

AESTHETIC EMOTIONS AND THE EVALUATION OF ARCHITECTURAL DESIGN STYLES

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ABSTRACT

The research studied aesthetic emotions and their relationship to architectural design styles. The goal was to see how people assess two contrasting design styles, namely Renaissance and Contemporary styles, by considering aesthetic and emotional aspects. Participants were 35 students, who were presented with 10 digitalized images of building facades of both architectural styles, projected on a computer screen. They were requested to assess each picture using a semantic questionnaire containing 11 bipolar themes organized into 4 categories. Results showed different aesthetic, comprehension, structural and emotional characteristics promoted by each design style. Renaissance design style was perceived as more figurative, more relaxing, simpler, typical, familiar and easy to understand. In contrast, Contemporary design style was found more interesting, and most liked. On the other hand, no differences were observed in the assessment of both architectural design styles regarding their positive or negative valence and their aesthetic value. Findings from this study can be applied for improving engineering and product design practice, and design education.

Keywords: Architectural design, renaissance style, contemporary style, aesthetic emotion, assessment, design education

1 INTRODUCTION

Emotions play an important role on our lives. They affect our everyday existence, and our general experience of well-being endowing it with pleasant and unpleasant qualities [1]. When emotions are produced by a particular class of stimuli such as an artifact, we refer to them as aesthetic emotions (e.g., joy, sadness, interest, disgust, etc.) [2], [3]. Aesthetic emotions can be elicited by different kind of artifacts: from the small scale of industrial design objects (e.g., a lamp), to the big scale of architectural designs (e.g., a shopping mall). Aesthetic emotional responses are very important for designers since they can stimulate or provoke people to prefer certain designs, or take certain design decisions over others [4].

In the last ten years, the effect of emotions on design has significantly captured the attention of educators, researchers and practitioners. However, despite of the critical role played by aesthetic emotion on design, and on design education in particular, the way people react emotionally to certain designs, and what emotional responses are activated by which aesthetic features is not completely understood [5]. In education programs of most architectural design schools, the relationship between design and aesthetic emotion did not receive enough attention yet. In a previous study conducted in the art domain, Mastandrea et al. [6] found a general aesthetic preference for figurative pictures as compared to abstract ones. Participants showed a tendency to associating figurative art rather than abstract art with positive emotions; also the appraisal of figurative art reached higher scores than abstract art.

The present investigation can be seen as an extension of part of Mastandrea's et al. [6] study to other art fields like architecture and design. In light of the relevance of aesthetic emotion for design and design education, an empirical study is carried out into the assessment of aesthetic aspects that provoke different kinds of emotions with respect to two radically different architectural styles: Renaissance and Contemporary. The Renaissance style is identified with a cultural movement that included a revival of classical sources, and influenced different fields such as art, engineering, and architecture. Renaissance design style belongs to the period between the 15th and 17th centuries in different regions of Europe, where there was a conscious revival and development of certain elements

of ancient Greek and Roman thought and material culture. In architectural design, the Renaissance style sets an emphasis on geometry, symmetry, proportion, and the regularity of elements. Orderly arrangements of structural elements such as columns, and lintels replaced more complex proportional systems and irregular profiles of medieval buildings. The Contemporary style, on the other hand, can be situated in the last thirty years. Generally speaking, it can be seen as a continuation of the Modern style initiated in Europe and United States at the beginning of the twenty century. Although the Contemporary style developed into many different trends all over the world, basically it can be characterized by having abstract details, plain surfaces, and highly elaborated geometrical forms and materials.

Provided the effect that emotions have on our perception of satisfaction and preferences of design objects, understanding what kind of emotions are brought out by different architectural design styles is expected to improve both design practice, and design education. A discussion on how findings from this research might relate to engineering and product design education is offered at the end.

2 THE ASSESSMENT OF ARCHITECTURAL DESIGN STYLES

The aim of the present study is to observe how people evaluate different architectural styles; two different styles are taken into consideration: *Renaissance* and *Contemporary*. Buildings or architectural façades are considered examples that also non expert people are able to evaluate. A simple definition of old and new buildings or, more precisely, Renaissance and Contemporary, can be evaluated differently and can activate dissimilar levels of preference.

Architectural styles are chosen according to different formal characteristics. For example *complexity*, defined as the number and the varieties of different units present in a setting/picture [7], [10]. A moderate level of complexity of building façades was found to correlate with preference of naïve participants [7], [8]. Kaplan [9] proposed a model on environmental preference in which predictors like *complexity* play an important role. According to Berlyne [10] different levels of *complexity* can be associated to different levels of preference.

Other important characteristics concerned with architectural styles preferences can be influenced by *familiarity*, defined as the frequency of architectural examples that people are daily exposed to (cfr. Mere exposure effect,) [11], and by *prototypicality*, defined as the number of styles attributes belonging to the architectural building. Prototypicality is explained as the degree to which an object is representative of a general class of object. Examples of preference for prototypicality have been found in a number of areas: design, face attractiveness, and arts. The way that these characteristics are perceived, depends on the schemata of the observer, which varies from naïves and to experts. According to the *circumplex aesthetic model* proposed by Russell [12] the affective appraisal of the environment can be summarized by two dimensions: *pleasantness* and *arousal*. In view of another aesthetic model called *Discrepancy Model* [13], the level of likeableness attributed to an external stimulus (i.e., an industrial object, an architectural building or a natural environment) depends on how far is the appraised environment from the prototypical exemplar that an individual has in mind. If the incoming stimulus is too similar or too different from the prototype, it is very possible that the evaluation will be negative; on the contrary at a moderate level of discrepancy there are good chances that the stimulus will be appreciated.

Based on the models of aesthetic preference described above, and in order to assess two contrasting architectural design styles, in the present study we organized eleven appraisal variables into the following categories: (i) Architectural styles: (ii) Structural characteristics, (iii) Comprehension, and (iv) Aesthetic Emotion (See Section 3.3).

3 METHOD

3.1 Materials

With the assistance of two experienced architects, 10 building façades were selected for the experiment. These belonged to two main architectural styles: *Renaissance* and *Contemporary*. Pictures from these styles were thought to be dissimilar with respect to a list of features described in the Instruments section. Digitalized representations of the selected building images were presented to participants during the task.

3.2 Participants

Thirty five subjects (24 F and 11 M) belonging to the Faculty of Educational Sciences of the University of Roma Tre participated in the task. They had no formal training in architectural design.

3.3 Instruments

A Semantic differential questionnaire was created with 11 bipolar appraisal variables articulated in four categories that included: (i) Stylistic characteristics: *Figurative/Abstract*; *Classical/Modern*; (ii) Structural characteristics: *Simple/Complex*; (iii) Comprehension: *Easy/Difficult*; *Familiar/Not Familiar*; *Typical/Not Typical*; (iv) Aesthetic Emotion: *Positive/Negative*; *I like/I don't like*; *Relaxing/Arousing Interesting/Not Interesting*; *Beautiful/ugly*

3.4 Procedure

Digitalized images of Renaissance and Contemporary style building facades were projected to groups ranging from 6 to 8 participants using PowerPoint software. The 10 pictures were presented randomly, and were evaluated individually by each participant using the 11 bipolar variables. For an illustration of Renaissance and Contemporary style pictures employed in the experiment see Figure 1.



Figure 1. Example of pictures assessed by participants during the experiment: (a) and (b) Renaissance Style buildings; (c) and (d) Contemporary Style buildings

4 RESULTS

As a first analysis we performed the mean score for every picture, shown in Table 1. Results showed that Renaissance building facades were significantly evaluated more figurative, simple, typical, familiar and easy to understand; in addition, they were considered more relaxing. On the contrary, Contemporary building facades were liked slightly more and were found more interesting. No

differences were observed in the assessment of both architectural styles regarding their positive and negative valence, and their aesthetic value.

Table 1. Mean scores and t-test analysis of the evaluation of the 11 bipolar features

	Renaissance Architecture	Contemporary Architecture	t-test
Figurative/Abstract	2,0	4,2	***
Simple/Complex	3,8	6,0	***
Typical/Not Typical	2,3	3,4	***
Interesting/Boring	3,6	2,5	**
Easy/Difficult	3,6	5,2	***
Positive/Negative	3,5	3,4	n.s.
Like/ Don't like	3,8	3,2	*
Relaxing/Arousing	3,9	5,3	**
Beautiful/Ugly	3,6	3,1	n.s.
Familiar/Not Familiar	2,7	4,9	***

NOTE.* $p < .05$; ** $p < .01$; *** $p < .001$

5 DISCUSSION

Findings from this study can be discussed in the framework of related models of experimental aesthetic theories presented before. In most cases, different aesthetic, comprehension, structural and emotional characteristics were found between the Renaissance and Contemporary design styles. While looking at these dissimilarities, it is observed that the Contemporary design style was perceived as more interesting, and most liked. Renaissance design style, on the other hand, was assessed as more figurative, more relaxing; also simpler, typical, familiar and easy to understand, but less preferred. In our study, Renaissance architecture was seen to be more typical than Contemporary architecture. It is suggested that Renaissance buildings were perceived as more prototypical since they are characterized by clear and well defined design principles and composition rules. Since Contemporary buildings may belong to more pluralistic trends, their composition rules are more variable, and thus less prototypical. Another assessed variable deals with the level of familiarity, which is defined according to the *mere exposure effect*. Several studies found that a repeated exposure increases the affective preference for a stimulus [14], [15]. According to these theories, it is plausible that participants, who live in Rome, were frequently exposed in their everyday experiences to Renaissance buildings; a major familiarity for this class of stimuli would have produced a preference toward this style.

However, regardless of the fact that participants found Renaissance buildings more familiar than Contemporary ones, they assessed the latter as more interesting and pleasant. Findings in our study about complexity were in line with aesthetic theories claiming that a moderate level of complexity is generally most preferred [7], [9], [10], [13]. In our study, the Contemporary design style considered as less symmetrical and more complex than the Renaissance one, was preferred. Simplicity, however, appears to be a possible reason since participants evaluated Renaissance designs as easier to comprehend, and therefore more relaxing.

On the other hand, it is interesting that despite the figurative features characterizing the Renaissance buildings, participants still perceived it as less complex than those from the Contemporary style. It seems that for people lacking developed structures of design knowledge, the more abstract the building, the more complex and difficult to understand. Despite the above differences, participants found both design styles similarly aesthetic and valuable.

In summary, contrasting to the view of major aesthetic theories, variables such as familiarity, typicality, simplicity and figurativeness were not found to contribute to a major appreciation of the assessed designs. Purcell [13] *discrepancy model* can provide a theoretical framework to explain these findings. Renaissance designs might have been perceived by students as too similar to their mental prototypes, and as a result they might found them less pleasant and less interesting than Contemporary designs. It is suggested that these last exemplars might differed to some extent from students' mental prototypes; hence they might aroused the autonomous nervous system and produced, if this activity is

not frustrated by the impossibility to comprehend the picture, a preference for Contemporary designs (with higher scores on the pleasant and interesting variables).

5.1 Aesthetic emotion, product artifact, design styles, and design education

Although the present study focused on the relation between aesthetic emotions and architectural design styles, implications can be considered for product design. Results showed that, irrespective of the particular design artifact that is being assessed, the concept of style embraces a number of well defined principles, rules, and values that may affect people emotions in a predictable way. For this reason, the idea of design style is viewed as a powerful tool that, transcending a specific domain of application, can help to predict how people will respond emotionally to designs characterized by similar styles. In practice, the concept of style might have important applications for the aesthetic assessment of product design. For example, it can help to explore how and to what extent, industrial artifacts sharing a common style may elicit people's emotions. The concept of design style can also be considered in engineering and industrial design education, where students might be taught about the importance of this tool and its application to the assessment of aesthetic emotions. A major challenge would be training students in the identification of critical features associated to the style of design artifacts that are responsible for bringing to the forth specific aesthetic emotions. It will be interesting to educate students in the notion of style and emotions in order to see whether this relationship is consistently perceived in a variety of industrial design objects (e.g., a lamp, a kettle, or a corkscrew), or whether a specific style can elicit different emotions, depending on the function of the industrial design object under assessment (e.g., the classic style will not always be perceived as figurative, simple, typical, interesting, relaxing, and familiar in a lamp, as much as in a kettle, or a corkscrew). A second challenge should be to teach students how to manipulate certain design principles with the intention to trigger specific aesthetic emotions, without violating principles and values that are critical for the recognition of the design style.

6 IN CONCLUSION

By considering the effect that aesthetic emotions have on the perception of satisfaction and preferences of design artifacts, the current research contributed to gain more insight on how people react emotionally when exposed to two contrasting architectural design styles. Findings from this study can be applied to improve engineering and product design practice, and design education. Predicting how people may react or develop emotional bonds with respect to certain design styles will enable a better control of the design process. Moreover, educational programs will also benefit from an understanding of how aesthetic aspects of designs affect students' emotions. Learning how to manipulate designs to elicit specific emotions will contribute to create a better and more humane world.

In a future research we plan to extend the scope of this study to investigate the concept of style in architectural design artifacts in comparison to other design fields. We will do so by investigating architectural and industrial design artifacts in relation to aesthetic emotions, as well as to design expertise. We would like to see to what extent style can be considered an universal concept that affect aesthetic emotions in predictable ways independently of the knowledge domain under assessment, and how design experience in two related but different domains might influence aesthetic evaluation. Another aspect to be investigated is whether artifacts belonging to a same domain that differ in their functions but share a similar style, may affect people aesthetic emotions in a similar way.

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