



Integrated design and production of modular office products Wenzhou Polytechnic

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Abstract: humanization, ease of use and functionalization are very necessary and important factors in furniture design. This paper focuses on the expression methods and methods of humanization, ease of use, integration and modularization in bookshelf design, as well as the embodiment in elements such as structure, material and color, and expounds some use principles and procedures. The existing market of bookshelves is investigated in detail. Bookshelves, as the carrier of designers' aesthetic ideas, will make our life more colorful when their own value is truly reflected. As a logical and powerful design language and creative way, design will be more widely used in the field of bookshelf design in the future.

Keywords: Module; Function; Procedural methods; color.

1. Humanization

To meet the characteristics of "humanization", this product design is based on the system concept of combination. Furniture can be disassembled and reorganized according to needs. It is combined in the form of module components. It can be assembled freely in the formed system to meet various changes. Its design follows the following principles:

1.1 People oriented

The humanized design principle is not only to represent the development of society and the understanding of human nature, but also to meet the needs of most people, but also to take into account the special requirements of vulnerable groups and reflect their care for people.

1.2 Principle of integrity

Without the design requirements of integrated effect, the key good things can only be some fragmented or contradictory parts, and the impression left to the audience can only be fragmented and isolated.

1.3 Ecological principle

The ecological principle of "fashion home" design mainly refers to the close consideration of ecology, human health and safety in the whole life cycle of design, production, transportation, marketing, use and disposal of its raw materials. Specifically, we should consider selecting raw materials with little impact on the environment, reducing the use of raw materials, optimizing processing and manufacturing technology, reducing the environmental impact in the use stage, and optimizing the product service life and product scrap system.

2. Definition of office furniture

Office furniture includes tables and chairs. It refers to the work furniture used in the office or home. The simple components of office furniture are divided into office chairs, filing cabinets and desks.

2.1 Classification of office furniture

In terms of materials, it can be divided into panel office furniture, steel office furniture, metal office furniture, software office furniture, etc.

There are offices, open staff offices, meeting rooms, reading rooms, library rooms, training classrooms, laboratories and staff dormitories.

In terms of use functions, it is mainly divided into: office desk, office chair, office screen, sofa, tea table, filing cabinet, bookcase, etc., as shown in Figure 1.



Fig. 1 Coffee table, filing cabinet and bookcase

2.2 Office furniture is classified by material

High grade leather furniture: leather furniture is soft, elastic, tough, wear-resistant and sweat absorbing. It is an easy maintenance furniture material.

Soft cloth furniture: cloth furniture has a soft texture and can be cleaned or replaced. It is very convenient and changeable for cleaning and maintenance or home decoration. In addition to all cloth furniture, cloth is often used with rattan or paper fiber to make users more comfortable and make the colors of rattan and paper fiber richer and more changeable, as shown in Figure 2.



Figure 2 Fabric quality

Green products are designed according to ergonomics and people-oriented. They not only pay attention to people's physiological conditions under static conditions, but also study people's physiological conditions under dynamic conditions. Under normal use and occasional use, it will not cause adverse effects and injuries to human body. During the design and production, the service life of the product shall be extended as much as possible to make it more durable and reduce the energy consumption in the reprocessing process. The advantages and disadvantages of the existing products are analyzed as shown in Figure 3.

Existing products	Analysis of advantages and disadvantages
	<p>Product Description: upper and lower glass flat open office bookshelf</p> <p>Advantages: the product adopts steel structure, with strong compression resistance and not easy to deform.</p> <p>Disadvantages: the design is not convenient for disassembly, poor flexibility, rigid and occupies a large space.</p>

 <p>KEVIN E2001</p>	<p>Product Description: Leather Office bookshelf</p> <p>Advantages: the product adopts steel frame structure and is wrapped by leather materials, highlighting its high-grade grade. Easy to disassemble.</p> <p>Disadvantages: small utilization space and lack of functionality.</p>
 <p>mileston</p>	<p>Product Description: wood veneer office bookshelf</p> <p>Advantages: the product is made of hardwood, strong compression resistance, strong and durable, high-quality wood, spraying process and overall structure.</p> <p>Disadvantages: the design is rigid and inconvenient to disassemble.</p>
 <p>www.mileston.com</p>	<p>Product Description: wood veneer office bookshelf</p> <p>Advantages: the product adopts turnover structure design and has strong flexibility.</p> <p>Disadvantages: the design is flexible, but the design is monotonous.</p>

Figure 3 product advantages and disadvantages

High tech industries, securities finance, accounting lawyers and other industries with high requirements for office environment will be adopted, as shown in Figure 4、 5.



Figure 4 better environment



Figure 5 curve shape

3. Man machine dimension survey

The height of tables and chairs has been stipulated in national standards. Among them, the height and size standards of table furniture can be 700mm, 720mm, 740mm and 760mm; The seat surface height of chair and stool furniture can be 400mm, 420mm and 440mm. In addition, the standard dimensions for supporting tables and chairs are also specified, and the height difference of tables and chairs shall be controlled within 280 to 320mm, as shown in Figure 6.

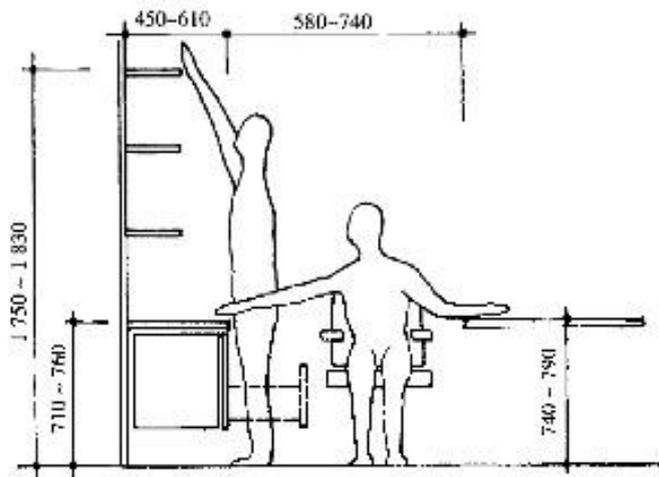


Figure 6 Man machine analysis diagram

4. Sketch

Sketch the rendering, as shown in Figures 7 and 8.

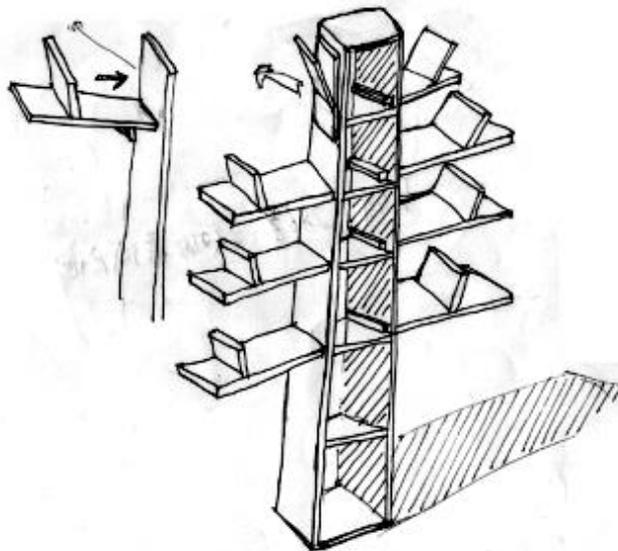


Figure 7 Sketch drawing effect

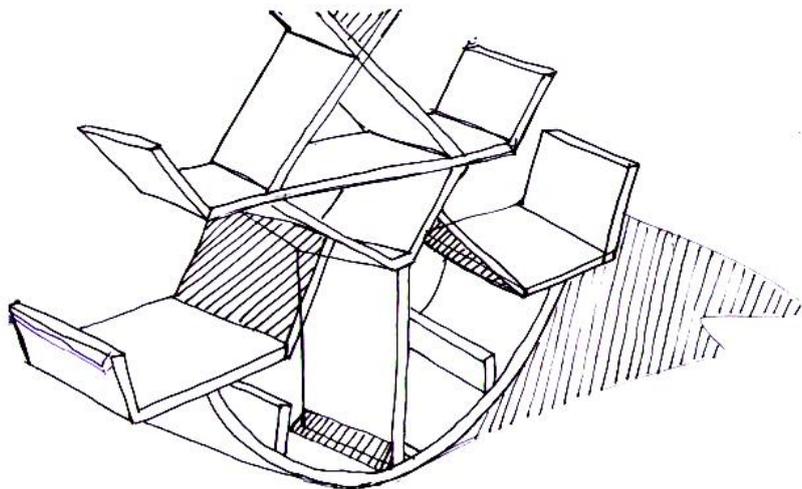


Figure 8 Hand drawn rendering

5. In depth design

After repeated demonstration and exchange, it is decided to select the following sketch as the final scheme and deepen it. Man machine environment analysis, color design, design deployment (detail design) and design deployment (detail design), as shown in Figure 9.

Modular monomer design, using its unique structural form, saves the use of office space. Users can arrange different office supplies for each monomer in the way of listing and flat placement according to their own needs and the differences of placement methods. For example: vertical bookshelf, wall bookshelf, office desk, etc. The self-contained seat design reflects its diversified and humanized characteristics. Provide comfortable space for visitors and employees to rest. The single bookshelf

design adopts the traditional pull-out structure. Space saving and easy to use. The overall height of the monomer is 40cm and the length is 80cm, which conforms to ergonomics. Provide users with comfortable and reasonable office space.

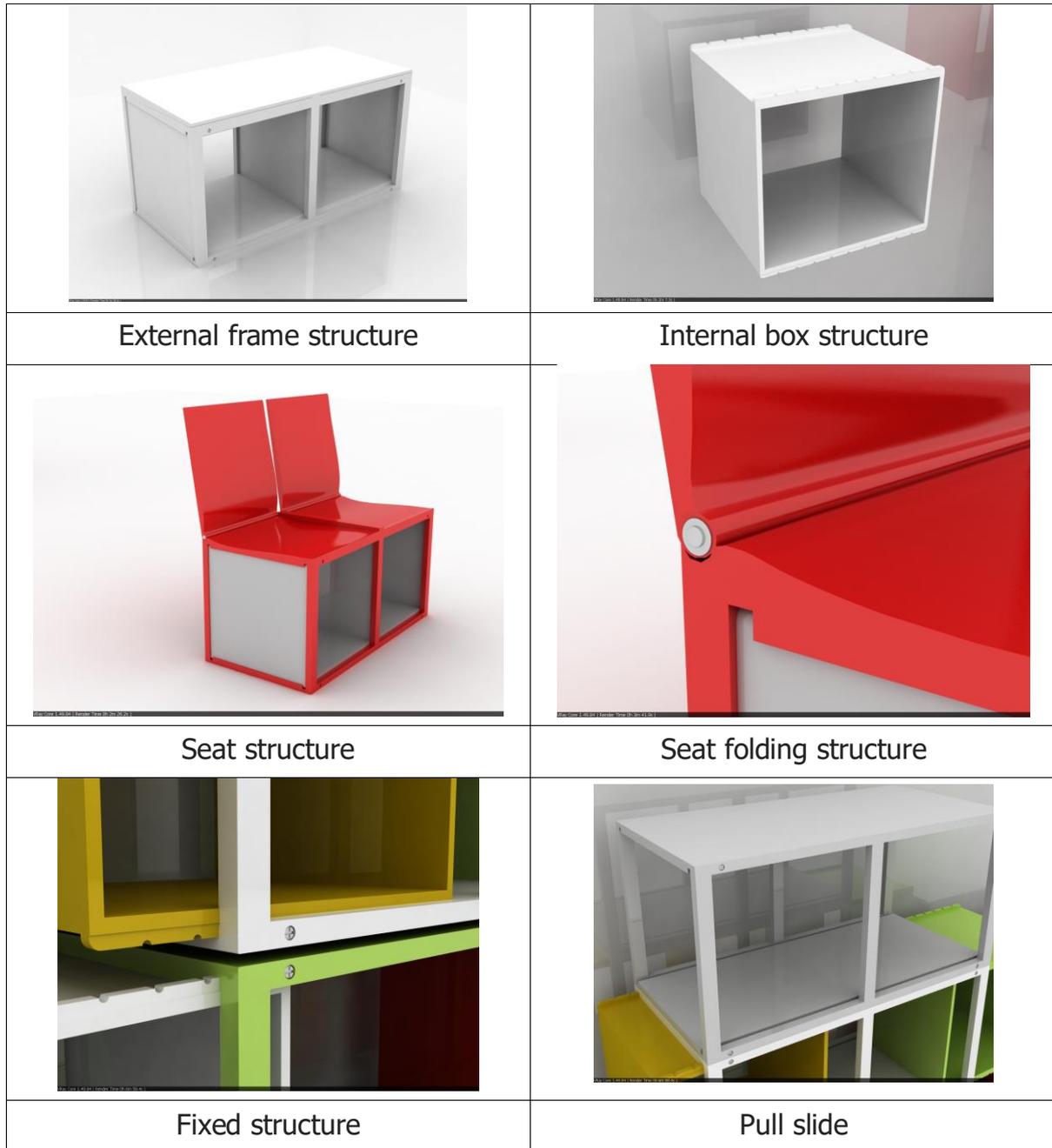


Figure 9 Description of the detailed diagram

In the emotional communication between people and products, in order to enhance their desire for products, we must pay attention to practicality and functionality while innovating the appearance, and add the function of life interest at the same time. From the perspective of color, structure, material and other elements, this design reflects the functional utility of humanization, ease of use, integration and

modularization.

6. Model making

6.1 Model making materials

PU foam, wood, electric wire, paint, putty, color paper, glass film, coarse (fine) sandpaper, wire, 801 glue, 101 dry glue.

6.2 Model making tools

Grinding machine, vice, hacksaw, curve saw, ruler, file, electric drill, various types of drill bits, pliers, iron brush, hammer

7. Conclusion

In the future modular design of office furniture, this paper focuses on the expression methods and methods of humanization, ease of use, integration and modularization in bookshelf design, and the embodiment in elements such as structure, material and color, and expounds some use principles and procedures. Provide a new use environment for the office environment, innovate boldly, break the existing use form, and use the limited environment and space to meet people's office and leisure.

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