, T. (2004). Narrative and music as variation: transformation of musical structure based on narrative discourse theory.

Proc. of the ninth international symposium on artificial life and robotics, 1,
170-173.

Lerdahl, F., & Jackendoff, R. (1983). *A generative theory of tonal music*. The MIT Press. Ogata, T., Hori, K., & Ohsuga, S. (1994). Towards narrative text generation based on

narrative techniques and strategies. *Proc. of International Federation for Information and Documentation*, 296-300.

Ogata, T., & Kanai, A. (2010). *An introduction of informatics of narratology: On the thought and technology of narrative generation*. Tokyo: Gakubunsha.

(in Japanese)

Table 1: The correspondence of musical variation techniques to discourse techniques

Discourse techniques		Musical variation techniques	
Tense	Order	Prolepsis	Inserting musical event to more forward than its original position.
		Analepsis	Inserting musical event to more backward than its original position.
	Frequency	Singular	Playing one musical event just one time (i.e., no change).
		Repeating	Playing one musical event more than one time.
	Duration	Iterative	Playing more than one musical events in paralel.
		Pause	Inserting a musical event which is not existing in the original music (it is corresponding to description in narrative).
Summary		Up the tempo.	
Scene		Down the tempo.	
Mood	Distance	Large	Increasing volume and pitch of backing part, and decreasing volume of melody part.
		Small	Decreasing volume of backing part, and increasing volume of melody part.
	Perspective	Selecting playing musical instruments (appearing and disappearing of musical parts)	

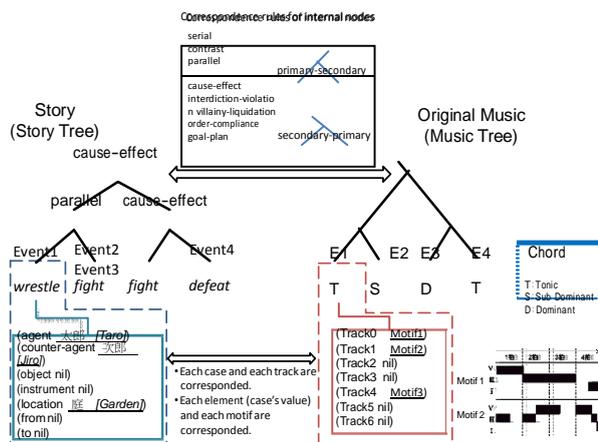


Figure 1: The mapping method between a story structure and a music one

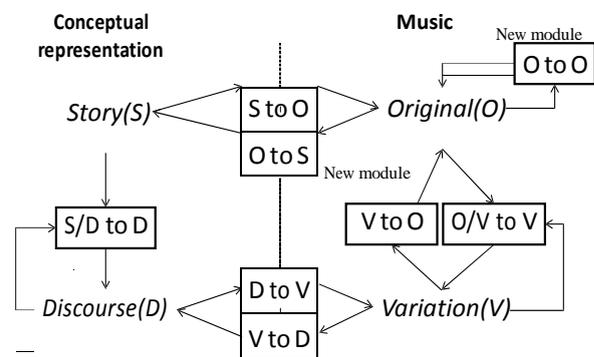


Figure 2: Circulation pathways and modules in the proposed system

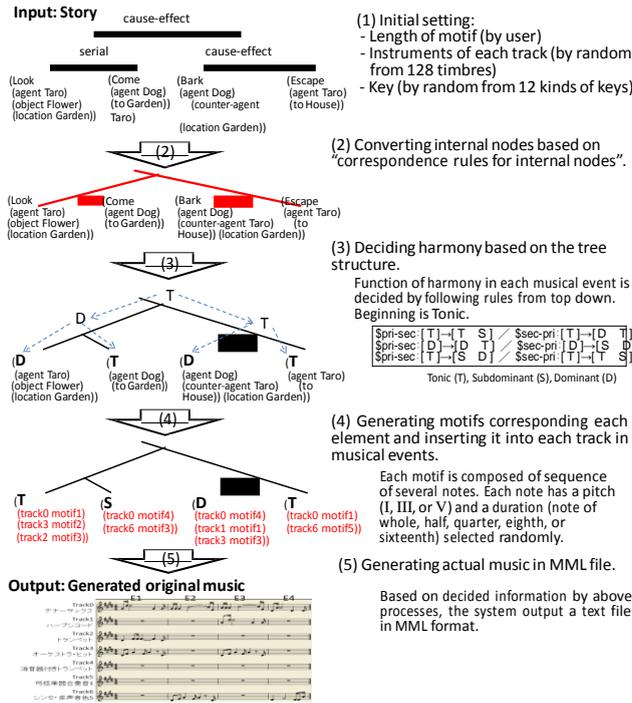


Figure 3: The flow of a transformation

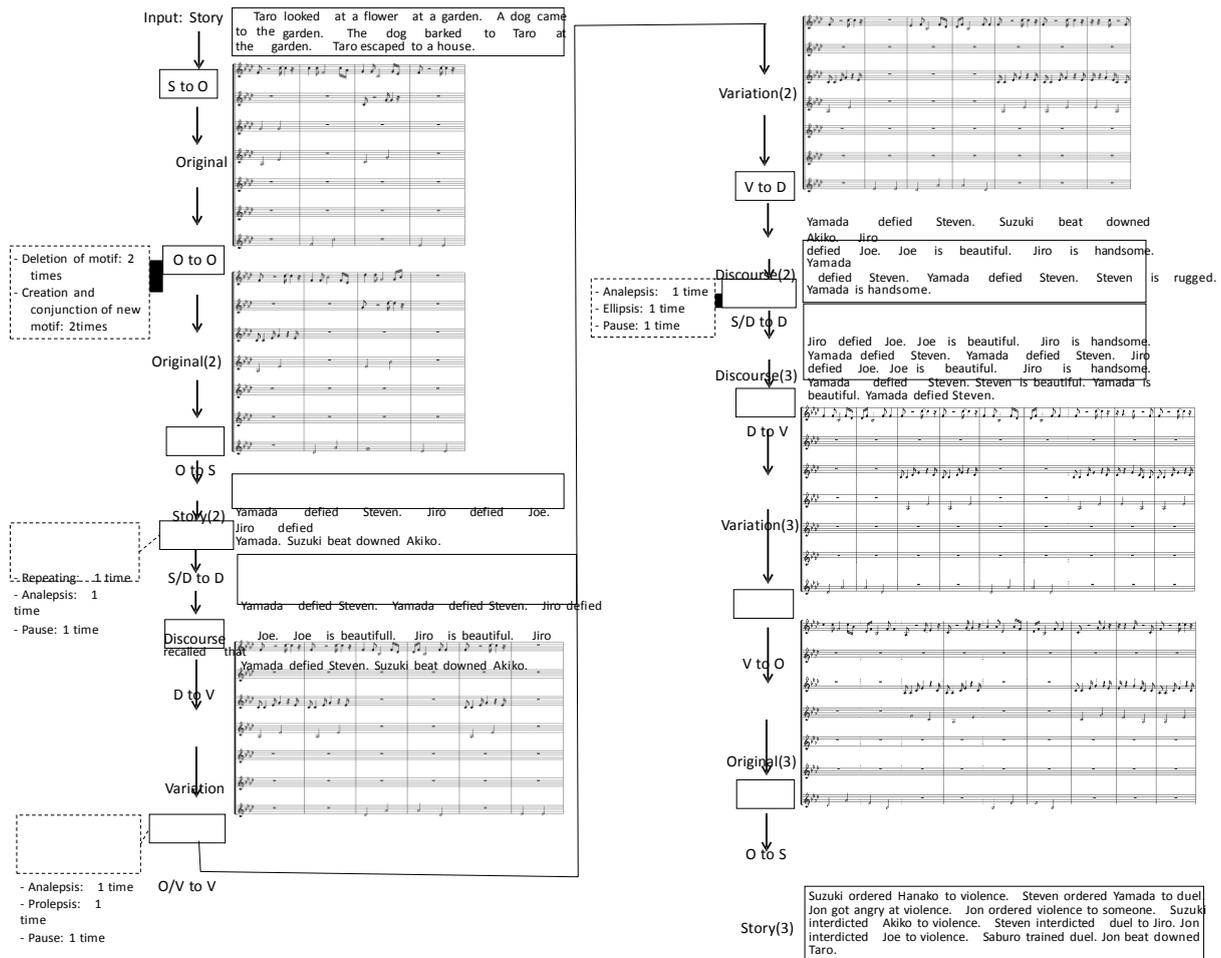


Figure 4: An execution example in a circulation generation process

VISUAL ART - RELEASING THE LIGHT

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Abstract:

From *Guanwu bian*: “Now in each movement and stillness, there is a partaking of the utmost wonders of heaven and earth, and between each movement and stillness, there is [also] a partaking of the utmost wonders of heaven and earth. Movement is Yang, and Yang and firmness are of the same *qi*; stillness is Yin, and Yin and pliancy are of the same substance. The generation of the ten thousand things by heaven and earth occur between a single movement and a single stillness, and the two *qi* [Yin and Yang] are mixed together and completed.” (*Guanwu bian jie er*, fasc. 5, in Wang Yunwu ed., *Siku quanshu zhenben chuji*). The theory that I apply in painting may thus be described as “movement, stillness, Yin, Yang, void, substance.” When Yin diminishes and Yang increases, then the brightness increases, and the rhythmic movement of the brush becomes more lively. When Yang diminishes and Yin increases, then the light is contained in stillness, energy is nurtured, sharpness gathered in, awaiting timely release. In stillness, there is movement, and in movement, there is stillness. The brush breezily sweeps along, between the Yin and Yang, between void and substance. In general, during the creative process I must know and observe the relationship between my own “physical energy” and that of the universe—it is necessary not only to blend them but also to absorb and release that energy.

“Releasing the Light.” Now the phrase “releasing the light” may be traced back to the Book of *Yi-Gin*, when it discusses the trigram *li*: “*Li* is the image of fire. „Fire“ is abstract—it does not have form, but only gives people the sense-impressions of light and heat. When it attaches itself to something, only then can its shape be manifest, whereupon it becomes much brighter. I have seen that the myriad things in the universe all have a tendency to „gather with their own kind“ and to join together, as the sun, moon, and starry asterisms join in harmony in the heavens ...” Besides explaining the origin of the title “Releasing the Light,” it even better explains the “purity of the self-nature” at its origin. The *Diamond*

Sutra teaches that “The heart should not be constrained by any perception when it perceives,” and this is echoed in *The Platform Sutra of the Sixth Patriarch*: “Who would have expected that the self-nature is originally pure in itself? Who would have expected that the self-nature is neither produced nor destroyed? Who would have expected that the self-nature is originally complete in itself? Who would have expected that the self-nature is originally without movement? Who would have expected that the self-nature can produce the ten thousand dharmas? One takes No-Form as the basis, No-Attachment as the root, and No-Thought as the objective.” This series of paintings is not grounded on the embodiment of image, and it does not cling to any departmentalist perspective, let alone take any concept and hang a framework around it.

Key words:

Releasing the light, viewing things, visible, movement and stillness, Yin, Yang, void, substance.

Introduction

The background to the “Releasing the Light” series is abstract expressionist forms in contemporary art. The motivation for the series was to explore the relationship between painting and painter: the purpose was to clarify, through free forms of expression, the limitations of freedom and of the senses that serve as “self” imposed by external conditions, and to go beyond the contemplation of awareness. Another motivation was to enter the condition of forgetting the self through the process of painting, to enter the true freedom of “selflessness” by escaping from the senses and the interference of phenomena on the senses. Through the activity of painting, one gradually lets go of the habits that have constrained the self for so long and lets the true inner knowledge slowly and freely release its light.

The value of this series lies in letting this “self” contemplate the habits of the self by progressive steps, then letting these habits of the self slowly dissolve, then letting each painting be a new beginning, and letting them truly, freely soar. The

contribution of the “Releasing the Light” series for other people derives from the eyes’ inability to interpret the paintings at first glance. Viewers will go on then to delve into them, and to understand the senses and consciousness, deep-rooted ideas. Afterward they re-contemplate their selves, thereby allowing both the free visual expression of the paintings and their own inner life energies simultaneously to soar in complete liberty and ease.

As for the series’ sources, they would first include Claude Monet (1840-1926), one of the initiators of the Impressionist movement, whose paintings were based on visual experience and cognition, not on traditional notions of painting, and omitted further embellishment. His presentation of visual experience accounted for changes in natural light, i.e., he depicted the sensed phenomena of moments, so that his paintings became a representation of the process of contemplation instead of a depiction of physical objects. This has influenced the “Releasing the Light” series insofar as it is an exploration of visual experience and sense-based knowledge. The second source is the graffiti-like abstract expressionist paintings of Edwin Parker “Cy” Twombly, Jr. (1928-2011), whose creative process involved depicting the secret impulses in the confusion of things. Cy Twombly’s paintings are a kind of phenomenological process of imagination and spontaneity, an expression of the investigation into secret structures. The third influence is a famous couplet from Gu Cheng’s (1958-1993) poem, “A Generation”: “The dark night gave me these dark eyes, / But I go to seek the shining light.” Darkness and light are phenomena, but they become a kind of truth when depicting phenomena. Gu Cheng’s poetry has an overabundance of viewpoints on distance or proximity and the “I,” which creates the poet’s distinctive sentimentality and incomparable beauty and sadness and centers, like the paintings, on the issue of the “I.”



Fig. 4: Claude Monet, *The Path Through the Irises* (oil on canvas, 200 x 180 cm)



Fig. 5: Cy Tombly, *Hero and Leander* paint and oil-based house paint on canvas (202 x 254 cm)

Research method

Since the series aims to investigate the relationship between painting and the painter herself, the primary research method is observation. “Observation” includes empty, still phenomena as well as moving phenomena, as well as the four seasons, day and night, rainy and sunny days, rise and fall... but as for observing the painter herself, this includes observing my own internal reflections on the various phenomena as they occur, and this reflection—without the interference of any added thought—is directly and swiftly swept out with a broom, using a lot of Chinese ink, flowing lines, and deconstructed color.

Main research findings

The creation of the “Releasing the Light” series happens immediately as worldly material phenomena occur and pass into me, with contemplation eliminated. As for the compositions generated by the phenomena, they are not driven by habit. That is, they do not derive from experience. The relationship between each painting and me is like that expressed by T. S. Eliot in his line, “In my beginning is my end” (1962:177), or like that of my poetic inscription for the painting, *One Green Leaf* (see Fig. 6): the “result” that appears now before my eyes

is created by a “cause,” but cause and result are both a single point on the same line.



Fig. 6: Hsieh Su-lien, *One Green Leaf* (oil on canvas, 110 x 90 cm, 2011)

One Green Leaf

Causes continue to create effects, all at once
because
red flowers and green leaves
are causes and effects
so
causes and effects
emerge from the same stem

The painting clearly presents symbols—phenomena in flux, and flowers. All these are filtered through the process of observing the changing colors of roses, as well as many other kinds of natural phenomena such as the colors on butterfly wings, the mottled effects on naturally decaying walls, the rain falling, golden color lotuses, and so on. But more importantly, it is a return to my childhood home, stepping on the paths I walked as a child and being brushed by a soft breeze, and to the time I was in Spain, during the autumn: past experiences are metamorphosed into the script that narrates feeling. One can still see forms in the painting, but they are visual reinterpretations, because right at this moment, in the interpretation of those past images, the participation of the “I” has been eliminated. That is, there is no “my” experience there. Only the metamorphized script remains, and the phenomena of the immediate present. Thus, the painting has departed from inscribing and polishing “reality.” Even so, as Freud once pointed out, the linking of imagined images with feelings is an activity called “daydreaming.” He wrote, for example, “When the child stops playing, he gives up nothing but the link with real objects; instead of *playing*, he now *phantasies*” (Storr 1972:30). However, in the

“Releasing the Light” series, no one is really fantasizing—there is only a kind of coming-and-going action. Therefore, there is no inescapably enchanting contradiction, and likewise there is no one daydreaming, and one cannot rashly establish the claim that someone is “daydreaming” (see Fig. 7).



Fig. 7: Hsieh Sulien, *Letting Go* (oil on canvas, 110 x 90 cm, 2011)

Letting Go

The brush seems to come and go
Colors seem to come and go Day
and night
Seem to come and go
All things
Seem to come and go

The “Releasing the Light” series proposes to paint without the “I,” which is different from Anthony Storr’s view, “...without which no art exists, but only self-expression” (Storr 1972:237). If a self exists that is expressing, then does that “self” truly exist? Or is the “self” only one kind of phenomenon? (see Fig. 8).



Fig. 8: Hsieh Sulien, *In Full Bloom* (oil on canvas 110 x 90 cm, 2011)

In Full Bloom

After fully opening
there's still fading to nothingness
therefore
don't grieve about death
because
life and death
are only phenomena

When the “self” exists, there is no art, because art is a limitless creation. It is impossible to create art that is free and limitless with a limited self. Because the “self” is controlled by the senses and sensations, phenomenal factors like “generation” and “extinction” can interfere with it. But inexhaustible, dynamic artistic creativity—that is something really boundless and separate (see Fig. 9). For that, one departs from limited language and ways of thinking and enters:

Consciousness without feature

Without end

Luminous all around (Thanissaru Bhikkhu 2002:51)



Fig. 9: Hsieh Sulien, *Releasing the Light* (oil on canvas, 110 x 90 cm, 2011)

Releasing the Light

Because of darkness, light is seen
because of light
one begins to know darkness
without darkness
one could not see the light

Recall Gu Cheng's lines, "The dark night gave me these dark eyes, / But I go to seek the shining light." Darkness and light are one kind of phenomena, but when depicting phenomena they unwittingly become truth. Gu Cheng's poetry, on examination, has too many descriptions of the various phenomena associated with "distance," "closeness," and "I," which explains his sentimentality and unparalleled beauty and sadness. As with the visual expression of the paintings, there is the issue of the "I." However, the mutually dependent relationship between the dark and the colored areas of *Releasing the Light* really flows out positively from my inner consciousness. There is a light-dark contrast, and its influence on me is like that of the sun and moon attached to the heavens and wondrous flowering plants attached to the earth. Light dependent on darkness becomes a truth, but how is "my" "knowing" to be attached to the bright, radiant wisdom? And how is it to be converted into wisdom?

Conclusion

When I concentrated on how I would convert “darkness,” use it in my paintings as the Chinese use “ink tonality,” and let that ink tonality get shaken up with brush-strokes, whether heavy or light, all kinds of transformations were put forth. As for colors, lines, daubs, and writing ... all are in turbulent motion. Sometimes the brush moved with lightning speed, sometimes it moved erratically, untethered to things. By interpreting visual verities through abstraction and representational text, the paintings become unpredictable. Their value lies in the painting process, which is like a release of light—and the release of the persistent state of selflessness. This may be described as one of the expressions of primal transcendence, because there is no demand on an “I,” and no need to focus control on anxieties. There is only letting these “I” demands depart from the body, letting habitual controls depart from persistent impulse, and the later revelation of internal purity. Conversely, the “Releasing the Light” series can illumine the complexity of human experience and excessive desire.

Sources

In Chinese

1. Hsiao-yun fashi. 1994. *Chanhua chanhua* [*Chan Painting, Chan Discourse*]. Taipei: Yuanquan chubanshe.
2. *Yi jing* [*Classic of Changes*]. *Siku quanshu* edition.
3. *Liuzu chanjing* [*Platform Sutra of the Sixth Patriarch*]
4. Zhu Bi. *Guanwu pianjie*, *Siku quanshu zhenben chuji* edition.
5. Tang Zhiqi. *Huishi weiyan* [*Subtle Words on Painting*], *Siku quanshu zhenben chuji* edition.
6. Tannishaluo Biqu [Thanissaro Bhikkhu]. 2002. *Xin ru zhihuo* [*The Mind Like*

Fire Unbound]. Trans. by Cheng Chen-huang. Taipei: Huiju chubanshe.

In English

1. Claude Monet, *The Path Through the Irises*. Link:
<http://www.metmuseum.org/collections/search-the-collections/110002463>
2. Cy Twombly, *Hero and Leander (To Christopher Marlowe)*, 1985. Link:
<http://www.e-flux.com/announcements/cy-twombly/>
3. Storr, Anthony. 1972. *The Dynamics of Creation*. London: Hazel Watson & Viney Ltd.
4. Eliot, T. S. 1969. *The Complete Poems and Plays of T. S. Eliot*. London: Faber and Faber, Ltd.
5. Thanissaro Bhikkhu. 1993. *Access to Insight: Readings in Theravada Buddhism*. Link: <http://www.accesstoinsight.org/lib/>

EXPERTISE IN ARTISTIC PHOTOGRAPHY

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Abstract

Empirical literature on the psychological processes involved in photography is extremely scarce. Given the varied uses of photography it is important to understand the psychological processes underlying the production of photographs. One question concerns how well existing psychological models of expertise might be applied to the domain of artistic photography. Technical aspects of photography likely involve the efficient application of routine, domain-specific patterns in representative situations, a process observed in many domains (Ericsson, 2006, Feltovich, Prietula, & Ericsson, 2006). Here, a traditional quasi-experimental approach (e.g., Ericsson, 2006; Kozbelt & Serafin, 2009) was utilized to compare the performance of expert photographers and novices on several domain-specific tasks.

In Study 1, 20 experts and 20 novices were each shown 30 photographic images (15 for 8 sec/each and 15 for 1 sec/each) that either did or did not possess a substantial technical flaw. The categories of flaws (composition, lens, lighting, and subject) and the 'no flaw' category were predetermined in an online pilot study completed by 11 professional photographers. The 30 images were evenly distributed across the five categories. A repeated-measures ANOVA to compare the abovementioned two within-subject factors, 'flaw' (5 levels: composition, lens, lighting, subject, no flaw) and 'display duration' (long versus short) and one between-subjects variable 'expertise level' (expert photographers versus novices) revealed that expert photographers outperformed the novices, $F(1, 38) = 12.80, p < .01$. Both groups were also differentially sensitive to four types of photographic flaws, $F(4, 152) = 33.63, p < .01$; specifically, identifying lighting and lens flaws was easier than identifying subject and composition flaws. Finally, participants responded with higher accuracy in the short duration condition compared to the long duration, $F(1, 38) = 11.59, p < .01$.

In Study 2 another group of 20 experts and 20 novices completed aesthetic judgment surveys on the initial same set of 30 images. Each image was rated on 26 items, each spanning an 8-point scale. Principal components analyses with varimax rotation revealed that expert photographers and novices use different aesthetic

judgment criteria. For experts' responses, originality loaded strongly on the first factor and pleasantness loaded on the second factor. For novice responses, pleasantness loaded strongly on the second factor, while dynamism loaded strongly on the second factor. This suggests that training in an artistic domain such as photography changes one's aesthetic judgment criteria.

Photography is arguably the most widespread artistic activity in the world. However, despite its popularity, the nature of photographic expertise has not been the subject of much direct empirical study. Given the varied uses of photography, including as a means of artistic expression, it is important to understand the psychological processes underlying the production of photographs. For example, vast individual differences in performance seem evident between eminent artistic photographers and the throngs of people who take photographs in a casual way. However, comments by photographers and most writings about photography (e.g., Cartier-Bresson, 1999; Jaeger, 2007; Traub, Heller, & Bell, 2006) have focused on more philosophical aspects of the domain instead of underlying psychological mechanisms. Thus, it is an open question how well existing psychological models of expertise might be applied to the domain of artistic photography. This is especially the case since expertise in photography likely derives from a complex combination of cognitive, perceptual-motor, and creative factors.

A key factor is one's technical knowledge of photography, which involves the efficient application of routine, domain-specific patterns in representative situations or tasks, a process observed in many domains (Ericsson, 2006). In photography, such patterns would likely be dependent on knowledge of light quality, design principles, and photographic equipment and could include quick assessments of image's visual 'accuracy' and possible technical errors. Along these lines, traditional accounts of expertise stress the role of quick scanning for regularities, patterns, abstractions, and integrating multiple cues (Ericsson, 2006; Feltovich, Prietula, & Ericsson, 2006). Additionally, experts' reasoning is often described as a dynamic interpretation of a scene and readiness to take action when appropriate. Thus, many aspects of photography plausibly involve mechanisms for quick pattern matching that are similar to those found in domains that have been studied in the traditional cognitive psychological literature on expertise.

Besides these pattern-matching mechanisms, the dynamic and aesthetic nature of expertise in photography is arguably also related to the creative ability or *adaptive* expertise (Hatano & Inagaki, 1986). In contrast to *routine* expertise domains, which are marked by inflexibility of the process, biases, and functional fixedness (Chi, 2006), *creative* expertise domains must involve mechanisms which allow overcoming such biases. For example, Hatano and Inagaki (1986) looked at the differences between excellence (adaptive expertise) and efficiency (routine expertise). As elaborated by Crawford (2007, p. 3):

A key distinction is that *routine* experts excel in the application of skill and knowledge to familiar problems, and *adaptive* experts are able to *construct new knowledge* as they solve problems, are more accurate in problem solving, and handle new problems more successfully. During problem solving, the cognitive processes of adaptive experts are distinguished by a greater attention to available evidence; closer analysis of data; a dialectical working back and forth from data to knowledge base; and deliberate, explicit thinking-through of questions posed to the self and conclusions. It is likely through these cognitive processes that adaptive experts *build* their existing knowledge base.

Cognitive adaptability is likely an important aspect of skilled artistic photography, and it is reasonable to think that photographers with several years of training and practice will outperform novices when asked to create new photographic images.

In this study, we attempted to understand the nature of expertise in artistic photography by examining both its routine and creative aspects. Traditional methods for studying expertise often involve quasi-experimental designs comparing the performance of experts and novices on a variety of cognitive and motor tasks (e.g., Ericsson, 2006; Kozbelt & Serafin, 2009); we adopted such a quasi-experimental approach, to compare the performance of expert photographers and novices on a range of domain-specific tasks. We tested several hypotheses: 1) Experts were expected to outperform non-experts on the routine task of detecting various types of

photographic flaws, as determined by experts in an online pilot study; 2) Photographers and non-photographers were also expected to differ in their performance on a creative task, specifically on their ability to crop interesting images out of a complex image. While both of these hypotheses may appear straightforward, identifying and designing tasks to demonstrate expert-novice differences is not simple; part of the rationale for this study is simply to find domain-relevant tasks that are potentially workable for answering these research questions.

Study 1: Flaw Detection and Creative Cropping - Method

Participants

In Study 1, the participants were 20 experts (11 males, 9 females) and 20 novices (7 males, 13 females). Experts were professional photographers with an average of 9.4 years of experience in photography, $M (SD)$ age = 33.7 (11.3). Novices were Brooklyn College undergraduates with no training in photography, $M (SD)$ age = 22.8 (5.9). After completing a research session, which lasted approximately 1 to 1.5 hours, experts received \$30 plus \$5 Starbucks gift card for participation and novices received two research participation credits required for their Psychology 1.1 course.

Procedure

At arrival, each participant was greeted by the experimenter and informed that the study is about how people evaluate and create photographic images. Participants were tested individually. First, each participant was introduced to the flaw detection task, in which each participant was shown 30 photographic images (15 for 8 seconds each, and 15 for 1 second each) that either did or did not possess a substantial technical flaw. The categories of flaws were tested in an online pilot study where 11 professional photographers rated 75 images on a set of four predetermined flaw categories: composition, lens, lighting, and subject. Images with no obvious flaws were also included. The 30 images with the highest inter-rater agreement were used in Study 1, evenly distributed across the five categories. Images were presented randomly within each time condition using Super Lab 4.0 software. This task builds on the traditional cognitive psychological literature on expertise.

After completing the flaw detection task, each participant was introduced to the creative tasks. In this paper only the first of the three tasks – the creative cropping out of a static image – is presented. This task was to mimic the spatial or “where” aspect of photography or zooming in and out of a scene to crop the best possible image (Hurn & Jay, 2008). Each participant was asked to frame five interesting images out of a static but visually complex scene presented as a full screen image. The image was presented using the full screen version of the Windows Picture Viewer upon which a screen-capture program Cropper v1.9.3.89 was superimposed. The cropping program consisted of a movable and resizable floating frame. The frame was rectangular in shape, shaded in blue (10% opacity). Initially, participants were trained to use the Cropper software (i.e., moving and resizing the frame and double-clicking inside the frame to automatically save the image). They were also allowed to zoom the base image in and out to get a closer cropping. Participants were instructed to frame and capture five images, of which they later chose their two best images.

At the end, each participant filled out a short demographic survey. This survey assessed the extent of experience in photography, and it included an item assessing their level of creative achievement in photography (adapted from the Creative Achievement Questionnaire of Carson, Peterson, and Higgins, 2005).

Study 1: Results

Study 1 evaluated differences between expert photographers and novices in their ability to recognize photographic flaws under either long (8 seconds) or short (1 second) time constraints. We performed a repeated-measures ANOVA to compare the abovementioned two within-subject factors, ‘flaw’ (5 levels: composition, lens, lighting, subject, and no flaw) and ‘display duration’ (2 levels: long versus short) and one between-subjects variable, ‘expertise level’ (2 levels: expert photographers versus novices). In general, expert photographers outperformed novices, $F(1, 38) = 12.80, p < .01$. Both groups were also differentially sensitive to four types of photographic flaws, $F(4, 152) = 33.63, p < .01$. Specifically, identifying lighting and lens flaws was easier than identifying subject and composition flaws. Finally, participants responded with higher accuracy in the short duration condition compared to the long duration, F

(1, 38) = 11.59, $p < .01$. No interactions between the independent variables were reliable.

Study 2: Judgment of Creative Cropping - Method

Participants

In Study 2, participants were 15 experts (11 males, 4 females), $M (SD)$ age = 39.9 (12.3) who received a \$20 Starbucks gift card for participating in an hour-long rating task. Experts were professional photographers with an average of 11.3 years of experience in photography

Procedure

In Study 2, another group of photographers rated the overall quality of images produced in the creative task in Study 1. Participants were informed that the study is about how people evaluate photographic images. Each participant was tested individually. The images were presented in a random order using Super Lab 4.0 software on a PC computer screen. Each image was displayed separately. Participants were first instructed that they would view 6 practice images and were asked to rate each image on an 8-point scale, with 1 indicating the lowest quality and 8 indicating the highest quality, using the number keyboard. This approach is supported by previous research on aesthetic judgment (e.g., Kozbelt, 2006; Kozbelt & Serafin, 2009), where a global quality rating has been shown as the strongest marker of aesthetic value. Participants were asked to utilize the whole range of the scale across all of the images, and were told that their ratings should be quick assessments of quality, there were no right or wrong answers, and their judgments should reflect their personal opinions of the images. After rating each image, the slideshow progressed to the following image. At the end of the rating task, each participant filled out a short demographic survey assessing, in addition to the basic demographic information, the level of education and computer proficiency. The whole task took about one hour to complete; however, only a portion of the study, involving expert ratings of images cropped from a complex static image, is reported here.

Study 2: Results

Study 2 evaluated differences between expert photographers and novices in their ability to produce photographs by cropping five images out of a complex static image and subsequently choose the two best images. We performed a repeated-measures ANOVA to compare the within-subject factor, 'selection' (2 levels: 'best' versus 'other') and one between-subjects variable, 'expertise level' (2 levels: expert photographers versus novices). In general, expert photographers' cropping were judged more favorably than those of novices, $F(1, 38) = 5.09, p < .05$. In addition, selection of the best images had an effect, with 'best' images being rated more favorably than the remaining images, $F(1, 38) = 4.71, p < .05$. There were no significant interactions; however, experts' 'best' images received the highest average quality rating and the novices' 'other' images received the lowest average quality rating overall.

Discussion

In this, the first empirical study (to our knowledge) to systematically examine expert-novices differences in artistic photography, we found several reliable results. Experts outperformed non-experts on both a well-defined technical task of identifying photographic flaws as well as a creative cropping task. In addition, we found that experts (as well as novices) were adept at selecting their 'best' images from a larger set. This pattern of results signifies that existing models of expertise (Ericsson, 2006) can be utilized to explain much of the nature of expertise in photography, perhaps particularly on well-defined tasks.

The most obvious merit of the study lies in simply identifying some of the main aspects of expertise in artistic photography. Despite photography's popularity, multitude of publications on its technical aspects, photographers' comments and many theoretical treatments on the creative and aesthetic value of photographs, none of the notions in the literature and anecdotal sources have been systematically tested. Such a gap between art theory and experimentation is common to other arts as well (Reber, 2008). There is undeniably value to theoretical accounts and the present study drew from these sources. However, the research reported here has begun to elucidate the nature of the initial steps in taking photographs. Later stages, like editing, might be tackled in future research.

Additional future research might examine the level of creativity needed in photography and compare it to other domains, such as painting. In addition, once aspects of photographic expertise are explored in enough detail, further research may explore the advantages and disadvantages of photography expertise; for example, the specificity of the knowledge acquired with expertise in photography. Is such knowledge highly specific and functionally fixed like knowledge of chess or perhaps it is more flexible like the knowledge of how to draw. Researchers may also explore the ubiquity of processing of human made visual information, in the media, on the street and in galleries and museums. It is quite possible that the static images that we encounter constantly through ads, magazines, and family photos continually shape and reshape our cognition in important ways.

References

- Cartier-Bresson, H. (1999). *The mind's eye: Writings on photography and photographers*. Millerton, NY: Aperture.
- Chi, M. T. H. (2006). Two approaches to the study of experts' characteristics. K. A. Ericsson, N. Charness, P. J. Feltovich, & R. R. Hoffman (Editors), *The Cambridge handbook of expertise and expert performance* (pp. 21-30). New York: Cambridge University Press.
- Crawford, V. M. (2007). Adaptive expertise as knowledge building in science teachers' problem solving. In *Proceedings of the Second European Cognitive Science Society (EuroCogSci07)*. May 23-27, 2007, Delphi, Greece.
- Ericsson, K. A. (2006). The influence of experience and deliberate practice on the development of superior expert performance. In K. A. Ericsson, N. Charness, P. J. Feltovich, & R. R. Hoffman (Eds.), *The Cambridge handbook of expertise and expert performance* (pp. 683-703). New York: Cambridge University Press.
- Feltovich, P. J., Prietula, M. J., & Ericsson, K. A. (2006). Studies of expertise from psychological perspectives. In K. A. Ericsson, N. Charness, P. J. Feltovich, & R. R. Hoffman (Eds.), *The Cambridge handbook of expertise and expert performance* (pp. 41-67). New York: Cambridge University Press.

- Hatano, G. & Inagaki, K. (1986). Two courses of expertise. In H. Stevenson, H. Azuma, & K. Hakuta (Eds.), *Child development and education in Japan* (pp. 262–272). New York: W. H. Freeman and Company.
- Hurn, D., & Jay, B. (2008). *On being a photographer: A practical guide*. Anacortes, WA: LensWork Publishing.
- Jaeger, A.-C. (2007). *Image makers, image takers: Interviews with today's leading curators, editors and photographers*. New York: Thames & Hudson.
- Kozbelt, A. (2006). Dynamic evaluation of Matisse's 1935 “Large Reclining Nude.” *Empirical Studies of the Arts*, 24, 119-137.
- Kozbelt, A., & Serafin, J. (2009). Dynamic evaluation of high- and low-creativity drawings by artist and non-artist raters. *Creativity Research Journal*, 21, 349-360.
- Reber, R. (2008). Art in its experience: Can empirical psychology help assess artistic value? *Leonardo*, 41, 367-372.
- Traub, C.H., Heller, S., & Bell, A.B. (Eds). (2006). *The education of a photographer*. New York: Allworth Press.



ABSTRACT

ART EXHIBITION

P625 ~ P678

THROUGH THE GORILLA GLASS: THE ENVIRONMENT IS THE MEDIUM

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Abstract

The artworks of the design group GUILD explore the integration of interactive media with the built environment. Many of their works incorporate direct human interaction such that the observer becomes a generator of dynamic reactions in the works as much as an interpreter of them. The principal example, Through the Gorilla Glass, was recently featured at Toronto's Nuit Blanche 2011 arts festival on the City Hall green roof in Toronto, Ontario, Canada and the arts event Unsilent Night, in Cambridge, Ontario, Canada. This kinetic sculpture was conceived in response to curator Shirley Madill's observations of Marshall McLuhan's *Understanding Media*; a work that questions the effects of quickly evolving communications media in the public realm. The sculpture points to an advancement of communication media such that they might become a means of playfully engaging public built environments. More specifically, the sculpture challenges the de facto medium of interactivity; the screen, especially the touch-screens utilizing Corning's gorilla glass as a thin layer connecting ourselves with the digital world. The work is not meant to downplay the significance of computer/screen based interaction but, rather, to elevate the role of digital interactive media into the realm of the physical, the architectural, and the environmental. The work, itself, is a large wave generator, wherein various transverse waveforms and patterns of light emerge through interaction with the piece. The work requires direct haptic interaction for it to perform, and thus a large part of the experience is in the manipulation of the piece followed by an interpretation of its movements. The work acts as an interface between the public and the science and phenomenology of waveforms. Visitors to the work are encouraged to create more pleasing or complex reactions from the sculpture by adjusting their input into the machine. In this light, Through the Gorilla Glass is a kinetic sculpture wherein its dynamic artistic qualities are brought about by empirical observations made by visitors interacting with the piece, giving feedback into the light and motion display

produced. As such, the work seeks to create an understanding of artwork by encouraging spatial interactivity in an aesthetic performance that fully involves the observer in the making of the art.

The artworks of the art collective GUILD explore the integration of interactive media with the built environment. Many of their works incorporate direct human interaction such that the observer becomes a generator of dynamic reactions in the works as much as an interpreter of them. The principal example, *Through the Gorilla Glass*, is an interactive kinetic sculpture. It was first developed and featured in Toronto, Canada's Scotiabank Nuit Blanche arts festival, where it was displayed on the City Hall Green Roof. Following this, it was featured at the Unsilent Night arts event in Cambridge, Ontario, Canada. It is now set to be displayed at the upcoming Burning Man 2012 in Black Rock City, Nevada, USA. The artwork is a 120 foot-long kinetic sculpture that displays transverse wave propagation across 84 sequentially moving wood fins and an array of reactive lighting. The fins have been cut from plywood into their elegant forms by CNC. They are mounted to a space-frame of hollow steel sections in twelve bays. The fins have custom laser cut acrylic mounts to support LED lighting. These lights alternate color with the movement of the fins, as controlled by a tilt-switch mechanism in the circuitry. An additional system of lights is controlled by an Arduino micro-controller connected to an accelerometer measuring the rotation of the fins at key locations. This information controls a secondary set of lighting, making illusory patterns of movement parallel to the sculptures physical motion. All the fins are connected with thick bungee cord to allow the wave movements to take place. The overall effect of the wave movement and following lighting display originate from direct interaction of visitors, moving the end fins to send wave movements down the length of the sculpture. This actuation of the machine can take place at both ends, or at mid-points, allowing visitors to create new interactions between the wave patterns they each create. These illuminated wave patterns can be seen from a distance, encouraging approaching the machine and further play to better understand the wave phenomena observed.

This kinetic sculpture was conceived in response to Toronto's Nuit Blanche curator Shirley Madill's observations of Marshall McLuhan's *Understanding Media*; a work that questions the effects of quickly evolving media and the subsequent transformation of perception in the public realm. McLuhan provides a description of media, being multiple and dynamic. Electric (or electronic) media decentralize our

world by engaging varied or new cognitive faculties, informing perceptions of our surroundings, for better or for worse, much more so than the content they hold. In fact, his argument points to the study of media through their interplay with other media (McLuhan, 26). As such, we have the opportunity to challenge media, what they are, how they work, how we interact with them, and to expand our creative capacity in understanding how we can make and engage the world around us.

McLuhan (18) himself points to artists as the primary re-interpreters of media:

“The effects of technology do not occur at the level of opinions or concepts, but alter sense ratios or patterns of perception steadily and without any resistance. The serious artist is the only person able to encounter technology with impunity, just because he is an expert aware of the changes in sense perception.”

In this light, the sculpture gives light to an advancement of communication media such that they might become a means of playfully engaging the public built environments by challenging our modes of interaction. The title, *Through the Gorilla Glass* refers to a fantastic re-imagining of interactive media. Gorilla Glass, a scratch resistant glass developed by Corning in the 1960s, was primarily used in automotive, aviation, and pharmaceutical industries. With the advent of touch screens, however, Corning saw the opportunity to use this thin, highly durable and pristinely clear glass as the cover for almost all mobile devices that require a touch screen interface. As such, the sculpture challenges the de facto medium of interactivity; the screen, especially the touch-screens utilizing Corning's gorilla glass as a thin layer connecting ourselves with the digital world. The work is not meant to downplay the significance of computer/screen based interaction but, rather, to elevate the role of interactive media into the realm of the physical, the architectural, and the environmental.

Though much of this project is about hypothesizing on possible future technologies and modes of interactions, it at the same time recalls a history of technological aspiration and invention, such as Leonardo da Vinci's conceptual machines, or a more recent reinvention of past technologies as with the Steam Punk genre. The intent is

to avoid extensive computerized technology and instead render the interface and the transformation of input into action at a base mechanical level. It is GUILD's hope that by combining various modes of technology and by focusing on the physical mechanisms and formal responses to audience input, we can redirect the design of the technologies into something that is sensual and visceral. It becomes hands-on, real-world material, as opposed to a digital interface. That said, even though the mechanism is shown to be palpably direct, even linear at times, there is a collective quality or shared gestalt to the work as a product of the combined interactions. These interactions are meant to challenge the audience's imagination by reinforcing the basic means of engagement, being play.

The main action of the piece functions as a large wave generator, wherein various transverse waveforms and patterns of light emerge through interaction with the piece. The work requires direct haptic interaction for it to perform, and thus a large part of the experience is in the manipulation of the piece followed by an interpretation of its movements. The work acts as an interface between the public and the science and phenomenology of waveforms. Visitors to the work are encouraged to create more pleasing or complex reactions from the sculpture by adjusting their input into the machine. The sculpture further becomes a new interface of communication between its users. They are to discover the ways that wave forms they can create individually interact and make new patterns with others' waveforms. Through this, the dynamic artistic qualities of the work are brought about by empirical observations made by visitors interacting with the piece, giving feedback into the light and motion display produced. The work seeks to create an understanding of artwork by encouraging spatial interactivity in an aesthetic performance that fully involves the observer in the making of the art. Art in this case becomes a tool, instrument, and environment of research into the phenomena that surround us. It is an aesthetic machine. Natural phenomena are brought into a technological environment, and their combination is a dynamic art.

McLuhan, Marshall. (1994). *Understanding Media: The Extensions of Man* Cambridge, Massachusetts: MIT Press.

NEURAL ART: SOME EXAMPLES

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Abstract

One of the themes of my art work over the years has been the relationship between the human nervous system and artistic expression, work that I have grouped under the term Neural Art. I have approached these ideas through my installations and my paintings. The work I will show is one of the forms that this approach has taken in my paintings.

In these works, I have conceptually represented the perceptual nervous system as the network that is the interface between the external reality and our internal processes of understanding that reality. Ever since I began painting, I have been drawn to the natural landscape as a subject for my art. Therefore, I adopted the natural landscape as representative of external reality and superimposed a grid-like structure or network on it. In this way, the viewer, in a sense, has to look through the grid at the landscape, represented as being on the other side of the grid. The grid/network is a conceptual representation of the perceptual nervous system.

While the work of artist Piet Mondrain influenced my use of the grids, I am unaware of any direct connection between Mondrain's art and neural functioning.

I propose to show five examples which are represented in the accompanying pdf and jpg files. The titles, dimensions and media are listed below:

Title	Dimensions	Media
1) Highlands Network II	9 x 14 inches	Watercolor/Ink
2) Irish Stone Network	9 x 14 inches	Watercolor/Ink
3) Rocky Line Network	14 x 9 inches	Watercolor/Ink
4) Skelligs Network	14 x 9 inches	Watercolor/Ink
5) Coastal Network	9 x 14 inches	Watercolor/Ink

Artist: George K. Shortess

Titles of work - sizes – medium - date

Coastal Network	26 x 36 cm	watercolor and ink on acid free paper	1982
Highlands Network	26 x 36 cm	watercolor and ink on acid free paper	1982
Irish Stone Network	26 x 36 cm	watercolor and ink on acid free paper	1982
Rocky Line Network	36 x 26 cm	watercolor and ink on acid free paper	1982
Skelligs Network	36 x 26 cm	watercolor and ink on acid free paper	1982

CIRCLE OF TIME INTERACTIVE AND RELATIONAL AESTHETICS IN DIGITAL ART

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Abstract

Relational aesthetics in interactive multimedia computing is redefining the syntax and audiovisual aesthetics of interactive digital art, collaborative design, and other forms of electronic, multimedia communication. As images, text, and audio change over space and time, the syntax and aesthetics of the audiovisual interface is continually redefined. Artists are leading the way with innovative art forms that incorporate experience design, augmented reality, social media, and participatory design into innovative blended environments that challenge traditional perspectives of space and time. This paper examines the various dimensions of relational aesthetics in interactive art and design.

Keywords: relational aesthetics, interactive art, augmented reality, participatory design

French art critic Nicolas Bourriaud defined the area of relational aesthetics in 1998 in his book *Esthétique Relationnelle* (Relational Aesthetics). The term was first used in 1996 in the catalogue for the exhibition titled *Traffic* which Bourriaud curated at the CAPC, musée d'art contemporain de Bordeaux (Bordeaux Museum of Contemporary Art). Bourriaud (1998) considered relational aesthetics “a set of artistic practices which take as their theoretical and practical point of departure the whole of human relations and their social context, rather than an independent and private space” (p. 113). For Bourriaud relational aesthetics was not simply a theory of interactive art. It was a “means of locating contemporary practice within the culture at large” (Bishop, 2004, p. 54).

The term relational aesthetics is an appropriate term to apply to many forms of contemporary art that use electronic media and interactive computing. Spatial, temporal, and sensory networks continually change and create new patterns and relationships. In interactive computing, static relationships are replaced by non-linear, multidimensional webs of cognitive and sensory associations. New semiotic structures unify complex multimodal webs of information. A metasyntax transcends the semiotics of individual elements (Macken-Horarik, 2004; Search, 2008). Relational aesthetics integrates these complex semantic structures and networks of cognitive data and sensory modalities. In relational aesthetics, the focus on audiovisual aesthetics gives way to other forms of sensory feedback and new forms of physical interaction that involve gesture and embodiment. Works of art and events are no longer self-contained. Meaning is derived by interaction with people, the surrounding environments (physical and virtual), and time. This paper examines the many characteristics of relational aesthetics in art and interactive design which include dynamic semantic associations, open-ended meanings, temporal and spatial dynamics, kinesthetically articulated design, embodiment, social discourse, collaboration, and participatory design. Examples from the author’s interactive art installations are included to illustrate this area of aesthetics.

Dynamic Semantic Associations

In interactive computing, media with diverse semantic structures create dynamic relationships that change over time. Layers of sensory and cognitive information shape the experiences and emphasize simultaneous as well as sequential connections. Diverse forms of space and time are defined by images, text, and sound. The physical

interaction of the viewer creates another layer of sensory feedback and cognition that bridges physical and virtual spaces.

Rhythms in images (outlines, shapes, color, texture), text, and layout (e.g., the organization of images in relation to text, alignment and spacing, bleeds) create patterns that form the overall rhythmic structure of the virtual composition. Sound, animations, and transitions between elements also play significant roles in defining the meaning of the audiovisual aesthetics. Blank spaces, silence, and pauses in action separate elements in space and time and alter the rhythm and interactive aesthetics. Rhythm can also be used to create a unifying, overarching structure for the flexible semiotic codes that characterize multimedia computing. For example, the repetition of specific audiovisual rhythms, gestures, or movements through time and space weave individual elements into a coherent whole.

The space or movement *between* actions can also contribute meaning to an interactive experience and define the relational aesthetics of the artwork or event. In designing interactive environments, there is usually a focus on the specific action or movement that creates a response. However, the movements in between these actions can also become part of the aesthetic experience. Motion contributes to the spatial grammar of interaction (Search, 2006) which defines another element in relational aesthetics. Djajadiningrat, Matthews, & Stienstra (2007) referred to the “semantics of motion” which shifts action from a purely “non-functional” role to an aesthetic role that is “necessary” for an engaging experience (pp. 10-11).

In the same way that layers of sensory and cognitive information define relational aesthetics, layers of different types of actions and motions contribute an important dimension to the aesthetics of interactive art and design. Actions that include acceleration and deceleration, movement backward/forward, rotation or circular motions, and linear movements can be superimposed as parallel motions rather than sequential actions. For example, speed or rotation can occur simultaneously with linear movement in a particular direction. Djajadiningrat, Matthews, & Stienstra (2007) identified the relational aesthetics inherent in this “choreography of motion” as “the expression or beauty of the movement,” and used the term “arch of tension” from the performing arts to describe how the “expression of the work unfolds” (p. 31).

Open-Ended Meanings

These dynamic semiotic relationships result in open-ended meanings. The aesthetic experience is characterized by interruptions of logic and non-conclusive relationships that are defined outside a Western framework of logical hierarchies and causality. These discursive environments form a unique interactive aesthetic that is an inherent part of the art form. Eco (1989) cites Merleau-Ponty's description of the ambiguity of experiences that have multiple, open-ended perspectives in *The Phenomenology of Perception*:

How can anything ever present itself truly to us since its synthesis is never completed . . . since none of the views or perceptions I have of it can exhaust it and the horizons remain forever *open*? . . . This ambiguousness does not represent an imperfection in the nature of existence or in that of consciousness; it is its very definition. (p. 17)

Bourriaud (1998) felt the criteria we should use to evaluate open-ended art works are the relations themselves that are produced by the art works, especially the relationship the work or experience creates with participants which defines the “criteria of co-existence” (p. 109).

The criteria of co-existence and relational aesthetics also derive new meaning from the representational dichotomies that exist between physical space and virtual space. In virtual worlds, only selective elements from the real world appear in the digital spaces. The viewer must define relationships between *what is real* and *what is fictional*. Designers select the elements or schemata that are most likely to help the viewer or participant identify with the online experience. The “aesthetics of narrative” is integral to these works. Sensory and cognitive elements are selected for their ability to create emotional connections, raise curiosity, or intrigue the participants. Relational aesthetics in interactive environments is also defined by the need to balance quick access to information in the “real” world with the desire to create engaging virtual worlds that encourage participants to linger and explore.

Temporal and Spatial Dynamics

Physical interaction with time-based media creates a temporal dynamic in relational aesthetics. The meaning of text and audiovisual symbols changes over time, and rhythm is a key element throughout the interactive experience. In addition to rhythm, there are other forms of temporal and spatial dynamics in multimedia communication that impact the aesthetics of the online experience. Time is a critical element in blogs and social networks like Facebook, MySpace, and Twitter. There is

an emphasis on “now” and “immediacy” which echoes the temporal focus of performance art in the 60s. Participants anticipate immediate feedback and changes. Time drives the interaction as participants feel compelled to update and share information on a regular basis.

The blending of different types of space, created by digital and physical environments, is an integral part of our daily lives as we move through physical environments and interact with mobile devices or other virtual spaces. Augmented reality applications for mobile devices allow participants to map images of their surrounding physical world to information obtained from online, virtual databases. Other forms of augmented reality technology allow participants to seamlessly transform physical objects like walls, transparent panels, and mirrors into communication devices that enable them to share information through local and global networking. The visual information in the surrounding environment becomes part of the visual syntax and aesthetics of the interactive experience.

These “blended” environments, created by augmented reality applications, give artists opportunities to use environmental fluidity, another dimension of relational aesthetics, to explore new forms of artistic and cultural spaces. For Zabel (2010) environmental fluidity described an “aesthetic-technological” dimension of art that distinguishes the art of virtual worlds from other art forms. Blended or augmented realities create a new level of immersion that enhances the museum experience. The augmented reality work *Through the Virtual Looking Glass* is an art project that combines the surrounding physical environment with virtual worlds created in Second Life. The works are created by a network of international art collectives such as the Caerleon Sims/Virtual Art Initiative and the Pirates Art Network (Gaskins, 2010). In 2010, at the Museum of Modern Art (MoMA) in New York City, an augmented reality exhibition enabled viewers to merge the physical environment with digital information by using mobile phones and an application called “Layar” to see additional works on different floors in the museum (Gaskins, 2011). Amir Baradaran, whose blended reality art is part of a movement called FutARism, describes augmented reality as a new artistic medium that “adds virtual content to a given space that is experienced in real-time and in semantic context with the real-world environment. Canonical artworks and sites will be appropriated and augmented” (Gaskins, 2011). In the future, Baradaran plans to extend the level of immersion in his work by enabling artists throughout the world to place their own content into his

system.

Kinesthetically Articulated Design and Embodiment

With these new technologies, the gestures and movements of the participants also become part of the design and define a spatial grammar of interaction that integrates the audiovisual computer interface with the physical space of the viewer (Search, 2006). Kinesthetically articulated design (KAD) helps the viewer create a tangible connection to the visual and cognitive relationships defined in the virtual space (Search, 2002). In interactive environments, absolute positioning with an interactive device gives the participant a direct spatial correlation between the movement of the device and the movement of virtual elements on the screen, thus enhancing the kinesthetic design of the interaction. KAD is an important design element in interactive games that mirror the physical movement of the participant and underscore the significance of the body as an important part of the online experience. KAD evokes a sense of embodiment which is another dimension of relational aesthetics that bridges the physical and virtual spaces.

Abstract expressionist artists and performance artists in the 60s experimented with embodiment as an aesthetic dimension of art. For Djajadiningrat, Matthews, and Stienstra (2007) “the philosophy of embodiment dissolves the mind-body distinction, rather than replacing the Cartesian priority of ‘mind over body’ with a similarly dualist priority of ‘body over mind’ ” (p. 26). They recognized that “ordinary, pre-conceptual, bodily, lived experience of the world” is a critical element in communication (Djajadiningrat, Matthews, & Stienstra, 2007, p. 5).

Embodiment through the use of gestures plays an important role in defining the relational aesthetics of an interactive experience. Gestures constitute a visual language that everyone understands since they are based on shared tactile experiences. LeBaron and Streeck (2000) pointed out that gestures provide a bridge between tactile experiences and the abstract conceptualization of these experiences. They highlighted the work of the philosopher Condillac who felt that gestures “constituted the original, natural language of humankind” (p. 119) because they formed a social language based on common experiences:

Condillac called signs “sensations transformées,” transformed sensations, by which he meant the entire complex of affect, desire, sensory perception, and motor action that makes up what nowadays we might call “embodied experience.” (p.118)

Because of these shared experiences, the visual symbols created by gestures have the potential to form a common language for community discourse in interactive art and design. Peter Anders (1999) identified the importance of understanding the spatial dimensions of social interactions, including body position and gestures, in order to enhance our ability to communicate and navigate in cyberspace. He referred to this type of electronic environment as “anthropic cyberspace” and described the universal language of spatial communication as follows:

Spatial, anthropic cyberspace links to a pre-linguistic knowledge of the world—a knowledge crucial to our navigation, operation, and communication. We understand spatial representation regardless of its cultural origin. Spatial thought—a shared human trait—underlies the images of objects and spaces from all cultures. (p. 10)

Social Discourse and Collaborative Design

Today personal perspectives and the activities of everyday life are shared in social media sites such as Facebook, Twitter, and personal blogs. Using social interaction, participants describe experiences and influence each other’s understanding of art and events, contributing to another dimension of relational aesthetics. Social interaction redefines the social and cultural context for aesthetics and results in a collective memory and “integrated” aesthetics that is based on the synthesis of diverse perspectives rather than the opinions of curators and media theorists. The meaning of art, objects, or events is defined by individuals who form a sense of community with others, and then use that relationship and social discourse to shape their understanding of an experience. Axel Bruns (2008) pointed out that “collaborative produsage” is the driving force behind collective intelligence and a new era of developing creative work that is collaboratively designed, which in turn leads to new cultural perspectives that are reshaping society itself. The view that culture and art define society and human relationships is echoed in Claire Bishop’s (2006) paper “Antagonism and Relational Aesthetics.” Bishop (2006) cited a 1969 essay by Althusser titled “Ideology and Ideological State Apparatuses” where Althusser concludes that culture does not reflect society, but produces it (p. 13). Bourriaud also felt that the structure of art work produces a social relationship, but identifying the structure of a relational art work is not easy, because the work tends to be open-ended (Bishop, 2006, p. 13).

Collaboration in online environments extends this social discourse to participatory design which provides an opportunity for diverse participants to contribute to an art or design experience. Today's interactive Web environment creates a new form of collaboration that will "harness human skill, ingenuity, and intelligence more efficiently and effectively than anything we've witnessed in the past" and contribute to the "rise of a global, ubiquitous platform for computation and collaboration that is reshaping nearly every aspect of human affairs" (Tapscott & Williams, 2006, pp. 18, 19). It is now possible to create an inclusive design experience that blurs the line between artist and viewer, and engages participants in the process of creating the artistic experiences as well as defining the meaning of the work. Lessig (2008) described the creative potential for what he terms a "remix" culture in which participants combine diverse audiovisual media and produce new creative works or "remixes" (p. 69).

Jenkins (2006) pointed out that participatory design is "shaped by cultural and social protocols" that are defined by "media consumers" rather than "media producers" (p. 133). Benkler (2006) noted these decentralized methods of collaboration, along with the focus on sharing information in social media networks, are leading to the creation of new "patterns of production" that are defined by social interaction protocols (p. 3). These patterns and protocols contribute another dimension to relational aesthetics by integrating individual and collective perspectives into collaborative methods of creating and analyzing art and design.

Interactive Art Installation Example

The author's interactive art installations demonstrate many elements in relational aesthetics. In these works participants interact with two different computer programs and create animated patterns that are projected on a blank wall in overlapping, transparent layers. The programs include sound, so there are dynamic layers of audio as well. Poetic phrases of text also change with the interaction and create free associations as abstract references connect the words.

The two participants alter the pace and rhythm of the audiovisual display with their individual responses to the pattern transformations. The overlapping and merging rhythms from these diverse actions enhance the spatial and temporal dynamics of the interactive art. The varied pace of the interaction underscores the visual dynamics of the patterns and establishes a tangible connection between the viewer, the pattern transformations, and the changing network of cognitive

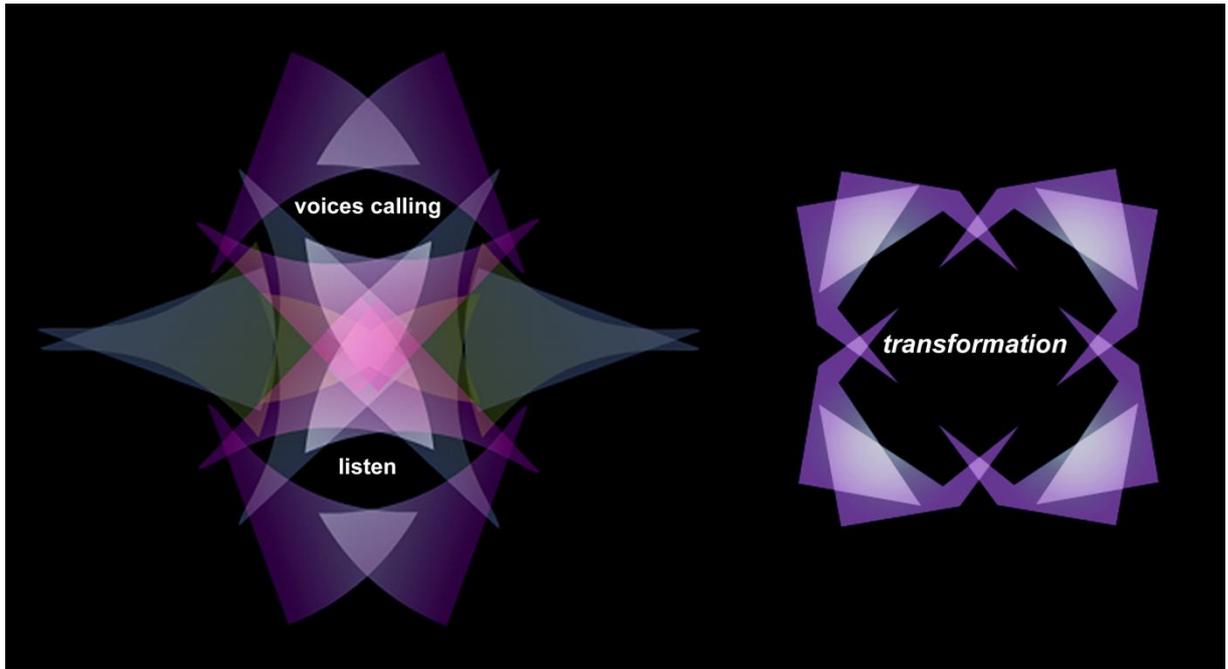
associations, thus defining another dimension in the spatial grammar of interaction and the relational aesthetics of the work.

Kinesthetically articulated design, embodiment, and gestures, also define the aesthetics of the art installation. The movements of the participants define patterns in the physical space that mirror the movements of objects in the virtual environments. The physical movements of the participants underscore the movement of the changing patterns and animations in the virtual space. Collaboration and social discourse also define the relational aesthetics of the art.

Participants often use gestures to describe to each other the movements, rhythms, and actions they experience in the installation (see Figure 1). Participants watch the actions of each other



Figure 1: Social Discourse in Interactive Art. Participants interacting with a multimedia art installation define the meaning of the work through social interaction.



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Figure 2: Images from Multimedia Installation by Patricia Search. Participants use two different computer programs to create diverse patterns that integrate images, text, and sound.

to learn how to change the patterns on the screen, navigate through the program, and find links to different sections of the program. As they explore the program, they talk to each other and share insights about the design and functionality of the art. Using social interaction—observation, dialog, and gesture—they define a participatory, relational aesthetics that contributes to their interpretation of the art.

Conclusion

Modern electronic technology is having a significant impact on the way artists and designers use relational aesthetics to create engaging experiences. The physical environment, gesture, movement, and social interaction define dynamic multimodal experiences that change over time. Augmented reality applications and mobile computing make it possible to integrate different types of physical space with electronically controlled environments. Social discourse and collaboration contribute diverse perspectives to these artistic experiences and shape the meaning of art and design. Relational aesthetics is integral to the interpretation of space and time in these new forms of interactive art and design.

References

- Anders, P. (1999). *Envisioning cyberspace: Designing 3D electronic spaces*. New York: McGraw-Hill.
- Benkler, Y. (2006). *The wealth of networks: How social production transform markets and freedom*. New Haven, CT: Yale University Press.
- Bishop, C. (2004). Antagonism and relational aesthetics. *October 3* (110), 51-79.
- Bourriaud, N. (2002). *Esthétique relationnelle*. Dijon: Les Presses du Réel.
- Bruns, A. (2008). Blogs, Wikipedia, Second Life, and beyond: From production to produsage. *Digital Formations 45*. New York: Peter Lang.
- Djajadiningrat, J.P., Matthews, B., & Stienstra, M. (2007). Easy doesn't do it: Skill and expression in tangible aesthetics. *Personal and Ubiquitous Computing 11*(8), 657-676.
- Eco, U. (1989). *The open work*. Cambridge, MA: Harvard University Press.
- Gaskins, N. (2011, August 4). The artist is prescient: Relational aesthetics and augmented reality. *Art 21 Blog*. Retrieved from <http://blog.art21.org/2011/08/04/the-artist-is-prescient-relational-aesthetics-and-augmented-reality>
- Gaskins, N. (2010, April 22). Beyond boundaries: Art exhibition & virtual 3D worlds. *Art 21 Blog*. Retrieved from <http://blog.art21.org/category/columns/art-21-creating-on-the-social-web>
- Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York: NYU Press.
- LeBaron, C., & Streeck, J. (2000). Gestures, knowledge, and the world. In D. McNeill (Ed.), *Language and Gesture* (pp. 118-138). Cambridge: Cambridge University Press.
- Lessig, L. (2008). *Remix: Making art and commerce thrive in the hybrid economy*. New York: Penguin Press.
- Macken-Horarik, Mary (2004). Interacting with the multimodal text: Reflections on image and verbiage in ArtExpress. *Visual Communication 3*(1), 5-26.
- Search, P. (2002). The metastructural dynamics of interactive electronic design. In Proceedings of the International and Interdisciplinary Conference of the Association of Internet Researchers. Maastricht, The Netherlands: Association of Internet Researchers. Retrieved November 15, 2002 from <http://www.aoir.org/members/index3.html>

- Search, P. (2006). The spatial grammar of interaction design: Weaving a tapestry of space and time in multimedia computing. In R. Griffin, B. Cowden, & M. Avgerinou (Eds.), *Animating the mind's eye* (pp. 185-190). Loretto, PA: International Visual Literacy Association.
- Search, P. (2008). The dynamic aesthetics of experience design. In *Proceedings of the International Association of Empirical Aesthetics Congress*. Chicago: International Association of Empirical Aesthetics (IAEA).
- Tapscott, D., & Williams, A. D. (2006). *Wikinomics: How mass collaboration changes everything*. New York: Penguin Group.
- Zabel, G. (2010). Theses on the art of virtual worlds. Retrieved from <http://www.scribd.com/doc/31391387/Theses-on-the-Art-of-Virtual-Worlds>

COLOUR DRAWINGS DERIVED FROM COPIES OF REAL LIFE OR IMAGINATION: FLOWERS AND BODIES

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In the next Art Exhibition, accompanying the *22nd Biennial Congress of the IAEA* in Taipei (Taiwan), I wish to present some large colour drawings in the form of lithographic copies.

The first table reproduces a geranium with its inflorescence, some other elements and its vase. The drawing, made with coloured pencils and watercolours, is very realistic and thus shows the efficiency of mental schemata and of the perceptual-motor coordination and confidence that were necessary, in cases like this, for such operations of copying from real life.

The plant is of considerable complexity, with two main branches, and there are also other elements. All this enriches the overall complexity, to the advantage of the aesthetic effect.

The second drawing is, instead, a work of imagination in which we see a texture of brightly coloured flowers – the product of fantasy. This work stems from the pleasure of the triumph of colour, as a form of escape and as an alternative to the rigid adherence to schemas dictated by reality. It involves the process of saturation of phenomenal qualities so that, after a predominance of realistic schemas, there is a need for the opposite, i.e. of anti-schema liberating situations. The colours are altogether festive, playful and reassuring. This work was created with crayons on white paper.

The third drawing is a copy of real life and shows a lying female nude seen from behind. The work has been made on special paper with a black pencil: it is sanguine and has some coloured pencil shading. I am very grateful to the model who agreed to pose for this effective realistic reproduction since experience shows that it is very difficult to obtain the cooperation of a non-professional model.

The history of visual art is rich in examples of the realistic reproduction of flowers or of female nudes, by artists such as Tiziano Vecellio, Edgar Degas, Gustave Courbet,

Pierre-Auguste Renoir, Amedeo Modigliani, René Magritte, Tamara de Lempicka, etc. The examples presented are also published in the volume entitled "*Affective Processes, Cognition and Action*". *Study Day in Honour of Paolo Bonaiuto. June, 4-5, 2010. Proceedings Book. Volume I: Selected Papers*, edited by V. Biasi in 2011.

The drawings are all signed and suitably numbered lithographs, and are as follows:

1) "Geranium" (Paolo Bonaiuto, 1961; 41x66 cm)

2) "Wreath of imaginary flowers" (Paolo Bonaiuto, 1961; 41x48 cm)

3) "Nude No 1" (Paolo Bonaiuto, 2000; 36x47 cm)

References

Biasi, V. (Ed.). *International Congress on "Affective Processes, Cognition and Action". Study Day in Honour of Paolo Bonaiuto. June, 4-5, 2010. Proceedings Book. Volume I: Selected Papers*. Teseo, Rome, 2011 (pp. 313).

Bonaiuto, P. (1988). *Forme Lineari e Bande Colorate. Un reattivo per la valutazione delle capacità di percepire l'espressività visuale*. Rome: First University of Rome "La Sapienza".

Bonaiuto, P. (1988). Processi cognitivi e significati nelle arti visive. In L. Cassanelli (Ed.), *Linguaggi Visivi, Storia dell'Arte, Psicologia della Percezione*. Rome: Multigrafica (pp. 47-79).

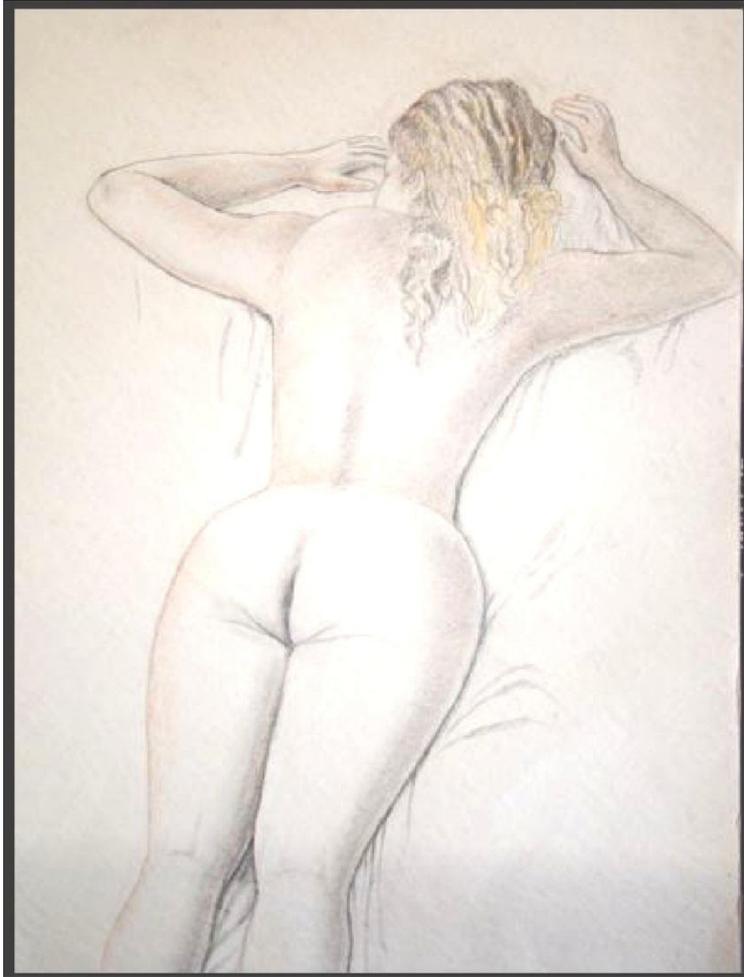
Keywords: Colour, Drawing, Fantasy, Flower, Nude, Realism



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THE EFFECTS OF EMPHASIS AND COMPLETION IN AESTHETIC FRAMING DECISIONS

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Antecedents, Purposes and Methods

I developed my photographic skills as a pupil of the famous photographer and designer Oliviero Toscani, by doing a specific course in Cecina (Tuscany) before graduating in Psychology. For the 22nd IAEA Art Exhibition, I wish to consider the effects of emphasis and completion in determining aesthetic framing. To this end, I have selected six coloured images of flowers in order to study “amodal completion”: the more intense this process, the stronger the corresponding need for completion (Biasi, 2006). This makes the beholder more involved in the process of confirmation of the activated mental schemata.

Perceptual completion phenomena are known in the experimental literature as “amodal completion”, “covered completion”, “occlusion”, “screening effect”, etc.

These occur when an object appears placed behind or below another, thereby avoiding or reducing sharp interruptions, fragmentations, incompleteness, irregularities, which are possible incongruent perceptions (Michotte, Thinès & Crabbé, 1967; Kanizsa, 1970; Bonaiuto, 1978, 1988). By means of completion, the observer can also confirm mental schemata and expectations that he/she possesses, and can satisfy a specific need, which can also be evaluated with an eleven-box self-appraisal scale (from 0 to 10 points; Bonaiuto & Biasi, 2006; Biasi, 2006).

According to our hypotheses, moreover, the “need for completion” is influenced by object importance, it being higher with more important objects. The perceptual completion process has a greater reason to exist when it must avoid the incongruous and fastidious incompleteness of a phenomenally “important” image; while the very same need may be markedly less intense with objects of apparently minor importance.

As a result, the evaluation of the “need for completion”, which the ordinary beholder experiences when faced with images of incomplete objects, also becomes a strategy – at a perceptual level – for studying phenomenal importance and its functional antecedents or consequences. Relevant antecedents consist of elegance and aesthetic

appreciation, which enhance object and event importance (Biasi & Bonaiuto, 2007a, 2007b).

Amodal or “covered” completion appears related to internal needs and tensions grasped at the level of the self, in the sense of demands that go to supplement and extend the directly visible areas with others that are still part of the reality “encountered”. This *tension of completion* or need to complete images that would otherwise remain interrupted or cut can be evaluated, as with other aspects, by means of subjective scales.

In a recent survey, twenty-four young adults, with both genders equally represented, were individually shown five boards in random succession. Each board showed an incomplete section – from very small to increasingly more extended – of the façade of a Renaissance building. The self-evaluations of the need for completion, assessed by means of the aforesaid procedure, gave rise to average values which increased as the section of missing façade decreased and as it became more asymmetrical.

The same was seen, and even more clearly so, when other realistic colour images of important objects or well-known people were used in similar experimental studies: an animal, a model, an automobile, a current banknote of large denomination. Each image was used in order to create five boards presenting vertical “slices” which gradually extended sideways, from the most incomplete one to that of the whole complete image. Each of these elements, on A4 cards, was presented in random succession along with the 11-step evaluation scale, still following the aforesaid procedure. In all cases, the mean values of the data collected showed the direct relationship between the intensity of the need for completion and the perception of incompleteness, which each time triggered the corresponding mental schemata. In other words, even the need for amodal completion in perception seems to conform to a general law of the motivational dynamics: the need increases in proportion to the “gaps” seen in the target object. In this case the target object was image completeness, guided by the correspondence to the integral mental schema of it.

Two factors of aesthetic experience are taken into consideration with these photographs: *originality*, owing to the close-up and thus rather unusual shots of the depicted objects, and beholder *involvement*. As the completion effect increases, so too does image *originality* and *emotional involvement* for the beholder. Special attention has been given to light and, to avoid any flattening effect, the photographs were taken

at dusk in mid summer. The six examples selected try to valorise two formal components: emphasis and completion.

List and Features of the Submitted Works

The six colour pictures I am presenting, with technical and psychological remarks, were obtained by means of a SONY Cyber-Shot DSC-H50 digital camera. They are as follows:

1) “Flowers, No. 1” (Valeria Biasi, 2011; 50x35 cm).

The image shows the preciousness and beauty of a twig of flowers. The vivid hues encourage completion, making the flowers appear closer.

2) “Flowers, No. 2” (Valeria Biasi, 2011; 50x35 cm).

The image shows a section of the previous twig but closer up, with strong emphasis of some flowers, thereby strongly encouraging visual completion. Originality is also assured by the unusual close-up shot. The beholder becomes particularly involved and is encouraged to explore the image.

3) “Flowers, No. 3” (Valeria Biasi, 2011; 50x35 cm).

The image is a close-up of a different flower, showing great emphasis and encouraging completion. This image is particularly unusual and the beholder is encouraged to analyse and explore it further.

4) “Flowers, No. 4” (Valeria Biasi, 2011; cm 50x35). There is a distinct floral texture: the leaves appear to extend well beyond the margins of the image and to cover each other, giving rise to a series of “screen effects”, with the relative functional consequences.

5) “Flowers, No. 5” (Valeria Biasi, 2011; 50x35 cm).

This inflorescence, of delicate pale blue, appears prominent with respect to an indistinct and blurred background. The completion effect is weaker, but the strong emphasis guarantees beholder involvement and image originality.

6) “Flowers, No. 6” (Valeria Biasi, 2011; 50x35 cm).

This image has average emphasis and completion effects. The psychological remarks are as for the above.

Overall, the dominant hues in the six flower images are bright pink and orange which, according to the colour classification (Bonaiuto, 1988), correspond to “reassuring and playful” colours stimulating positive emotional involvement.

References

- Biasi, V. (2006). *Il conflitto psichico. Analisi fenomenologiche e verifiche sperimentali*. Rome: Monolite.
- Biasi, V. & Bonaiuto, P. (2007a). *Eleganza e lusso come fattori dell'importanza fenomenica nella percezione*. In A.M. Curcio (Ed.). *Sociologia del lusso e della moda*. Milan: Angeli (pp. 141-154).
- Biasi, V. & Bonaiuto, P. (2007b). Elegance, phenomenal importance and personality as conditions of visual amodal completion of meaningful object images. *Perception*, 36 (Supplement, 30th ECVF), 214.
- Bonaiuto, P. (1978). *Processi e fenomeni psichici nel nostro rapporto con le illustrazioni*. Rome: Università degli Studi di Roma "La Sapienza".
- Bonaiuto, P. (1988). Processi cognitivi e significati nelle arti visive. In L. Cassanelli (Ed.), *Linguaggi Visivi, Storia dell'Arte, Psicologia della Percezione*. Rome: Multigrafica (pp. 47-79).
- Bonaiuto, P. & Biasi, V. (2006). *L'incompletezza strutturale come fattore di attivazione dell'esigenza di completamento*. Rome: Università degli Studi di Roma "La Sapienza".
- Kanizsa, G. (1970). Amodale Ergänzungen und Ernartunsfehler des Gestalt psychologer, *Psychologische Forschung*, 33, 325-344.
- Michotte, A., Thinés, G. & Crabbé G. (1967). *Les compléments amodaux des structures perceptives*. Louvain: Publ. Univ. Louvain.
- Keywords : Aesthetic Appreciation, Completion, Emphasis, Involvement, Perception.

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THEMES AND VARIATIONS: SON AND FATHER

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The works I am exhibiting are inspired by drawing made over the past year or so by my five-year-old son, Benjamin Ulysses Kozbelt. Like most children, my son spent a fair amount of his early life coloring and making marks on surfaces, but only around his fourth birthday did he become noticeably interested in drawing as a major activity. He now draws many pictures a day, and I have begun to use his drawings as the basis for some of my own works, as a sort of theme and variations. Typically I do not interfere much when he is drawing, nor do I rework his images directly on the same surface, unless he invites me to draw with him. Instead, I take his finished drawings and use them as the architectural or thematic basis for my own composition. I try to preserve something of the spontaneity, fun, and (sometimes) subject matter of the originals. I also try to engage the manner of mark-making, drawing with an unusual grip or my non-dominant hand, and trying not to be overly metacognitive while working. I restrict my variations to the same kind of media (marker, crayon, etc., on white paper) that my son uses. This has proven to be a refreshing change of pace from my usual laborious methods.

Some of the drawings on display develop the subject of a unicorn, alluding to Paleolithic art as well as the work of Willem de Kooning, Hans Hofmann, and others. The general mode of working using simplified but recognizable forms makes contact with some of the work of Paul Klee, Henri Matisse, and Pablo Picasso. I continue to

explore more stripped-down and abstract modes of depiction as my daughter, Layla Shahrazad Kozbelt, now about 1.5 years old, has begun happily making lively marks on paper, in imitation of her big brother.

Additionally, as someone who is both a scientist and an artist, I cannot help but think about how this method of working as well as my son's own drawing process are relevant to my research life. The nature of children's drawings has been of longstanding interest to psychologists (e.g., Gardner, 1980), arguably outdistancing empirical work on skilled adult drawing, at least until recently. Having had a strong research focus on skilled adult depiction, I was never heavily immersed in the empirical literature on children's drawings. However, when my son was born, I suspected that when he began drawing, I would become very interested in the topic; this indeed has happened, in a number of ways. Among the issues in representation and depiction that such drawings highlight are: the spontaneous sense of balanced composition that the drawings of many young children display (see Winner, 1982, pp. 168-169); the kinds of features are included or excluded; how different objects or animals are differentiated – for instance, different species of dinosaurs; the order in which various marks are made (e.g., Goodnow & Levine, 1973); the degree of motoric control used in different aspects of a depiction; the extent to which different media, colors, and types of marks are combined; and many more.

References

- Gardner, H. (1980). *Artful scribbles: The significance of children's drawings*. New York: Basic Books.
- Goodnow, J. J. & Levine, R. A. (1973). The "grammar of action": Sequence and syntax in children's copying. *Cognitive Psychology*, 4, 82-98.

Winner, E. (1982). *Invented worlds: The psychology of the arts*. Cambridge, MA:
Harvard University Press.

“Theme” drawings by Benjamin Kozbelt:



“Variation” drawings by Aaron Kozbelt:



VISUAL ART - RELEASING THE LIGHT

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Abstract

From Guanwu bian: “Now in each movement and stillness, there is a partaking of the utmost wonders of heaven and earth, and between each movement and stillness, there is [also] a partaking of the utmost wonders of heaven and earth. Movement is Yang, and Yang and firmness are of the same qi; stillness is Yin, and Yin and pliancy are of the same substance. The generation of the ten thousand things by heaven and earth occur between a single movement and a single stillness, and the two qi [Yin and Yang] are mixed together and completed.” (Guanwu bian jie er, fasc. 5, in Wang Yunwu ed., Siku quanshu zhenben chuji). The theory that I apply in painting may thus be described as “movement, stillness, Yin, Yang, void, substance.” When Yin diminishes and Yang increases, then the brightness increases, and the rhythmic movement of the brush becomes more lively. When Yang diminishes and Yin increases, then the light is contained in stillness, energy is nurtured, sharpness gathered in, awaiting timely release. In stillness, there is movement, and in movement, there is stillness. The brush breezily sweeps along, between the Yin and Yang, between void and substance. In general, during the creative process I must know and observe the relationship between my own “physical energy” and that of the universe—it is necessary not only to blend them but also to absorb and release that energy.

“Releasing the Light.” Now the phrase “releasing the light” may be traced back

to the Book of Yi-Gin, when it discusses the trigram li: “Li is the image of fire. „Fire” is abstract—it does not have form, but only gives people the sense-impressions of light and heat. When it attaches itself to something, only then can its shape be manifest, whereupon it becomes much brighter. I have seen that the myriad things in the universe all have a tendency to „gather with their own kind” and to join together, as the sun, moon, and starry asterisms join in harmony in the heavens ...” Besides explaining the origin of the title “Releasing the Light,” it even better explains the “purity of the self-nature” at its origin. The Diamond Sutra teaches that “The heart should not be constrained by any perception when it perceives,” and this is echoed in The Platform Sutra of the Sixth Patriarch: “Who would have expected that the self-nature is originally pure in itself? Who would have expected that the self-nature is neither produced nor destroyed? Who would have expected that the self-nature is originally complete in itself? Who would have expected that the self-nature is originally without movement? Who would have expected that the self-nature can produce the ten thousand dharmas?One takes No-Form as the basis, No-Attachment as the root, and No-Thought as the objective.” This series of paintings is not grounded on the embodiment of image, and it does not cling to any departmentalist perspective, let alone take any concept and hang a framework around it.

Key words: Releasing the light, viewing things, visible, movement and stillness, Yin, Yang, void, substance.

For IAEA Art Exhibition
Art works and poems of Sulien Hsieh



Sulien Hsieh, “Golden Water Lilies at Baihe, in Taiwan”
Oil painting, 2011 (116.5x91 cm)

Golden water lilies grow from mud
And are reflected on the surface of the muddy water
You Me
Blue sky, hint of green
Still blessedly harmonious
No difference



Early Autumn

To say it's early autumn
Is the start of
Clinging to time
The notion of early autumn
Is something to grab on to—
The experience of the “I”



Sulien Hsieh, “Awareness”
Oil painting, 2011 (116.5x91 cm)

A Pool for Growth and Life

Growing and thriving between heaven

and earth
The water clear at the source
Purify the mind, reduce desire
Nurture the essence, *qi*, and spirit



Sulien Hsieh, "Guanziling"
Oil painting, 2011 (116.5x91 cm)

Guanziling

In Guanziling there is an old
Buddha
An old Buddha revealed amid
humankind
Pure incense swirling upward
Tells of suffering beyond
description
The old Buddha always sits still,
listening
Slowly
People's monochromatic lives
Become colorful at a touch
Originally
The old Buddha's quiet sitting
Is everything and nothing
The power of the dharma is
unlimited



Sulien Hsieh, "Summer Night
in Taiwan ", Oil painting,
116.5x91cm, 2011

Summer Night in Taiwan

Breathing out, breathing in
Tranquility and wisdom
It
Juts out and in
From the depths of the sea
Slowly reaching
The dawn and emptiness



Sulien Hsieh, "Taiwan Winter", Oil painting, 116.5x91cm, 2011

Taiwan Winter

People use the "I" feeling

To experience Taiwan's winter

If

Emptiness emerges from the innate mind

Then this winter

Is

The myriad dharmas, become empty

SOUNDS OF THE OCEAN

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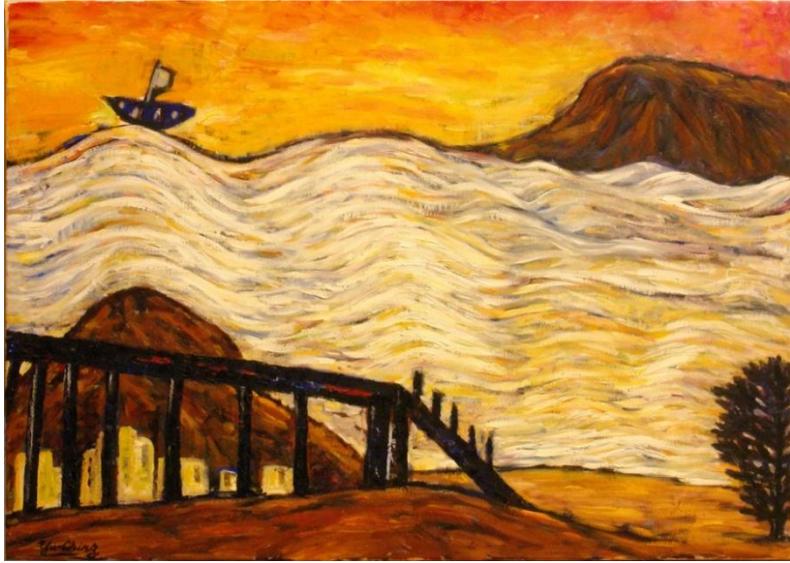
Abstract:

This picture is expressed in a surreal way. The frame is not a dream, however, its images portray some metaphors of my life. I drew it by intuition, allowing subconscious thoughts to come out.

In the picture, the boat is like a wayfarer. The ocean is a symbol of life. The sounds from the ocean resemble the noisy changes in my life. Sometimes the waves of sea elevate so high, and the boat seems lonely and in danger. Yet when the ship moves in an upsurge, it represents how I plunge into my own world, and enjoy adventure with no fear.

Then, the coast is an emblem of reality. It's not far away from the lonely boat, but the desolated city there is not so vibrant and quite confined. So, the boat won't land there. This represents how I don't devote myself to pursue reality. Also, I like to travel by sea, listen to the melody of the tides, and explore the rhythms of nature. This picture is truly telling a story about me.

The artwork:



My Self-Description and Creative Perspective:

Sounds of The Ocean

I believe that true art should have intrinsic, permanent, and infinite significance, and the power of art should come from artist's authentic experience emotion, imagination, creativity, contemplation, and critical analysis of life and the world. Different artists of various ages, periods, and places, have their unique inspirations and experiences of life and the world. People need share the enormously deep feeling with others through art.

German hermeneutics philosopher Gadamer (Hans-Georg Gadamer, 1900-2002) claims that experiencing art can stimulate our soul to think about our life. Works of art are not just formed with aesthetic quality. Art has meaning and content, and it can't be isolated from its real-life inspiration (Gadamer, 1989). Merleau-Ponty's (1908-1961) philosophy has similar comments about art as well. He believes that the life of an artist "follows" the life of his art (Adam, 1996).

Based on these thoughts above, I devote my creativity to connecting the images I create to sentimental feeling in my heart. My painting 《Sounds of the Ocean》 is telling a story about myself. This picture is expressed in a surreal way. The frame is not a dream, however, the image portrays metaphors representing my life. I drew it by intuition, allowing subconscious thoughts to come out. The way that I express this work seems like surrealism, but it's not. It instead integrates the characteristics of emotion in expressionism and metaphor of symbolism.

In the picture, the boat is like a wayfarer. The ocean is a symbol of life. The sounds from the ocean resemble the noisy changes in my life. Sometimes the waves of sea elevate so high, and the boat seems lonely and in danger. Yet when the ship moves in an upsurge, it represents how I plunge into my own world, and

enjoy adventure with no fear.

Then, the coast is an emblem of reality. It's not far away from the lonely boat, but the desolated city there is not so vibrant and quite confined. So, the boat won't land there. This represents how I don't devote myself to pursue reality. Also, I like to travel by sea, listen to the melody of the tides, and explore the rhythms of nature. This picture is truly telling a story about me.

I like imagery that has poetry, sentimental color, and texture. I believe that if a work could connect with genuine human emotions, it can touch people. Although our contemporary world has a lot different forms of media for presenting art, oil painting still has its unique and powerful place in art media.

When I create an oil painting, I enjoy the process of using the brush, line, color, and texture to create imagery, which is formed in my heart. The feeling of driving both my body and perceptive mind is like Nietzsche's (Friedrich Wilhelm Nietzsche, 1844-1900) philosophy of art, thought, and imagination. The philosophy asserts that one's body participates in the impulse of creation and imagination (Gong, Zhuo- Jun, 1998). Nietzsche also describes that the meaning of art reflects our enthusiasm of life (Fu, P'ei- Jung, 2011). I believe the process of creating art or experiencing art can really bring people a feeling of satisfaction in their life. Artistic creation is about emotion, sub-consciousness, and consciousness of life.

Besides, existentialist philosopher Heidegger (Martin Heidegger, 1889-1976) reminded me to think about my existence. He claims that people do have some difficulty in life, and we must reflect on our difficulty to let us have the consciousness of life. Then we can really exist (Magee, 1998). When I create an image with the purpose of solving difficulty in my life, I'm trying to face the problem and reflect upon it. For me, it's a process of pursuing existence. Although facing one's

problems is tough, the feeling of reflecting on my life is also inviting and fascinating.

Therefore, my artistic creations are built on these philosophical perspectives. They could be created through any form and media. They could be abstract, realistic, or surrealistic. The result of my creation just depends on what imagery I have in my heart.

Reference

- Adams, L. S. (1996). *The methodologies of art: an introduction*. Boulder, CO: Westview Press.
- Fu, P'ei- Jung (2011). *History of western philosophy*. Taipei: Linking Publishing.
- Gadamer, H. G.(1989). *Truth and method*. (Weinsheimer, J., & Marshall, D. G. Trans.). New York: Seabury Press. (Original work published 1960).
- Gong, Zhuo- Jun (1998). *Dialectic of the body and imagination: Nietzsche, Husserl, Merleau-Ponty* (Unpublished doctoral dissertation). National Taiwan University, Taipei.
- Magee, B. (1998). *The story of philosophy*. New York: DK Publishing, Inc.

ENVIRONMENTAL VIEWS, PANORAMAS AND INDIVIDUAL DETAILS

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Antecedents, Purposes and Methods

For the 22nd IAEA Art Exhibition I have selected six coloured pictures which illustrate interesting environmental views, panoramas and individual details.

List and Features of the Submitted Works

The six colour pictures I am presenting, with technical and psychological remarks, have been obtained by using a CANON digital camera. They can be listed as follows:

1) "Patch No. 1". (Giovanna Siervo, 2011; 50x35 cm). The image shows an old house with an external staircase and a green-painted door, which is surmounted by a stone arch. The steps of the staircase are also of stone and are worn through use, bearing the signs of the actions of those who repeatedly walked on them. This is an example of causality in that the signs of use are traces of repeated actions.

2) "Patch, No. 2" (Giovanna Siervo, 2011; 50x35 cm). Part of an alley in a Southern Italian town. Again, there is an external staircase. Here, too, there are the signs of wear and of time, as traces of ageing.

3) "Patch, No. 3" (Giovanna Siervo, 2011; 50x35 cm). Panoramic view of an Amsterdam canal with the typical houses that have partially inclined fronts in order to hoist furniture with pulleys from the windows, since the inside staircases were too narrow for furniture to pass. There are also three white ducks floating in a row on the water.

4) "Patch, No. 4" (Giovanna Siervo, 2011; 50x35 cm). View of an abandoned wooden house in Southern Italy. Trees have grown inside. Here, too, there are signs of wear over time, in the lower part of the building. The image also symbolises the victory of nature over human craft.

5) "Patch, No. 5" (Giovanna Siervo, 2011; 50x35 cm). Environmental detail showing the arrangement of some stones in the façade of an old church in Southern Italy. This image also shows the signs of wear over time: some stones have fallen down while the remaining ones do not look very compact or well connected to the rest of the building.

6) "Patch, No. 6" (Giovanna Siervo, 2011; 50x35 cm). Environmental detail of small logs and sections of the same timber cut and piled up with some order. Perceptually, there is an important experience of causality linked to clues of "piece", "cut" and "section" (Massironi & Bonaiuto, 1965; Bonaiuto, 1970).

References

Biasi, V. (2006). *Il conflitto psichico. Analisi fenomenologiche e verifiche sperimentali*.

Rome: Monolite.

Massironi, M. & Bonaiuto, P. (1965). *Ricerche sull'espressività. Qualità funzionali,*

intenzionali e relazione di causalità in assenza di 'movimento reale'

[Investigations on expressiveness. Functional and intentional qualities and causality relation in absence of 'real movement']. Comunicazione presentata al

XVI Congresso Internazionale "Artisti, Critici, Studiosi d'Arte", Rimini, S.Marino,

1965. Publ. also in: *Rassegna di Psicologia Generale e Clinica*, 1966, VIII, 1-42

(reprint, Rome: Kappa).

Bonaiuto, P.: *Creatività, produttività, percezione* [Creativity, productivity,

perception]. In U. Apollonio, L. Caramel & D. Mahlow (Eds), *Ricerca e Progettazione. Proposte per una esposizione sperimentale*. Venice: Alfieri, 1970 (pp. 139- 175).

Bonaiuto, P. (1988). *Forme Lineari e Bande Colorate. Un reattivo per la valutazione delle capacità di percepire l'espressività visuale*. Rome: "La Sapienza" University of Rome.

Keywords: Aesthetic Appreciation, Causality, Completion, Emphasis, Involvement.



INTERRUPTION I TO IX

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The series of paintings *Interruption I to IX* was conceived for the art project *Vaivém* (Seesaw). This project was developed between January 2008 and June 2009 and included two exhibitions – *Vaivém norte*, in the Art Academy of Azores, Ponta Delgada (2008) and *Vaivém sul*, in the Capuchos Convent, Lisbon (2009) – as well as an artistic residency in São Miguel, Azores (2008). The main goal of the project was to reflect on the specificity of the insular reality of a distant territory – Azores, a Portuguese archipelago in the Atlantic Ocean.

Interruption I to IX was presented in *Vaivém norte*. This work resulted from the thinking of the island as a finite territory whose physical/visual limits are drawn by the coastline. This reflection led to a comparison of the archipelago of the Azores with the mainland Portugal – its differences and similarities regarding aerial representations (i.e. maps, satellite pictures). In *Interruption I to IX* there is an attempt to establish an analogy between the island and the dam which identifies the dam as the reverse of the island – island, natural/dam, artificial; island, land surrounded by water/dam, water surrounded by land; island, height, volume/dam, depth; island towards the outside/dam towards the inside. Each one of the works pictorially presents a dam from the mainland Portugal whose hydraulic basin area is similar to the area of each one the islands of the Azores.

References

Cameira, Emanuel (2009). Duas artistas uma ilha. *Arte Capital*. Retrieved from <http://www.artecapital.net/criticas.php?critica=238>

Almeida, Emília Pinto (2009). A norte. A sul. In Canela, Alexandra (Ed.), *Vaivém sul* (pp. 13-22). Almada: Casa da Cerca – Centro de Arte Contemporânea.



THAT-HAS-BEEN SERIES

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Abstract:

Paintings in “That-Has-Been” try to grasp the blurred past. I use Chinese-ink to simulate images of photographs, mold images by hand, and further create paintings different from the original photographs. By real, virtual, and mechanical unemotional objective depiction, the images are translated into subjective ones through the naked eye.

Developing a detached grayscale series seems to purely record an historical event not exactly correct or true; it also weakens the critical terms or any elements which may arouse emotions.

About works

(1)



(1)That-Has-Been -A Gathering , Chinese Ink on Paper , 69x88.5cm , 2011

(2)



(2)That-Has-Been –Heaven , Chinese Ink on Paper , 69X130cm , 2012

(3)



(3)That-Has-Been –Single Lady , Chinese Ink on Paper , 58x42cm , 2012

About That-Has-Been series

<http://wangmingren.com/index.html>

Follows the context of the Big City series, the That-Has-Been series is an accumulation of my past brush-and-ink experience. Apart from the use of base materials and special types of binders, the mediums in this series are limited to the three most authentic Eastern tools: brush, ink and Xuan paper. As the range of tools is determined, the main issue is how to build up the height of the art. Ink wash is therefore the medium of choice because, as a non-Western medium, it best represents the Chinese spirit.

Ink wash produces its own characteristic strokes and unique visual impressions. It creates organic forms when applied in a seemingly random manner. I paint in grayscale to simulate the black-and-white effect of newspapers and photographs, as well as to imply a low-key, restrained approach, a distance between the subjects and myself. The process of my painting is rational; gray “evokes neither feelings nor associations” and thus helps focus on what is happening in the paintings.

By simulating overexposure or the flowing texture produced by the chemical bath during photographic processes, I create a feeling that time is passing by in the pictures. Some details and contours are clear while others are blurred, and the picture is melting and self-deconstructing, emulating a nostalgic atmosphere of old photos and leading the work toward ambiguity.

Through treatments such as gray-scaling photographic images, defocusing, blurring,

omitting details and erasing them, personal emotions are excluded, while objectivity, truthfulness and distance of photography are intentionally maintained. Such cold treatments produce the calm, low-key posture of a bystander while shifting the audience's attention from the ink wash material to the atmosphere itself of the work and its representation of the event, behind which the uniqueness of painting is concealed. It is such a metaphorical approach that is important in conveying the intentions of my work.