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Proposition for Innovation of Product Design Value

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Abstract: Innovative design is fundamental for enhancement of market vitality and sustainable development of industrial economy. Its social role and influence has become an important factor in optimizing human mode of living, improving quality of life and promoting the progress of civilization. As the angles of innovative design constantly change with the development of contemporary social, economic, scientific, technological, environmental and cultural conditions, it is necessary to re-examine during the research and development stage the relationship between innovative design and human lifestyle from the perspectives of the ontological value, influencing field and influencing forms of innovative design. Discussions on contemporary views on the ontological value, artistic standing and design dimensionality of innovative design are aimed for direct effective role of innovative design in socio-economic life, lifestyle and living environment, thus providing preference and advice for adjusting value orientations of innovative design of contemporary product to reasonable angel.

Keywords: design, art, innovation, industrial economy, sustainable development

Development of personalized consumption based on effects of modern culture has provided broad room for innovative design in terms of the effects on market. The thought and spirit for innovative design have, by means of product design, considerable effects on social economic life, culture, art, science and technology, which indicates that innovative design is the basis for maintenance of enterprise development vigor and impetus for growth of market economy. As innovative design has shaped the mainstream trends suitable for contemporary cultural, consumption and economical development, it has become an important power for enterprise to expand potential market. Therefore, explorations into the influencing form, scope and significance of effects of innovative design could enhance the role of innovative design in consumption market under contemporary economic, social, cultural, scientific and technological conditions, thus promoting the sustainable development of industrial economy.

ONTOLOGICAL VALUE OF INNOVATIVE DESIGN

Human beings have relied increasingly more on design in modern society, for modern design concerns the relationship between human beings and their living environment. Hence, from the perspective of sustainable development of society, scientific exploration into the

influencing factors and effects of the value of innovative design under modern social conditions full of reforms has become a practical issue for discussion and research for designers. In reality, major issues and contradictions related to human existence and life could arouse our thoughts about significance and value of design. However, some innovative designs are usually derived from a common demand for life, for instance, directly related to one aspect of life; therefore, an innovative design could be obtained from a way of living, a manner of doing things or communication method. This indicates that the width and depth of design thoughts could involve different aspects of human activities, innovation, no matter thoughts at shallow or deep layers, always focuses on social significance and value of human life. As it is widely known, the essential value of design is to create value for clients and the soul of design is innovation. A good innovative design shall possess the relative social and practical values, which requires the designer to think about and solve from the perspective of living requirements and issues such life issues that man can not solve himself, including the problems of social culture, living environment and living manner. Hence, innovative designers shall think about issues from the angle of future trends and explore and refresh in mind in spirit of innovation and from the new angle the methods that man could utilize to solve life problems. The essence of the value of innovative design resides in the utilization of the effects of design

to establish scientific suitable ways of living for human beings to promote civilization process of human beings. As foundation for industrial economy, the development of modern innovative design mainly targets at human cognition methods and aesthetic values to create the satisfying features of a product to meet market requirements in terms of utility, artistic and social values. Hence, innovative design could demonstrate the mainstream relationship between contemporary life and consumption in terms of cultural, social features and value systems, for which, great attention has been attached to innovative design. The thinking orientation here above has contributed to the utility of innovative design to consumption market. Classical design could influence people of different times, of several generations and from different countries, the fundamental reason is that an effective way to solve problem has been found in design, which is to say, the essential value of design to solve practical issues has been grasped. Features of modern design determine that innovation shall involve culture, art, social life, economy, religion, ethics, science and technology to explore the methods to solve problems and issues. Tripp Trapp chair designed by Peter Opsvik in 1972 is a classic of innovative design in term of solving practical problem and it has won great popularity among clients even now. The success of this design resides in Peter Opsvik has explored in depth from the angle of human-machine relationship children's requirements for receiving room and scope of sitting tool as they grow up and finally succeeded in adjusting the height of seat to suit children's height and other physical changes and accordingly to enrich values of chair. The thought provoking adjustment structure of the design together with the supporting principle and changes of functionality of chair has realized the value objectives of innovative design in three aspects, expansion of use value, simple elegant form and sustained social use.

The reasons that Tripp Trapp chair is still in use today reside in not only its practical use for people's life but also the fact that it facilitates rational consumption as per social development. The design value and social significance of Tripp Trapp chair have become criteria to evaluate sustainable design.

All innovative designs of human beings have distinct features of the times, social development and limitations and hence human beings have never stopped the exploration and research into unknown fields. With regard to design, innovative design focuses more on practical problems of human life; therefore, its value resides in involvement of different fields and break through in functionality and use. On solution of problems, innovative design usually targets at distinct functionality objective. In addition, it could demonstrate novel unique social significance of a design. The social benefit and value of innovative design could be demonstrated in five aspects.

(1) Innovation enhances overall knowledge of human beings.

(2) Innovation constantly improves human cognitive power to learn new things.

(3) Innovation is the method to explore new design.

(4) Innovation helps correct unsuitable human way of living through guidance and variable method.

(5) Innovation promotes progression of civilization by direct effects on human way of living.

Problematic property of design object is prerequisite for the existence and development of design and innovation of design shall inevitably solve the same problem but with better methods. Hence, the value, moral and aesthetic system related to innovative design could be changed as times move on. Innovative design always has direct effects on human life to influence and change human life, bringing benefits to human beings and meanwhile realizing significance of design. In addition, it helps clients to establish healthy consumption value.

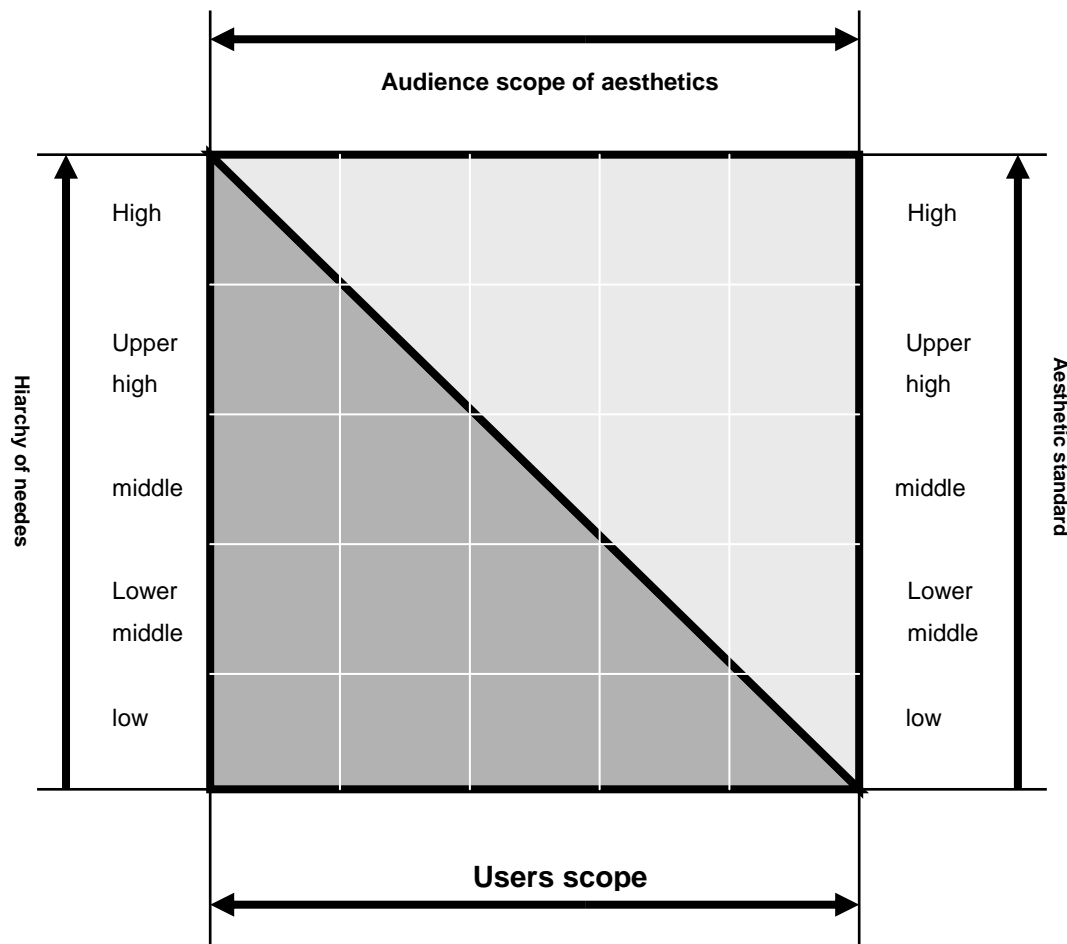


Fig 1 Relationship among aesthetic standards, hierarchy of needs and users

The significance of innovative design for consumption value could be demonstrated in its effects on consumption level. Consumption level generally refers to client's acceptance degree of a product in terms of its physical, aesthetic, social value and price. Within the effects of product on clients, the physical value is necessary condition, price concerns moderate consumption, aesthetic value influences client's mental orientation and social value is widely regarded as the contribution degree of a product in terms of its role in promoting human civilization, improving environment and facilitating sustainable social development. As shown in figure 1, consumption phenomenon has demonstrated the relationship between new innovated value and hierarchy of needs. Density of need is in inverse proportion to hierarchy of needs; need higher at hierarchy of needs means consumptions in narrower scope and vice versa is true. Aesthetic value of a design is another factor to influence consumer's attitudes. Aesthetic standard is in proportion to the audience; higher aesthetic standard of design means audience in wider area and the vice versa is true. Hence, the key of design resides in grasping essential problem of human life and thinking about value orientation according to rules and features of consumption market. The reason why classical design could only become rare luxury consumption item in market is because good design is always not sufficient in supply. Design works of masters

are classical, but far short to meet market demand. There has been unbalanced supply of good design. This is the reason why innovative design have more influences on professional development of design and design service; the former stresses physical tribute and aesthetic value of a product and the latter related service procedure and system to convey design to terminal users and to enable users to experience all round satisfaction from practical use and aesthetic value of the product. Hence, successful handling the relationship between R & D and popularization could facilitate the popularization of a design and help ease the contradiction between supply and demand of good design.

AESTHETIC VIEWS ON INNOVATIVE DESIGN

After entering into industrial age, human beings have witnessed rapid development of science and technology whose constant changes have promoted development of social attitude, living style, culture and art. Client's cognition of a product starts from the outside to the inside of the product and according to the theory of innovative design, effects of the outside of a product, the external form, is the direct factor to stimulate and guide consumption behavior. As the analysis of market value orientation shows, the value of arts and design is in most cases evaluated from the perspective of aesthetics and

usefulness. Arts usually keep the audience stay at cognitive level to enjoy the aesthetic beauty of the artistic form of a product. In arts, only aesthetic and style value is considered. With respect of design, the audience could feel the satisfaction of a product by combined effects of the language cognition of the beauty of a product and the experience of the product usefulness. However, the aesthetic value of a product generally compromises the usefulness of the product. Ettore Sottsass has marginalized the functionality of a product in his design and put more emphasis on irrational, subtle and symbolic aesthetic aspects of the product to give clients strong feelings of the extra ordinary shock of aesthetic form to their hearts. Hence, in industrialization age, the excessive effects of the physical tribute of a product need to be adjusted by the external aesthetic factors such as form, state and color so that client's emotion could be stimulated to increase the level of the mental effects of a product and to stress the immaterial aesthetic factors of the product. Whereas, the technical structure of a product contributes more to the usefulness of the product through the external tributes. Judging from the definitions of art and design, they belong to different value categories. However, the kinds of experience could be obtained while using a product; the aesthetic beauty is mainly felt by looking and feeling while the usefulness of the product, the design value, is mainly obtained through the effects on human organs during man's operation of the product. For instance, during the operation of a product, client could experience the product at shallow level by listening, looking and touching and he could finally give evaluation of the product by the coordination degree between the product and dynamic changes of his body. Hence, a good design shall target at both the aesthetic and physical value of a product.

Morphological form, structural method, technical principle and artistic technique comprise of four important aspects of innovative thinking and the four aspects correlate and interact, forming important conditions for the materialization of design. Ettore Sottsass has employed bravely subversive artistic form in his design of Carlton bookcase and other things; he has broken away from the restrictions of modernism and ushered in the design thoughts of post modernism. The exaggerated form and free use of colors in his works have put fresh color on rigid modern design. He has marginalized the functionality of a product in his design and employed irrational, subtle and symbolic decorative means to emphasize aesthetic aspects of the product. Ettore Sottsass believes the joy of life resides in the aesthetic value of simple language, flowers, odor and color. Ettore Sottsass has employed this thought in each work. His works vary from romance of aesthetic value to common colors but never bore the audience but arouse the audience's curiosity. Philippe Starck has established himself in morphological design of products. His works from design of juicer to the design of Olympic torch have demonstrated the aesthetic spirit of sculptural language and the forms of his designs have rich morphological beauty and elegance. Poul Henningsen's design of PH lamp series is typical example of ideal combination of technique and

aesthetics. The design has been put to market for over 70 years till present but still not outdated. PH lamp's biological form has demonstrated the effects of biological structure and aesthetic beauty on visual cognition. The skillful employment of optics and structure has avoided the harm of luminous object to human eyes. Hence, classical designs have proved the general perception that the rationality and rigidity of technology and sensitivity of arts which seem to contradict with each other could be adjusted by design and the key resides in grasping aesthetic and technical value. Design could help solve the problem of whether balance the two aspects or emphasize one aspect. Hence, a designer should determine his orientation toward the two aesthetic dimensionality to demonstrate the individuality of his design.

First of all, the aesthetic value of a product shall gain popularization among general public. A fundamental work in design is to integrate and determine the reasonable existing form of a product. In modern design which is based upon satisfaction of demand of most audience, a designer shall first of all separate from individualized factors and look for common factor in the public to satisfy demand of most clients. The reason is that maximization of design value resides in maximization of demand for the design and design is representation of commercial economical benefit, social environmental benefits and ethical moral spirit. Individuality based on this thought here above is not differentialized aesthetic value to cater for a specific group of clients but satisfies demand of consumption group. This is integration of the two value systems, combining aesthetics with life and common characteristics of society. This becomes basis principle for realizing commercial value of the satisfaction with aesthetics of the audience. The mutual compromise of design and commercial value is a common phenomenon in modern design but a great many designs fail to obey this principle. Hence, there are a great many unsuitable designs in market.

Secondly, aesthetics shall target at pure individuality. The individuality hereof tends to refer to aesthetic taste and artistic spirit, which could be understood in aesthetics as aesthetic property in terms of morphology. The reason is that aesthetic property corresponds to reactions of individual user. Aesthetic property represents aesthetic tributes and helps to arouse emotions of user, becoming dominant factor to decide attitude of individualized consumer. As Dominique Xardel points out in the ninth chapter of *Consumer Behavior*, attitude is toward object and it includes a kind of abstract thought or guidance. In *Consumer Behavior*, attitude is an invariable orientation of consumer, which makes consumer always handle an object as a good or not good object. The orientation hereof is not born but developed during consumer's cognition process. Design of a product mostly guides clients to interact with the design by stimulation to emotional organs by morphological beauty. Hence, the basic judgment of clients to a design relies on cognition of aesthetic value of the appearance of a design and the judgment basically corresponds to aesthetic taste of client. During this process, the client may be aroused to feel fond of,

good about, indifferent or against of a design. Individualized users tend to be free and self centered in aesthetic taste and design value and they are free, unstrained, and difficult to understand to most designers. PUNK style of young people is typically individualized. In contrast, middle aged designers, artists and special groups have the style of maturity, profoundness and elegance and they are highly critical of design. Hence, aesthetic dimensionality of design could be separated from current trends and life, for aesthetic and artistic tribute of a product derives from life, trend and contemporary times, targeting at consumers. Hence, such innovation that does not suit for logics in life is Utopian design and difficult to win in market.

INNOVATIVE DESIGN DIMENSIONALITY HAS THE CHARACTERISTICS OF THE TIMES

The influence of Bauhaus modernist design thoughts has gone beyond ordinary historical significance, still having profound effects on contemporary design.

However, excessive industrialization and commercialization have led to absence of individuality and ecological beauty of a product, for we could not escape the effects of technical standards and industrialized manners in reality. When digitalization technology has been realized, production controllability and system efficiency have been improved dramatically, for the improvement of the controllability of production system has made it possibility to change and vary design style. In digitalized conditions, design methods and techniques could be applied flexibly to different links of production techniques so that the form, structure, function and interface of a product in conventional sense could be easily expanded or changed. As illustrated in figure 2, innovation of contemporary products has always been influenced by three factors of innovation, namely technical, morphological and using method innovation. On this condition, design has involved in different layers of production process from planning, appearance and structure to technology and service, having establishing new category of property for design.

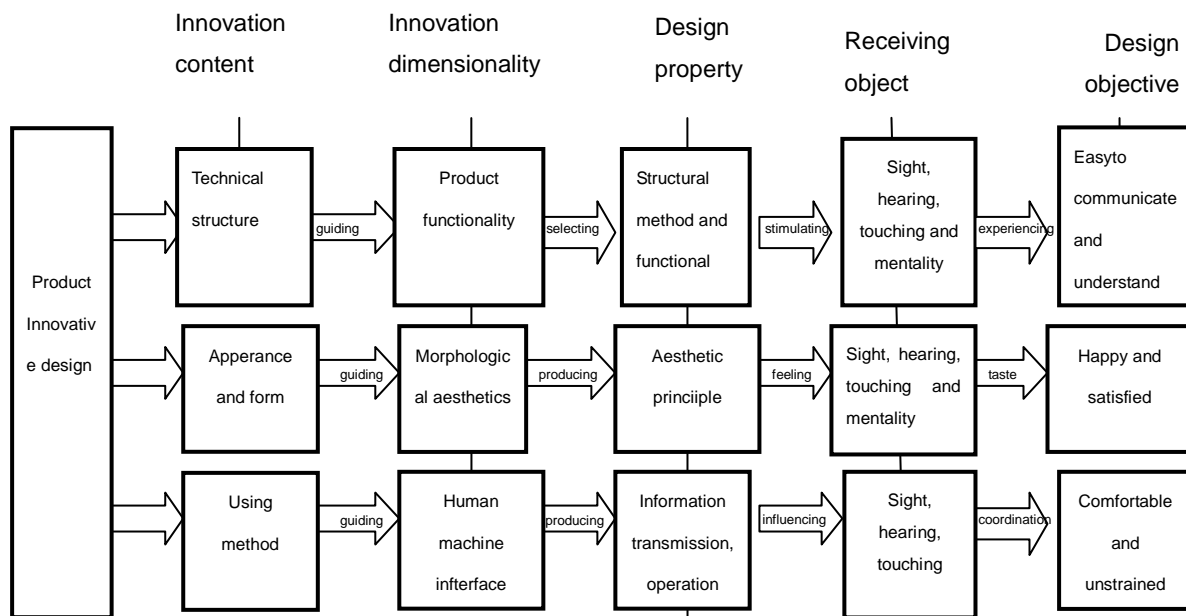


Fig 2 Relation between objective of product innovation and design dimensionality

Design property refers to generally necessary basic characteristics of the effects of design research on design object. For instance, morphological design of a product has the characteristics of aesthetics and language so that the product could be perceived by hearts of clients. In addition, human-machine interaction design principle has demonstrated multiple characteristics including operation manner, information transmission technology, design aesthetics and symbol semantic. The properties hereof are directly related to sensing mentality and behaving ability of human beings. Users operate and control products through the language system established by cognition of design properties. Modern products are comprehended in normal circumstance as tool property and some products could

complete more complicated work with help of modern technology, tending to become intelligent products. Simple tool property has simple operation relation with users and complicated tool properties more complicated systematic and cognitive relations with users, involving appreciation of morphological characteristics, understanding of principle, structure and form, and grasp of interactive language of human machine control manner and interface. Hence, it is understandable that the expansion of simple tool property of a product into complicated capacities results in existence of new design dimensionality. As Donald Norman proposes in *Emotion Design*, design of product shall be considered from three levels, instinctive, behavior and reflection level. He has indicated the importance of experience

design methods in the establishment of relationship between users and complicated capacities of a product. Hence, contemporary designers begin to attach more attention to the causes and rules of human behaviors in product material and immaterial environment. With help of design and servicing property, users are introduced into experience process so that human behavior and habit could be corrected to experience enriching effects to mentality of consumers. Hence, with regard to the proportions of design mentality and emotion in design, the key factor to evaluate design is whether a product could stimulate mental effects.

Innovative design will be manifested at different levels under development conditions of social economy, science, technology, arts and culture. First of all, conventional physical technology and technique is necessary condition for innovative design; it stimulates innovation and invention of technology and technique and realizes the value and strength of science and technology by its wide applications in various aspects of life. Applications of various new technologies have brought fundamental revolution in social life. Internet living style has become the main development stream; personal space, information exchange and economic mode have started to change qualitatively and individualized orientation for commercial value and new trends have appeared and changed frequently. For instance, the inventions of email box and mobile phone have changed conventional ways of communication and postal service. Mail box and public landline phone have disappeared from people's sight rapidly; some though installed in public places have lost actual value and significance as a symbol for and witness of historical development. Hence, the innovative design that has won approval from consumers is always incorporating a new way or method to solve problem; as it changes people's life from new angle, it intervenes and influences people's life style and behavior habit. The 4C products, namely computer, communication, consumer electronics and car electronics could complete more actions by touch screen, where the physical relationship between man and object has been replaced by and transferred into through immaterial mathematic symbols interactive relation between man and continuous information. In front of effective interactive demand for information, designers shall realize clearly that negative effects of internet life style are an imperative pending issue. Ethics, security and unhealthy habits related with information interaction could result in degrading of man's physiological potency. In addition, internet life style could cause harm to human body and lead to sub health. All these problems shall be considered by designers. Hence, in interactive design, the concepts of ethics, intervention and sustainability of design shall be incorporated to find new ways to solve problems and to make design more far reaching.

Innovative design has been regarded as a form of input into capital by enterprises and it has played significant role in sustainable development of industrial economy. The effectiveness of innovation capital is determined by the significance and influencing area of innovation value. Not all innovation could bring benefits and it's only when objectives and significance of innovation comply

with the development of the times and market demand, can innovation become impetus for growth of industrial economy. Innovative design could outplay design value and bring new benefits to society and consumer, which is the direct reason why new products could produce high profits at the early stage of market expansion. Johns Hopkins has stressed the effects of innovation capital; he regards knowledge capital as spare idea and innovation capital as spare innovation. He assumes that in the case that innovation capital could be duly managed to service a specific objective, its benefits would be maximal and it could get prosper easily in small but flexible organizations. According to Johns Hopkins, innovation of design is fundamental to maintain development of an enterprise no matter what scale the enterprise has.

Mainstream design concepts of different times have provided guidance for the formation of public consumption awareness; whereas, the formation of mainstream design concepts are determined by the contribution degree of innovative design to improvement of man's life and promotion of social progress. Hence, the extensive area of contemporary design has provided rich soil for innovation for research and development of products and design has become in real sense impetus to arouse public design awareness and promote market development despite varied modes and individuality requirements.

CONCLUSIONS

Innovative design is distinctive in the sense it help man to explore ways and new methods to solve problems and it facilitates the expansion of market development room and development of industrial economy. Innovative design as a category of value subject determines the formation of man's life style and consumption concepts between the contemporary time and the future. Hence, effects and influencing degree of the innovation subject could be represented by the process form consumption demand, value production, value output and value application. The analysis of the object and influencing area of innovative design value has revealed that innovative design shall base upon society, life and market to finalize scope and value of innovative design in terms of contemporary concepts, artistic aesthetics, techniques and methods. Innovative design dimensionality shall be adjusted with the change of the times and market conditions so that the related innovation of technology, artistic form and living mode could be more practical, comply with the rules of the social and economic development and become impetus to promote sustainable development of industrial economy.

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