



# MA JIANG

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LUND  
UNIVERSITY



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A modern furniture collection inspired by Chinese calligraphy and Scandinavian design aesthetic, made in sweden.

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# ABSTRACT

The cultural significance of a language is multifaceted and complex. Language exists as not just a means of communication, but also a reflection of the history, traditions, values, and beliefs of a culture. Language holds within it the stories, myths, and art, passed down through generations and contains the nuances and subtleties of a community's way of life, including their customs, social norms, and daily practices.

This bachelor thesis investigates how furniture can reflect this cultural significance of language, in its construction, structural, appearance, and use. Specifically, it will explore aspects of Chinese Clerical Script of the Han Dynasty, and apply it to the design of dining chairs, and a dining table.

# TABLE OF CONTENT

ABSTRACT	3-4
PREFACE	5-6
BACKGROUND	
A Cultural Fusion	7-9
Inspiration Source	10
Chinese Philosophy	11-12
Scandinavian Aesthetic	13-14
Scandinavian Furniture	15-18
Chinese Furniture	19-22
Chinese Calligraphy	23-24
Clerical Script	25-26
IDEATION	
Form Analysis	27-30
Sketches	31-34
Prototypes	35-38
Finalising Design	39-40
Early CAD Models Chair	41-46
Early CAD Models Table	47-52
Exploration of Hard & Soft	53-56
REALISATION	
Final Designs	57-58
Material Choice, CNC, Dowels & Dominos	59-61
Assembling	62-63
Fabric selection	64
Building & Detailing	65-71
RESULT	
Photoshoots	72-86
Renderings	87-94
REFLECTION	95-96
REFERENCES	97-98
ACKNOWLEDGEMENT	99-100



# PREFACE



缘分, yuan fen, is the Chinese word meaning "fate or chance that brings people together, destiny", which perfectly describes our design journey. Our friendship began with a very direct question from Daniel when we first met in studio "Are you Chinese?" Tommy was born in China then immigrated to Sweden at the age of 14, and Daniel is an "ABC", meaning "American born Chinese", exchanged from the North Carolina State University of the United States. Both of us share the same cultural heritage, yet view many things through different perspectives. Through early research and many conversations, we quickly discovered our shared interest in the modern renaissance of Chinese culture through western lenses. What are the things inside our culture that we appreciate the most, and how can we extract that and manifest them together with western aesthetics? MAJIANG is our answer.

The name MAJIANG for the table set comes from our last names Ma 马 and Jiang 姜. When we combine them together as MaJiang, it is a homophone for 麻将, which better known by its alternative spelling, Mah-jong, a traditional Chinese tile-based game that requires skill, strategy, and luck to form winning combinations and outscore opponents.

Just like Majiang, our design process and many other things in life also require skill, strategy and luck. Sometimes one can have a more significant impact than the others, but all is needed to have the best outcome. We hope that through our design you can get inspired and invoke some curiosity of the culture and the wisdom from the far east. Yuan Fen not only succeeded in bringing us to Lund from two opposite sides of the Earth, and completed this project, but also brought you here. Thank you for reading and hopefully, we will meet again.

# A CULTURAL FUSION



Research began with the exploration of modern styles of furniture. We specifically studied pieces from Modern Chinese furniture design due to its inorganic history, and diverse range of output, which allowed the unique design process, and choices of each piece to be interrogated. The recent history of the relationship between the Chinese state and attitudes towards its own culture, has been turbulent, with events such as the May 4th Movement and Cultural Revolution having had significant impacts on Chinese furniture design.

During periods such as the Cultural Revolution, traditional Chinese furniture was seen as a symbol of the old order and was therefore deemed inappropriate by the Communist Party, which sought to promote a new, revolutionary culture. Resultantly, many traditional Chinese furniture makers were forced to abandon their craft, and the production of traditional furniture declined sharply while at the same time, the government encouraged the development of a new, modern style of furniture that was more in line with the revolutionary ideals of the time, characterized by simple, utilitarian designs that were intended to be affordable and accessible to the masses. However, these designs were often cheaply manufactured, with an emphasis on function rather than form, and the designs had no relation to the rich cultural heritage of Chinese furniture and craftsmanship.

### Female Leadership

Jacky Tsai, 2016  
Here, it could be that western powers are prostrating themselves at the feet of China – or perhaps old gender roles are recognising the power of new ones



Recent shifts in attitudes towards traditional culture has spurred a renewed interest in traditional Chinese design aesthetics as younger generations seek to connect with their heritage within the frameworks of a modern lifestyle. Many newer designs have adopted features such as leaving wood unvarnished, exposing the wood grain like in Scandinavian designs, or reducing the visual complexity of supporting elements, like in Japanese designs.

This led us to ask this question: what makes furniture “Chinese” or “Japanese” or “Scandinavian” and what factors drive those specific design choices?

This question was inherently leading as many furniture designs are a mixture of cultural values, materials, living habits, manufacturing techniques and history. For example, the famous Wishbone Chair, also known as the CH24 Chair designed by Danish designer Hans Wegner in 1949 for the Carl Hansen & Søn, was heavily inspired by the rounded form and proportion of Ming Dynasty seats of the time and was one of 6 iterations of Wegner’s CH series for the

company, CH referring to “Chinese” in this nomenclature. Many modern Chinese furniture pieces employed techniques, and aesthetic restraint not previously featured in historic furniture pieces, however still are able to maintain the feeling of cynicism, without unfettered imitation.

We concluded the design decisions of a furniture piece could be sliced into 3 layers: Philosophy, Aesthetic, and Execution. These encompassed the ideas, values, and lifestyle considerations employed, the visual language employed, and the techniques, craftsmanship and finishes employed, respectively.



## CH24 | Wishbone Chair

Hans J. Wegner  
Carl Hansen & Søn, 1949  
A classic chair featuring  
a distinctive Y-shaped  
backrest and a handwoven  
paper cord seat.

# INSPIRATION SOURCE



## Contemporary Chinese Furniture Design

*Charlotte & Peter Fiell, Zheng Qu*

"Contemporary Chinese Furniture Design" is a comprehensive guidebook written by design historians Charlotte and Peter Fiell, showcasing the evolution of Chinese furniture design from the 20th century to the present day. The book features over 60 designers and makers and their works, with stunning photographs and detailed descriptions, providing insights into the cultural and historical contexts that have shaped contemporary Chinese furniture design.



## Ming-style Furniture Research

*Wang Shi Xiang*

"Ming-style Furniture Research" is a seminal work by Wang Shi Xiang, a renowned Chinese furniture scholar, published in 1986. The book is considered a definitive guide to the history, design, and craftsmanship of Ming-style furniture, one of the most significant and influential furniture styles in Chinese history. With detailed analysis and exquisite illustrations, the book provides a comprehensive understanding of the aesthetic and technical aspects of Ming-style furniture, including materials, joinery, and decorative techniques.

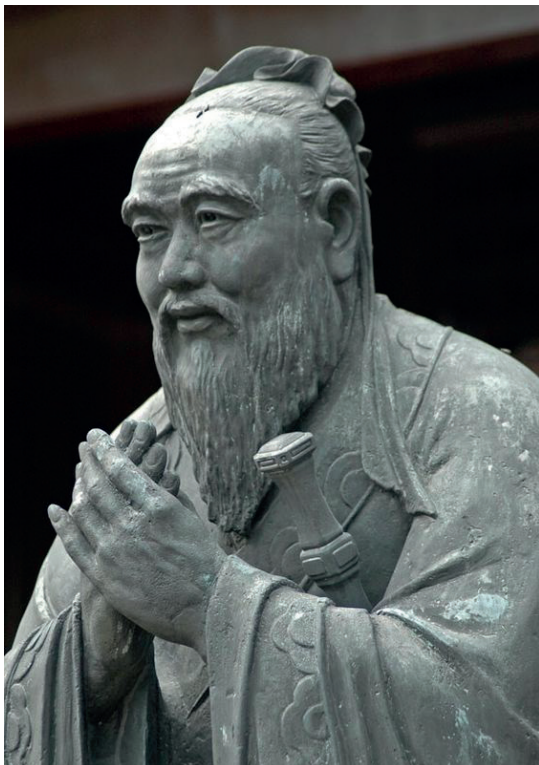


## Design The Definitive Visual Guide

*DK, Foreword by Judith Miller*

"Design, Second Edition: The Definitive Visual Guide" is an extensive reference book that explores the world of design in all its forms, from graphic design and product design to architecture and fashion. Written by a team of design experts and published by DK, the book is visually stunning and features over 500 pages of photographs, illustrations, and informative text. It covers design history, theory, and techniques, highlighting the works of iconic designers and offering insights into the creative process behind some of the world's most innovative designs.

# CHINESE PHILOSOPHY



In Chinese philosophy, such as Confucianism and Taoism, humility and modesty are considered essential virtues for achieving a harmonious society and personal growth. Confucius, the famous Chinese philosopher, emphasized the importance of humility, respect for authority, and consideration for others in his teachings. In addition, modesty is often associated with a sense of self-discipline and self-restraint, which are also highly valued in Chinese culture. By showing modesty, individuals are seen as more mature, responsible, and trustworthy.

## BACKGROUND

Besides humility and modesty, Confucianism also emphasises social relationships and respect for elders and authority figures. It encourages individuals to maintain harmonious relationships with others, including family members, friends, and colleagues. This may lead to a closer social distance, as people may feel more comfortable being physically close to those they have a close relationship with.



In general, social distance between people in many East Asian cultures, including Chinese culture, tends to be shorter than in Western societies. Many East Asian countries have high population densities, meaning that people are used to living in close proximity to one another. As a result, they may be more comfortable with a shorter social distance and have adapted to more crowded social settings. Many East Asian cultures tend to use indirect communication styles and nonverbal cues, such as facial expressions and body language, to convey meaning. A shorter social distance can facilitate these nonverbal cues and make communication more effective.



Chinese dining table

In China, people prefer using square or round table for dining. Everyone has the same distance to others.



# SCANDINAVIAN AESTHETIC



## BACKGROUND

Scandinavian furniture design is a style that emerged in the Nordic countries of Denmark, Sweden, Norway, Finland, and Iceland in the mid-20th century. It is known for its simple, minimalist aesthetic, functionality, and use of natural materials. One of the defining features of Scandinavian furniture design is its emphasis on simplicity and minimalism with designs typically characterized by clean lines, geometric shapes, and unadorned surfaces. There is a sense of elegance in the simplicity of the design, and a notable lack of unnecessary ornamentation.

Scandinavian furniture design also heavily employs natural materials with wood being particularly important, as many Scandinavian furniture designs use local woods such as birch, beech, and oak. These woods are valued for their beauty and durability, and their warm tones and natural grain patterns create a sense of harmony with the indoor environment.

In terms of colour, Scandinavian furniture design tends to favour a neutral palette of whites, greys, and earth tones, exposing the natural characteristics of the material instead of attempting to modify or obstruct them. This muted colour palette creates a sense of calm and tranquillity, and allows the natural materials and clean lines of the furniture to become a focal point, with more effort directed towards subtle surface changes rather than colourful finishes.

Lastly, we believe that Scandinavian furniture design is characterised by a sense of timelessness and durability. The furniture is designed to be used and enjoyed for many years, and is often passed down through generations as heirloom pieces. This focus on durability and longevity reflects a broader cultural emphasis on quality and craftsmanship in the Nordic countries.



# SCANDINAVIAN FURNITURE BRANDS



## Nord Dining Table

*Glismand & Rüdiger  
Bolia*

Bolia is a contemporary furniture brand based in Denmark, known for its high-quality craftsmanship, sustainable practices, and modern Scandinavian designs that blend functionality with aesthetics.



## Crate Loungechair

*Gerrit Rietveld  
Hay*

Featuring low proportions with a gently sloping back and seat with supportive armrests, the chair's simplicity and spatial design mirrors the designer's architectural style – providing functionality and comfort without absorbing space.

BACKGROUND

To better understand the differences between Scandinavian mass-produced furniture design versus hand crafted furniture, we visited the IKEA in Älmhult, and the Danish Design Museum and other Scandinavian furniture stores, such as Bolia, Hay, Svenssons, and the Carl Hansen & Søn Store in Copenhagen. At the IKEA museum, we learned about how a focus on mass production leads to the price centric use of engineered materials, simple joining techniques, and sustainability through material choice. Some of these cost trade-offs lead to compromises in final quality through methods such as flat packing. This contrasts with Danish handcrafted furniture, which is less price conscious, and has a greater emphasis on quality, material choice, sturdiness, and longevity. Given our focus on the permanence of language as a carrier of culture, we believed following the Danish philosophy on industrial design for furniture would better reflect our prompt of designing furniture.



## IKEA Museum

*IKEA, Älmhult*

The museum showcases the history and evolution of the iconic Swedish furniture brand, IKEA. The museum features exhibitions, displays, and interactive installations that explore the company's design philosophy, product development, and cultural impact over the past 75 years.

# DANISH FURNITURE & CRAFTSMANSHIP

## CH20 | Elbow Chair

Hans J. Wegner  
Carl Hansen & Søn, 1956  
A Danish design icon,  
combines sleek aesthetics  
with ergonomic comfort.



## BACKGROUND

Danish craftsmanship is renowned worldwide for its exceptional quality, timeless design, and meticulous attention to detail. Rooted in a rich tradition of craftsmanship, Danish artisans have perfected their skills over generations, creating masterpieces that blend functionality, aesthetics, and sustainability.

Danish craftsmanship encompasses various fields, including furniture, ceramics, textiles, glassware, and silverware. The Danish design philosophy emphasizes simplicity, minimalism, and functionality, often characterized by clean lines, organic forms, and natural materials. Craftsmen prioritize the use of sustainable resources and employ traditional techniques alongside innovative methods to produce durable and environmentally friendly creations.



One of the most iconic examples of Danish craftsmanship is the Danish furniture design movement that emerged in the mid-20th century. Led by renowned designers such as Hans J. Wegner, Arne Jacobsen, and Børge Mogensen, Danish furniture exhibits exceptional craftsmanship, comfort, and timelessness. The use of fine woods, expert joinery, and meticulous finishing techniques showcase the attention to detail that defines Danish craftsmanship.

# ANCIENT CHINESE FURNITURE



A superbly carved huanghuali folding horseshoe-back chair, (Jiaoyi) Late Ming dynasty 16th / 17th Century



A well-preserved chair from Song Dynasty Late 13th Century

## BACKGROUND

Ancient Chinese furniture design is characterized by a deep philosophy that informs the decisions regarding proportions, ornamentation, and the overall aesthetic of furniture. Chinese philosophies such as Taoism emphasizes the importance of balance and harmony which is reflected in many aspects of ancient Chinese designs such as the ornamentations and proportions, which are carefully designed to create a sense of harmony and equilibrium. For example, the height of a piece of furniture is often proportionate to its width, creating a sense of balance and stability. The placement of ornamentation is also carefully considered, with decorative elements placed in symmetrical patterns to create a sense of harmony and intention. Others such as Confucianism's emphasis on the importance of social harmony and order are reflected in furniture designs that feel rigid and stable, with furniture designs staying relatively conservative and repeating the same styles and techniques.



### The Night Revels of Han Xizai

Handscroll painting, Gu Hongzhong  
10th century, 27.5 cm x 618.8 cm  
Palace Museum, Beijing, China

Furthermore, culture is often tied with traditions and customs. Since we are making furniture pieces with modern production techniques, certain traditional rules for furniture making may be changed or compromised. Some examples of these rules can be the shape of the furniture—proportions between different components, angles, and geometries. Additionally, the usages and functions of these traditional furniture can be also regulated. In a painting from 10th-century China, *The Night Revels of Han Xizai*, people were gathered around a series of low dining tables, enjoying live music performances and luxurious cuisines. In the painting, there is a depiction of a man next to the performance leaning forward on a chair. Though it is difficult to tell whether the man was leaning forward to reach for the food or to have a better glance at the show, it demonstrates the reflection of customs and traditions to furniture designs of the time. However, these traditional heights are no longer suitable for modern living conditions, and it is essential in design to find the balance between maintaining tradition and being adaptable for the modern lifestyle.



# MODERN CHINESE FURNITURE

**A**fter the Cultural Revolution in China, Chinese furniture design went through a period of transformation as the country's economy began to grow and modernize. During this time, there was a renewed interest in traditional Chinese culture and design, which influenced many modern Chinese furniture designs.



Da Tian Di Collection,  
ShangXia, China  
2016



Hangzhou Stool,  
Min Chen, China  
2013

One characteristic of modern Chinese furniture design was a focus on simplicity and functionality, similar to the trends in modern Scandinavian design. Modern designs often featured clean lines, minimal ornamentation, and a focus on the practical use of furniture. This shift away from the elaborate and ornate designs of traditional Chinese furniture towards a more streamlined and contemporary aesthetic reflected the changing values and lifestyles of Chinese society. In terms of ornamentation, modern Chinese furniture design often incorporated traditional motifs, but in a more subtle and understated way than in traditional furniture. This reflected a desire to honour and preserve Chinese cultural traditions while also creating furniture that was relevant to contemporary lifestyles. In this way, designers could employ

foreign design philosophies and manufacturing techniques while maintaining a Chinese “feel” to the furniture, however the quality of these executions varies.

In addition, the increased availability of technology and modern manufacturing techniques had a significant impact on modern Chinese furniture design after the Cultural Revolution. As traditional furniture focused more on form rather than materials, newer manufacturing techniques and materials allowed for the emergence of designs such as the Between Sky and Heaven series of polycarbonate and carbon fibre tables and chairs that would not have traditionally been possible, but that maintain traditional design philosophies.

永和九年歲在癸丑暮春之初會

于會稽山陰之蘭亭脩禊事

也羣賢畢至少長咸集此地

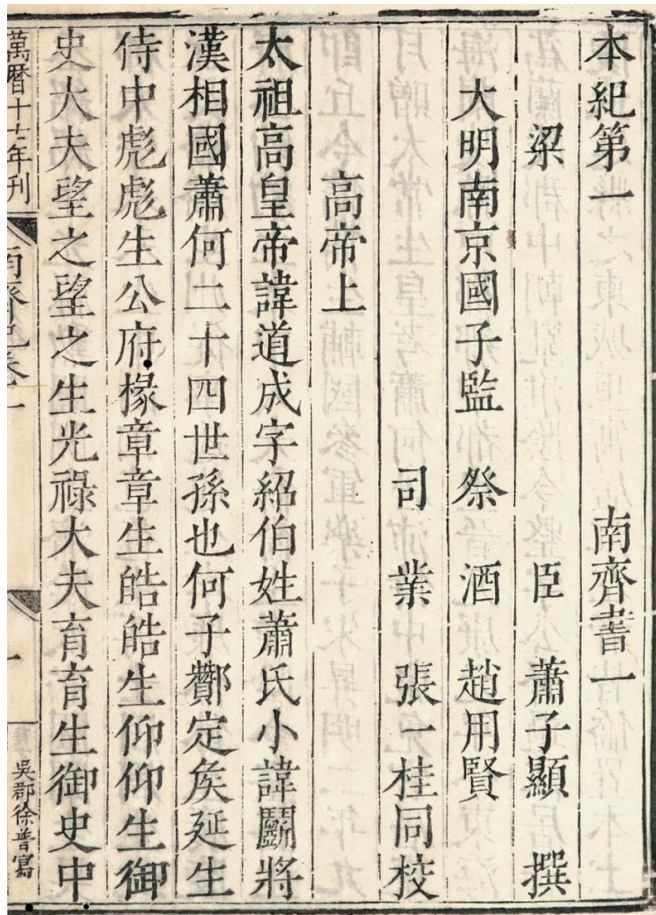
有峻嶺茂林脩竹又有清流激

湍映帶左右引以為流觴曲水

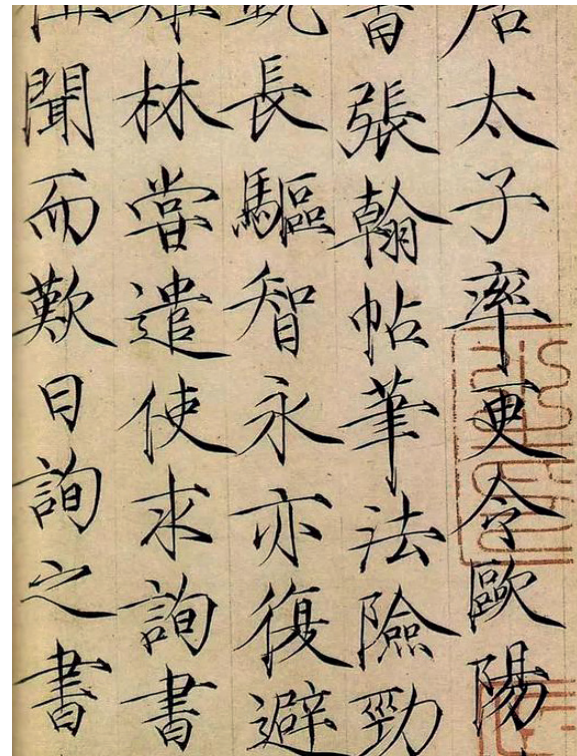
列坐其次雖無絲竹管弦之



# CHINESE CALLIGRAPHY



Song calligraphy style (宋体)  
Originating in the 10th century, is characterized by its refined and graceful brushwork. It emphasizes clarity, balance, and meticulous strokes, reflecting the aesthetic ideals of the Song Dynasty.



Shou jin ti (瘦金体)  
A calligraphy style developed in the 7th century, is known for its compact and structured characters with square proportions. It embodies a sense of stability and strength while maintaining a graceful and balanced appearance.

Lan Ting Xu (兰亭序)  
a masterpiece by Wang Xi Zhi in the 4th century, is a renowned calligraphic work embodying elegance and harmony through its fluid brushstrokes and profound artistic expression.

Chinese calligraphy, a revered art form with a history of over 2,000 years, embodies the beauty of the written word. Through skilful brushwork, calligraphers express their emotions and convey the essence of the text. Each stroke carries meaning and energy, creating a harmonious composition. Chinese calligraphy encompasses various styles, from the bold and powerful seal script to the delicate and graceful cursive script. It requires discipline, patience, and a deep understanding of tradition. Beyond its aesthetic appeal, calligraphy holds cultural significance, symbolizing virtues such as wisdom, harmony, and inner peace. It serves as a bridge connecting the past with the present, preserving and transmitting the rich heritage of Chinese culture.

BACKGROUND

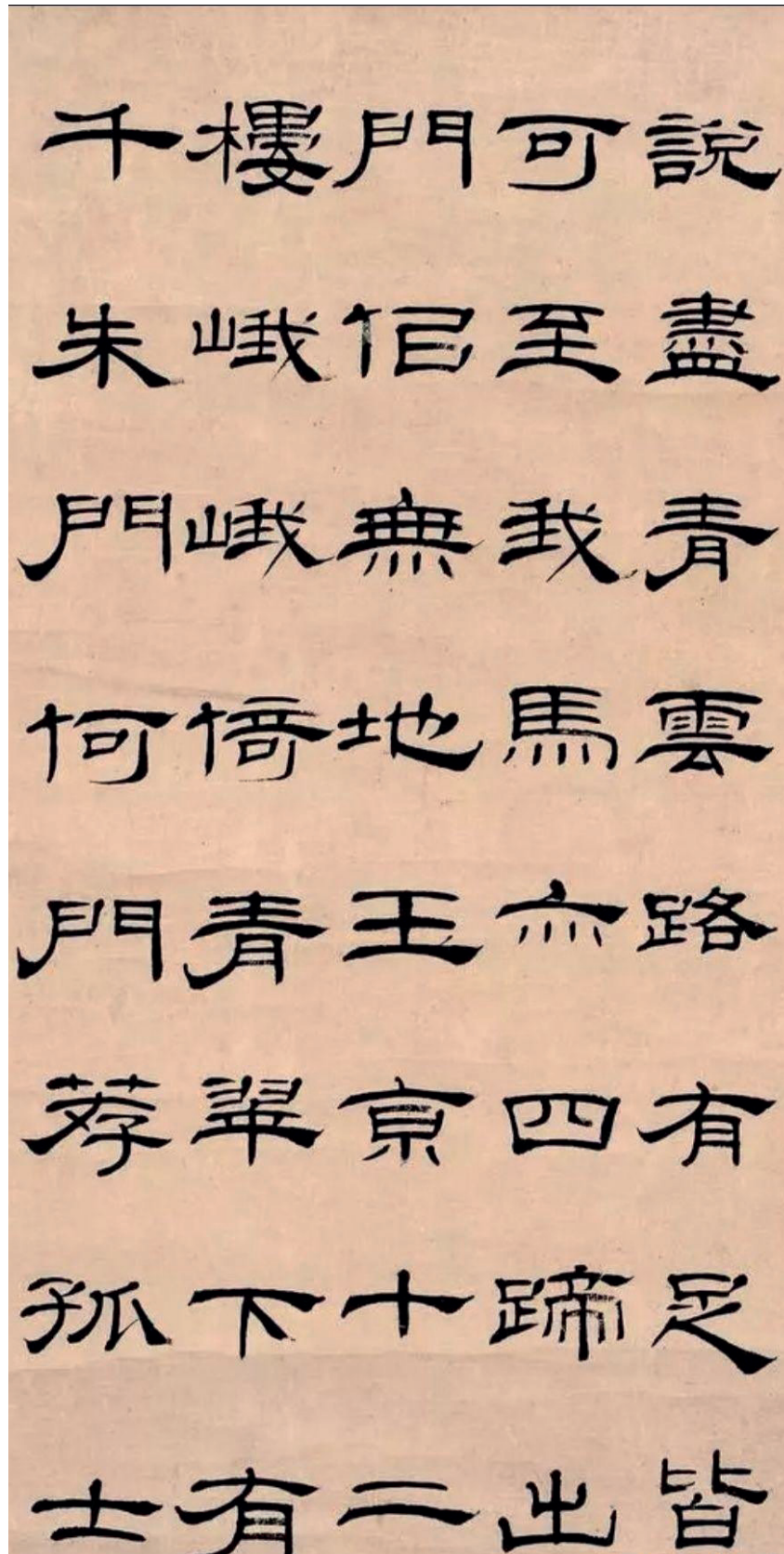
# CLERICAL SCRIPT

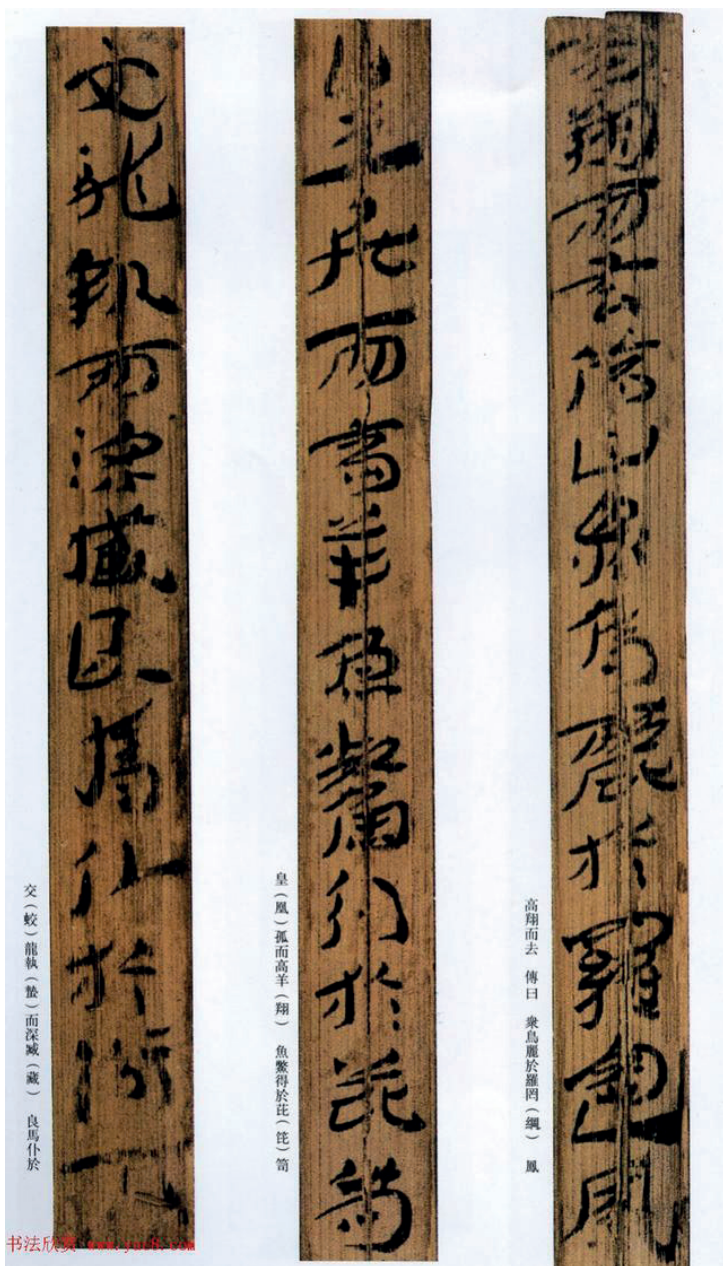
The clerical script, also known as “lishū” in Chinese, is a calligraphic style that emerged during the Qin Dynasty (221-206 BCE) and reached its peak of popularity during the Han Dynasty (206 BCE-220 CE). This script is characterized by its structured and square-shaped characters, which are carefully composed with clear and defined strokes.

Unlike the earlier script styles such as the seal script, which were intricate and artistic, the clerical script was developed for practical purposes. It was primarily used for official documents, inscriptions on tombstones, and bureaucratic records. The characters in clerical script exhibit a sense of order, balance, and regularity.

The strokes in clerical script are typically straight, rigid, and slightly angular. The characters have fewer curves compared to other calligraphic styles. The brushwork is deliberate, with deliberate breaks and pauses between strokes, creating a distinct rhythm and cadence.

The clerical script calligraphy requires skilful brush control and precision, as the characters are composed of numerous straight and angled strokes. Calligraphers must maintain consistency in stroke thickness and spacing to achieve an aesthetically pleasing result.

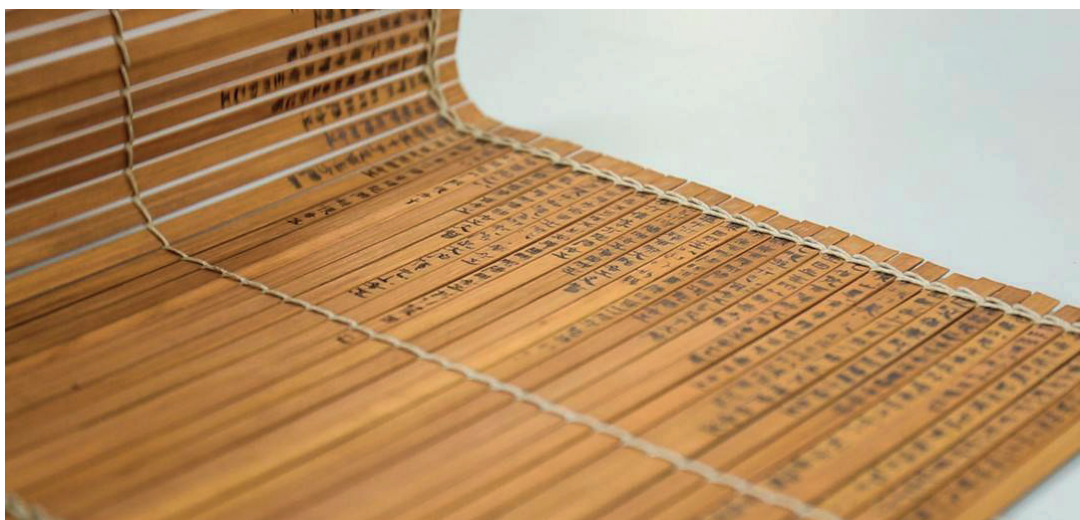




Despite its utilitarian origins, the clerical script possesses a unique elegance and beauty. The simplicity and clarity of the characters exude a sense of authority and dignity. Its distinctive style has influenced subsequent calligraphic styles and remains a vital part of Chinese calligraphic tradition.

The clerical script calligraphy continues to be appreciated and practiced by calligraphers and enthusiasts alike, serving as a testament to the enduring legacy of this historical writing style.

In the 3rd century BCE, the clerical script was often written on bamboo or wooden slips due to their durability and ease of transport. This facilitated the preservation and dissemination of important documents and administrative records.



# FORM ANALYSIS

橫平	三 圭 謹 畫	橫畫平正,是写好隶书结构的最基本要求,初学須先写得如水之平,再讲变化。
豎直	川 車 赫 憮	直畫要写得如繩之直,不可歪斜。橫平了,豎直了,字自然穩。
擘縱	大 丈 吏 更	直撇上段要直,下段要放。
捺放	人 之 乚 心	長撇大捺,是隶书的特征,一定要写得恣肆舒展,勁健得勢。
點緊	六 漁 燭 漆	“点如利鈎鏤金”,“貴緊而重”,數点並列,尤須相互配合,緊密連系。
折方	四 己 問 回	轉角要方折,斷而再起,不可弯环如篆,款側如楷。
中正	弼 輿 衡 嶽	三个部分湊合的字,中部要写得端正。
旁展	從 象 所 譽	隶勢相背,要如鳥翼翩翩,盡量向兩旁开展,以丽姿态。

平衡	千 百 委 靈	左右平衡，取得重心穩定。
對稱	必 舞 燕 齊	兩面對稱，以求字形美觀。
密排	量 臺 薑 疊	橫畫多的字，要排得緊密，筆畫細些，空白少些。
疏布	山 巾 丩 內	筆畫稀疏的字，要粗壯有力，排得開些。
勻齊	祚 憎 講 蕭	均勻整齊，有規律性，能增加字的美觀大方。
錯綜	馨 繫 鑿 繫	筆畫繁複的字，要寫得錯綜而不混亂，容壯而不犯碍。
平頭	項 明 唯 嚮	兩個部分合成而左面短小的字，頂線要齊。
齊腳	齋 帷 蒹 慕	垂腳平齊，字形方整，這是張遷碑中的字例。

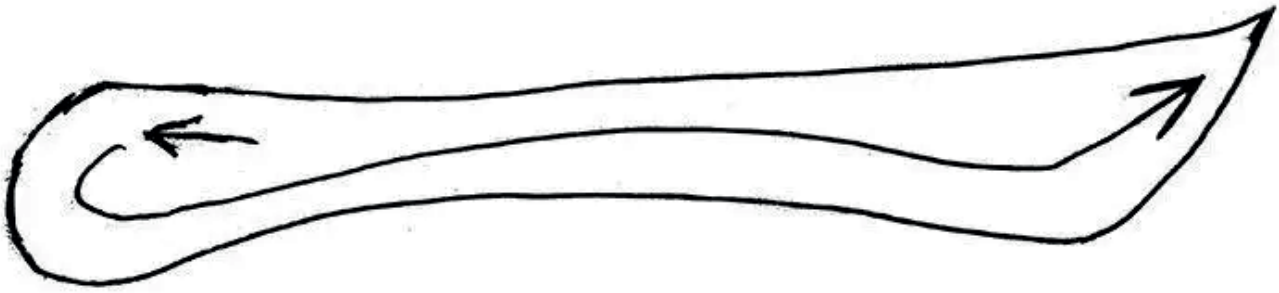
50

方整	留 止 豎 彊	方整朴實，庄嚴大方，是張廷、面狹、游方等碑的結構特色。
圓美	山 宮 留 流	圓潤婉麗，兼用篆法，孔宙、曹全、小子等碑都有此例。
豐肥	一 公 卜 又	筆畫簡單的字要寫得丰肥老健。
纖麗	壽 華 熹 麗	筆畫較多的字，寫得纖細一些，能使字形秀麗。
傾斜	力 勿 夕 母	這類斜形的字，上畫寫得斜些，撇捺才得舒展。
變換	龔 叢 辟 崩	本來不大方整的字，古人往往用移動部分位置的辦法變換結構，求得方整。
錯落	變 夔 豐 饗	上半筆畫繁複，要寫得緊密整齊；下半簡單，要寫得寬舒穩定。
留放	并 拜 弗 門	兩直相並的字，一筆左伸要放，一筆直下要留。

51

In order to understand the visual language of the clerical script, we did some research on the rules of writing clerical script in a correct way. Depending on the character, clerical script often has very strict rules regulating the thickness of the stroke and distance between the strokes within the character. Clerical script also puts a lot of emphasis on the proportion of each stroke section – for those sections which are tight and compact, they will often get compressed so there is more “air” and “flow” coming through from the rest of the character. Furthermore, repetitive strokes in a clerical script character must have variations – either by changing the length or the thickness of one of those strokes, to achieve an organic feeling.





In calligraphy, "蚕头燕尾" (cán tóu yàn wěi) refers to a specific style of brushwork that imitates the shape of a silkworm's head and a swallow's tail. It is a term used to describe the beginning and ending strokes of a Chinese character or a calligraphic piece.

When writing in the style of "蚕头燕尾," the initial stroke of a character is executed with a sharp, abrupt, and slightly thicker brush stroke, resembling the head of a silkworm. This stroke is meant to catch the viewer's attention and set the tone for the rest of the character or piece.

On the other hand, the final stroke of the character or the concluding stroke of the calligraphic work is executed with a graceful, elegant, and tapered stroke, imitating the shape of a swallow's tail.

This stroke is intended to leave a lasting impression and create a sense of closure.

The "蚕头燕尾" style of calligraphy emphasises the importance of balance and contrast between the initial and final strokes. It adds visual interest, rhythm, and a sense of completion to the overall composition.

When applied to calligraphy, "蚕头燕尾" embodies not only the meaning of a well-structured and aesthetically pleasing opening and ending in writing but also reflects the artistic and expressive nature of Chinese brushwork.

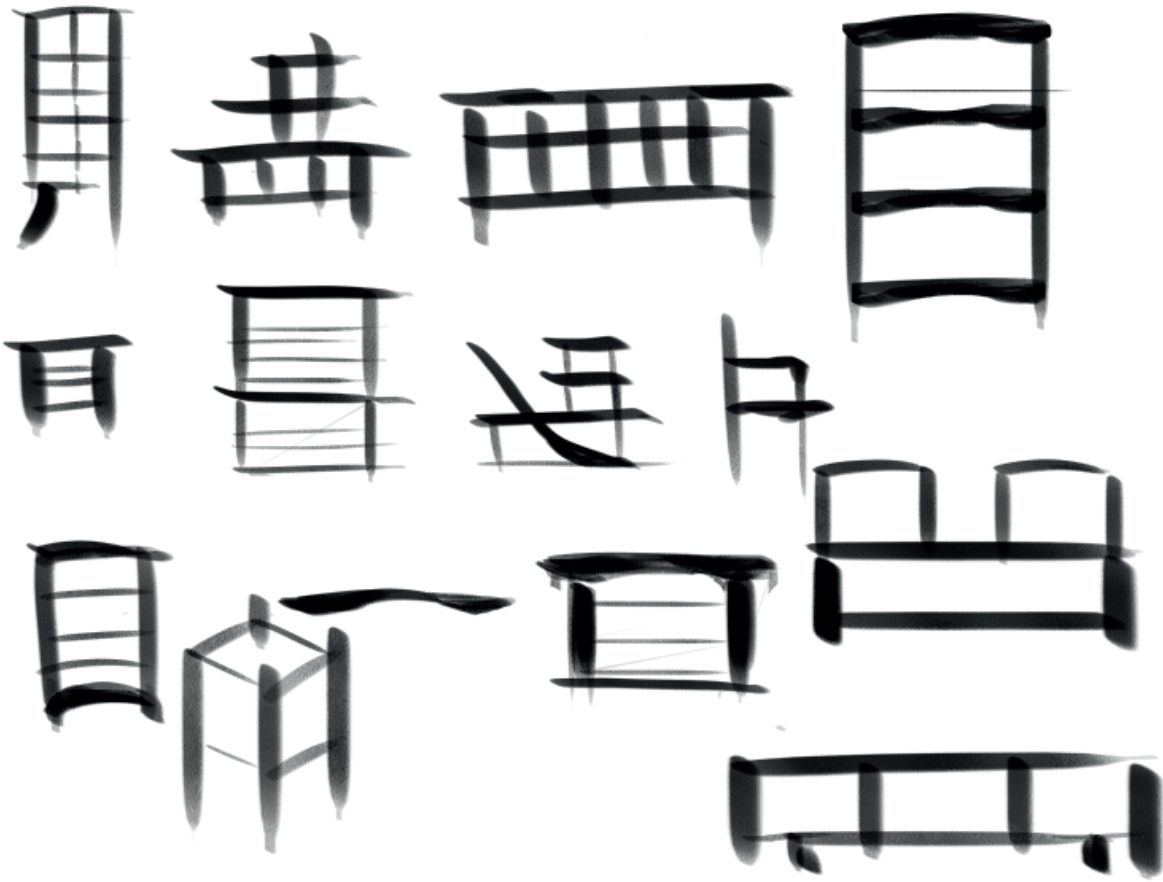


B O Y A N I D E A

满, Artwork by 3D visual artist Bo Yan. He tries to project traditional Chinese calligraphy into 3D structures.



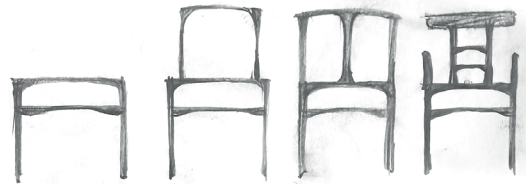
# EARLY SKETCHES



Furniture - Complement (Radical)  
 "concrete" "abstract."

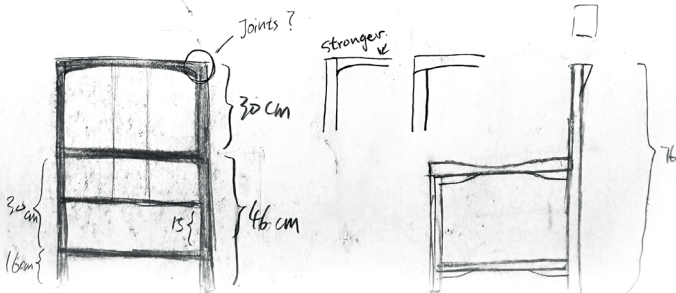
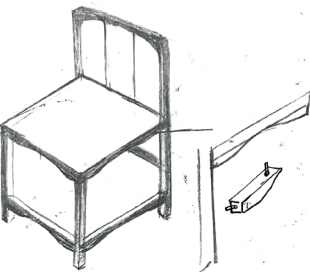
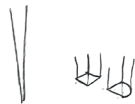
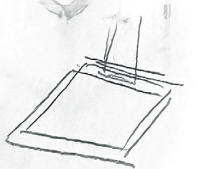
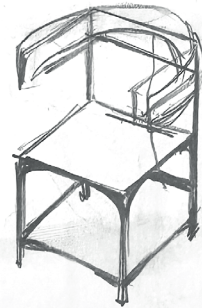
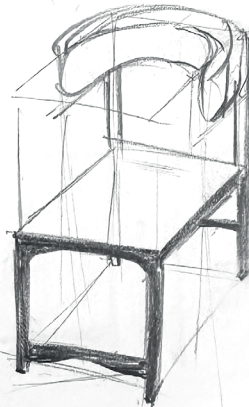
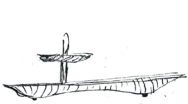
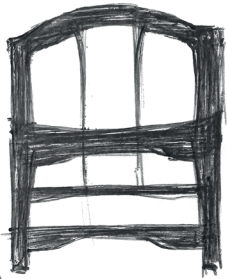


第一楼在下部结构完成时，  
不宜打开。

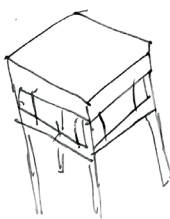
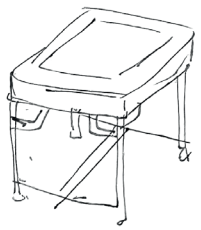
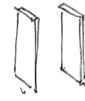
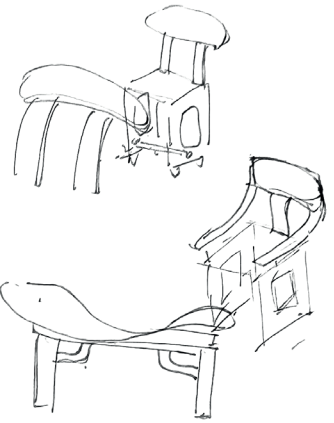
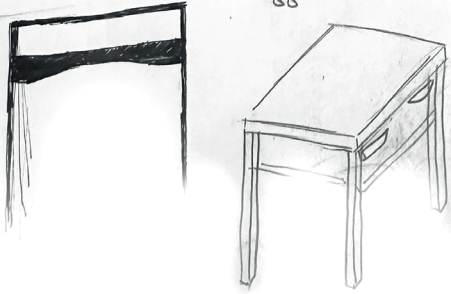
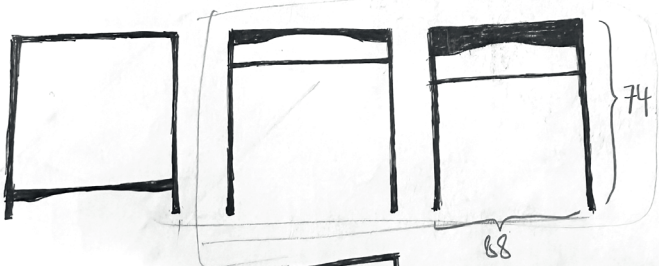
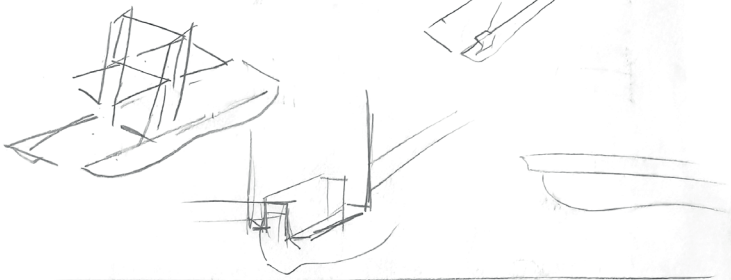
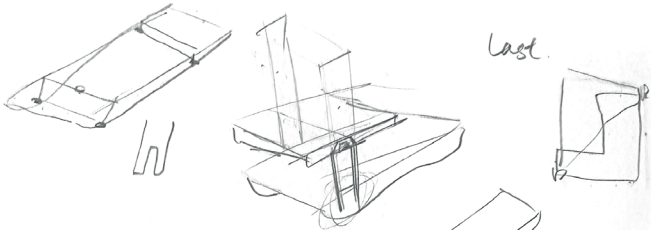


IDEATION

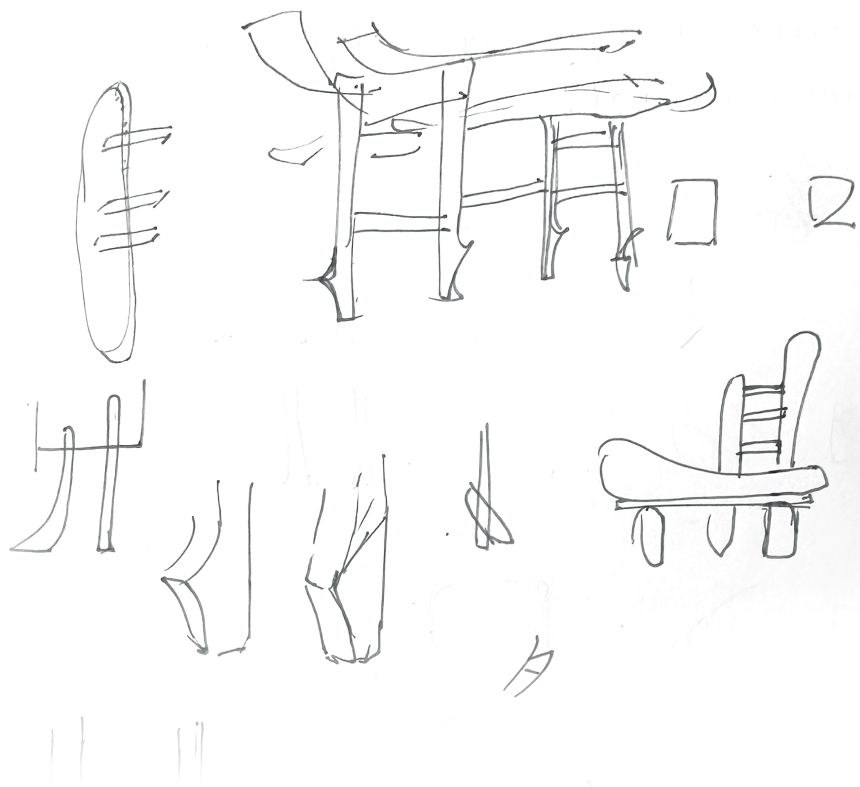
H  
Add more abstract to the form



IDEATION



IDEATION



Main structure should have proportion.  
 Substructure adapt its shape and proportion to functions and forms / material.



# PROTOTYPING



IDEATION



To be able to have a better understanding of how we can integrate our ideas into furniture, we started to build small scale prototypes using bamboo and wooden sticks.

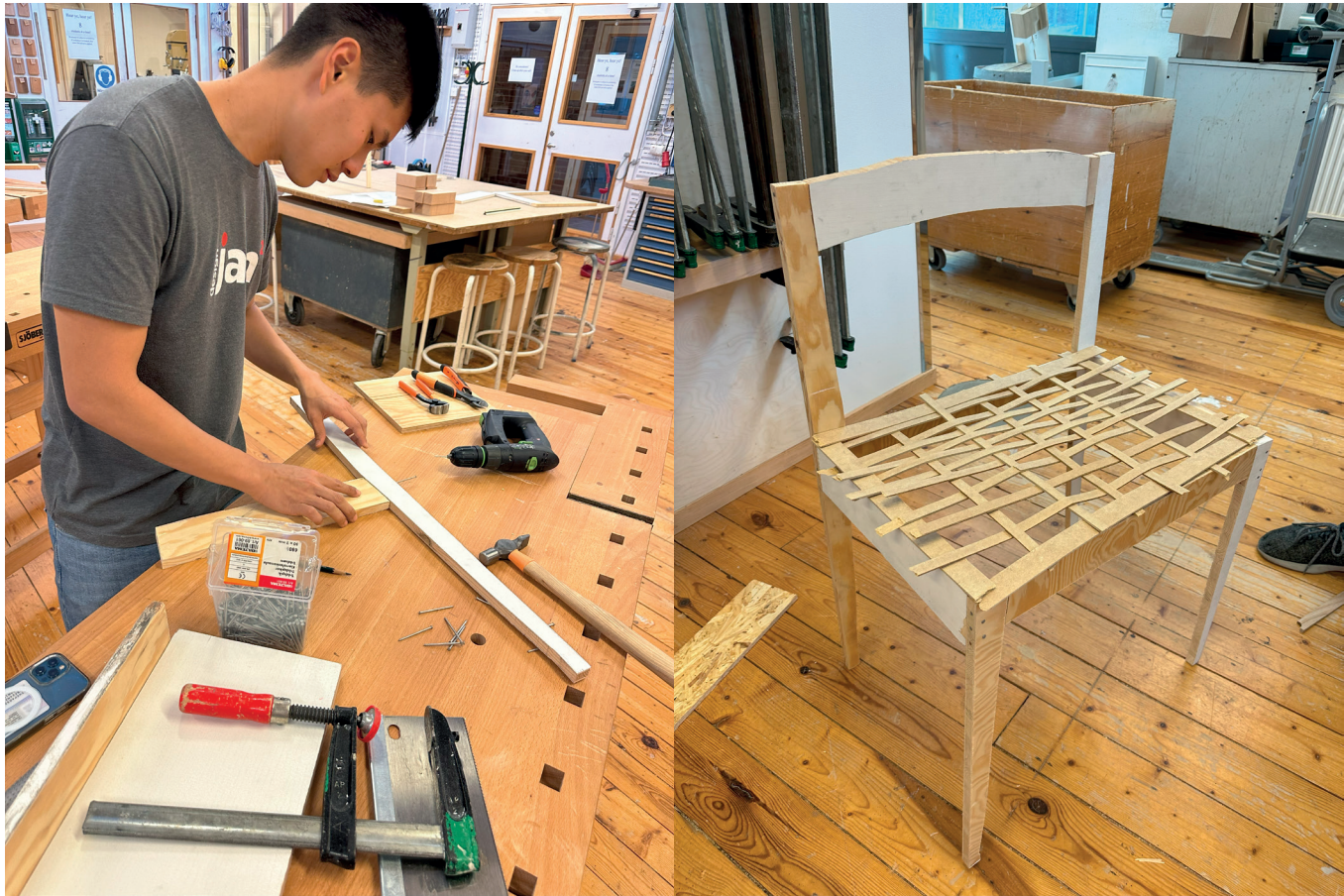






IDEATION

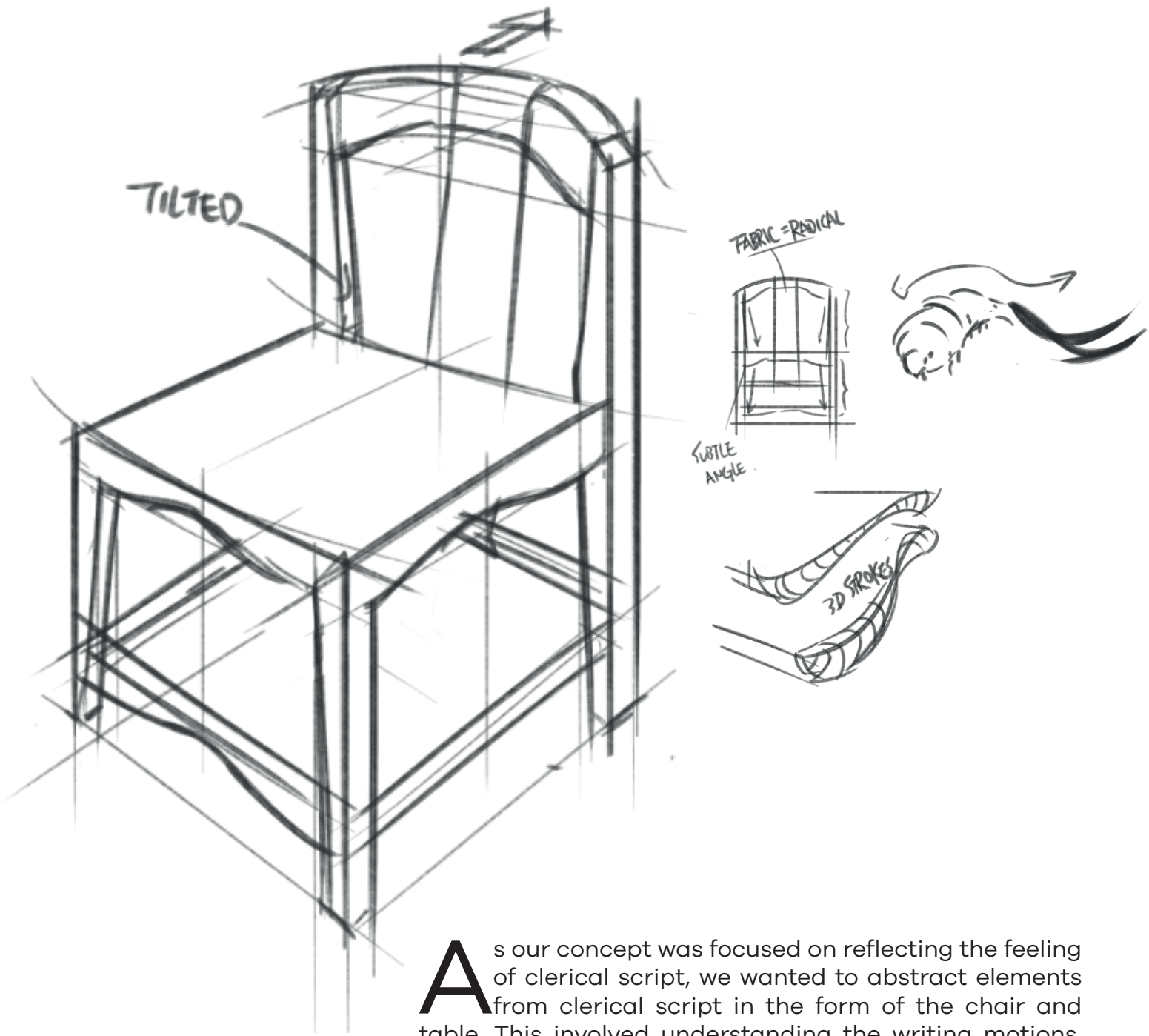
# PROTOTYPING 1:1



**W**ith a focus on translating some rules of clerical script into physical furniture, we wanted to adjust the proportions to maximise the visual sturdiness of the product, and to pursue a more flattened look. This would involve unconventional proportions and thus we needed to test the ergonomics with a 1:1 prototype. This was roughly constructed out of scrap oriented strand board and affirmed most dimensions, however set a limit to the minimum seat depth which was allowable.

In our first 1:1 prototype, we wanted to push the extremes of a rectangular dimensions to see what the limits of comfort were. With the dimensions of 2:3, we learned our designed needed more depth, and the back rest needed to be slightly higher.

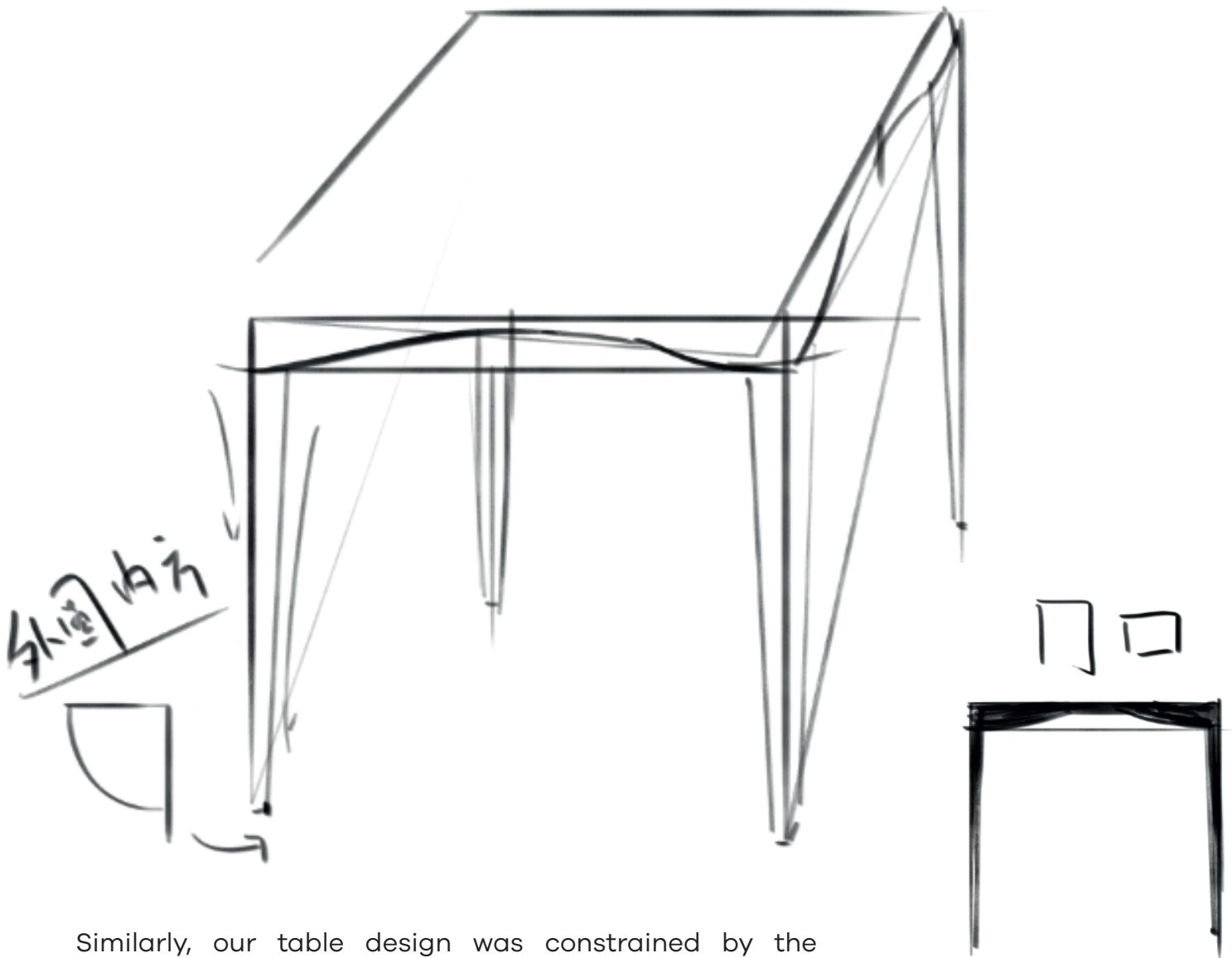
# SKETCH CHAIR



IDEATION

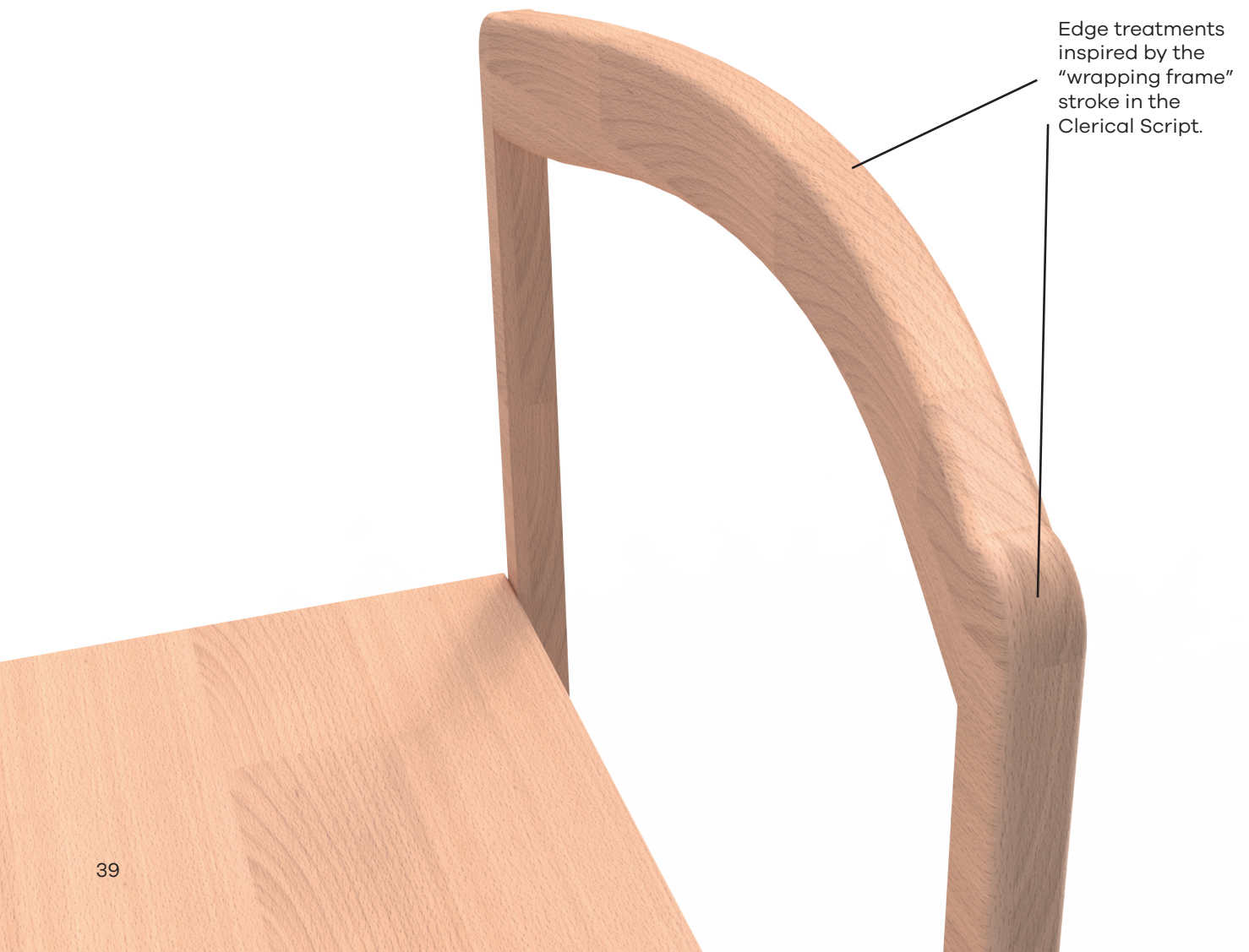
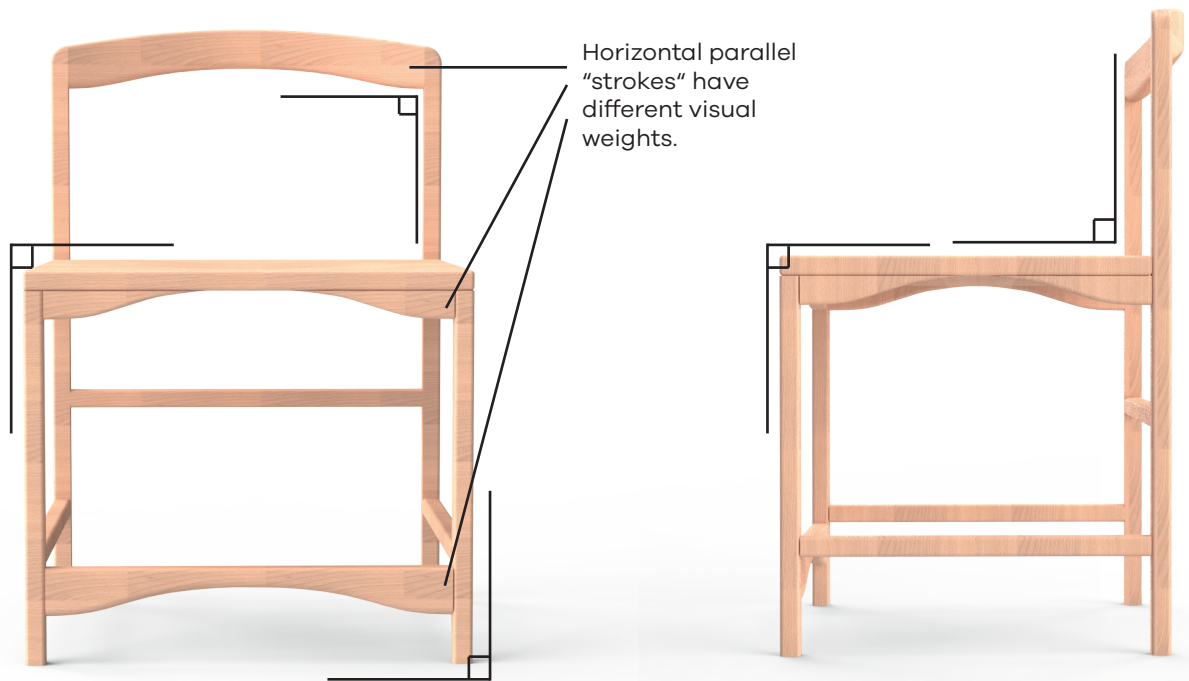
As our concept was focused on reflecting the feeling of clerical script, we wanted to abstract elements from clerical script in the form of the chair and table. This involved understanding the writing motions, purpose, and subtle details of clerical script and finding ways to incorporate that into different surface transitions, joints, and shapes in our chair design. Chinese calligraphy is able to achieve varying line thicknesses in a single stroke by varying the pressure applied to the brush, resulting in 2D medium achieved by a 3D motion. In our design, we wanted to capture that 3D motion using asymmetric curves, and undulating surface in a key places such as the front spindle or the underside of the seat to give users the feeling of balance stability like in clerical script, but upon further inspection, is able to convey the movement of calligraphy.

# SKETCH TABLE



Similarly, our table design was constrained by the mechanics of being a table, resulting in the table apron being one of the key features to evoke elements of Clerical script. The apron would be thick on both ends and gradually transition upward towards the middle, evoking the shape of the top strokes in Clerical script with a gentle top and a sweeping bottom. This would also allow our design to be more ergonomic and maximize the space between a table surface and seat height for users by thinning out material where the user will actually sit, while maintaining a consistent visual weight. The legs themselves would slightly taper to reflect the taper in the legs of the chair to create more visual harmony, and create the illusion of a wider base on the table to evince the silhouette of Clerical scripted characters.

# CHAIR CAD V1





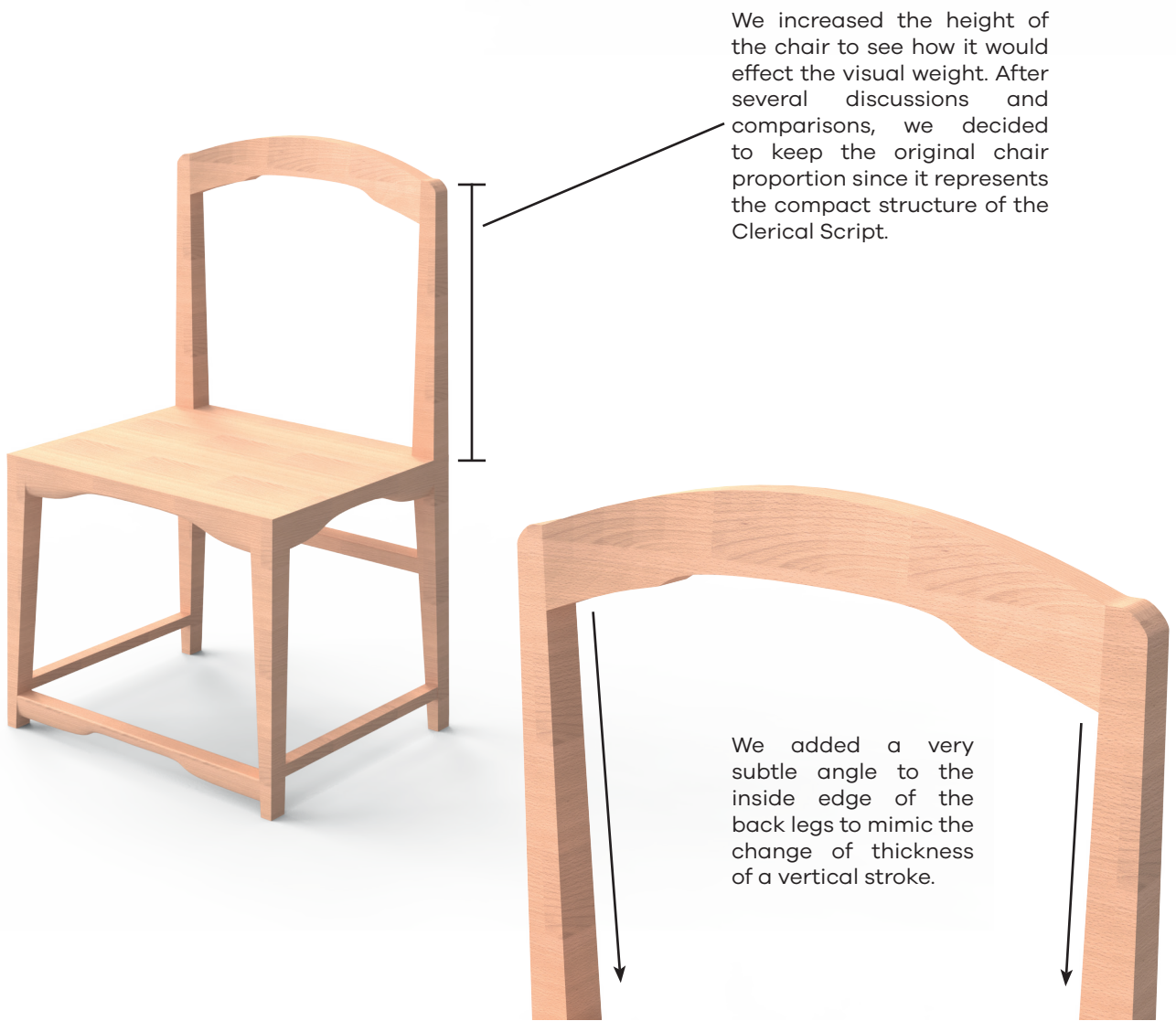
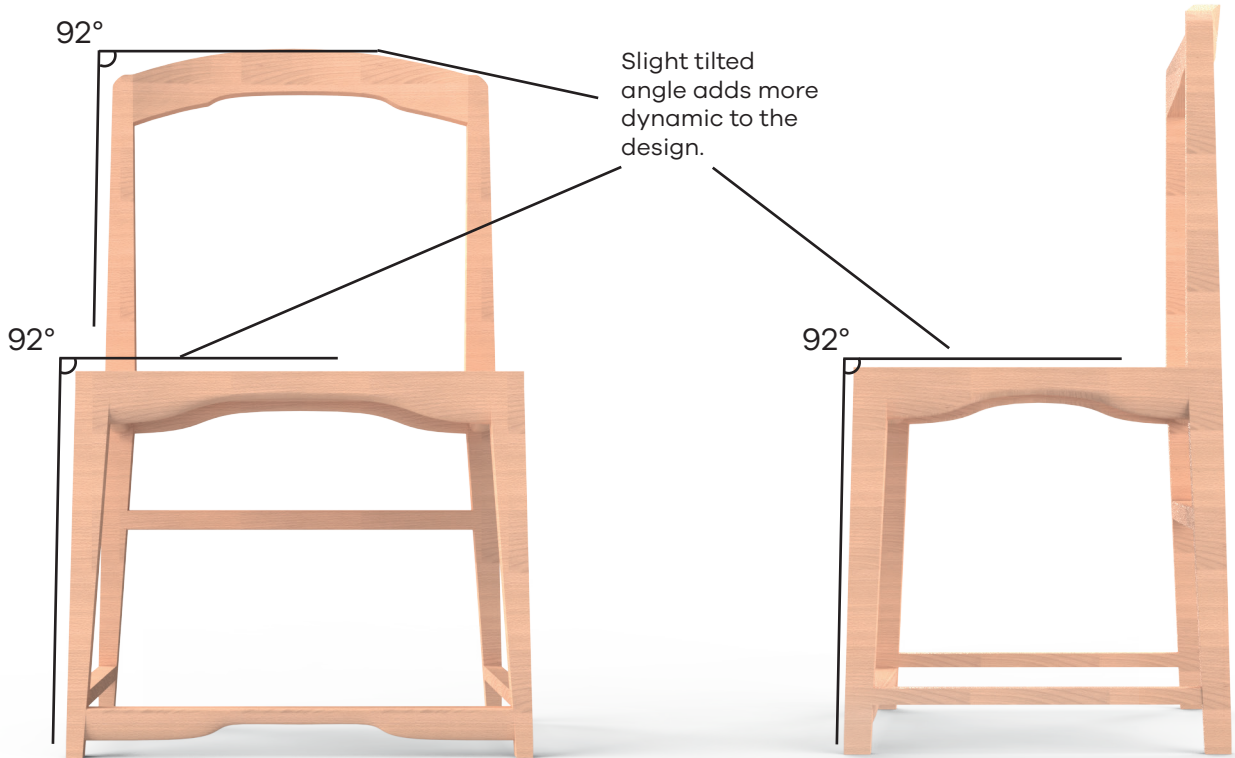
Geometric translation of the "silk worm swallow tail".



Our first prototype focused on the dimensions, being slightly wider than a normal chairs, it would better capture the compressed nature of clerical script.

We also focused on the relationship of the three major horizontal "strokes" of the chair, and how differences in weight, thickness, and movement could mimic rules used in constructing characters in clerical script

# CHAIR CAD V2

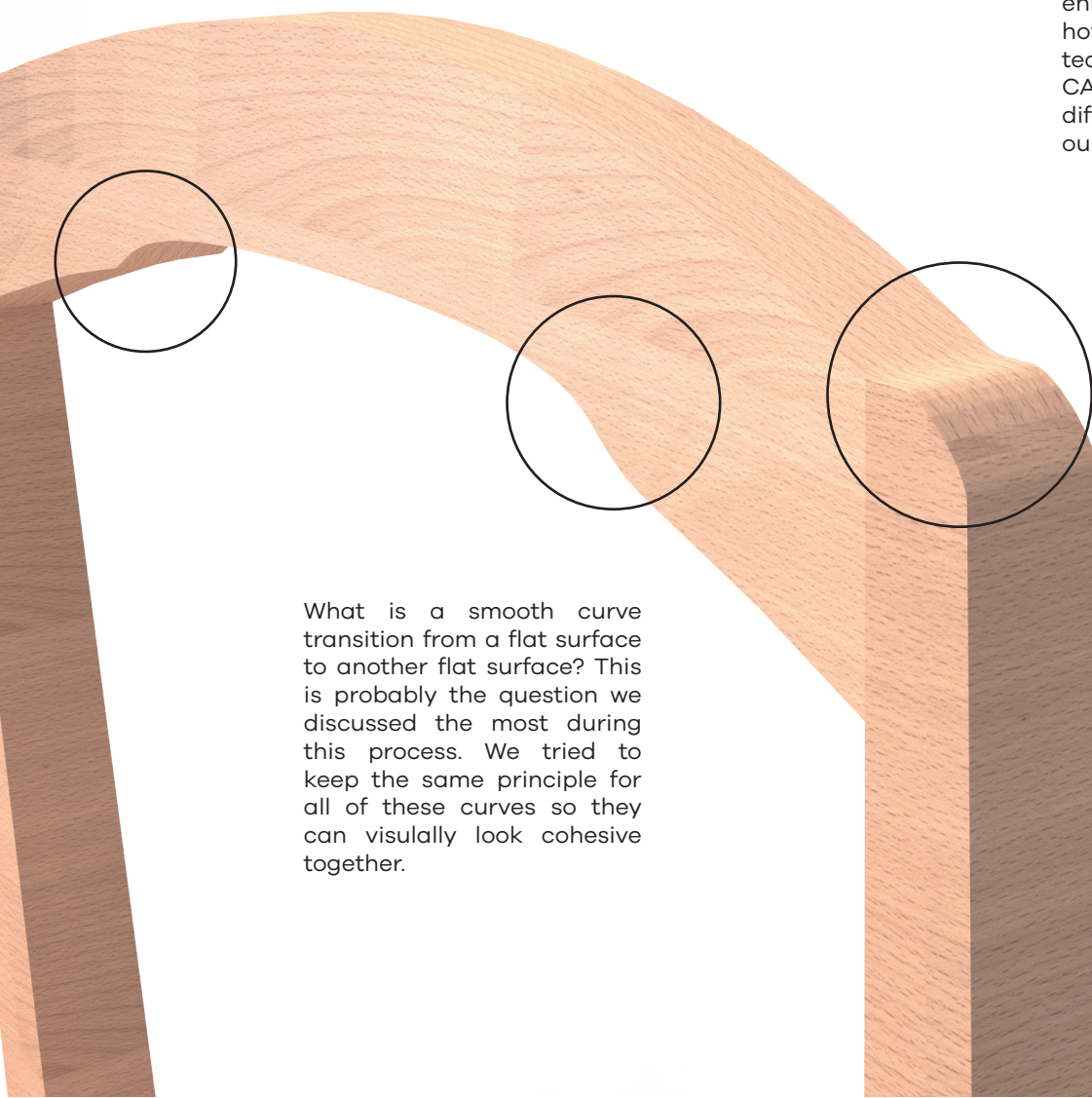


IDEATION



China Chairs,  
Hans J Wegner,  
Fritz Hansen  
1944

China chairs by Hans J Wegner enlightened us many ways on how to compromise between techniques and form. With this CAD model, we wanted to explore different ways to apply curves to our chair design.



What is a smooth curve transition from a flat surface to another flat surface? This is probably the question we discussed the most during this process. We tried to keep the same principle for all of these curves so they can visually look cohesive together.

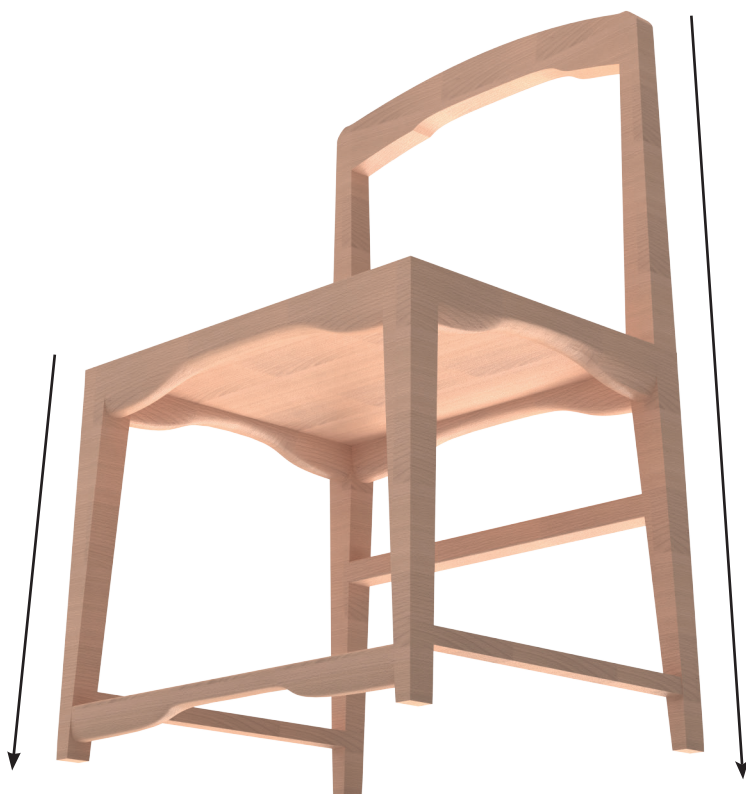
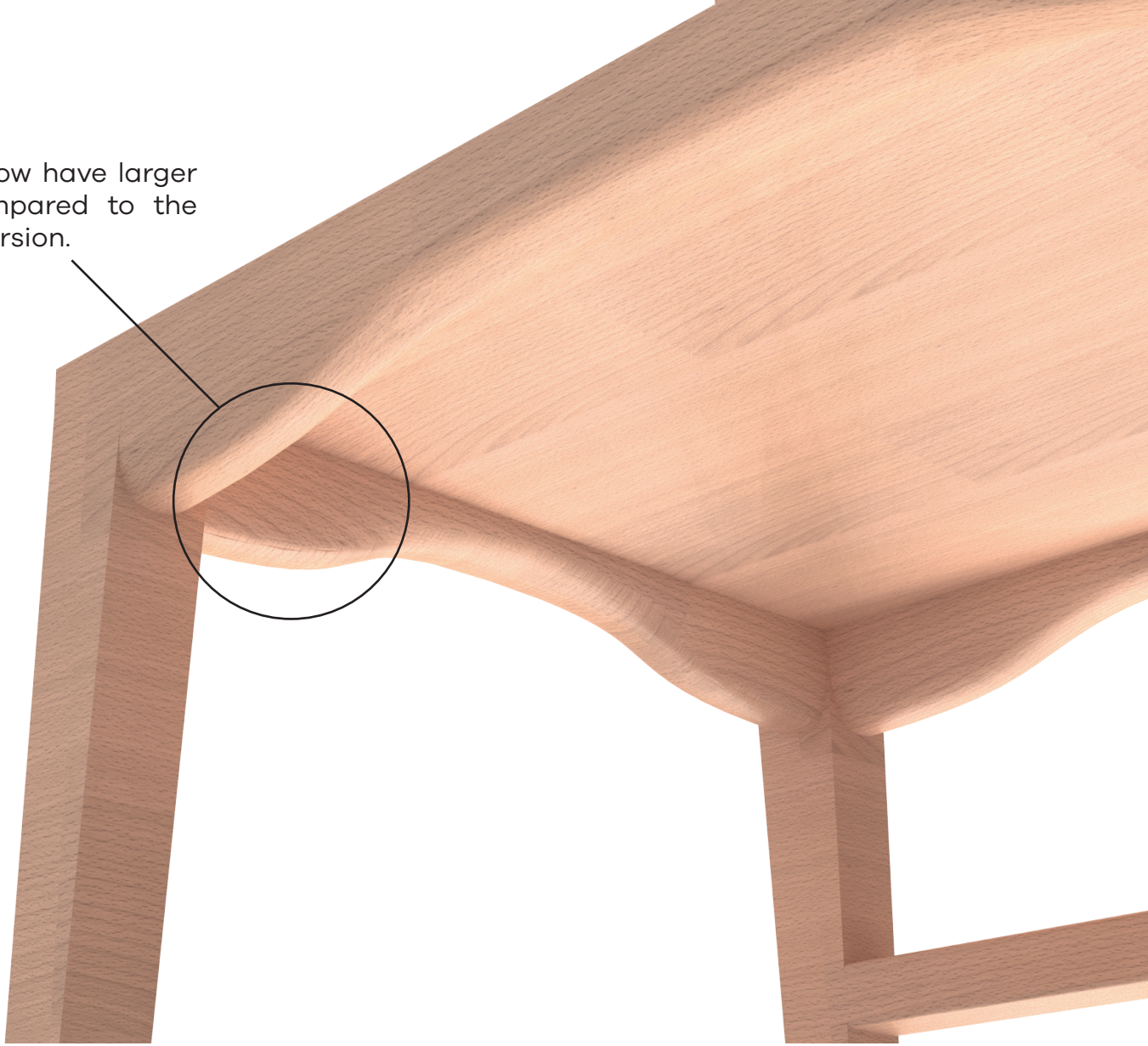




In our second iteration, the inside curves legs slant out gradually, giving an impression of bottom heaviness and weight, while preserving a light form factor. Subtle differences in the angles on the inside faces of the legs push the illusion of a trapezoid shape, making the base seem wider, reflecting the under strokes of wide based clerical script characters.

Additionally, the second iteration was composed of "forms derived from forms". In researching the China Chair series by Danish designers Hans J Wegner for Fritz Hansen, we examined how he used shapes which were not exact replicas of traditional shapes, but instead derived more standardized shapes which evoked the same feeling as the original forms, while also involving a modern, sturdy, industrial aesthetic.

Aprons now have larger radii compared to the former version.



The trapezoid illusion makes the visual weight at the bottom part of the chair heavier, contributing a form that is more steady and firm.



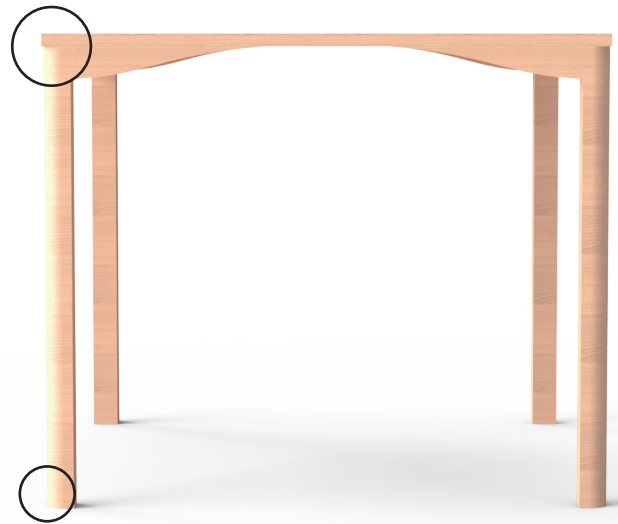
IDEATION

# TABLE CAD V1



## Ba Xian Zhuo

"Ba Xian Zhuo" (八仙桌) is a traditional Chinese square table intricately crafted with ornate carvings, representing the Eight Immortals. It showcases exquisite artistry, symbolic motifs, and is treasured as both furniture and a cultural artifact, embodying Chinese heritage and elegance.



Our table design was heavily influenced by our finalised chair design, and a traditional square table design called "Ba Xian Zhuo". The first iteration had a two layered construction method, which had the tabletop surface resting on a based support frame with curved mimicking the aprons on the chair. However, this surface transition was fundamentally different from that of the chair base, and so our second iteration focused on framing the table surface within the legs and supports.



IDEATION

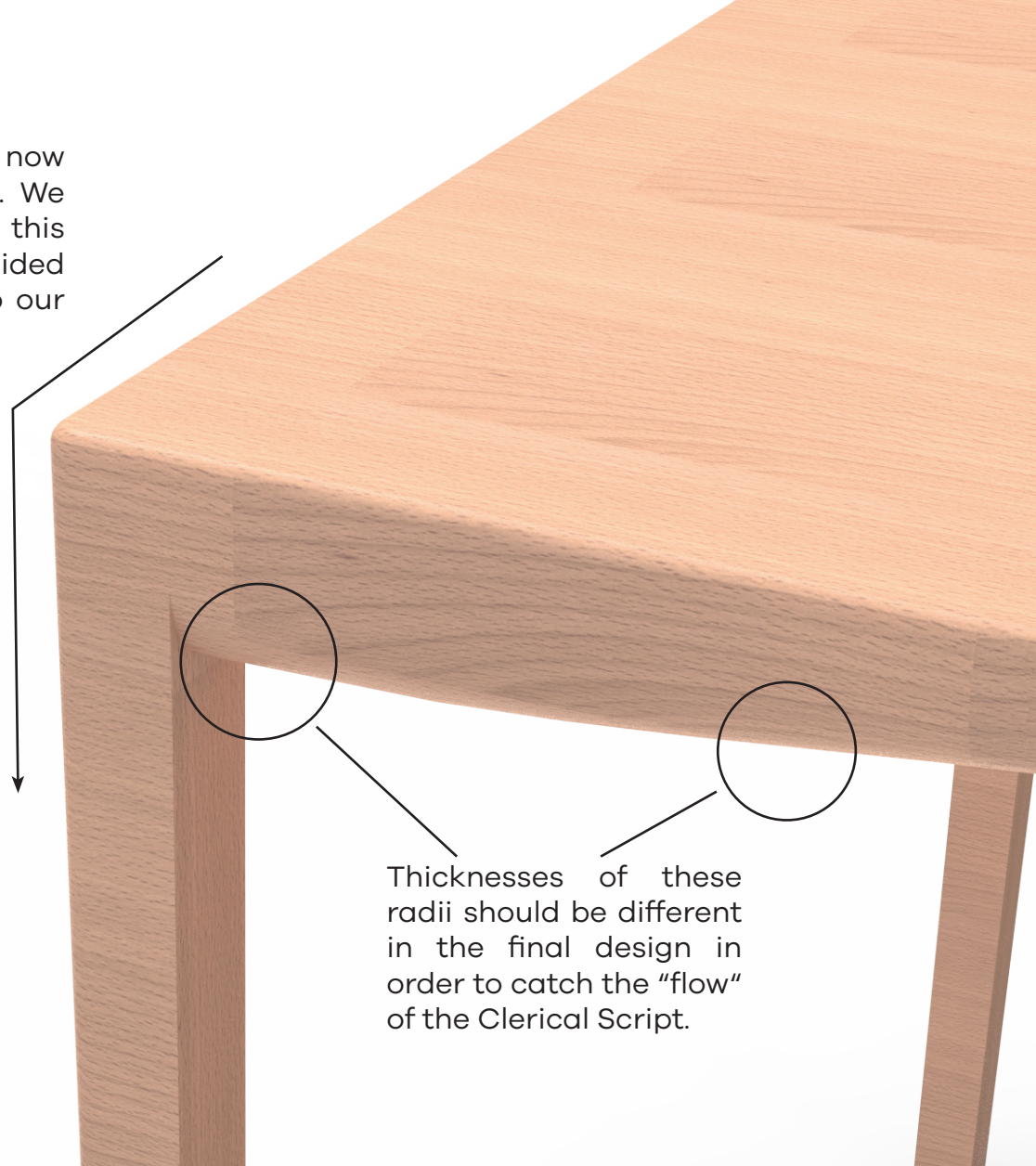
# TABLE CAD V2





IDEATION

The table top is now flushed to the legs. We were happy how this is looking and decided to take it further to our final design.



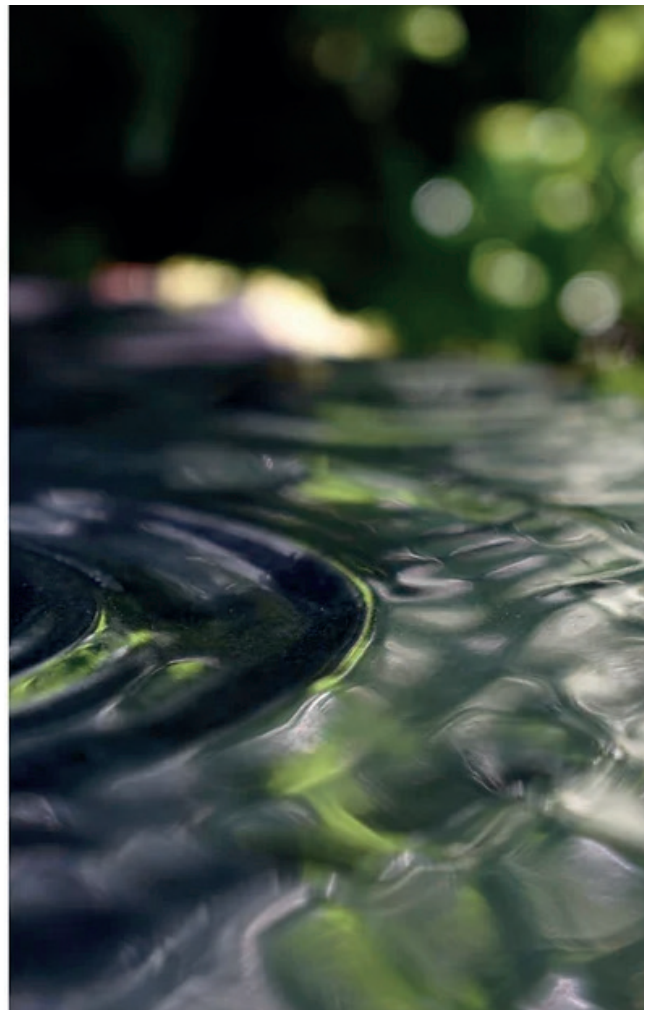
Thicknesses of these radii should be different in the final design in order to catch the "flow" of the Clerical Script.

The second design of our table opened additional possibilities for the construction of the table. Given the use of the aprons in framing the tabletop, the edges of tabletop piece would not be exposed, thus allowing us to use a veneering engineered wood such as MDF instead of solid wood, saving on costs and eliminating the need to condition the expansion and contraction of wood throughout the seasons. The smoother edge treatment at the corners also allowed us to implement the concept of Waiyuan Neifang, or "rounded exterior, perpendicular interior". This can be seen the surface treatment of the legs, which sharpen into a harsher surface tradition on the outer edges but maintain and smooth radius on the inner edges.



# EXPLORATION OF HARD & SOFT

Rain Sound  
Shen Lie Yi  
Shanxi Black Granite  
170 x 70 x 56 cm  
2002



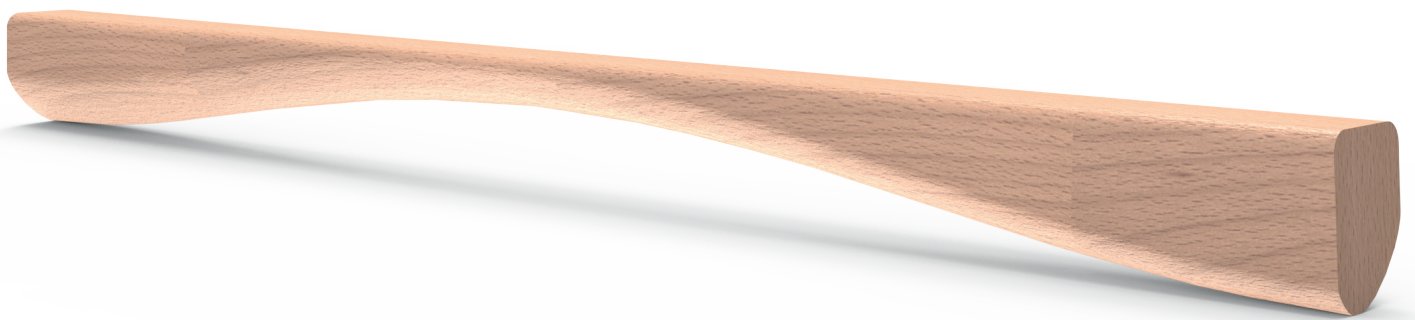
**S**hen Lie-Yi was born in Hangzhou and graduated from Sculpture Department, China Academy of Art. He currently teaches at the School of the College of Public Art of China Academy of Art.

Such as the Rain series, he uses rough granite to express the elegance and peace of water is the challenge of fusing two extremes within one medium.

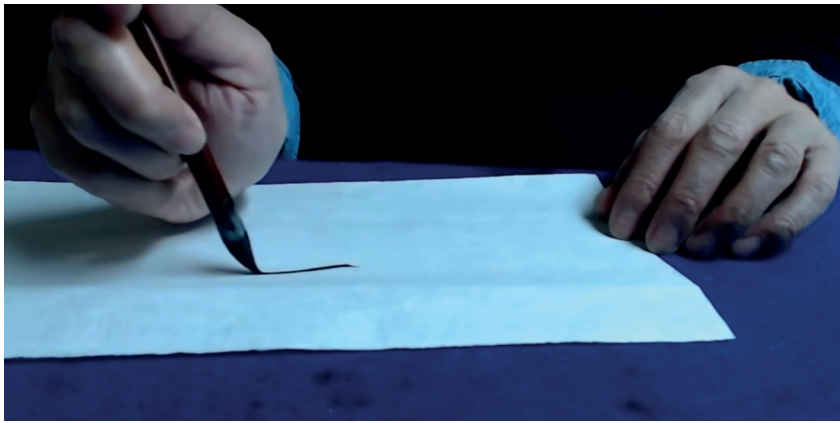
This entails a strong visual contrast. In traditional Chinese culture, water symbolizes the principle of yin and softness, while stone symbolizes yang and hardness. One of the rich insights of Daoism is that 'hardness and softness compensate for each other. Water, as the extremity of softness, moistens all things.

We were fascinated by the way Shen Lie-Yi transformed a solid, hard and rough material like granite into art pieces that convey softness, smoothness and dynamicness. We believed that this is the way we can solve the issues we had with the supporting apron and the wood – to integrate the curve into the seat so the wavy structure will not be compromised.

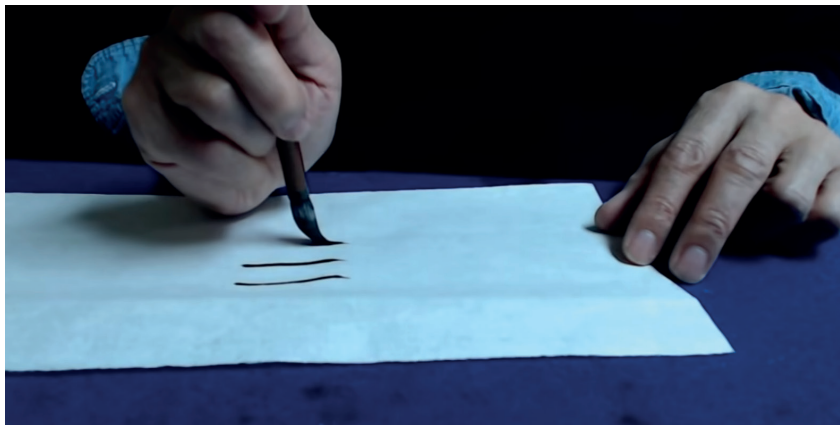




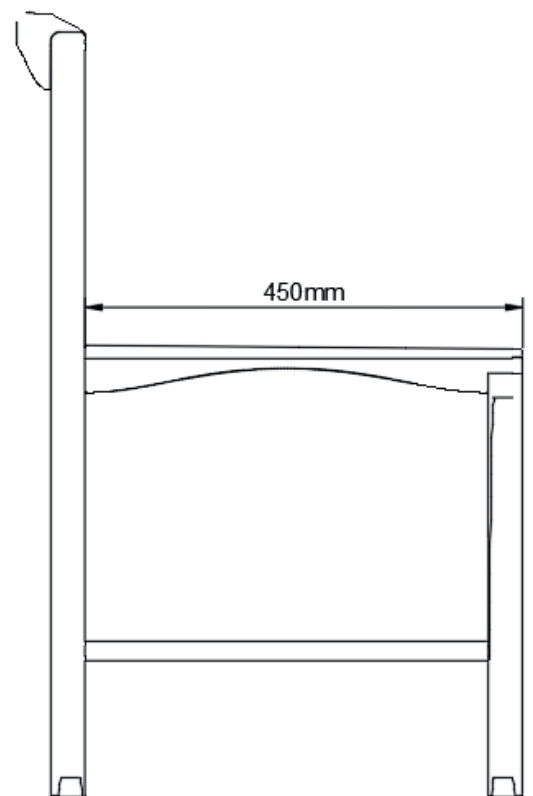
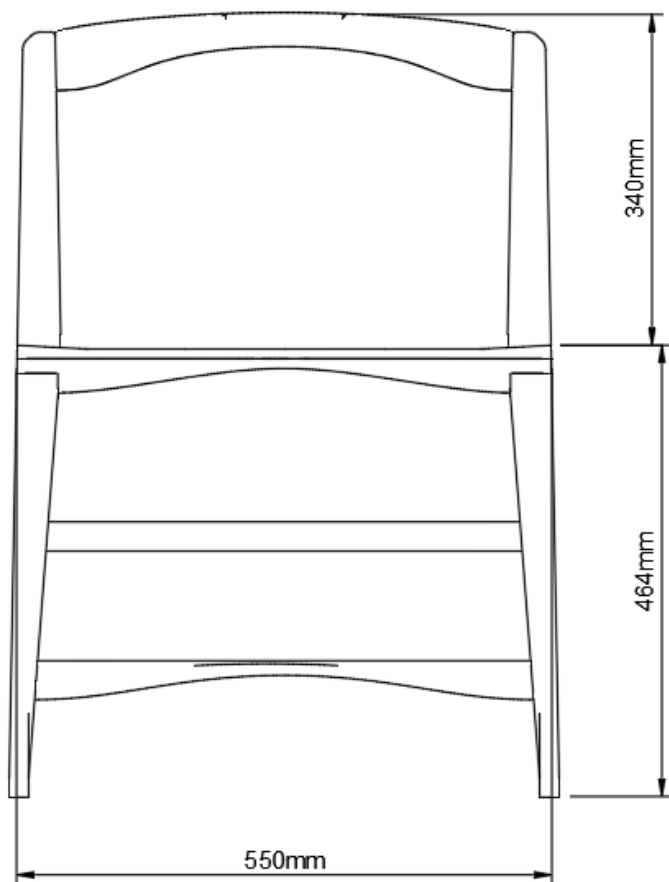
**T**he curves on these two pieces were inspired by the movement of the hand and the changing shape of the brush head to imprint different thicknesses and shapes onto a paper. In doing this, we derive a three dimensional form from a two dimensional shape, allowing the shape of chair to invoke the same feeling as a character.



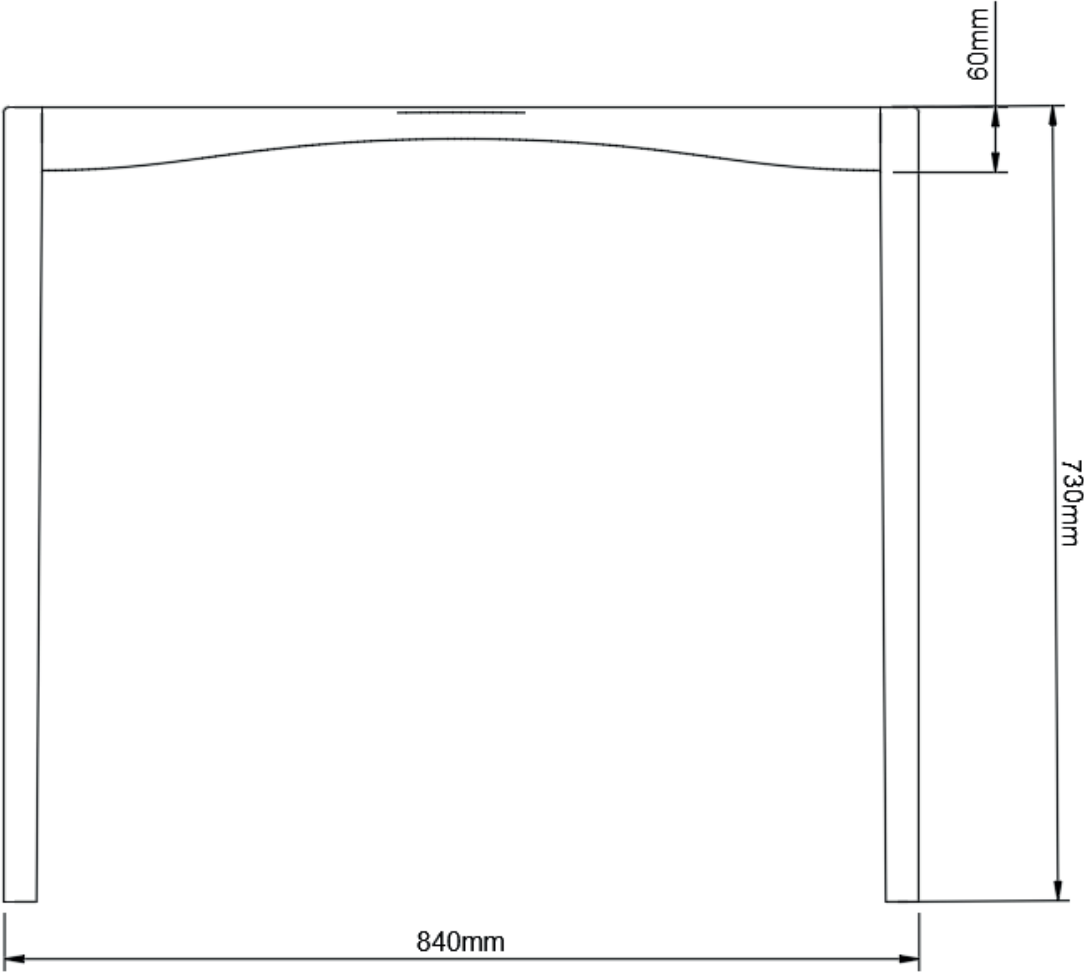
The brush head plays a crucial part of controlling the thickness and the form of the stroke. An experienced Chinese Calligrapher can control the movement of the brush head by minimum movement of their fingers.



# FINAL DESIGN CHAIR



# FINAL DESIGN TABLE



# MATERIAL CHOICE



REALISATION

**W**e chose to use beech wood for our furniture pieces. Beech wood is known for its exceptional durability, making it a reliable option for furniture that is built to last. It has a dense grain structure and high shock resistance, which means it can withstand daily use and wear without easily succumbing to damage or warping. Considering the fact that many parts of these pieces are going to be produced using the CNC, a hard wood like beech has less risk of cracking during the process. Furthermore, beech has low shrinkage and minimal movement due to changes in humidity and temperature, making it less prone to cracking or warping over time.

# CNC





# DOWELS AND DOMINOS

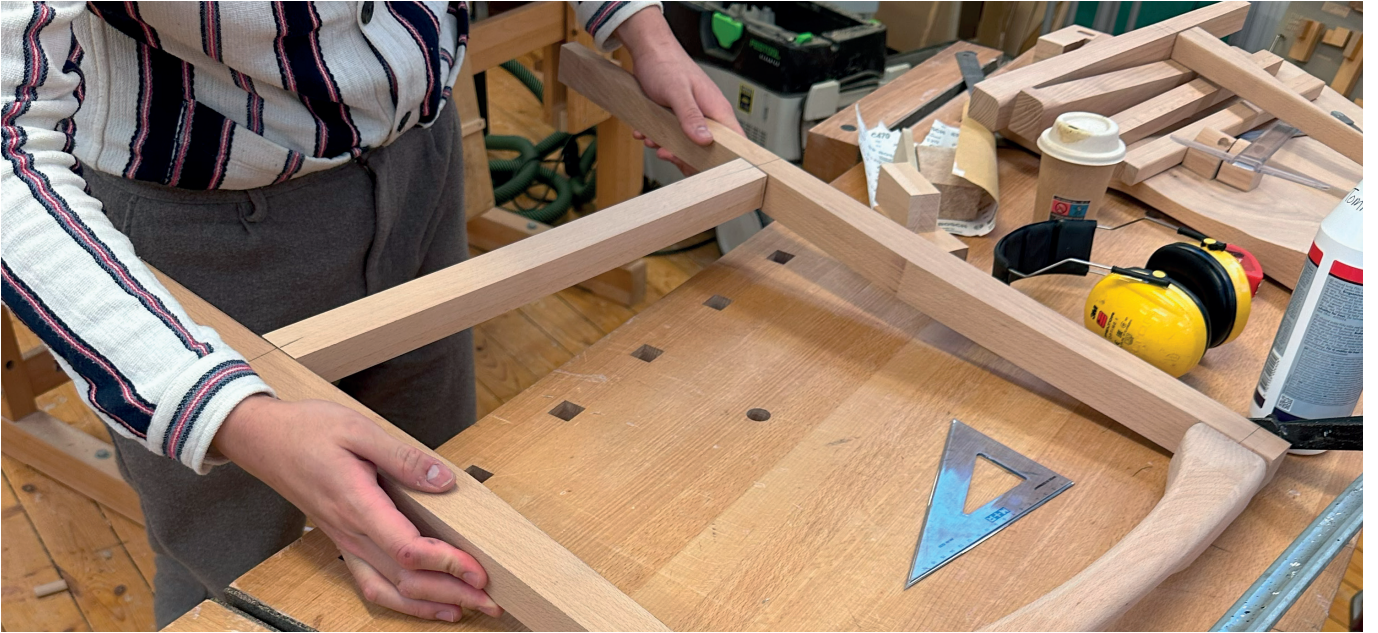


Dominos and dowels were the primary connection method used during the manufacturing process of the chair. This was done for efficiency in the manufacturing process as well as strength. To accommodate this decision, surfaces which touched or were structural to the chair were enlarged to make room for larger dominos, and the heights of spindles were determined to optimize for structural rigidity as dominos would take the place of other potential joining techniques such as lap joints.

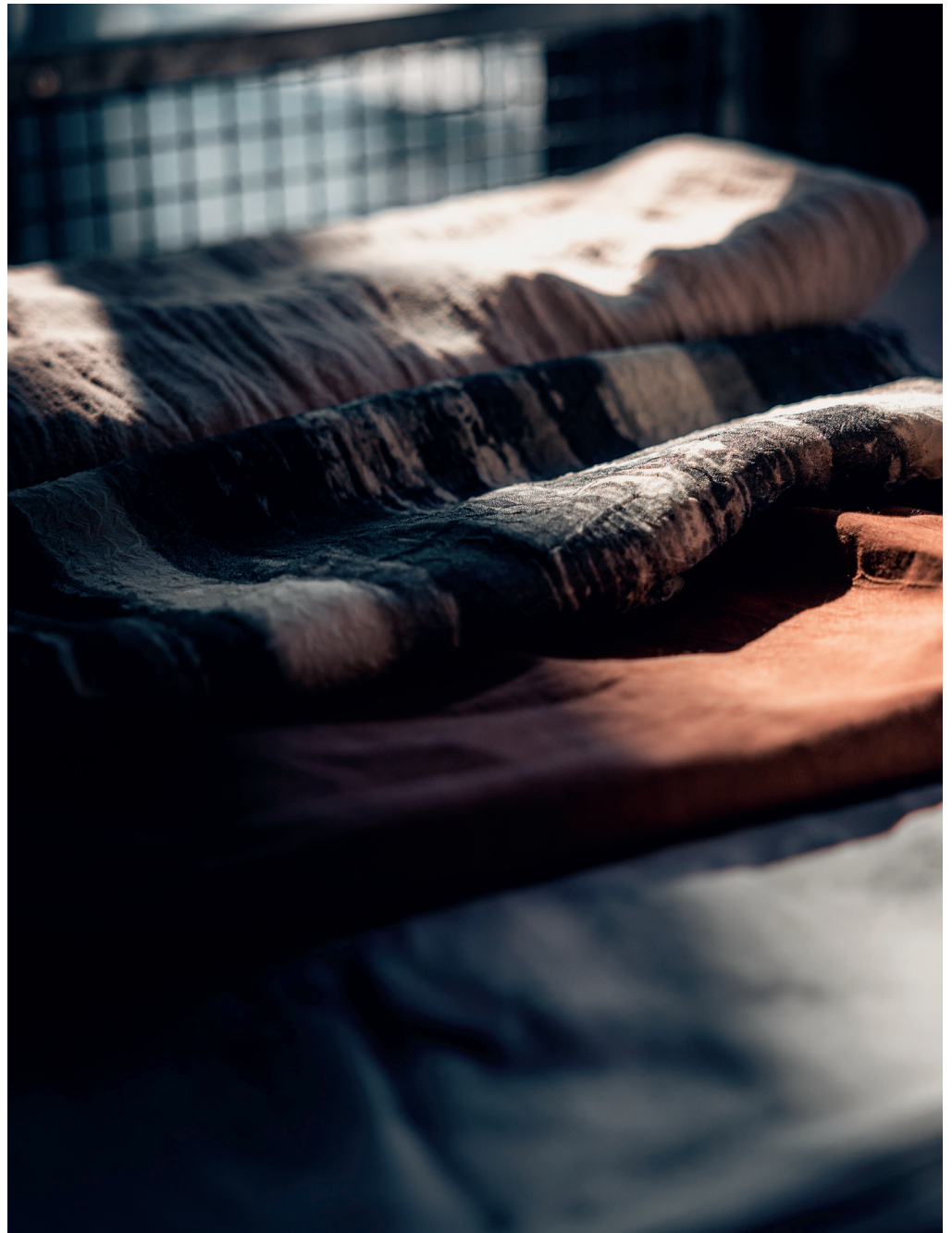
# ASSEMBLING



REALISATION



# FABRIC SELECTION



**W**e purchased several different fabrics from China for the strap hanging on the back of the chairs. These fabrics are made out of linen, cotton, and silk. However, we chose to not using these fabrics due to the low durabilities. Therefore we chose PU leather for better strength and easier daily maintenance.

# BUILDING TABLE



On the design of the table, we wanted the focus to be on the curvature and surface transitions of the aprons. Many design choices in the manufacturing process were made to achieve this.







## REALISATION

The tabletop chosen was a veneered MDF board which would allow a flush edge with the support structure of the table, thus resulting in a design that would have the table top slot into the aprons. The shape of the aprons themselves would derive from an abstracted silkworm head-swallow tailed stroke of Clerical script, and dominos would be used to join the thicker ends of the aprons to the table legs. On the inside of the aprons, we use triangular supports which would pull the aprons together to create a more rigid frame that would be mostly invisible to users, thus not compromising the form of the table.

# EDGE TREATMENT CHAIRS







In our critiques with Anna and Claus, a topic of discussion that was often brought up was asymmetry and how it should be incorporated into the design of the chair. As Clerical script often highlights the asymmetric form of some characters, it was a challenge to translate that into a naturally symmetric product such as a chair or table, without being too literal or obvious. In our critiques, Claus mentioned key surface transitions in the design where asymmetry could be highlighted in a way that looked both intentional and subtle, where a user, after using and understanding the product, would be able to appreciate a deeper resemblance to our inspiring calligraphic style. Some examples include having a more intense transition in the curvature of the backrest, a sharp to rounded edge transition on the edges of the seats and a smooth joint transition between the front legs and the front spindle.

# SURFACE TREATMENT



REALISATION



# RESULT





















































# REFLECTION

This project was an educational experience that taught us many things regarding design, working within constraints, and the design process.

Working on a more aesthetics based project was a bit of a challenge for both of us coming from an analytical background. It was easy to focus on the designs of how certain surface traditions would be constructed what methods used, and mathematic and geometric parameters to follow without taking a step back to consider how the decisions affected the overall response to the design.

Because we wanted the design of our chair to reflect the philosophy of Chinese Clerical Script and not solely on the surface level aesthetics, we had to consider how subtle or blatant we wanted specific details to be, as well as how these details would interact with each other to form a cohesive unified design reflecting a singular character.

This required us to regularly step back from our detail oriented math based approach, and consider how many small design decisions can still influence the emotional response to the overall design aesthetics, even when done within guidelines and themes that were established initially.

With the goal of establishing a connection between Chinese Clerical Script and our design language in a subtle and philosophical way, our design process was also heavily informed by research, discussions, and user testing. Instead of plastering motifs and cliches, we want the user to feel the same energy from our design and clerical but only recognize the underlying connections upon an spending time with the furniture. This involved determining which shapes and details to emphasize, and which ones to blunt in order to achieve this affect, and further strengthening our design process by involving user not only in design anthropometrics, but also emotionally, linguistically, and culturally.

# REFERENCES

## BOOKS

### CONTEMPORARY CHINESE FURNITURE DESIGN

Fiell, C., Fiell, P., & Qu, Z. (2019). Contemporary Chinese Furniture Design. Cologne, Germany: Taschen. ISBN 978-1-78627-492-2

### MING-STYLE FURNITURE RESEARCH

Wang, S. X. (2020). Ming-style Furniture Research. Beijing, China: SDX Joint Publishing Company. ISBN 978-7-108-06731-9

### DESIGN: THE DEFINITIVE VISUAL HISTORY

DK. (2021). Design, Second Edition: The Definitive Visual Guide. ISBN 978-1-465-49137-4.

## WEBSITE

### 64 WAYS OF WRITING CLERICAL SCRIPT

[http://www.shufazidian.com/ziliao\\_m/31401.html](http://www.shufazidian.com/ziliao_m/31401.html) (2023-04-01)

## PICTURES

### FEMALE LEADERSHIP, JACKY TSAI

<https://www.theguardian.com/artanddesign/gallery/2016/oct/17/jacky-tsai-the-harmonious-society>

### SCANDINAVIAN INTERIOR

<https://www.thenordroom.com/a-combination-of-styles-in-a-historic-stockholm-apartment/>

### MATERIAL APPRECIATION

<https://download.muuto.com/MediaLibrary/Cover-Lounge-Chair-Images>

### SCANDINAVIAN MINIMALISTIC INTERIOR

<https://www.designhousedesign.com/se/luna-lamp?size=436&version=429&pp=0&epik=dj0yJnU9MjdBQm9yQ1BLRFRuakR6VHpbQjl3eWZnNVB6dUNsNIYmcD0xJm49Sk92ZWx5VEEdYRVRodU5hbjbQqSmdyUSZ0PUFBQUFBR1F4WExj>

### BOLIA TABLE PICTURE

<https://www.bolia.com/en/furniture/dining-room/dining-tables/?family=nord&lastfacet=family>

### HAY

[https://www.svenssons.se/varumarken/hay/crate-loungestol-lackad-furu/?variantId=577518-01&country=SE?&utm\\_source=google&utm\\_](https://www.svenssons.se/varumarken/hay/crate-loungestol-lackad-furu/?variantId=577518-01&country=SE?&utm_source=google&utm_)

### IKEA MUSEUM

<https://ikeamuseum.com/sv/almhult/utstallningar/berattelsen-om-ikea/demokratisk-design/>

## **CARL HANSEN & SØN**

[https://www.carlhansen.com/collection/chairs/ch24/ch24-mahogany-oil-fsc70-natural-cord/variant/9158?utm\\_medium=referral&utm\\_source=pinterest&utm\\_](https://www.carlhansen.com/collection/chairs/ch24/ch24-mahogany-oil-fsc70-natural-cord/variant/9158?utm_medium=referral&utm_source=pinterest&utm_)

## **SONG DYNASTY CHAIR**

<https://i.pinimg.com/originals/6b/c7/f2/6bc7f2b10074ee0c4707df9578becd2a.jpg>

## **MING DYNASTY JIAO YI**

<http://www.sothebys.com/en/auctions/ecatalogue/2007/fine-chinese-ceramics-and-works-of-art-including-property-from-the-collection-of-the-albright-knox-art-gallery-buffalo-new-york-n08299/lot.312.html>

## **SHANGXIA COLLECTION**

<https://i.pinimg.com/originals/48/9a/28/489a28ce0a527ce026af61f3aee20c7a.jpg>

## **韩熙载夜宴图**

<https://www.dpm.org.cn/collection/paint/228200.html>

## **王羲之**

<https://zhuanlan.zhihu.com/p/25378703>

## **HANGZHOU STOOL**

<https://www.chen-min.com/hz-stool>

## **CLERICAL SCRIPT**

<https://zhuanlan.zhihu.com/p/344483068>

[http://www.shufazidian.com/ziliao\\_m/31401.html](http://www.shufazidian.com/ziliao_m/31401.html)

[http://k.sina.com.cn/article\\_2147544553\\_8000ede900100g74y.html?from=cu](http://k.sina.com.cn/article_2147544553_8000ede900100g74y.html?from=cu)

## **BEECH TREE**

<https://www.skogskunskap.se/skota-lovskog/om-lov/vara-lovtrad/bok-fagus-sylvatica/>

## **BEECH WOOD**

<https://www.rarewoodsusa.com/species/beechn-american/>

## **CONTEMPORARY CHINESE FURNITURE DESIGN**

<https://www.bispublishers.com/contemporary-chinese-furniture-design.html>

## **DESIGN DECOND DK**

<https://www.amazon.com/Design-Second-DK/dp/1465491376>

## **CULTURAL REVOLUTION**

<https://i.pinimg.com/originals/78/25/65/782565d79e75ef8ecc4c5b5d48d11582.jpg>

## **CH CHAIR**

<https://www.carlhansen.com/sv-se/kollektion/stolar/ch24/ch24-oakwalnut-oil-natural-cord/variant/9448>

## **3D CALLIGRAPHY**

<https://www.dazuoshe.com/bashufabiancheng3ddongtaiyet.html>

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Thank you all for being a part of our journey and for helping us achieve our goals.







**2023**