

A Study of the Classification for Simplification Design of Products

Chia-Wen Hsu* Nien-Te Liu** Chia-Wei Liu*** Tzu-Yu Chen****

* Graduate Student, Graduate School of Applied Arts & Design, Shu-Te University
Kaohsiung, Taiwan (R.O.C), emily809@hotmail.com

**Assistant Professor, Department of Product Design, Shu-Te University
Kaohsiung, Taiwan (R.O.C), ntlou@mail.stu.edu.tw

*** Graduate Student, Graduate School of Applied Arts & Design, Shu-Te University
Kaohsiung, Taiwan (R.O.C), pdsteven@gmail.com

**** Graduate Student, Graduate School of Applied Arts & Design, Shu-Te University
Kaohsiung, Taiwan (R.O.C), hihiamigo@hotmail.com

Abstract: The concept of simplification has become one of trend of modern design development. Therefore, the purpose of this paper is to classify different types of simplification by analyzing the characteristics and evolution of the product. The results of this paper can be used as the references for simplifying design by designers. First of all, this study collected many different types of products which are available in the market. Then, the purpose, functions, and features of products are analyzed so to understand simplification characteristics of the products. Finally, the products are classified in accordance with the simplification characteristics. In this paper, classification of products simplification is studied and the results can be concluded into four categories and 12 principles: 1. Vision simplification: (a) lower elements of construction, (b) apply geometry on product appearance, and (c) integrate with various materials; 2. Function simplification: (d) decrease functions, (e) easy to operate and being understood, (f) reduce operation steps, (g) experience application, (h) geometrized and standardized objectives; 3. Specialize on single category: (i) single material application, (j) emphasis of the original value, and (k) emotional reinforcement. 4. Recycling: (l) utilization of eco materials.

Key words: *Product simplified, simple design, product evolution*

1. Introduction

PHILIPS thought that products in the future should be based on an idea of "Simple", therefore brought up a slogan "Sense and Simplicity" as a philosophy of design, and also indicated that as the improvement of technology, simplification will be the final faith of technology [1]. Among the originality rules that Health proposed, the first rule is to be simplicity. The word "simplicity" here is to find the core value. "Core", is a key point that remains after analyzing a concept, while the subordinates should be deleted [2]. That means an electronic product should not be designed as a remote control which has extra functions but useless. Meanwhile, Maeda also indicate that for the purpose of simplicity, the first thing to do is to decrease functions in order to emphasize the core function. Once if the product is inevitably added with many functions at the same time, then its complexity should be reduced in other ways [3]. Therefore, the main purpose of this paper is to collect and analyze different types of product in order to realize the purpose, function and design characteristics of simplify, therefore to complete the classifying of simplification.

2. Definition of Product Simplified

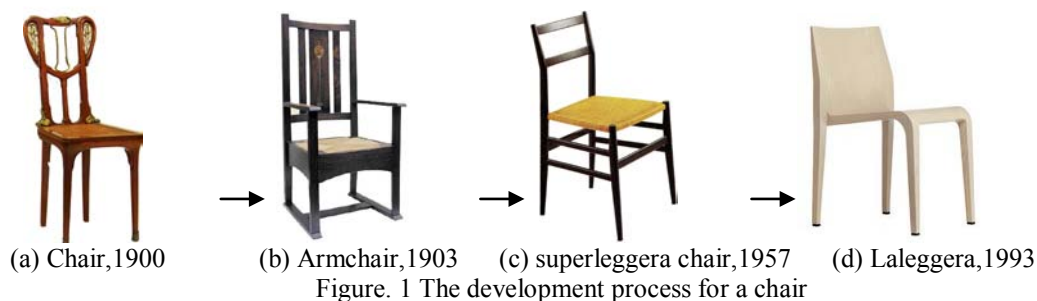
The ability of solving problems is highly required during the process of simplification design. The process of designing is to eliminate all unnecessary elements in order to retain the core demand. When emphasizing the modeling simplification, it needs to pay attention to its internal meaning, and to confront it by presenting the concept of “Less”. The simplification procedure concludes various modes and paths, but the definition of simplification design is not yet accurately defined. Therefore, the simplification design of product will be redefined in this paper. To diminish the expenses of cost, to reduce the usage of material, or to shorten the procedure of product operation can be taken as the simplified design of product.

3. Analyses of Product Simplification Cases

Due to the variation within the emphasis of every cases and a close correlation between the function and form of products, the mainly discussion in this paper categorize in accordance with product characteristic, outward appearance, and functions. Therefore, we collect many types of products and cite 6 brief case analyses.

Case 1

In the Arts and Crafts Movement, chairs are designed to present the symbol of royalty by emphasizing the splendid decoration as shown in Fig. 1(a), There are many decorative pattern, the so-called heavy sculpture, on the surface, and it became the most popular technique in that age. Chairs are extremely original-concept-based products, which include the most basic construct elements in the simplified design. As we can see in Fig. 1(b) and (c), besides reducing the construct elements in the procedure of simplification, the minimalism in the end of 60's is also has an influence upon design style — eliminating all outer decoration, and maximum presentation by using single element. Until now as we can see in the Fig. 1(d), it applies single material onto the deconstruction of the product, and this kind of method simplifies the connection of its construct elements and comparatively reduces the steps in producing. Appearance is to be the first element that decides the first impression, while the quantity of modeling and lines will affect the visual feelings; therefore, product simplification needs to lower the visual complexity.



Case 2

Products should acquire functionality, which includes the degree of the difficulty when using, and delete or hide the minor function according to the user demand, so to present the optimal function. APPLE prevail the trend by its brief style. Take iPod for example, since iPod was made until now, there is no obvious modification of its appearance in the first generation, while the buttons are just simply shortened into four buttons: forward, backward, pause and menu.

When developing into second generation, iPod buttons are partial independently settled side by side on the top as shown in Fig 2(b). Although the control of product becomes independent and clear, yet the emphasis on

the operation buttons actually loses the original meaning of simplification.

The third generation combines all control buttons into one button shown in Fig 2(c). And according to the principle of Gestalt Theory, it applies grouping, and group the same characteristics into an integer [4]; therefore, the product appearance will be clearly understood by function distinguishing and integrating, and hence present the concept of simplification.

Case 3

Every product has its own basic structures. We can deconstruct and retain a single element and precede the property standardization in order to reach the goal of simplification and specialization on single product. While facing a simplified-ready product, as shown in Fig 3, we can rebuild a new exterior by deconstruction. In this case, it applies subtracting design as a basis of eraser design, and maximizes utilities by using a single element. While erasing, it is hard to make a totally clear if lacking a sharp edge. Therefore, this design extracts corner and eraser as a combination of function, it is actually increasing 8 dimensions while subtracting volume, and expanding the function demands of product in order to present the concept “Less is more”, and elaborating ultimate utility.



(a) (b) (c)
Figure. 2 The development process for iPod



Figure. 3 Kadokeshi Plastic Eraser

Case 4, 5, and 6

Besides, simplification methods also include reduction of product elements, reusable and recyclable. A handy-audio product, which designed by MUJI, as shown in Fig 4, is also a representative product of simplifying: Simplify its original appearance by using paper and emphasize its handy convenience by combination so to lighten weights of the product. Frank Gehry took special material as a basis of creation as shown in Fig 5. Use corrugation fiber pasteboard as an ingredient, and attain to a well-durable on weight by the application of architecture calculation. As shown in Fig 6, a Holland designer designed a set of tableware for the purpose of environmental protection. The design inspiration comes from the surplus food in our daily life. In order to transfer these resources into other reusable product and use them efficiently, this set of tableware is composed of coffee and vegetable dregs, so that it can be totally decomposed after using. This kind of design which is based on the green economic is also a category of simplification design.



Figure.4 Muji Audio trumpet



Figure.5 Wiggle Side Chair



Figure.6 Waste-Ware

4. Principles of product Simplification

Integrating the analysis stated above, we can catalog related principles according to the procedure of simplification. In Case 1, the complexity in vision of a chair's decoration, which was designed in Arts and Craft movement, is reduced by the simplification process. In Case 2, the subtractions of iPod are eliminated or hidden. Similar characteristics are grouping for suitable functions according to the principle of Gestalt theory. In Case 3, by using basic construction elements, we can unify and standardize the characteristics of products and then precede simplification. Of the application on green material in Case 4, 5, and 6, products are to be reduced, reused and recycled in concerned of environmental protection.

Then we can classify into 12 detailed principles according to the categories, and can be shown as follows:

- (1) Vision Simplification (Case 1): a. lower elements of construction; b. apply geometry on product appearance; c. integrate with various materials;
- (2) Function Simplification (Case 2): d. decrease functions; e. easy operation and easy understanding; f. reduce operation steps; g. experience application; h. geometrized and standardized objectives;
- (3) Specialize in Single Category (Case 3): i. Single material application; j. Emphasize the original value and emotional reinforcement;
- (4) Recycling & Reusing (Case 4, 5, and 6): k. Use the ready-made items; l. Utilization of nature materials.

5. Conclusions

After analyzing and researching, we can get two conclusions as follow:

1. The simplification design of product is redefined in this paper. To diminish expenses of cost, to reduce the usage of material, or to shorten the procedure of product operation can be taken as the simplified design.
2. we get 12 principles, which are based on the classification of product simplify procedure, into 4 categories:
 - (1) Vision Simplification: a. lower elements of construction; b. apply geometry on product appearance; c. integrate with various materials;
 - (2) Function Simplification: d. decrease functions; e. easy operation and easy understanding; f. reduce operation steps; g. experience application; h. geometrized and standardized objectives;
 - (3) Specialize in Single Category: i. Single material application; j. Emphasize the original value and emotional reinforcement;
 - (4) Recycling & Reusing: k. Use the ready-made items; l. Utilization of nature materials.

References

- [1] Marzano, S. (1999) *Creating Value by Design: Thoughts and Facts*, Antique Collectors' Club.
- [2] Heath and Dan Heath (2007) *Made to Stick: Why Some Ideas Survive and Others Die by Chip*, 1th ED., Random House.
- [3] Maeda, J. (2006) *The Laws of Simplicity*, The MIT Press.
- [4] Wolfgang Kohler (1992) , *Gestalt Psychology: An Introduction to New Concepts in Modern Psychology*, Liveright Publishing Corporation.