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REVIEWS

Studies of Design Creativity: A Review and its Prospects

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Abstract | This paper provides an overview of current studies on design creativity by analyzing them with respect to two aspects. The first aspect is the foundation of Design Creativity. To analyze this, we survey fundamental studies on design and creativity, which have been developed as a means of building basic knowledge on design creativity. Additionally, key issues in the human cognition of design and creativity are examined. We also survey the methodological challenges that have enhanced creativity in design. Various methods and tools are considered as applicable technology for fostering the creative competencies of individuals or teams in relation to design. Additionally, techniques for assessing creativity that are strongly related to these methods and tools are also reviewed. For the second aspect, we discuss examples of criticism of contemporary art. In the domain of art, critics evaluate practitioners and assume responsibility for guaranteeing the quality of art. For this reason, critics are expected to be "connoisseurs" who can 'foresee the future' from an authoritative position. The structure in which such a role for criticism resides, can be understood as an artistic creation at a social level. Further, morality and ethics are examined from the perspective of social creativity. Finally, we suggest how design critiques will be able to enhance social innovation.

1 Introduction

Creativity is a central issue of design, and there are several different aspects of creativity in design. This paper reviews significant research approaches to design creativity[1–5] from the standpoint of the two aspects (cognitive and social) of creativity.

At first, the foundations of research concerning 'creativity' and 'design' are discussed in order to find a framework for the relationships between them. Basic studies on design creativity concerning the various types of creativity are surveyed in order to discuss the features of creative design. To understand this, we survey fundamental studies on design and creativity that have developed as a means of building basic knowledge on design creativity.

Based on these frameworks, some critical terms are extracted from previous studies on both creativity and design. In particular, human cognition is a focus and essential processes such as 'creative cognition'[6–11] and 'insight in ideation'[12] are investigated at the early stage of the design process, namely the 'concept generation process'.[13–15]

Design creativity: Design Creativity is assumed to be different from the general sense of "creativity". It is expressed to be instrumental in not only addressing the social problems we are facing but also evoking an innate appreciation for beauty and happiness in our mind. In advanced design research, creativity in design has been focused on in order to clarify the features of design and humanity.

Creative cognition: Creative cognition is the practical aspect of the study of cognitive psychology that aims to approach creativity. The basic structure of creative activity is expressed in the "Geneplore Model," which consists of generation and preventive exploration phases (by Ronald A. Finke, Imagery, Creativity, and Emergent Structure, Consciousness and Cognition, Volume 5, Issue 3, September 1996, pages 381–393).

Insight in ideation: Ideation is the process of forming and relating ideas. Details of the cognitive structure involved in the ideation process have not been clarified. Insight, which is intuitively grasping the inner nature of things, is believed to drive the creative ideation process.

Concept generation process: Ideation can be shown as concept generation process. Concept is abstract object that is for a disambiguation in human mind. In design, concept generation can be defined as the process of composing a desirable concept towards the future. Concept generation is also a highly intellectual activity.

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Moreover, motivation[16–18] flexibility,[19] and the process of "expertise and creativity"[20–23] are discussed in relation to different grades of creativity,[24–26] for example, big-C, little-c, and mini-c. The study will distinguish between everyday creativity[27] and innovation[28,29] at the historical level.

Next, we survey methodological research for enhancing creativity and innovation in design in order to systematize the above key issues, as well as to use the knowledge obtained through the investigation of the foundations of design creativity.

Various kinds of creative methods and tools for 'Design Thinking'[30–35] are considered and built. For developing applications for design support tools, it is necessary to assess creativity. Research into creativity assessment shows wide diversity over the past 50 years. Traditionally, the process of design has been seen as a process of rational problem solving.[36–39] However, the definition of design changed in complexity in the post-industrial society. Definitions of design have been discussed from the viewpoint of the future.[40,41]

2 Study Methods for Enhancing Design Creativity

In the field of design research, two kinds of creativity are related in the process of design. One is related to the process of design, while the other to the outcomes of design. In the former, cognitive work of analogy is believed to be an essential mechanism of creative design.[42–46] In this respect, Cross has highlighted 'creative leaps'[47] present in empirical studies on design processes, in which expansions of awareness may have been caused by a release from mental fixation.[48,49] The role of visual thinking[50,51] is considered to be crucial in releasing mental fixations. Analogical reasoning has been given the most attention in design, because it relates to the creative insight for design by metaphor.

Furthermore, valuable issues concerning the methodology for enhancing design creativity, as well as methods of assessment, are collected in the second section. Popular methods of creativity in design range from traditional methods such as brainstorming,[52,53] to advanced methods such as bio-inspired design.[54–56] Further, methods of creativity assessment[57–61] are discussed. In addition, important perspectives of design creativity, such as aesthetics,[62–65] engineering design,[66–69] and other studies (empirical study, theoretical model, practically[70] and case study[71]) on those creative issues of designing are surveyed.[72–75]

The next section of this paper problematizes the missing points of design studies that lack critiques from a social composition viewpoint. The importance of social aspects of design creativity are also discussed. We will investigate the causes for a lack of criticism in the domain of design, as well as the future role of design critique and how it can be realized.

3 Social Aspects of Design Creativity

The opinion that design as an activity can solve problems and produce more favorable situations, or 'improvements' is entrenched in the fields of architecture and engineering. This can be understood as a twentieth-century control-focused view of design.[76,77] Such a view assumes that engineering, science, and technology can solve modern problems and deliver a wide-ranging contributions to society, and humanity in general. In this 'problem-solving' view of design, design is positioned as a 'benefit' that sets as its goal the pursuit of innovation on a social scale. The techniques of design for improvement have progressed over time, gradually becoming more sophisticated with the advent of computers. As a result, our everyday lives are conducted in environments so artificial that our entire lifestyles revolve around designed objects. Yet, the world we have created is incomplete.[72–74] Indeed, understanding design creativity is a pressing issue in our contemporary society, whose development has been propelled by advances in science and technology. For example, we must recognize that human creativity is not perfect. Assuming such non-perfection, problems will always exist in society, or at least they will always be lying in wait. For the next generation, awareness of the cycle between design and society (cyclic nature of design and society) must be perpetuated.[78,79] To consider the current situation, the entire picture must be considered, in relation to the meaning of synchronicity as well as using an historical view. Design cannot be considered in vacuum. As belief is associated with the danger of complacently believing that evolution brings improvement and progress, criticism plays the role of highlighting excesses.

As such, the question of how to manage and coexist with problems is the essential challenge of design. Moreover, the definition of "a better situation" is undeniably arbitrary. Human-made objects resulting from design processes must coexist with all people in the environment and have connections with others, even if they are owned privately by individuals. Further, the future is not the private property of any one

Motivation: Motivation is literally the desire to do things, the psychological feature that arouses an organism to action toward a desired goal. The relationship between intrinsic and extrinsic motivation have been discussed as a trade-off in organization management. In design research, it is explained as the driving force for the creative process.

Flexibility: Flexibility is an important feature of the cognitive process. Flexibility reflects a capacity for change. For example, for the "nine-dot problem," low flexibility is observed when the examinee sticks with one approach. Flexibility leads the person to try a more varied approach to the problem.

Expertise and creativity: Expertise refers to special skills or knowledge. In computing sciences, expertise has become an important subject for investigation of the learning process to build a knowledge based system.

Everyday creativity: Everyday creativity means "creativity in everyday life" of all ordinary people. From the perspective of human nature, creativity at an individual level is valuable for culture, history, and the future of humankind.

Innovation: Many countries recognize the importance of research and development as well as innovation. Innovation refers to creativity in social change. Recently, product or service design can be seen as a potential force to inspire innovation.

Design thinking: Design has been understood as practical knowledge from an interdisciplinary perspective. For example, Stanford University's *d.school* adopted group work as a formal method to educate engineering students through design thinking (2005).

Analogy: Mental quality consists of the ability to learn from experience, adapt to new situations, understand and handle abstract concepts, and use knowledge to manipulate one's environment. In mapping theory, analogy is a human cognition used to map existing knowledge from the source domain to the new target domain.

Brainstorming: A kind of creative technique. Alex Faickney Osborn built methods for creative problem solving in 1939. These were popular methods for creative group work in various domains including design.

person. Accordingly, the following question must be continually addressed: "Design for whom?"[80,81] In particular, humankind's history of co-owning the environment and coexisting with others provide evidence of how difficult this actually is. We bear responsibility for developing a notion of co-ownership and coexistence for future generations.[83]

3.1 *The role of critiquing in art*

How can we advance our society, given that it is a creation of previous design? In other words, how can we facilitate the departure of design creativity from the limited framework of current design?

It is the role of critique to assess the state of affairs in society, note what problems exist, elucidate how things should be, and lead the way toward the appropriate direction. Critiques also include debate on the quality of things.[84] However, the critique of artworks, for example, includes not only a discussion of a work's value but also a promotion of the suggested thoughts by searching for latent value in the work in society. At times, critique of art evokes a new value for art in future societies by clarifying a point when the art will be realized and works toward making this a reality.

In the context of twentieth-century art movements, two critics, Clement Greenberg and Harold Rosenberg, strongly supported the new abstract art[85–87] emerging in America while maintaining different perspectives on the "expression" of art form.[88] Their critiques were undoubtedly responsible for innovating and stimulating the arts. This study considers that Greenberg and Rosenberg comprehended the role of critiques in advancing society with regard to design; although their domain was art, reconsidering the contributions of these famous critics can enable a deeper consideration of how the frameworks of existing concepts can be broken.

Interestingly, although Greenberg and Rosenbergmade similar claims, their views on the value of painting had different foundations. Both strongly supported the abstract expressionist movement,[89] which was prominently represented by Jackson Pollock. Greenberg believed modernism could help foster the vanguard, claiming that America was a special place where new art forms that brokewith tradition could be explored.[90] Moreover, he set the challenge for investigating how far thepure exploration of painting could go, declaring the "autonomy of the painted form."

By contrast, Rosenberg sought to change the focal point of art by engaging in review. He paid greater attention to the actions of artists than to the objects they created (artworks). He challenged the artist's mission as a heroic exploration meant to unleash creativity. In their criticism, both Greenberg and Rosenberg encouraged artists to release themselves from the traditions of Europe and to increase their degree of freedom.

Besides Greenberg and Rosenberg, another "mountain" was Leo Steinberg (*berg* means "mountain" in German), who discussed the horizontal and vertical aspects of painting and is considered an innovator of modern art criticism. In a typical pattern, Steinberg challenged European tradition by seeking to change its context. In the 1970s, critics initiated discourses on art that were then developed by artists and the public. The leaders of the art discussion during this period were not artists but critics.

This became particularly striking in post-Duchamp modern art.[91] Duchamp's art[92] can be variously seen as a challenge to societal systems and norms, a philosophical inquiry, and a thinking game. Similar to Umberto Eco's "open work",[93] it can be understood as a form of expression that highlights the diverse possibilities of interpretation. Here, ambiguity takes center stage over form as the emphasis is placed on discovery of multiple meanings through proactive intervention of the audience. Duchamp's work is a "sign," with traits similar to abstract expressionism, possessing an adaptability to transform according to context and to express timeless meanings. In general, Duchamp created a method of changing the meanings of art.

Modern art aimed neither to be decorative nor provide closed or fixed messages.[65] The key characteristic of modern art is an "openness" that can be freely interpreted by the audience.[93] A cutting-edge development of the era was that the notion of "concept" emerged as conveyer of new meanings and embodiment of innovation. Beyond the work itself, audience was interested in artistic statements and debates among critics, with direction of art being a topic of passionate discussion among the younger generation. Art criticism also had a significant effect on the art market. It should be emphasized that criticism had such an influence that it was able to direct the course of modern art. This is vastly different from the role of the art researcher or art historian. It is no exaggeration to say that modern art blossomed as a result of the role "the leading critique" played in driving a paradigm shift.

As mentioned above, criticism of works of art aims to examine issues inherent in art, such as form, image, meaning, and interaction with the audience. Criticism also examines, in

Bio inspired design: We can learn how to create from nature. Bio inspired design refers to biologically inspired engineering design.

Cycle between design and society: In today's society, people need to obtain a wider view of design to consider the future world. A cyclic system between designed outcome and society has been viewed comprehensively.

Art criticism: Art criticism refers to the analysis and evaluation of works of art. It originated with Plato and developed in the 18th century. In the 20th century, art criticism developed in the American art field. Clement Greenberg proclaimed Abstract Expressionism and Harold Rosenberg provoked discussion about the "gestures" of the artists.

The Open Work: The Open Work remains significant for its powerful concept of "openness," which was raised by Umberto Eco.

Abstract art: Abstract art has its origins in the 19th century in Western art history. A pioneer of abstract art is Russian artist Wassily Kandinsky (1866–1944), who used colors to evoke impressions and feelings. After him, many art movements used abstract images. The famous movement was "post impressionism" by Paul Gauguin, Georges Seurat, Vincent van Gogh, and Paul Cézanne, Cubism. Following post impressionism which was the avant-garde art movement of the early-20th-century, was developed by Georges Braque and Pablo Picasso.

Abstract expressionism: Abstract expressionism was a contemporary art movement that developed in the 1940s. Greenberg named "color field paintings" such as those by Clyfford Still, Barnett Newman, Adolph Gottlieb, and so on as typical of abstract expressionism.

Modernism: Artistic or literary philosophy and practice; a self-conscious break with the past and a search for new means of expression in the 19th and 20th centuries. Modernism includes expressionism and abstract art.

a latent and powerful manner, inevitable issues pertaining to political power, social problems, the contradictions of history and, sometimes, human nature itself. Regarding the role of leading critiques in art, this study focuses on the absence of such critiques in design until now. In its argument for the importance of such critique, this work proposes the term "design critique." In addition to discussing the reasons as to why design critique is lacking, this research identifies the main obstacles, outlines the ideal form of design critique with reference to modern art criticism, and presents prospects for innovations that design critique can be hoped to drive.

3.2 *Design critique*

3.2.1 The absence of design critique: Why is there no design critique? First, we must consider the historical origin of design. When design began receiving mainstream attention in the late nineteenth century, it was considered a trail blazing element within art, not independent of it. Obvious examples include the *Deutscher Werkbund* (German Association of Craftsmen) and Bauhaus.[96,97] As art became independent of the patronage of nobles and others, the right of "making" was transferred to citizens. During the development of industrialization, the aims of the design-led arts movement resulted in the flourishing of the industry. The structure of the arts system, combining urban and architectural design, reflected a figurative mindset, represented by a craft-centric pyramid structure that would later transform into a more industry-oriented structure (see Figure 1). Taking Bauhaus as the conceptual peak, a historical view suggests that the "design movement" itself was a "critique" of art. In attempting to dislodge aesthetics from its roots and transcend cultural identity, religious frameworks, social systems, and the decorative function of art, revolutionary movements set intimacy with industry and technology as their goal. The conceptual unification of form and function revealed a search for a methodology of creation that did not rely on the world of humans. Modern art movements, such as Futurism, De Stijl, and Russian Constructivism, all had, to varying degrees, the same origins as the design movement and comprised a group proclaiming new lifestyles and value systems. In short, critiquing past societies and art was among the aims of the design movement. Given the problem of self-contradiction, the growth of criticism was never realized within design itself.

Second, from the 1930s, the relationship between industry and design became extremely close, while concurrently, issues in design became fragmented. Broadly, design was split into engineering design, which focused on internal mechanisms, and interface design, which focused on interactions with humans. The domain of design was divided into several small areas correspondent with particular purposes. Although reviews of design trends in these small areas were conducted, no higher-level reviews of general design trends were undertaken. It is a matter of course that standards remained in place within domains broken down into specialized areas. When domains were broken down into specialized areas, design could not successfully facilitate self-criticism. Notably, Sedlmayr (1948) predicted the issue of "missing humanity," which is a similar problem to this separation by specialism.[98]

Concept: Concept is defined as that which refers to the figure of an object, along with other representations such as attributes or functions of the object, which existed, is existing, or might exist in the human mind as well as on the real world.

Futurism: The Italian art and social movement "Futurismo" aroused the dynamics of machinery trends. Futurism is an avant-garde movement founded in Milan in 1909 by the Italian poet Filippo Tommaso Marinetti. On his manifest in 1909, he launched it by referring the symbolic icons of the 20th century. They are "speed", "technology", "youth" and "violence".

De Stijl: A stream of modern art movement in the Netherlands, which meant "the style." Theo van Doesburg (1883–1931), Piet Mondrian (1872–1944), and Gerrit Rietveld (1888–1964) are famous artists of this movement. Minimalistic expression such as simple colors and geometrical shapes are representative of this style.

Russian Constructivism: Russian Constructivism is also known by the name Russian avant-garde. Russian Constructivism was a movement that was active from 1913 to the 1940s. Vladimir Tatlin, Kasimir Malevich, Alexandra Exter, Robert Adams, and El Lissitzky are famous members of this movement.

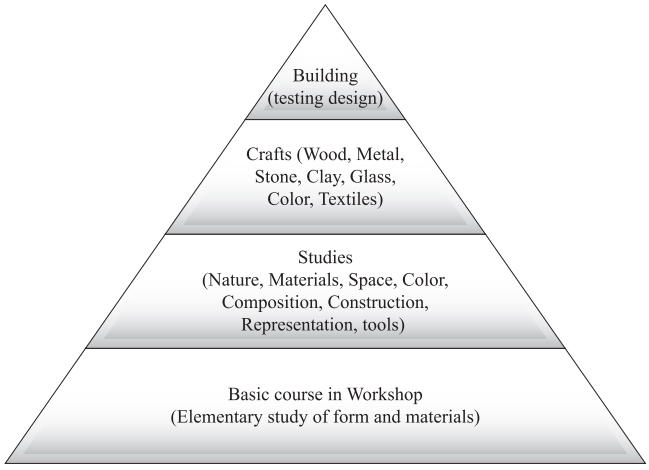

Figure 1: Craft-centric scheme of Bauhaus education.

3.2.2 Critique of what: The question of what to debate is the most important aspect of critiquing. In this section, we discuss the contents of criticism in order to identify the targets. Regarding art critiques, Greenberg, Rosenberg, and Steinberg focused on different aspects of similar issues from different perspectives: object, action (process), and context (Figure 2). Comprehensively, a consideration of the issues present in modern art enabled an exploration of the question of creativity in design critique.

3.2.2.1 Form of objects: Greenberg's criticism primarily focused on works of art as real objects. He viewed the history of art as nothing more than changes in form that could be understood as a progression toward purity. Setting as an objective the perfect unification of actual objects and the image seen on the surface, Greenberg removed all unnecessary elements in pursuit of autonomous painting. In France in 1968, there was a reconsideration of various existing art forms. Based on a reexamination of traditions and binary semiology relationships (signifier and signified),[99] there was a return to supports and surfaces as well as a tendency towards socially experimental expression. This resonated with Greenberg's theory of painting, with art progressing through minimalism and condensing in the form of conceptual art. The art movements were short-lived tendencies but emerged in multiple regions. The power of critique lay in its ability to conceive of these as a single larger movement.

Following Greenberg, we can develop a design critique of designed objects' attributes. Both the physical and functional characteristics of designed objects can be analyzed from a historical perspective. In short, the 'shape' of a designed object reveals its originality. Based on this aspect, some reviews have criticized the style of designed objects showcased in magazines, TV programs, and the Internet.

3.2.2.2 Artists' actions: Rosenberg, meanwhile, focused on the act of painting. Using the term 'action painting', he moved away from pictorial representation and emphasized the act of creation. Thus, the painting was viewed not as an object but as the traces of an action. Rosenberg's critique tends toward self-generativity. In other words, while early works involved making the traces of creation visible in the next stage, the struggle with art came to be understood as the essence of creation. Further, emotion was viewed as the origin of action and the very substance of art. Therefore, at issue for critique was the problem of the origin of art. However, approaches that are not only passionate but also indifferent and reserved became a subject of debate, leading to the development of conceptual art theory. In this, the *idea* for the plan of action (i.e., the concept) became the artwork itself.

3.2.2.3 Contexts: Leading critics, such as Greenberg and Rosenberg, encouraged the innovation of art. However, physical limitations constrain the creativity of artists; material constraints limit the representation of art; and body constraints limit the images of art. Additionally, mental constraints influence the preliminary setting of the art. Steinberg identified what was changed by the artists of post-painterly abstraction. Innovation in art (in Western art) referred to the position of the media of presentation. He suggested different meanings of the campus axis (as a form of media): horizontal and vertical. Setting a medium for paintings, such as a flatbed or screen, places a strong cognitive constraint on the human mind.[19] Of course, as design is a highly conceptual activity, humans are free from such

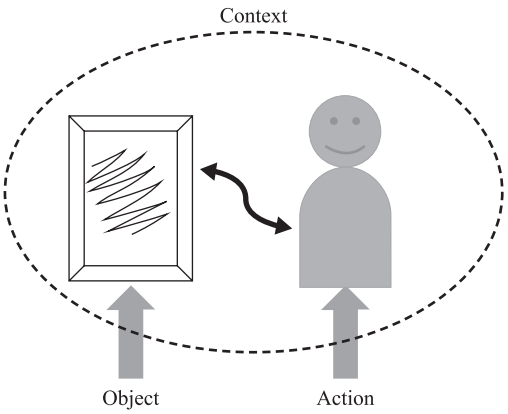

Figure 2: Three different main focuses of art critiques.

Action painting: Jackson Pollock is a representative artist of action painting. Action painting is a feature of abstract expressionism.

Self-generativity: Self-generativity can be explained with the term "autopoiesis." Autopoiesis was originally presented as a system description that was claimed to define and explain the nature of living systems. A canonical example of the autonomous system is the biological cell.

Signifier and signified: The "theory of the sign" by Ferdinand de Saussure (1857–1913) defined a sign as being made up of the matched pair components of signifier and signified. The signifier is the pointing finger, the word, the sound-image. A word is simply a jumble of letters. The pointing finger is not the star. It is in the interpretation of the signifier that meaning is created. The signified is the concept, the meaning, the thing indicated by the signifier. It need not be a "real object" but is some referent to which the signifier refers.

Minimalism: Minimalism in visual art, generally referred to as "minimal art," emerged in New York in the early 1960s. A typical style of minimalist expression is geometric abstraction. David Smith, Anthony Caro, Tony Smith, Sol LeWitt, Carl Andre, Dan Flavin, Donald Judd and others were called minimalists.

Conceptual art: Conceptual art took myriad forms, such as performances, happenings, and ephemera. It flourished from the mid-1960s through the mid-1970s. Much conceptual art is self-conscious or self-referential.

Post-painterly abstraction: Some critics, including Clement Greenberg and Barbara Rose, remarked on the decorative character of some post-painterly abstraction.

Table 1: Paradigm classification of leading critiques (on similar topics).

Level	Object	Process	Context
Approach	Philosophical	Psychological	Ethnographical
Framework	Evolution	Commonality	Culture
Category	Aesthetics	Poesies	Unconsciousness
Issue	History	Performance	Criteria
Focus	Form	Action	Habit
State	Rationality	Absorption	Estrangement
Example (Art Critique)	*C. Greenberg*	*H. Rosenberg*	*L. Steinberg*
Mechanism of Generation	Abstraction (conceptual)	Autonomy (tangible)	Conflict (intangible)
Possible Point in Design Critiques	Structure and Function	Interaction and Affordance	Media and Constraints
Value	Originality	Experience	Theme
Timing	Post-performance	In-performance	Pre-performance

physical constraints during design ideation. However, a basic understanding of the context behind designed objects should be considered before designing to avoid habit-based constraints. The critique of design can be helpful in this regard. The main design critiques to be anticipated are shown in Table 1, which is based on the classification of art critiques. Object, process, and context levels of critiques are explained by classifying approaching types, frameworks, categories, issues, focuses, states, examples, processes, possible points in design critiques, values, and timing are represented. This classification suggests a paradigm shift in the definition of design.

3.3 *The vanguard*

Innovation in twentieth century art was understood to be led by the "avant-garde" (namely, the Vanguard). Greenberg first defined the role of the Vanguard as separate from "Kitsch" (popular art). Critique not only understands the Vanguard but also creates a space for it in the art world. Art criticism hints at things artists search for but cannot actualize yet. Although systematizing knowledge is the prevailing method in the academe, ignoring the critic as an active participant neglects the core characteristic of critique, which is 'the times'. Organizing exhibits in museums and leading emerging movements in the real world are activities on vastly different dimensions. Therefore, nobody can criticize it simply because they are well-read, even if they are knowledgeable of the field concerned.

To nurture leading critiques in design that can spearhead the changing of existing criterion, different types of creativity may be required. Scholars and stakeholders should, thus, consider utilizing suitable curricula to foster the creativity of design critiques, but differently from the education of designers.

In general, critique seeks a different direction from that of public opinion. Critique looks to the future while historians reflect on the chronology of the past. Public opinion, however, expresses the feelings and opinions of the present. It may be deemed as resembling national sentiment and pervious to the influence of mass media. It is difficult to deny that political propaganda, public relations, and product marketing have similarities with incitement and agitation. Hence, a critique must be independent from public opinion.

3.4 *Social problems caused by the lack of design criticism*

3.4.1. Ruin and stagnation of systems: The focal points for understanding design creativity are human-related factors. However, a blurred line exists between perceptions and behaviors determined by internal factors and those determined by social factors. The boundary becomes even more ambiguous when subjective aspects, such as sensibilities, are included in the design evaluation equation. This section examines human behavior (e.g., perception, judgment, and preferences) and society, which are the objects of innovation, and then discusses the effects that can be expected as a result of critique.

Regarding design selection, the burden of cost is the primary deciding factor for the public. In a recent case of failure of design at the social level, initial opposition to the design of the 2020 Tokyo Olympic Stadium did not concern the design itself but the cost. As design and cost became a single issue, which was obvious even to the public, the focus shifted to the responsibility of those

"Avant-garde": Radically new or original means. Originally, "avant-garde" is a French term, in sense "vanguard". In art history, it means the advanced group, especially in the visual arts as the leading activity of art movement.

"Kitsch": Greenberg distinguished avant-garde from "Kitsch" in a German term. "Kitsch" is generally cheap art, as it implies that the work in question is gaudy, or that it solely serves ornamental and decorative purpose rather than useful purpose to a work of true artistic value. Its "amount" transcends everything else, and therefore, it sometimes receives a positive aesthetic evaluation.

charged with selecting the design. This was a fault caused by a lack of design critique. As such, a social system that fosters rigorous function with design critiques would enable social truthfulness, which would address the ethical issues concerning design. The establishment of such a system should be recognized as an urgent issue.

Moving from the existence of a hypothetical critique, we can now discuss what would be critiqued and what would be the subject of inquiry. Tokyo will host the Olympics for the second time in 2020 (the first time was in 1963). In fact, the first Tokyo Olympics was a symbol of Japan's recovery and coincided with significant social transformation, marking an innovative period in international relations. The twentieth century, with its golden age of manufacturing and its constant state of war, remains fresh in our minds. In anticipation of the second Tokyo Olympics, we should identify the meaning of the new Olympic design and seek a true social motive for it.

We consider the design proposal for the 2020 Tokyo Olympic Stadium, which was mentioned above in relation to the problem of value or, rather, the problem of value and design selection. This example shows how the absence of critique extends beyond the question of the Vanguard and becomes a problem related to fairness in competition. Unfortunately, social problems continue to arise concerning the originality of the event's official emblem. Such problems stem from the lack of a sense of social responsibility among professionals.[7] Many of the designs have been suspected of plagiarism (it has been claimed the designs were the work of assistants), but this issue has been dismissed as a problem related to poor supervision and management. This situation construes design as simply another form of business and, thus, erases the notion of design as a creative profession. Previous works will always have an influence on new design, and thus, the question of imitation versus authenticity is constantly examined. This discourse involves another type of respect for creative activity. Generally, plagiarism in design is not widely debated in community of advertising (adland) during the production process. In the example case of Japan, however, it must be addressed as a general social system. Awareness has been limited to situations where a proposed design resembled another. However, the issue has not escalated into a scandal comparable to hidden plagiarism in a 'masterpiece' or 'famous work', which was based on ordinary expression. The problem of originality is not one of evaluating the merit of the work, and the issue of ethics has not arisen after problems have been identified. Such a scenario stems from the absence of critique. This example shows an unsuitable design proposal that contravenes the ethics (context) and resulted in not only a lower-level of originality in the work (object) but also in a weaker creative process (action).

3.4.2. What should we innovate?: The lack of design critiques breeds several strands of problems. Nonetheless, it can engender opportunities for a paradigm shift. The previous section identified reasons for the failure of design as a business and project. Problems with how people make choices, systemic drawbacks of competitions and screening, and concerns with the foundation of the structures of power and self-interest have all been discussed.

Further, the need for system reform and a diagnosis of the appropriateness of the methods for achieving such reform must be also examined. If the system does not change, its selections will tend to have similar characteristics and the selection range will be extremely limited. Consequently, on the issue of the selected design or the designer, it is necessary to criticize the conservative nature of the selection process as a social system that laid the foundation of this situation.

To gain a hint of the role of leading design critiques in the social system, the first part of this work examined the role of art criticism: a higher-level viewpoint is required to understand how creativity is manifested and the ways in which society receives it. However, design critique can clearly do something more important: it can lead to social change. The social motive to share high-quality symbolic designs and the selection system created under real-world conditions are dramatically different.

The ideal we wish to share and the structural norms creating our everyday world do not completely align. There is freshness to the way art criticism breaks down the barriers of conservative art aficionados.

Related to the above, the client for the design of Olympics-related items is the nation-state, but the government has not offered a mechanism for direct citizen participation. Calling it a "national project" is a way of imbuing the project with authority or power, but this is a twentieth-century manner of thinking. An opportunity should have been sought to rewrite the problematic situation. For example, why was a chance not taken on the creative potential offered by computers? This could have involved a composition that aggregated the brushstrokes of millions of people. It is regrettable that we were unable to act with a pioneering spirit and bring to life something that was recently thought impossible.

3.4.3. The challenge for design critique: In latter part of this paper, we have discussed the issues caused by the lack of design critiques, specifically referring to the 2020 Olympic Games. However, many important problems in the current society stem from the same root. Design critique, and its institutionalization, is an indispensable issue in the general discourse of human society. In the twenty-first century, the definition of design has slowly moved away from how it was defined in the twentieth century.[23] For example, design does not simply drive innovation—it incorporates high-level goals and is a rational approach to social, economic, and environmental challenges. Such a paradigm shift shapes the perspective of design. In looking toward the future, this new definition cannot be separated from design critique. We yearn for a high-level, future-oriented design critique that breaks with past limitations to become a driving social force for the next generation. Design critique will also provide an ethical foundation based on humanitarian concerns previously excluded from the big picture of design. We hope to work toward a design study that will provide the context for generating such a critique.

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