Research on Ming Dynasty Huanghuali Wood Official's Hat Armchair with Four Protruding Rounded Ends

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Abstract. Huanghuali wood official's hat armchair with four protruding rounded ends collected in Tsinghua University Art Museum has abandoned the traditional image of official's hat and taken advantage of simplicity and elegance to the fullest, hence become a piece of classical furniture design in China. The thesis analyzes and studies from aspects like form feature, aesthetic taste, spiritual connotation presentation, so as to manifest that Chinese literati and craftsmen in Ming and Qing Dynasties have already possessed an ultimate pursuit for minimalism when designing furniture display.

1 Introduction

In late Ming Dynasty and early Qing Dynasty, Neo-Confucianism dominated, authority centralization culminated, so bureaucracy prevailed. Being an official has become the highest pursuit of literati and people with high ideals. Official's hat armchair was named after it's greatly resemblance to hat worn by ancient officials. Ming Dynasty furniture represents the aesthetic height of classical Chinese furniture, as an outstanding type of traditional armchairs in Ming Dynasty, official's hat armchair attracted people by its simple and elegant style, what's more, it was pursued by ancient scholars for its symbolic meaning of official career. From the aspect of form, official's hat armchair is divided into southern official's hat armchair and northern official's hat armchair. As for southern official's hat armchair, its top rail and arms don't protrude, entirely edged with plain mouldings, equipped with a solid board as its back, front leg is generally connected with gooseneck front post, the lower part of seat commonly adopts humpbacked stretcher and pillar-shaped strut [1]. Northern official's hat armchair is generally called as official's hat armchair with four protruding ends, it mostly applies round-shaped timber and solid board back, installs gooseneck front posts backward, its lower part of seat generally humpbacked stretcher with pillar-shaped strut or apron, so as to realize accordance. In terms of decoration, northern official's hat armchair is not as gorgeous as
southern official's hat chair, but it is more simple and elegant. Although they vary greatly in details, both of them possess features of an official's hat. More importantly, Ming Dynasty huahuangli wood official's hat armchair with four protruding rounded ends is an extremely special existence, it has not only given full play to features of simply and elegant modelling in overall shape and structure, but also completely abandoned the most distinctive image-official's hat, each details and unique modelling of it are pervasively expressing craftsmen's pursuit of honesty and uprightness in the dark and corrupted official circles.

2. Form features of simplicity and elegance

2.1. Modelling and structure

Official hat's armchairs with four protruding rounded ends (figure 1, 3 and 5) are exactly simple, plain and elegant in structure and modelling. The height of chair is 1085mm, its seat is a panel with mortised and tenoned frame which is 545mm long, 460mm wide and 440mm high. Footrest stretcher is set on front legs (120mm high above the ground), the upper part of hind leg is slightly curved backwards and the lower part of hind leg is vertical and straight\(^2\). Compared to ordinary official's hat armchair, it is slightly low and somewhat rotten in four legs, in order to make it stable, legs were orderly sawed. Top rail, support chair arms, gooseneck front post, four posts and three side stretchers are round, straight and pole-shaped. Aprons under the seat are plain, straight and square. Modelling of back board sides is somewhat concave in upper part and convex in lower part, so it presents a slight S curve. As for the structure of traditional official's hat armchair with four protruding ends (by taking Ming Dynasty official's hat armchair with auspicious animal design and four protruding ends as reference and comparison- figure 2, 4 and 6), craftsmen often add side posts between arms and mortise-bearing frame member as accessories to fasten armchair's structural strength. On one hand, side posts can greatly enrich and decorate chair modelling, on the other hand, it can prevent baggy clothes worn by ancient people from dropping off. However, official's hat armchair with four protruding rounded ends has totally spared side posts, by comparing to other traditional armchair, it has backwardly installed its gooseneck front post, so gooseneck front posts and front legs are made of different woods. For the backward installation of gooseneck front posts can completely satisfy with demands of supporting and fixing in structural strength, meanwhile, it can easily prevent clothes from dropping off, official's hat armchair with four protruding rounded ends has completely spared side posts and reached a simple and easy form. With regard to structural connection, seat has inherited the mortise and tenon structure exclusively owned by classical Chinese architecture and furniture. Mortise and tenon adopts the concave and convex parts of two wood members for connection. The concave part is called as mortise, the convex part is called as tenon, by inserting tenon into mortise for perfect accordance, all components can be organically joined to make the whole structure bear greater external force, integrated and and firm. Metal nails are not necessary, and fish glue adhesion is only assistant\(^3\).

Ancient craftsmen wholeheartedly integrated aesthetic thoughts of literati into official's hat armchair with four protruding rounded ends to make it generally simple, fresh, upright and straight, meanwhile, it is also elegant and literary. What a piece of gorgeous ancient furniture.
2.2. Material selection and decoration

Official's hat armchair with four protruding rounded ends (figure 8 and 9) selects Hainan huanghuali wood as raw material. Huanghuali wood is academically called as dalbergia odorifera, a species of legume in the Fabaceae family. Its air-dry density ranges from 0.82/cm$^3$ to 1.1/m$^3$, the wood is mainly grown in sunny place with the altitude of 100m on Diaoluo mountain in eastern Hainan province. In the previous decade, huanghuali grows rapidly and its DBH annually increases by 0.87cm on average. Then, its growing cycle gradually slows down, and annually increases by 0.44 cm on average. Hainan huanghuali wood is difficult to grow into useful timber, so a say goes that it takes 500 years for huanghuali wood to grow to be as thick as bowl rim. In addition, owing to its warm color, hard wood, stable temperament and nondeformable, it obtains the name of useful timber. When it encounters severe weather, scab is easily formed (generally called as grimace pattern) with flexible and partly hidden and partly visible grain. Meanwhile, during the long term of usage, huanghuali wood furniture has formed a layer of oily membrane (patina) on surface as wood oxidizes with air, closely rubs
and touches with human body\cite{4}. Furniture patina takes over several decades of year or even a century to form and play as a natural protective membrane, thus becomes one of the methods to identify the date of furniture.

Back and hind leg (upper part) of official's hat armchair with four protruding rounded ends are somewhat curved, and more curved than other traditional official's hat armchair with four protruding ends, so it's not easy to be processed. However, as for material selection, this armchair still adopts the most precious rosewood- Hainan huanghuali wood. In order to make the curve structure of seat become optimal, craftsmen may select older and stronger timber, and spare great efforts on cutting so as to make the timber be optimal. Therefore, curve components of official's hat armchair with four protruding rounded ends can be so soft and smooth, and present a uniquely elegant rhythm. Material features also make the simple and elegant official's hat armchair with four protruding rounded ends more precious.

| Four famous woods in China | Pattern | Growing cycle (wild) | Density | Place of origin | Family |
|----------------------------|---------|----------------------|---------|-----------------|---------|
| Hainan huanghuali wood      | ![Pattern](Image) | Around 300-500 years | $0.82-1.1g/cm^3$ | Baisha, Yaxian in Hainan | a species of legume in the Fabaceae family |
| Padauk                     | ![Pattern](Image) | Around 300-500 years | $1.05-1.25g/cm^3$ | Taiwan and southern Yunan | a species of legume in the Pterocarpus family |
| Wenge                      | ![Pattern](Image) | Around 150-200 years | $0.8-1.02g/cm^3$ | Guangdong, Guangxi and Yunan | a species of legume in the Pterocarpus family |
| Mahogany                   | ![Pattern](Image) | Around 180-300 years | $0.85-0.95g/cm^3$ | Southeast Asia, Central and South America | a species of legume in the Fabaceae family |

Figure 7 Four famous woods in China.

In ancient times, craftsmen often carved various kinds of pattern and design on chair backs to express blessings, the decorative pattern of traditional official’s hat is basically divided into three types: specific pattern like flower, bird, fish and animals which symbolize nobility and prosperity; abstract character pattern which symbolizes happiness, longevity and dignitary; pattern which integrates the above two patterns\cite{5}. Whereas, the seat back of official’s hat armchair with four protruding rounded ends has no decorative patterns at all, its seat
emphasizes on form and reticence, and only implicitly carves a circle of convex line on apron (formed by three pieces of plates under the seat). Delicate detail design has made this elegant and exquisite seat somewhat lively, and thus become an exclusively important part of the armchair. Being extremely simple in style, the armchair owns a more accurate requirement on appearance size, craftsmen should firmly adhere to the design concept of aesthetic material and skillful technique, strictly deliberate the dimensional relation which conforms to furniture aesthetics. There is a saying goes that an official’s hat armchair contains heartfelt devotion made by craftsman.

![Fig.8](image1.png)  ![Fig.9](image2.png)

**Figure.** 8 Huanghuali Wood Official's Hat Armchair with Four Protruding Rounded Ends (Picture of front view).

**Figure.** 9 Huanghuali Wood Official's Hat Armchair with Four Protruding Rounded Ends (Picture of lateral view).

3. Uniform aesthetic taste

3.1. Symmetry and equilibrium

Symmetry and equilibrium is a natural rule which has been gradually explored and mastered by Chinese ancestors through their deliberate research on natural consciousness and philosophical critical thinking ability during several-thousand-year production activity, its universal form has permeated in natural objects. Early in ancient ages, ancestors have already controlled and mastered the natural rule, by polishing natural objects in a balanced and regular way, people can bestow them with aesthetic meanings to be decorations. The modelling structure of symmetry and equilibrium has been continuously developed and perfected throughout history, so far, Chinese traditional buildings, furniture, furnishing and even a piece of landscape painting contain people’s pursuit of balanced aesthetics.

3.2. Golden ratio

Golden ratio is the best visual proportional relation which has been summarized by people in long-term practice. As the proportion between the whole part and the larger part equals to the proportion between the larger part and the smaller part, the formed proportional relation is namely golden ratio, so as to impress people with comfort and harmony. Although it is originated from geometry, its aesthetic value specifically guides the development of each
discipline and generate far-reaching influence, so as to be the gold rule for people to master the relation of harmonious proportion.

With respect to official's hat armchair with four protruding rounded ends (figure 10 and 12), craftsmen regard the seat as cutting line, proportion between the upper part and the lower part has reached 1: 0.618, so its seat completely stands at the cutting line of golden ratio. As people look at the front horizontally, two points will thus form a golden proportion. The structure of official's hat armchair with four protruding rounded ends brings a comfortable and harmonious beauty with its exclusive proportional relation and symmetry and unity.[6]

![Fig. 10](image1)

**Fig. 10**

Huanghuali Wood Official's Hat Armchair with Four Protruding Rounded Ends (Scale drawing).

**Fig. 11** Golden ratio of human body drawing (Front view).

**Fig. 12**

Huanghuali Wood Official's Hat Armchair with Four Protruding Rounded Ends (Scale drawing).

3.3. Liveliness beauty

The form of official's hat armchair with four protruding rounded ends is stable and lively. Based on conforming to human engineering. Innovative craftsmen have adopted curve technique to design back and hind leg (upper part), which distinctively contrasts with straight gooseneck front posts. By skillfully applied the technique of curve and straight comparison, the simple and plain modelling structure has become somewhat nifty and lively. Point-like sectional form formed by arms and top rails appropriately set off seat, and add some liveliness to elegant official's hat armchair with four protruding rounded ends[7]. The convex carving on apron highlights gradation and grace of armchair outline. Huanghuali wood grain is lively and graceful, and regular in its irregularity, so appears outstandingly meaningful and beautiful.

4. Spiritual presentation of incorruption

In Ming Dynasty, the authority carried out rehabilitation policy to stabilize society, stimulate social economy to be prosperous, and then capitalism handicraft industry and commercial industry started to burgeon. Imperial family set manual workshop in its court, gathered many skilled craftsmen, the progress of handicraft art has provided a sound economic environment, books related to researches on furniture design gradually increased like Zongzhuanglu. However, in official circles, in order to consolidate feudalism regime,
governors of Ming Dynasty advocated Neo-Confucianism and then developed authority centralization to the climax. Neo-Confucianism believes that reason governs all ideological systems, bestows it with various kinds of specifical cultural connotation, so as to form a behavior standard of three cardinal guides and the five constant virtues as specified in the feudal ethical code. Three cardinal guides means that ruler guides subject, father guides son husband guides wife, and five constant virtues means that benevolence; righteousness, propriety, wisdom and fidelity. The system that blindly suppressed humanity had triggered a drastic rebound in political system of middle and later stage of Ming Dynasty, corrupted official environment, and then the whole society became untruthful and prevailed by bureaucratism. In this disordered background, scholars and literati possesses new thoughts of innovation. Many literati and scholars took off their armours and went home one after another, put their own aesthetic decrees and ideas into studying furniture design, even took part in designing to bring them into life, as a result, Ming Dynasty furniture is exquisitely aesthetic and precise after being immersed in thick humanistic atmosphere.

In traditional Chinese culture, art and thoughts mutually influence and merge. As the outstanding leader of traditional Chinese armchairs, official's hat armchair deserves its place not only for the dignified and elegant appearance, but also for its symbolic meaning. From the aspect of name, official's hat armchair contains scholars and literati's hope for official career, what's more, the image of official's hat more manifest students' expectation on official career\[8\]. Official's hat armchair with four protruding rounded ends has abandoned this highest symbol, and been revised to straight and round image. A small alteration exactly presents literati's ideas about officials and people. The water that bears the boat is the same that swallows it up, only by living among ordinary people, can officials truly realize people's demand and hence realize their simplest pursuit. On the upper part of hind legs, the designer has changed the original straight form into a slightly curve of the upper part, the curve gradually slows down on lower part, the back board with a small S has been altered to a posterior raise that conforms to human spine. In this chair, people will naturally be imposing and properly seated. Officials should be neither humble nor pushy, not be conceited and discouraged, an elegant posture can manifest official's idea of people-orientation. As for decoration, official's hat armchair with four protruding rounded ends regards the natural grain of huanghuali wood and lustre as the dominant aesthetic elements, has abandoned all flashy decorations to be natural and modest. It tells both ordinary people and officials that persistence, ultimate source and original inspiration should always be adhered. The design of this chair is not only a functional expression, but also the spiritual pursuit from literati and scholars on incorruption in cultural trend.

5. Minimalism of official's hat armchair with four protruding rounded ends

Official' s hat armchair with four protruding rounded ends is a model in Chinese furniture manufacturing history, its simple and modest form can't live without the accurate control over each detail by craftsmen, and also its spiritual connotation bestowed by ancient literati. The design concept of constantly striving for simpler coincides with the modernism designer Ludwig Mies Van der Rohe's minimalism. For instance, Barcelona Chair is completely intersected with minimalism and thus has become a strong support for his design principle\[9\]. The chair has omitted all fussy decorations to be wholly simple and elegant. Seat back is
structured in curve to completely conform to human spine. Legs are made of stainless steel to be cambered and crossed, cushion applies soft high-density sponge covered with leather to realize a perfect combination of rigidity and grace\textsuperscript{[10]}. While stressing on its function, Barcelona chair also expresses pursuits of aesthetics, designer's care for humanity, and thus deserves to be a piece of classical work of modern furniture design. Several centuries ago, craftsmen played the simplicity of official' s hat armchair with four protruding rounded ends to the fullest and made them greatly favored by people through accurately controlling proportional balance and the incorruption spirit bestowed by literati. It's effective for furniture designers to resort to reference, once benefited from other advanced thoughts, their works will be everlasting elegant and new. The design concept held by official' s hat armchair with four protruding rounded ends is also the pursuit possessed by craftsmen and literati from Ming and Qing Dynasty for minimalism.

6 Conclusion

Ming Dynasty furniture stands for the aesthetic height of classic Chinese furniture. It collects the essence of traditional Chinese culture, what's more, as a carrier of ancient Chinese material culture, it bears the important memory possessed by a nation. This ancient material civilization with memory can help us to get rid of fickleness, elaborately stare at history and observe the present. At present, Chinese furniture design universally lacks of original and high-quality design concept, what's worse, driven by interests, various kinds of copy and plagiarism. By following and inheriting ancient furniture, the return of spirit of craftsmen has positively guided the improvement of cultural deficiency in Chinese furniture design, led Chinese furniture design industry to make continuous progress in modelling, aesthetics and culture, and then presented a high-quality design level with national cultural features.

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