



On Performance Measures of Product Design

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Abstract

Sketches, computer graphics and natural patterns play different roles in industrial design. This paper mainly discusses and compares the three measures with special focus on the importance of sketches, especially that for students majoring in science and engineering. However, it does not mention some specific performance measures of sketches, such as gouache and so on.

Keywords: Industrial design, Performance measure, Sketches, Computer graphics, Model

Design is defined in many ways, some as creation, some as scheme and so on. Design refers to the process in which human beings change nature and society to create material and spiritual wealth, manifested in people's thoughts, planning, tools and methods. Performance measure of design means the employment of tools and methods during the course, that is, expressing people's thoughts and plans with certain tools and methods. Therefore, performance measures seem particularly important for designers.

Currently, design is mainly divided into visual design, architectural design and product design while its performance measures include sketches, computer graphics and sketches and natural patterns and sketches. With their respective performance measures, proper use of them will help to improve the design quality as well as design schemes, hence fulfilling consumers at different cultural levels with their more practical and connotative designs and therefore fulfilling their material and spiritual demands.

Industrial design is a comprehensive branch covering a wide range instead of just figuring out schemes and sketches. To be more exact, it is a complicated science involving both reason and sensibility. Accordingly, we are expected to cultivate our observation abilities to observe things around us, ranging from international situations, trends in design development, people's living standards and ideas to every trifles in daily life because some things that seem irrelevant to design tend to embody more profound meanings. These things, propelling the whole society's economic and cultural development, are bound to influence people's ideas, market and commodities and so on. Finally, these macro factors will directly lead to the constant change of design trends with its relevance to other factors. Currently, international industrial design displays the following trends:

1. currently prosperous economic development will promote consumption and provide a huge market for excellent products;
2. more attention will be paid to consumers' demands;
3. more attention will be paid to the design of computers for small companies, families, offices and so on;
4. it is still a big challenge for designers to overcome technological difficulties;
5. some big distributors tend to be intermediate consumers who will focus attention on cutting down costs;
6. there will be closer partnership between designers and the business world.

As far as the three measures are concerned, sketches are liable to express a designer's ideas during the course of an interaction with others more directly and rapidly although natural patterns and computer graphics express his intentions in a more overall way. A variety of tools, such as pencils, pens, markers, color concentrate as well as liquid powder paper and parchment paper can be employed to create sketches with different styles to express different design elements such as materials and light used in design. In order to be qualified for industrial design, one has to develop his habit and ability in thinking and theoretical basis. During the training course, learners' abilities in aesthetics, practice and skills as well as theory and knowledge will be emphasized.

The necessity of hand painting for any designer is shown in the following aspects:

1. As a tool, hand painting can express designers' ideas conveniently and correctly, hence helping to achieve better design effects through interaction. First of all, hand-painted sketches are the main method and tool in the early-stage interaction between designers and clients because it is impossible to create models with computer technologies or material objects only based on a roughly-designed idea with a waste of designers' work. Design is a course, which will lead to a good result only with all parties' participation. Sketches play an important role in it because they convey designers' design highlights and ideas concisely as well as make the connotations embodied in designers' works clear to clients or help them understand the internal meanings embodied in the performance measures used by designers.
2. I don't totally agree that hand painting reflects a designer's self-cultivation, at least that in aesthetics. For most industrial designers who lack in or have no basis in arts, painting is not where their strengths lie in, therefore, hand-painted sketches cannot necessarily reveal designers' painting ability. Of course, it is undeniable that a designer is expected to have high self-cultivation in aesthetics, literature, arts, science and so on. Hand-painted sketches provide us with spiritual enjoyment because it is a variety of techniques employed in it that make them more vivid.
3. A designer's ability in drawing drafts reveals not only his painting ability but his interpretation of structure and material. It calls for a designer's overall understanding of the structure and material of a project with his keen observation, especially that of structure.
4. Hand painting is to a designer's analytical ability what sketch is to literary sketch. Sketches can reveal a designer's focus on some highlights while software and natural patterns cannot. When drawing a sketch, a designer is expected to reproduce his design ideas on paper with his design focus and analysis on structure and material in mind.
5. Sketches apply to interaction objects in a wider range because it is the ultimate goal for design to achieve human interactions. The process of drawing sketches involves designers' efforts in improving their ideas, in which they gain more materials with drafts and interactions with their clients, analyze the information they have got, perfect their designs and therefore produce better works. Although the other two methods also involve the perfection of design ideas, they'll take more time and efforts and involves more labor in modification. In addition, it provides greater convenience for the entrusting party to see the modification results and give advice for further modification.

Several principles should be paid attention to in performance measures of product design: first, different methods should be employed for different contents and the principles of exactness, rapidness and economy should be followed in language; second, after learning and experimenting on a variety of performance measures, one or two can be used intensively which are most suitable to one's personality and have wide adaptability; third, in spite of their value in artistic appreciation, performance measures are not art works because they mainly provide illustration, therefore, more attention should be drawn to the contents manifested in works instead of the process of creating them rather than the achievement of some unpractical effects with improper use of techniques; fourth, there are only basic methods, no absolute methods for performance measures of product design. Therefore, in spite of the fixed techniques and steps, like any other creative work, no fixed pattern can be followed totally because people tend to employ their creativity in some way in their design. Therefore, rules can not be imitated but be absorbed and learned.

Conclusion

To sum up, it is essential for designers to have abilities in hand painting, especially those majoring in science and engineering in industrial design. With performance measures as a significant section in the design process, sketch is of particular importance. Design sketches, embodying consumers or clients' demands as well as designers' ideas, promote the harmonious interaction between design and market and therefore fulfill the demands for design to some extent. The ability in drawing sketches is a fundamental basis for any designer because things produced by the computer are lacking in individuality in spite of its advanced technology nowadays. After all, design is one part of culture, therefore, individuality is indispensable for design.

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