

## EXOTICISM IN FURNITURE DESIGN

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### ABSTRACT

This paper deals with research on different manifestations of exoticism as a strategy for innovation in design and form-building of furniture. The interest in exotic and distant cultures and their art gives rise to a tendency: the emergence of culture mix. Decorative design elements from the East are being integrated with existing furniture types in Europe, or are used to create new ones. The study is done by selecting examples and commenting the phenomena of exoticism in interior and furniture, observed in the works of architects and cabinet-makers from the past. The art of Asia influenced both royal persons and common people long before the development of modern transportation and media widened the horizon.

**Key words:** furniture design, culture mix, history of furniture, 20<sup>th</sup> C design.

### INTRODUCTION

Historically, no culture develops in isolation from other nations. Different manifestations of exoticism in art, such as chinoiserie, orientalism, japonism, were also observed in furniture and interiors from the 17<sup>th</sup> to the 20<sup>th</sup> centuries. They originated as imitations and a response to the demands of collectors; they were an attempt to interpret a distant culture from the European point of view and create a new source for imagination. The word „exotic“ meaning „from another country: not native to the place where found; foreign“ and „strikingly, out of the ordinary“; while „exoticism“ the „interest in or adoption of the exotic“ (Webster’s, 1986). Stimulated by trade with the East and finally, by „England’s massive imperial control over lands in China, India, Africa, and the Pacific (...) many non-Western forms and ornamental motifs had found their way into the vocabulary of European decorative arts“. (Oshinski, 2004). „Chinoiserie, from 'chinois' the French for Chinese, was a style inspired by art and design from China, Japan and other Asian countries. The style was at its height from 1750 to 1765“. (Style Guide,

VAM). Coming „from the French *Japonisme*, [it] is the study of Japanese art and artistic talent“ (Ono, 2003).

Exoticism has evolved simultaneously with the interest in faraway geographic destinations, therefore, after the Geographic Discoveries in the 15<sup>th</sup> C and archeology later on. Certain geographic areas, though, being too isolated or unknown to Europeans before the 17<sup>th</sup> C, suddenly turned out to be especially rich in ideas, such as Asia and the Far East. Human curiosity and the opening of commercial roads, such as the Silk Road, gave rise to a vogue, that initially found its way in collecting Asian artefacts, considered as art. The desire to own exotic objects brought about the development of lucrative trade with luxury goods such as porcelain, lacquer objects, screens, kimonos, Japanese prints etc., in the 17<sup>th</sup>, 18<sup>th</sup> and the 19<sup>th</sup> C. The 20<sup>th</sup> C also gave its input in the ‘collection mania’ with objects, such as paper lanterns and Japanese baskets and Netsuke figurines; but it grew deeper and turned to philosophies, ideas and customs of life (Buddhism, Yoga, Chinese cuisine, martial arts, Japanese Tea Ceremony, Ikebana, etc.). There is hardly any aspect of life that has not been turned into

a curiosity; therefore, this interest is a proof of a basic human for new and unusual ideas. Furniture design, being inseparable from daily life, and at the same time, being subjected to vogue, is very affected by exoticism. The exchange of ideas in the material world is a way of communication between cultures; moreover, it is a way to communicate our own unique persons to our neighbors; therefore, it is always present.

## METHODS

In the paper, a chronological survey was adopted as well as analysis in order to discover some manifestations of exoticism. The objective is to follow visual features of far Eastern influences on furniture and interior decoration without being able to fully exhaust the theme. Case study is the method of research, by selecting specific examples, following the principle „outside-inside“, starting from pictorial imitations, decorative techniques, integration of new shapes, to understanding the form-building of the source objects.

### 1. EXPOSE

Chronologically, the first contact with Asiatic luxury goods brought about the desire of owning and then imitating them, and using them as decoration for walls or already existing furniture types in Europe. Dismantling of Chinese screen panels or even layers of thick lacquer and applying them on European furniture as decoration brought about the vogue of installing ‘Oriental lacquer rooms’ in residences and palaces. „Coromandel panels were used to cover the walls in lacquer rooms from the 1680s onwards“. (Campen, 2009). New habits appeared in the 17<sup>th</sup> C as a result of the trade with the Far East, like tea-drinking, that also encouraged porcelain-collecting; the need of new types of furniture appeared (tea-tables, china cases, tea caddies).

These types could not be described as ‘exotic’ in themselves, but encouraged exotic decoration.

Researching our cases, logically the older examples were found to be centered on decoration and qualities of the surface and depictions (dragon claws, pagodas, parasols, bells, landscapes etc.). Then, several borrowed details, such as the shape of legs, the curving line that joins legs and front rails, brought the undulating silhouette to furniture. Later, in the 19<sup>th</sup> C, interest was drawn by Japanese art and its inherent clear constructive lines. Finally, in the 20<sup>th</sup> C, the interpretation of the actual historical Chinese furniture type became important, as well as developing them further in modern forms.

### 1.1. TEA-DRINKING: FURNITURE AND ACCESSORIES

Tea-drinking began in England as a court vogue during the reign of King Charles II. „The English „East India Company“ purchased and presented 2 lbs. of tea to Charles II. in 1660, and 23 lbs. in 1666“. (Pepys, 1669). The trade of tea and sugar and porcelain services, connected with it, became active in the 18<sup>th</sup> C. The reason for the popularity of this drink was the advertising by medics who recommended it for colds; headaches, indigestion etc. (Wikipedia). Tea-drinking in England, apart from the import of Chinese porcelain, encouraged production the tea caddies, where the tea leaves are stored. Tea tables emerged as an adaptation of a round tray on a tripod; the tray with its handles and a *gallery*, shaped in the form of the porcelain cup rims, was transformed into a tea table. Both objects are light, movable and can be brought in when needed and then taken away after tea drinking was over. The table top could be turned vertically at 90°, so that it could stand flat against a wall, when

not in use. This was possible by means of a hinge, secured under the top on a small cage, used as a support for the top. The example shown (Figure 1.) is from 1750-55 from England. „ It appears that a new top has been added to an 18th-century stand, which was



**Figure 1: Tea table, England, 1750–1770, changed and re-decorated in 1820-90. Victoria & Albert Museum, London**

A rectangular version of tea table with a high gallery at the edge of the top is shown on Figure 2. „The stretcher, cabriole legs, and serpentine top are related to (though not derived from) a design for „China Tables“ in Chippendale’s Director (1754). The carving is of particularly fine quality (...). The gallery on the top keeps the expensive china cups from accidentally slipping“ (Rieder,1977).

Another example from the same collection is the Secretary-Cabinet (Figure 3.) from ca.1760. It is an example of a typical combined piece of furniture: a china case-cum-writing desk, or secretary-cabinet. The upper part was made open for the display of porcelain, and the decoration combined gothic and Chinese features. „ The top in its present state appears somewhat truncated; originally there may have been an additional pagoda or other decorative terminal feature in the Chinese

originally polished mahogany. The whole has then been newly redecorated. This may have been done in the early 19th century, perhaps for an owner who again wished to evoke a sense of the exotic“ . (Tea table).



**Figure 2: English tea table with a rectangular top and gallery, the Untermeyer collection, 1755–1760. Metropolitan Museum, New York**

taste. The individual elements could be traced in the Director, although the secretary was not derived from this work. [. . .] The screen and railing before the open shelves are based on the lattice designs from Canton illustrated in Sir William Chambers’ „Designs of Chinese Buildings“ of 1757, while the incurving scrolls of the feet imitate an authentic Chinese type of foot.“ (Rieder,1977).

The China Case on Figure 4 was made ca.1755 and is a design from Chippendale’s Director. „The cabinet’s composition features three-partite principle: a double-door middle part, crested on top with a broken pediment with pierced carving and a solid lower part with doors. The decoration on the glass doors and the wooden doors is derived from Chippendale’s Director“ (Chippendale society, 2015).



Figure 3: Secretary-cabinet, ca. 1760, Untermyer's Collection, Metropolitan Museum, New York



Figure 4: Mahogany China Case, ca. 1755, after a design by Thomas Chippendale, catalogue from dealer Ronald Phillips Ltd

## 1.2. BORROWING FROM CHINESE FURNITURE

In his work „The Art of Furniture: 5000 years of furniture and interiors“, Danish author Ole Wanscher points out several instances, when Chinese furniture influences European pieces. For example, he quotes a chair design from 12<sup>th</sup> C (Figure 5), that had its impact on English furniture: „The S-shaped slat supporting the curvature of the human back does not appear to have been developed until much later in China, and it is likely that the principle, adopted in English chair forms, evolved during the eighteenth century“ (Wanscher, 1966). The English chair on Figure 6 is „a fusion of Chinese and British forms“. This phenomenon explains the emergence of new chairs with a curving back rest; these chairs are typical of the period of George I in England (Victoria and Albert Museum).

Wanscher also points out, that there are many decorative stands (Figure 23 C) that are „an ancient Chinese tradition which can be traced as far back and which lived on in Europe during the nineteenth century as a reminiscence of the China fashion“ (Wanscher, 1966).

To our view, Chinese furniture silhouettes, especially the legs integrated with the curved front rail, that makes them seem made of one piece of wood, have strongly influenced Rococo furniture treatment of legs and rails. We have given an example of a 17<sup>th</sup> C seat of red lacquer on Figure 23 B, where specifically the legs and rail treatment does not make any joints obvious. Since the incised red lacquer is of particular importance, surfaces have been united to secure the place for ornament.



Figure 5: China, 18<sup>th</sup> C. Armchair of Padauk wood. The seat is of wickerwork. Kunstmuseet, Copenhagen.



Figure 6: Chair. England, 1725. Beech, japed in gold and green on a red ground; modern upholstery. Victoria and Albert Museum, London.

### 1.3. ASIAN LACQUER

Over the centuries, exoticism shows a deepening understanding of faraway decorative objects. Starting with the surface decoration from 16<sup>th</sup> and 17<sup>th</sup> C, when the Chinese landscapes captivated the imagination of Europeans, the attention was drawn simultaneously to the bright shiny surfaces of Asiatic lacquer. Vernis Martin in France and Japanning in England were the direct consequences of this interest. „Chinese lacquer, as a comprehensive term including the actual finishing material (Urushi), the traditional preparation and application techniques and the valuable lacquered objects, refers therefore to important world cultural heritage. (...) Chinese lacquer originates from the sap of a species of lacquer trees, *Rhus vernicifera* (*verniciflua*), being tapped from the tree“ (Liu, *et alri*, 2014).

Asian lacquer objects were brought to Europe by the East India Company<sup>1</sup>. The Japanese Export Cabinet ca.1600, (Figure 7), as well as the Japanese Export Cabinet from 1630 (Figure 8) with a Dutch Stand, are both from the collection of Victoria and Albert

Museum in London. The second lacquered casket is from Rijksmuseum (Figure 9). „Japanese applied arts often play with expectations, surprising their users. The exterior of this casket is decorated with neat, ordered landscapes. However, the interior is very different, for the flap opens to reveal that the knobs of the drawers are butterflies, whose wings can even move“ (Casket with Drawers).

Japanning is defined as „the imitative processes that were executed principally with alcohol-soluble spirit varnish“. (Hill, 1976). The same author cites a 1668 book entitled *A Treatise of Japanning and Varnishing* by Stalker and Parker, and explains that these authors have probably been receiving training by Chinese lacquer craftsmen brought to Holland. He states that: „the basic process of „plain lacquering“ requires thirty-three steps, while the making of a special article of ware might necessitate more than twice that number“, and explains that 18<sup>th</sup> C japanning included drawings: „Design inspiration (..) was derived from imported Oriental domestic objects such as porcelain, lacquered furniture,

<sup>1</sup> „The Dutch East India Company or VOC (Verenigde Oostindische Compagnie) was founded in 1602 and in time became the largest sea merchant company in the world at that time.“ (Victoria and Albert Museum, 2018).

and perhaps from textiles, as well“ (Hill, 1976).



Figure 7: Cabinet from Japan, ca. 1600, Victoria and Albert Museum, London



Figure 8: Cabinet, ca. 1630, Japan, the stand is from ca. 1690, possibly The Netherlands. Victoria and Albert Museum, London



Figure 9: Casket with drawers, anonymous, c. 1800–c. 1850, lacquer on wood, w 22.7cm × h 17.5cm × d 14.5cm, Rijksmuseum, Amsterdam



Figure 10: James Abbot McNeill Whistler, The Peacock Room, Google Art Project

#### 1.4. CHINOISERIE AND JAPONISME IN THE 19TH CENTURY

An example from the Buckingham Palace in London from the 1840-s is the so-called „Centre Room“ of the East Wing (Figure 11).<sup>2</sup> The interior is an example of 19<sup>th</sup> C chinoiserie; it consists of furnishings and decorations brought from The Royal Pavilion

at Brighton. Among other things, it features „The four Chinese pictures [. . .] taken from a series of eleven painted by Robert Jones in 1817“ (Maxwell, 2007). An amazing decorative interpretation of Chinese pagoda is a 4-m high porcelain sculpture (Figure 12). The next example is the interior of the so-called „Peacock Room“ from England in 1870-s<sup>3</sup>, (Figure 10), by the American artist Whistler,

<sup>2</sup> “Buckingham Palace was enlarged by the architect Blore in the 1840s, during the reign of Queen Victoria, when the East Wing was built“ (Maxwell, 2007)

<sup>3</sup> presently at the Freer Collection, Smithsonian Institute, Washington.

featuring *japonisme* decoration, with, among other motifs, a portrait of a young lady in Japanese kimono. The Room featured peacock paintings on the wall; it was built to provide shelter for the extensive porcelain collection of the British shipping magnate Frederick



**Figure 11: The Centre Room of the East Wing of the Buckingham Palace, London**

Further on in the 19<sup>th</sup> C, an example is the furniture of the English architect William Godwin, very constrained and graphic in view. He was deeply influenced both by *japonisme* and by Chinese furniture, more specifically, the *quan*, low wide seating piece of furniture, surrounded on three sides with pierced latticework. This can be seen in his settee (Figure 13.), „E.W. Godwin was fascinated by Chinese furniture (...). He also used



**Figure 13. Edward William Godwin, Settee, London, 1869-1885 (made), Mahogany, ebonised; brass; modern silk, Victoria and Albert Museum, London.**

Richards Leyland. <sup>4</sup>(The Peacock Room). Compared to 17<sup>th</sup> and 18<sup>th</sup> C chinoiserie, 19<sup>th</sup> C use of Chinese and Japanese elements was more true to origins, yet the accent remained on its exotic and decorative quality.



**Figure 12: Four Pagodas: c. 1800-3, Jingdezhen [Jiangxi Province, China, mounts: c.1816-18**

ebonised mahogany to suggest an Asian influence, although the settee was also available in natural mahogany“ (Settee, VAM). Godwin’s table on Figure 14 was another example of his interest in Asian furniture types. It is shaped after a Chinese stand, like the one we have illustrated on Figure 23 D; it is known that he made other versions with turned legs. (Table, VAM).



**Figure 14. Edward William Godwin, Table, 1876. ebonised wood, probably mahogany, with brass feet. Victoria and Albert Museum, London.**

<sup>4</sup> and later on the American industrialist and art collector Charles Lang Freer.

### 1.5. EILEEN GRAY AND THE CRAFT OF LACQUER

The example of the Irish-born Eileen Gray, who was established as a brilliant Art Deco and modern designer in Paris, is one of deep, actual experience in Japanese lacquer. Eileen has studied the very craft with her



Figure 15: Eileen Gray, screen, about 1923, France. © Victoria and Albert Museum, London

The example on Figure 15 is a lacquer screen by Eileen Gray from the Victoria and Albert Museum. „... The screen reveals (...) a centuries-old East Asian artistic medium absorbed and transformed into the essence of modernity.“ (Lacquer Screen). A permanent exhibit at the Museum of Modern Art in New York, „The Brick Screen (on Figure 16) is one of her best-known creations.“. (Brick Screen). Gray’s „preference for the meticulous finish of lacquer reveals the contemporary taste for materials used in Japanese decorative arts.“ (Designing Modern Women, 2013). Modernist treatment included abstract motifs and applying of different materials and techniques (silver leaf, sand and gravel).

teacher, the Japanese master craftsman Seizo Sugawara. She got so deeply involved with this technique, that discovered other colors (blue), that were not possible with the genuine Asian lacquer. Gray<sup>5</sup> designed and executed a number of products (lacquer screens, chairs, etc.) that she used for her client’s interiors.



Figure 16: Eileen Gray, Brick Screen, 1923, France.

### 1.6. HANS WEGNER AND HIS 7 CHINESE CHAIR

Wegner’s evolving chair design in the 1940s and 1950s demonstrated originally the research on the Chinese Quanyi chair and then its gradual transformation into his „Chinese Chair“ (Kinastol), the „Y-Chair“ and finally, „The Chair“. The last model emerged, still keeping a vestige of its prototype: the rounded back-cum-armrests. The biggest transformation concerned the chair leg structure: the front rail was still kept in Kinastol, only to disappear in the next varieties. One thing is undeniable – the designer’s chief interest being the variation on backrest supports, curving artistically to the front, like the ones in the „Y-Chair“.

<sup>5</sup> “In 1989 Eileen Gray (1878-1977) was a young Irish student at the Slade School of Art in London. She became fascinated by the work of lacquer restorers in an English studio, and worked there until she was able to go to Paris and establish herself with a Japanese lacquer-master, Sugawara. Here, she finished the apprenticeship begun in London. By 1913 she was exhibiting pieces she had designed and lacquered herself, in the Salon des Artistes Décorateurs. (Kenton, 1984)



Figure 17: Quanyi Cair of Huanhuali Wood, Ming Dynasty, China, 17<sup>th</sup> C. Christies.



Figure 18: The original Ming Chinese chair at the Design museum of Copenhagen. Next is Wegner's version called „The Chinese Chair“ .

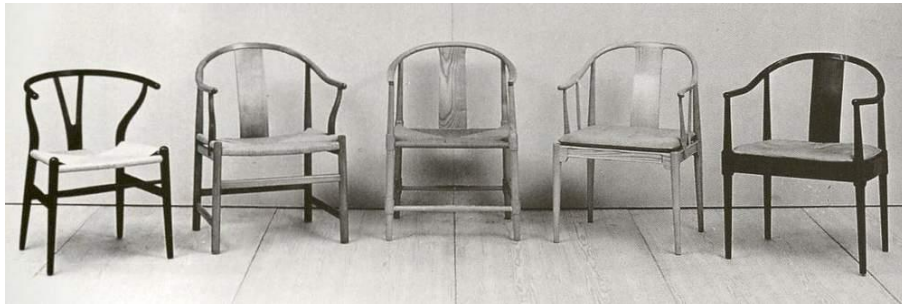


Figure 19 Hans Wegner, Five models, variations on the Chinese chair.

Bernsen is of the opinion, that in seven successive chair models Wegner changed different chair parts: „the vertical splat becomes a Y-shaped detail (in Y-chair); legs acquire different rails and stretcher supports. Finally, in „The Chair“, only the integrated

chair back with armrests remains as a typical feature.“ (Bernsen, 1995). On Figure 18, we can also notice how the overall height of the chair was lowered in comparison with the original.



Figure 20: Hans Wegner, The Chair, Johannes Hansen, Denmark, 1949.



Figure 21: Hans Wegner. The „Y-Chair“. The back stile of the chair ingeniously curves to the fore to support the horse-shoe backrest.



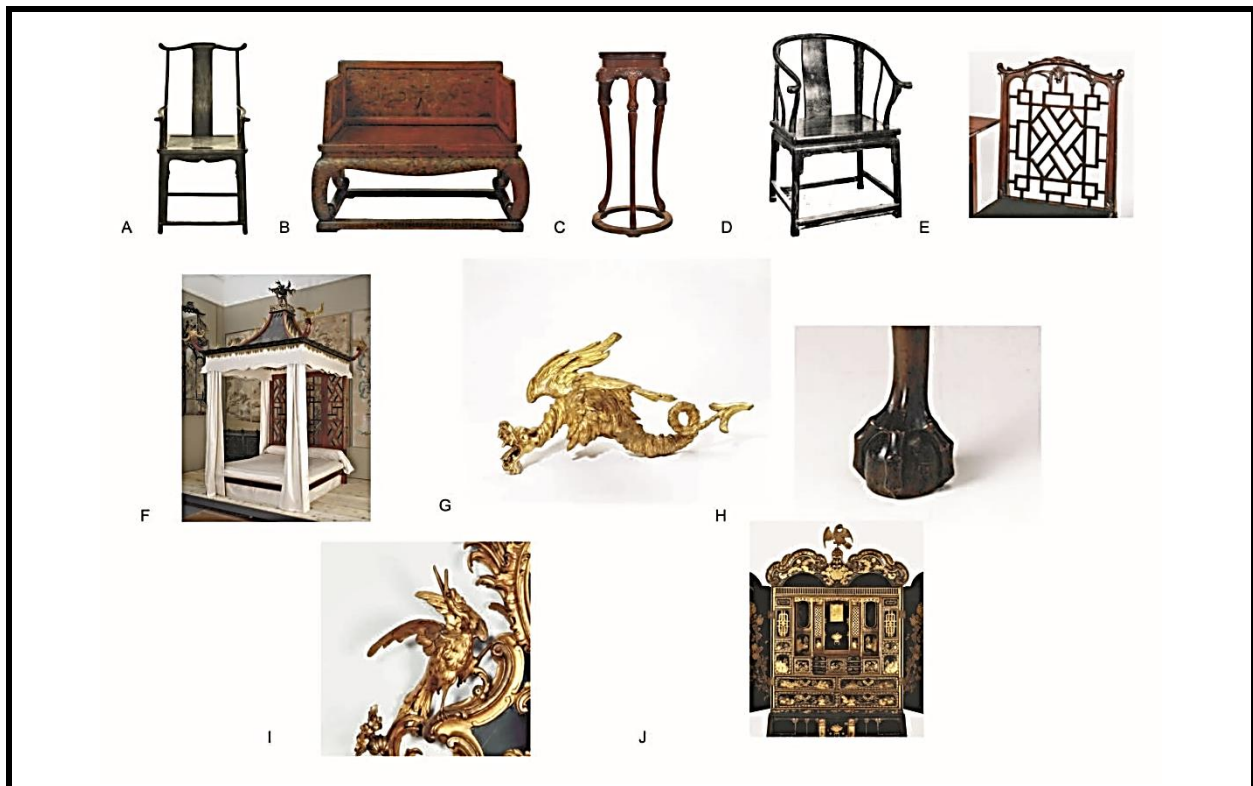
Figure 22: Jiyao-yi is the name of Chinese X-chairs of the Ming and Quin Period with rounded backs, for the Emperor's family

## RESULTS AND DISCUSSION

In the paper, we have shown that over the centuries, exoticism is a steady feature of interior and furniture. So what is, more specifically, the ‘exotic’, in furniture and interior decoration? After looking at the above examples, we can find that: exoticism is first manifested in:

- *Materials.* Ever since mahogany wood started to be used at the beginning of the 18<sup>th</sup> C, by the British furniture company Gillows of Lancaster (Stewart, 2008), exotic woods were the first furniture material to be integrated from the former colonies. For the 20<sup>th</sup> C, exotic woods seem to keep the trend that started in the 18<sup>th</sup> C, especially during the Art Deco period and later on, but we can add bamboo and rattan, very much used in contract design today.
  - *Wood finishes.* The bright shiny Asiatic lacquers with landscapes painted with gold on the black background were the absolute craze of the 18<sup>th</sup> C, due to the impression they make on the senses. Here we can also add the brilliant inlays of mother-of-pearl in black lacquer background, as well as incised Chinese red lacquer, although the latter was so difficult to make, that it was not imitated in Europe. The 1980-s witnessed another peak in interest towards glossy finishes; and we could say they never really fell off the spotlight.
  - The depicted flat *decorative motifs* were typical of chinoiserie. Exotic landscapes with rocks, trees, rivers, bridges, pagodas, and tiny robe-clad Chinese figures with conical hats were the usual subject matter.
- „Sometimes these figures were copied directly from Chinese objects, but more frequently they originated in the designer’s imagination.“ (Style Guide: Chinoiserie). Dragons and phoenix birds, and pagodas were some of the typical depictions.
- *Furniture detail.* Chinese furniture had an immediate impact on European furniture. Here we can enumerate the *curved line of rails and stretchers*, both in tables and chairs. The overall Rococo curving silhouette inevitably owes its lines to Chinese furniture. A table was made (Figure 23) to show the influences affecting detail. Inward-scrolling table legs are visually identical to the so-called ‘bracket legs’ in British Georgian furniture. The elegant silhouette of Chinese incense-stands bears a striking resemblance to small Rococo ‘ladies’ tables in mid-18<sup>th</sup> C France. The upward-turned layered pagoda roofs from Chinese temples had a great impact on both exotic architecture and furniture in Europe. The Badminton bed seems to be the best known example; but Chippendale chairs also feature top back rails with upturned ‘shoulders’. The pagoda motif was exploited as case furniture pediment or top. Geometric Chinese lattice-works and frets were widely used on vitrine glassed doors in the 18<sup>th</sup> C., combined with Gothic elements. Here again, dragon sculptures, dragon three-claw talons grasping a sphere, were again a frequent motif. From the Quanyi chair silhouette, the horse-shoe back-cum-armrests, as we have seen, was interpreted by

Hans Wegner in the 20<sup>th</sup> C, as a driving force for his most famous chair models.



**Figure 23: Asian influences on shape and decoration in furniture: A. Curved rails; B. Legs are integrated with rails and are inward-curved; C. Small stands with elegant curved legs are numerous; D. Horse-shoe-shaped backrest-cum-armrests; E. Chinese fretwork; F. Pagoda-shaped canopies and top rails for chairs; G. Dragons representations; H. Ball-and-claw furniture feet; I. Ho-ho birds decoration; J. Asian lacquer: gold motifs on black background.**

## CONCLUSIONS

In this paper, we looked at the following case-studies: tea-tables, china cabinets, Eastern lacquer finishes and their subsequent imitations – japanning in England in the 17<sup>th</sup> and 18<sup>th</sup> C; Godwin's Anglo-Japanese furniture and the lacquer screens of Eileen Gray of the beginning of the 20<sup>th</sup> C; this was done in order to follow the integrating of Asian art forms in European decoration and furniture. The mid-20<sup>th</sup>C brought about an important example in the person of Hans Wegner, who developed chairs by improvising on the Ming Chinese prototype. We could draw the final conclusion, that exoticism is not just a decorative approach, but only a starting point for

curiosity and eventually, for better understanding and interpreting of faraway cultures.

## REFERENCES

- BERNSEN, J. 1995. Hans J. Wegner, as quoted by: <http://www.designaddict.com/forum/General-discussion/Hans-Wegner-Chinese-Chair>.
- CAMPEN, J. 2009. Reduced to a heap of monstrous shivers and splinters: Some notes on Coromandel Lacquer in Europe in the 17th and 18th Centuries. *The Rijksmuseum Bulletin*, Vol. 57, No. 2, pp. 136–149.
- \* Casket with drawers, Rijksmuseum, Available on the Internet at: <https://www.rijksmuseum.nl/nl/collectie/AK-MAK-867>.
- \* Chair. Public access description. Available on the Internet at: <http://collections.vam.ac.uk/item/O8464/chair-unknown/>.

- \* Eileen Gray. Brick Screen. Available on the Internet at: <http://www.eileengray.co.uk/products/brick-screen/>.
- HILL, J. 1976. The History and Technique of Japaning and the Restoration of the Pimm Highboy, *The American Art Journal*, Vol 8. No. 2, Nov., 1976, pp. 59-84, Published by: Kennedy Galleries, Inc., Available on the Internet at: <http://www.jstor.org/stable/1594019>.
- KENTON, M. 1984. The Twentieth Century, in: *Lacquer: An International History and Illustrated Survey*. Phoebe Phillips Edition 1984, p. 218. Available online: <https://archive.org/details/lacquerinternati00newy?q=Lacquer>.
- \* Lacquer Screen, Eileen Gray. Victoria and Albert Museum, <https://www.vam.ac.uk/articles/art-deco-where-tradition-meets-modernity>.
- LIU, X., TIMAR, M., VARODI, A. 2014. Chinese Lacquer – Short Overview of Traditional Techniques and Material Characterisation for Conservation Purposes, *Pro Ligno*, Vol. 10 No 4, pp. 25–34.
- MAXWELL, C. 2007. Chinoiserie at Buckingham Palace in the Nineteenth Century, *The Burlington Magazine*, vol. 149, No 1251, Decorative Arts and Sculpture, (Jun., 2007), pp.383-392, Available on the Internet at: <http://www.jstor.org/stable/20074863>.
- ONO, A. 2003. Japonisme in Britain: Whistler, Menpes, Henry, Hornel and nineteenth-century Japan. New York: Routledge Curzon. p. 45. Available on the Internet at: [https://en.wikipedia.org/wiki/Japonism#cite\\_note-:0-1](https://en.wikipedia.org/wiki/Japonism#cite_note-:0-1).
- OSHINSKI, S. 2004. Exoticism in the Decorative Arts. In *Heilbrunn Timeline of Art History*. New York: The Metropolitan Museum of Art. Available on the Internet at: [www.metmuseum.org/toah/hd/exot/hd\\_exot.htm](http://www.metmuseum.org/toah/hd/exot/hd_exot.htm).
- PEPYS, S. 1669. *The Diary and Correspondence of Samuel Pepys, F.R.S.*, vol. I :109, p.171. Available on the Internet at: <http://limpidsoft.com/galley8/samuelpepys.pdf>.
- RIEDER, W. 1977. "The Highlights of the Untermyer Collection of English and Continental Decorative Arts", Catalogue, Metropolitan Museum of Art, ISBN 0-87099-169-8, p.88, Available on the Internet at: [https://www.metmuseum.org/art/metpublications/Highlights\\_of\\_the\\_Untermyer\\_Collection\\_of\\_English\\_and\\_Continental\\_Decorative\\_Arts](https://www.metmuseum.org/art/metpublications/Highlights_of_the_Untermyer_Collection_of_English_and_Continental_Decorative_Arts).
- RIEDER, W. 1977. "The Highlights of the Untermyer Collection...", Catalogue, Metropolitan Museum of Art, ISBN 0-87099-169-8, p.90, Available on the Internet at: [https://www.metmuseum.org/art/metpublications/Highlights\\_of\\_the\\_Untermyer\\_Collection\\_of\\_English\\_and\\_Continental\\_Decorative\\_Arts](https://www.metmuseum.org/art/metpublications/Highlights_of_the_Untermyer_Collection_of_English_and_Continental_Decorative_Arts).
- \* Settee, 1869–1885. Available on the Internet at: <http://collections.vam.ac.uk/item/O127328/settee-godwin-edward-william/>.
- STEWART, S. E. 2008. Gillows of Lancaster and London. *Antique Collectors' Club*, p. 25, as quoted online at: [https://en.wikipedia.org/wiki/Gillows\\_of\\_Lancaster\\_and\\_London#CITEREFStewart2008](https://en.wikipedia.org/wiki/Gillows_of_Lancaster_and_London#CITEREFStewart2008).
- \* Style Guide: Chinoiserie. The Victoria and Albert Museum. Available on the Internet at: <http://www.vam.ac.uk/content/articles/s/style-guide-chinoiserie/>.
- \* Tea-drinking in the United Kingdom, in Wikipedia, Available on the Internet at: [https://en.wikipedia.org/wiki/Tea\\_in\\_the\\_United\\_Kingdom#Seventeenth\\_century:\\_a\\_medicinal\\_and\\_luxury\\_import](https://en.wikipedia.org/wiki/Tea_in_the_United_Kingdom#Seventeenth_century:_a_medicinal_and_luxury_import).
- \* Table. Summary. Collections.vam.ac.uk. Available on the Internet at: <http://collections.vam.ac.uk/item/O70727/table-unknown/>.
- \* The Peacock Room. Wikipedia. Available on the Internet at: [https://en.wikipedia.org/wiki/The\\_Peacock\\_Room](https://en.wikipedia.org/wiki/The_Peacock_Room).
- WANSCHER, O., 1966. "The Art of Furniture: 5000 years of furniture and interiors", Reinhold Publishing Corporation, p. 252.
- \* 1986. Webster's Third New International Dictionary of the English Language Unabridged. Merriam-Webster Inc., Publishers. p.798.
- \* 2015. A Mahogany China Case. The Chippendale Society. Available on the Internet at: <http://thechippendalesociety.co.uk/mahogany-china-case/>.
- \* 2018. The influence of East Asian lacquer on European furniture. Victoria and Albert Museum, Available on the Internet at: <https://www.vam.ac.uk/articles/east-asian-lacquer-influence>.
- \* 2013. Designing Modern Women 1890–1990, October 5, 2013–October 1, 2014. <https://www.moma.org/collection/works/3985>.



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# **INNOVATION IN WOODWORKING INDUSTRY AND ENGINEERING DESIGN**

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