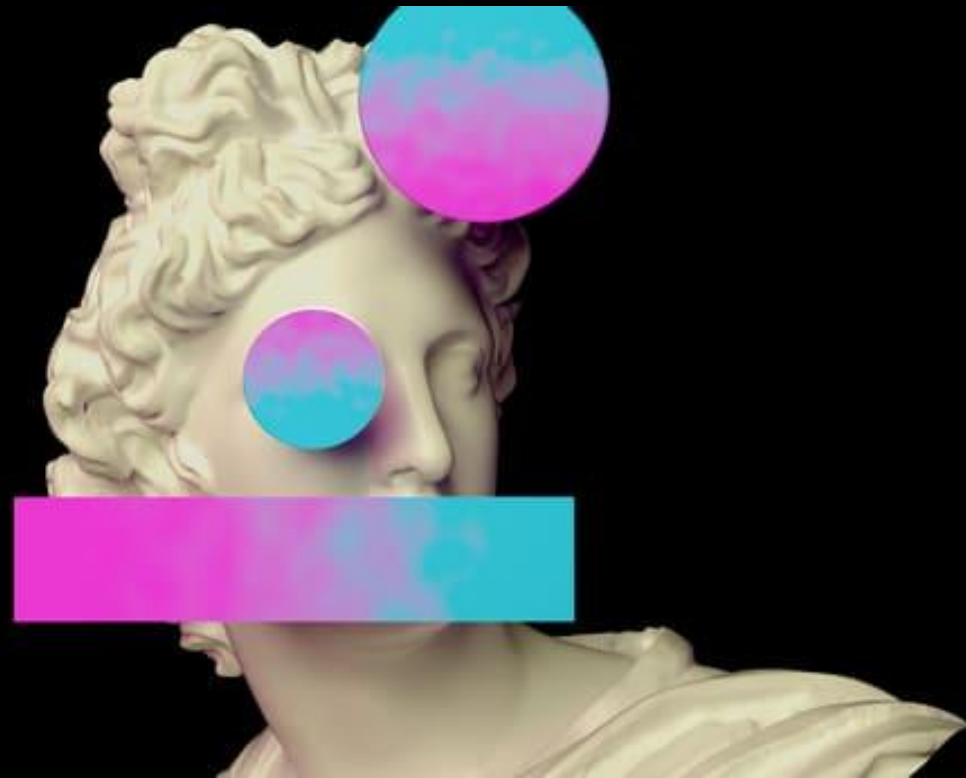


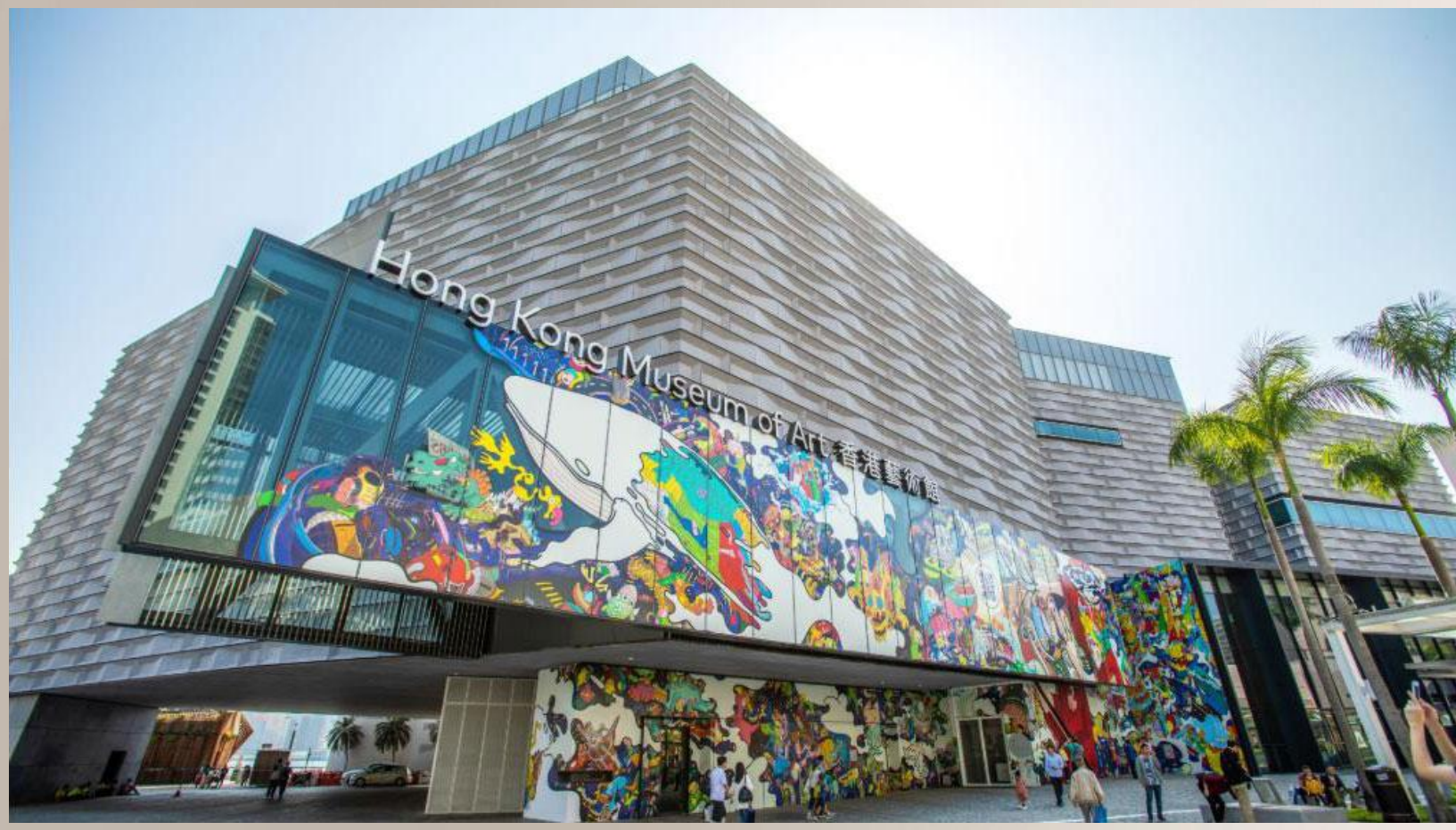
From Museums to Metaverse: Digital Heritage and Art Literacy in Education

Qiuzi Guo

Assistant Professor, Department of Cultural and Creative Arts,
The Education University of Hong Kong



1. Museum and Cultural Heritage





Why Do We Need Museums?





The Origins of the Museum: *It All Started in Italy*



Domenico Remps, Cabinet of Curiosities, 1690, Museo dell'Opificio delle Pietre Dure, Florence, Italy.

Wunderkammer = wonder chamber



Wunderkammern were designed to evoke “a room of wonder”

showcasing marvels—scientific, artistic, natural—that blurred traditional boundaries





A View of a Wunderkammer: Jan Bruegel and Peter Paul Rubens, *Allegory of Sight*, 1617, Museo del Prado, Madrid, Spain.

Studiolo of Francesco I de' Medici, c.1572, Palazzo Vecchio, Florence, Italy.



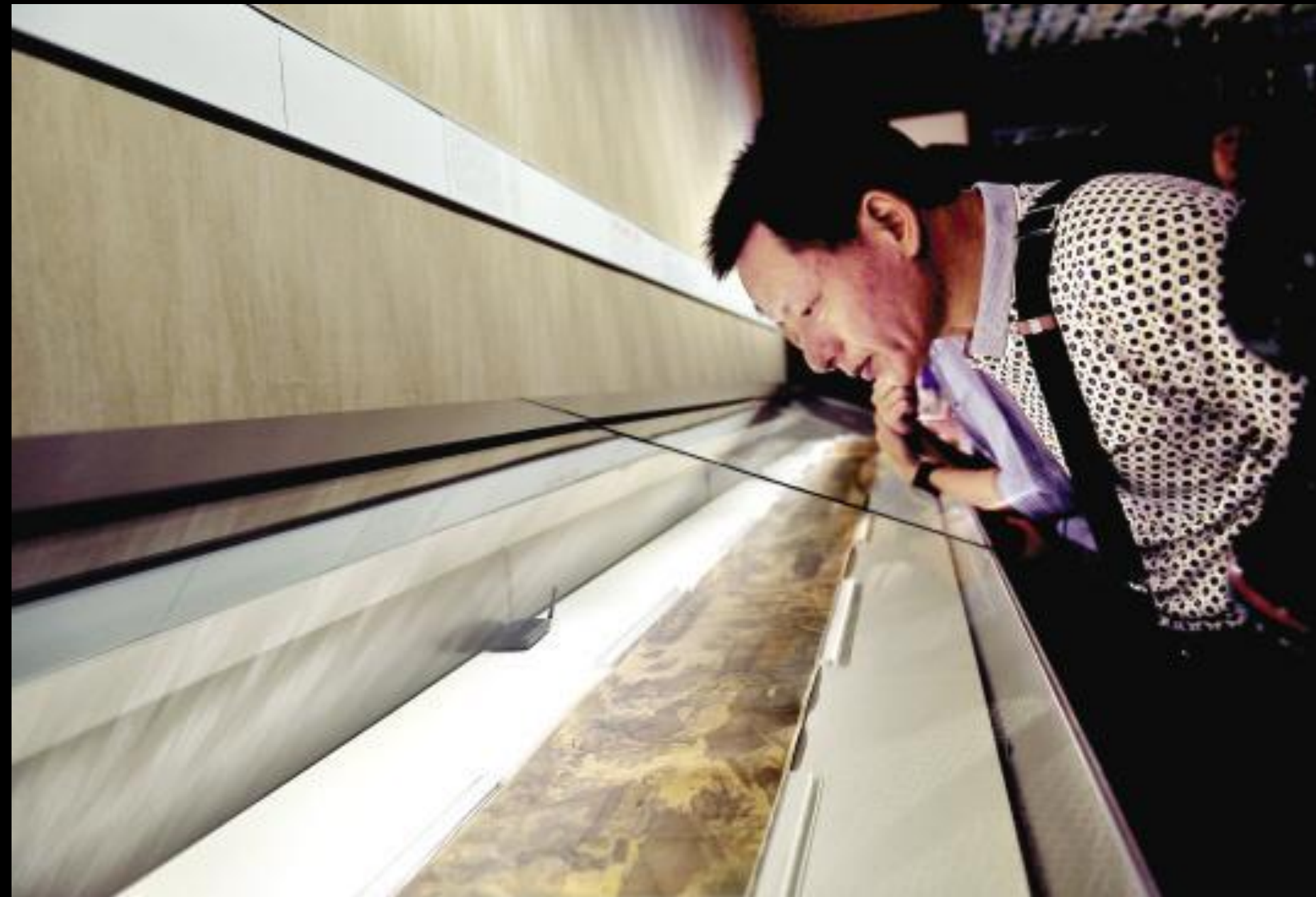
Hands-On & Interactive Learning



The Archduke Leopold Wilhelm in His Gallery at Brussels by David Teniers the Younger (1610-1690) 1651. Kunsthistorisches Museum, Vienna



The British Museum (1759, London)



Qingming festival scroll exhibiting in the Palace,
2015



Qingming festival scroll exhibiting in the Palace,
2015



Run in the Palace”



A Fervor to Glimpse 'China's Mona Lisa'

Give this article



Waiting in Beijing to enter the Palace Museum in the Forbidden City to view a famous painted scroll from the 12th century. Gilles Sabrie for The New York Times

An endeavour to assert cultural identity.

“The growing emphasis on culture, however, stems partly from the government’s efforts.”



- How did the Imperial Palace become the Palace Museum?
- Why are there more than one 'Palace Museums'?
- What are the key impacts of digitization of the Palace Museum's collection?



(Purple) Forbidden City 紫禁城



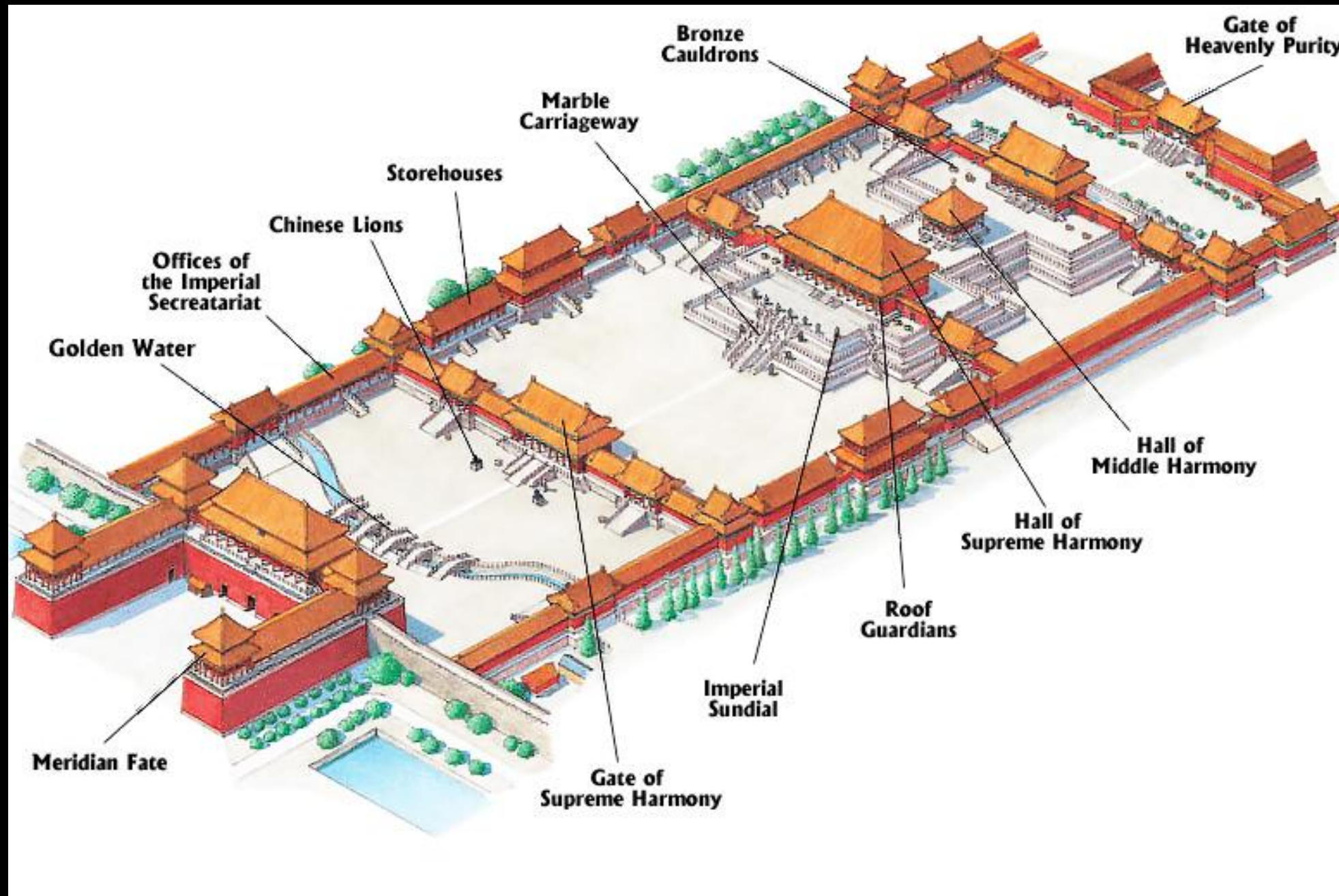
- Chinese name: 紫禁城 - literally "Purple Forbidden City"
- Purple represents the North Star, believed to be the Celestial Emperor's home
- Construction: 1406 - 1420, under the Ming dynasty, continuously repaired/rebuilt by successive dynasties



Palace buildings:

- situated along a **central north-south axis**
- **symmetrical layout** suggests established imperial hierarchy

Portrait of an official in front of the Beijing Forbidden City,
16 Century



Clear north-south line organizing the layout

Most important buildings positioned on central axis (Hall of Supreme Harmony)

Structures arranged symmetrically on either side

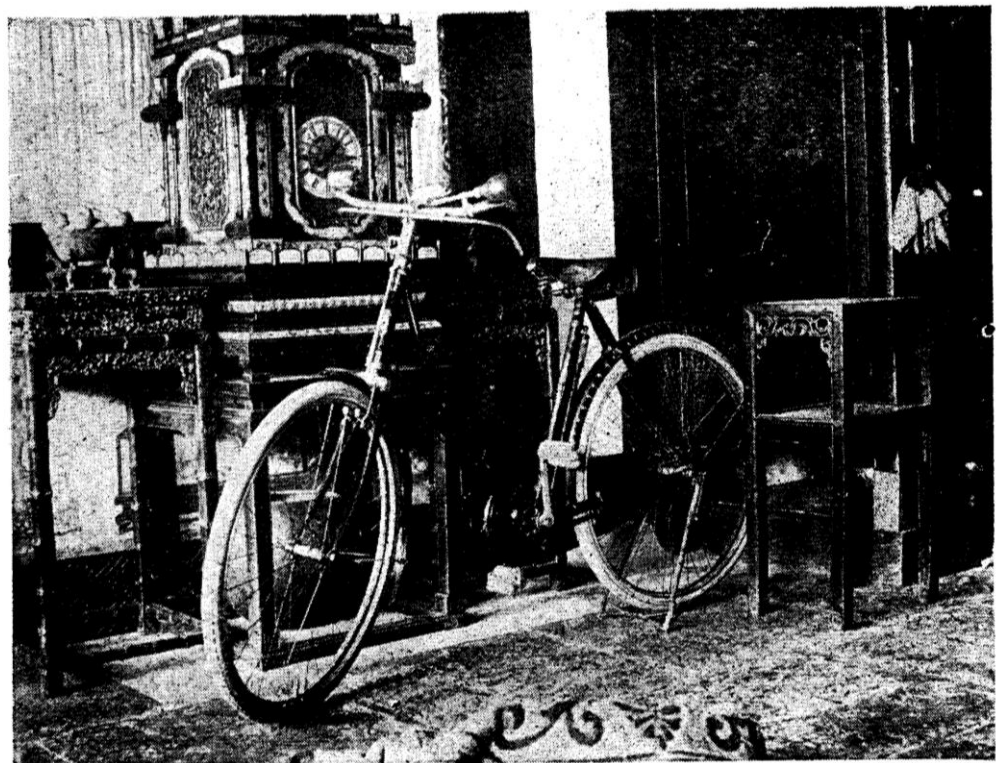
General Layout of the Forbidden City in Beijing

The Last Emperor Puyi (1906-1967)

- Born in 1906
- Became Xuantong Emperor at age 2 in 1908
- Abdicated the throne in 1912 at age 6 after the Xinhai Revolution
- Left the Forbidden City in Beijing after his abdication in 1924



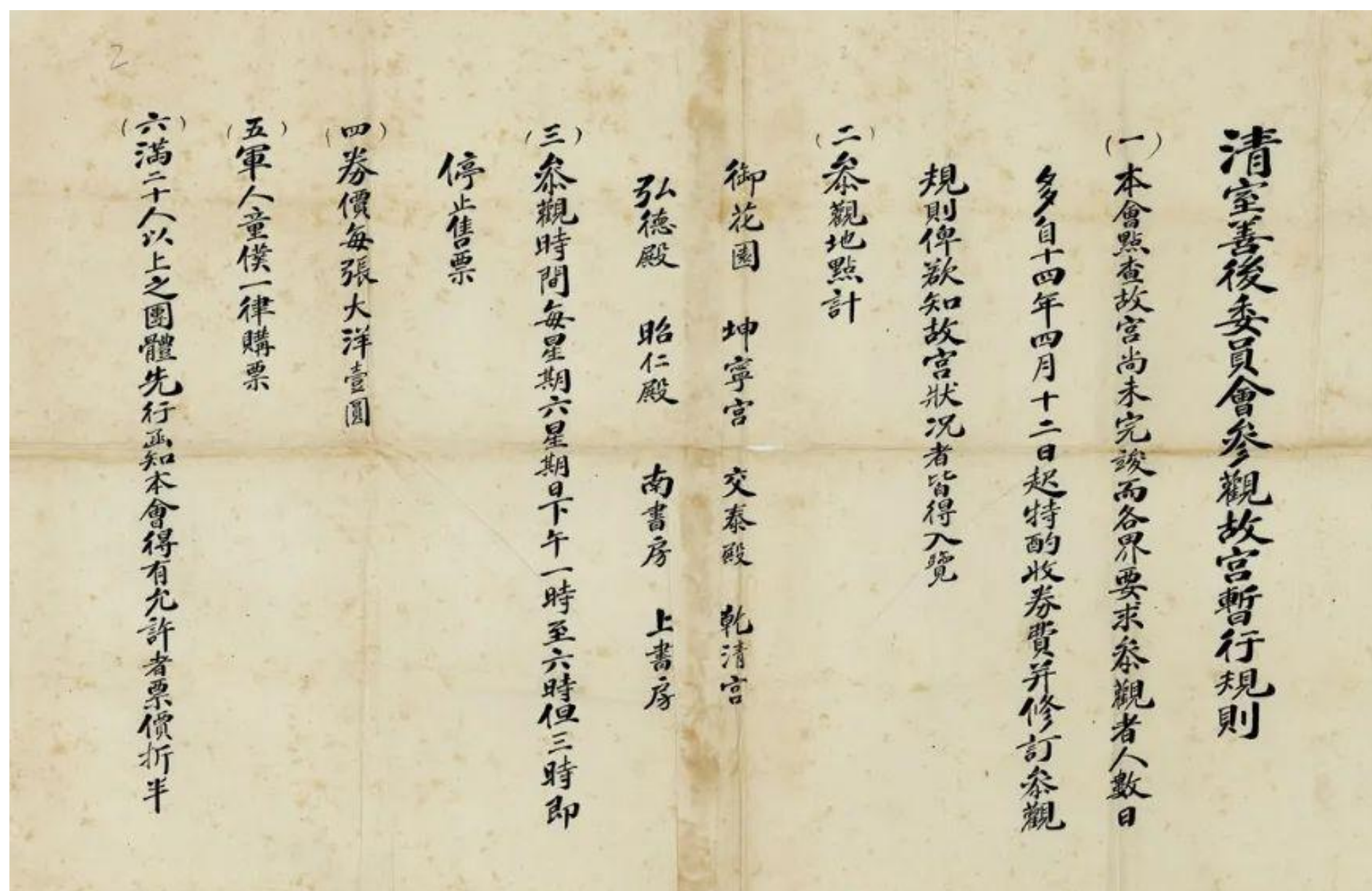
Became Public since 1925



27
儲秀宮內陳設
及廢帝溥
儀妻之自行
車
十三年六月二十
二日為取不
件啟封不
換

Chen Wanli , Wan Rong's Bicycle,
1924





“The rules for tourists visiting the Palace Museum formulated by the Imperial Household Committee.” 1925

Starting from April 12, 1925, tickets will be sold, and visiting rules revised so that those who wish to see the condition of the Forbidden City can enter and visit.

The visiting areas include: The Imperial Garden, Kunming Palace, Jiaotai Hall, Qianqing Palace, Hongde Hall, Zhaoren Hall, South Study, and Upper Study.

Visiting hours are every Saturday and Sunday afternoon from 1 pm to 6 pm, but ticket sales will stop at 3 pm.

The ticket price is one yuan per ticket.

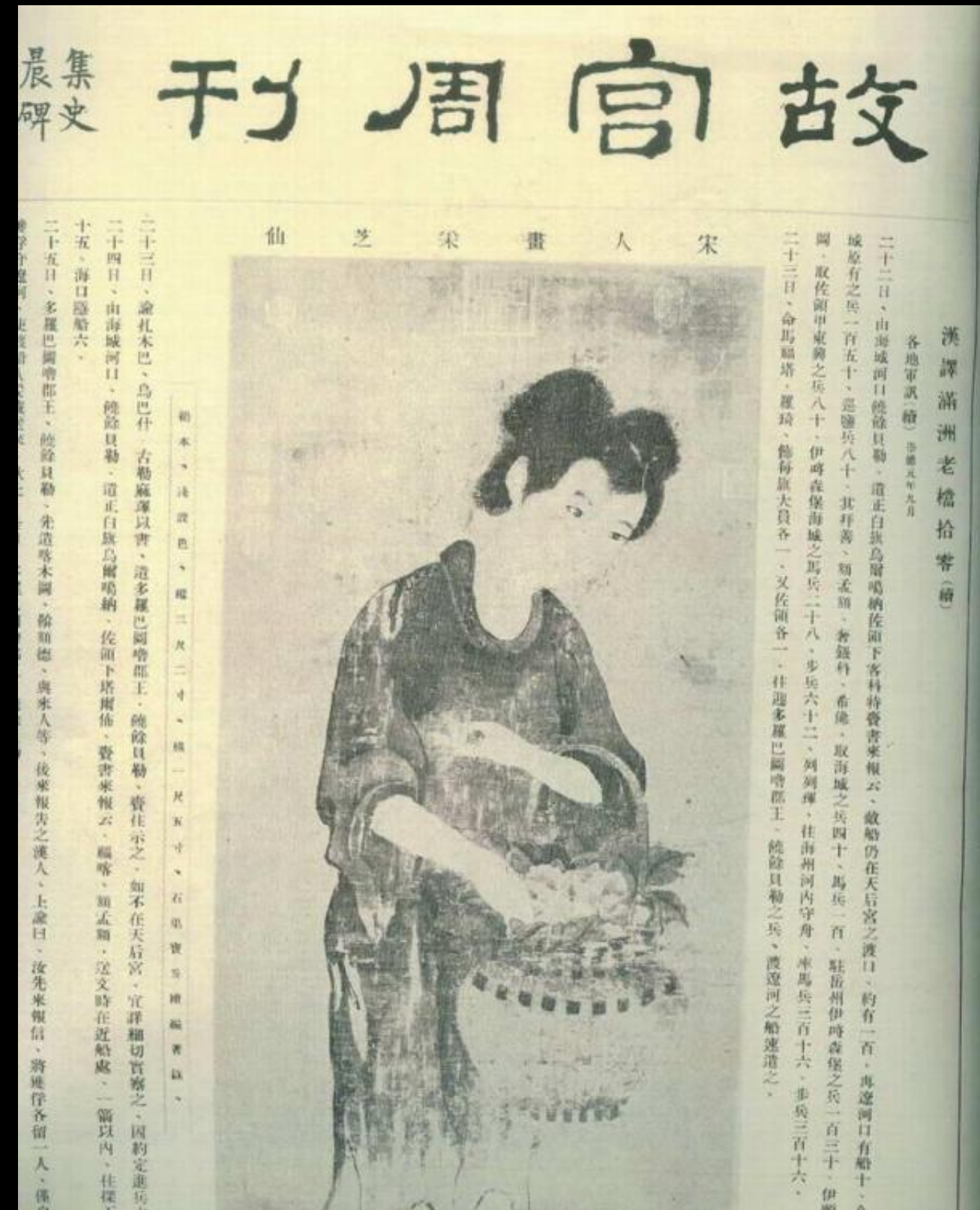
Why the Forbidden City was transformed into the Palace Museum

- Preserving cultural heritage: growing need to preserve the legacy rather than allowing it to be damaged or plundered
- Nationalist sentiment: break from past feudal traditions and reshape China into a modern nation-state
- Promoting education and research: allowing for deep study, exhibition, and education about history and culture
- Tourism potential: Satisfy domestic and international interest in imperial palace

Palace Museum in the 1930s



Palace Museum Weekly





National Palace Museum, Taipei

<https://theme.npm.edu.tw/opendata/index.aspx>



全文檢索

請輸入關鍵字



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相關連結

常見問答

意見反映

English

故宮網站

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:::

OPEN DATA

文物典藏資料庫

100萬畫素 CC0

600萬畫素 CC BY 4.0



展覽精選

約 3MB/72dpi



精選圖像

約 20MB/300dpi



故宮精選

全民共享





Open on July 2, 2022
Located in the West
Kowloon Cultural District
(WKCD)

Designed by Rocco Yim

900 artifacts from the
Palace Museum, Beijing and
the National Palace
Museum, Taipei



timable

香港故宮文化博物館 Hong Kong Palace Mu...

关注



More instagrammable?

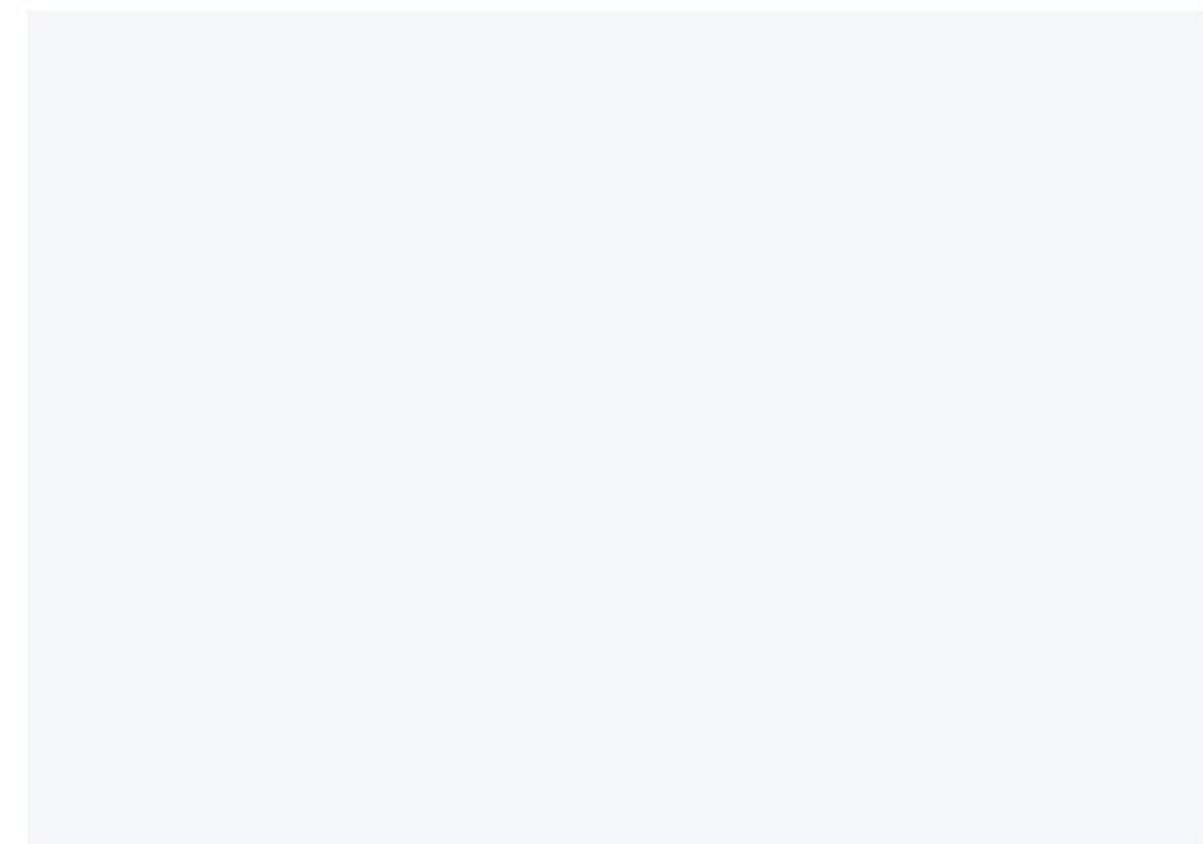


Jazz Musical Festival

西九文化區 | 最快年底可中環坐船前往 本年度經常營運赤字料10億

撰文：倪清江

出版：2025-02-06 21:08 更新：2025-02-07 01:17



熱門文章

查看更多 >



2. Technology and the Transformation of Museums



数字圆明
RE-YMY



伊斯蘭國摧毀伊拉克亞述古城尼姆魯德



PA
尼姆魯德亞述

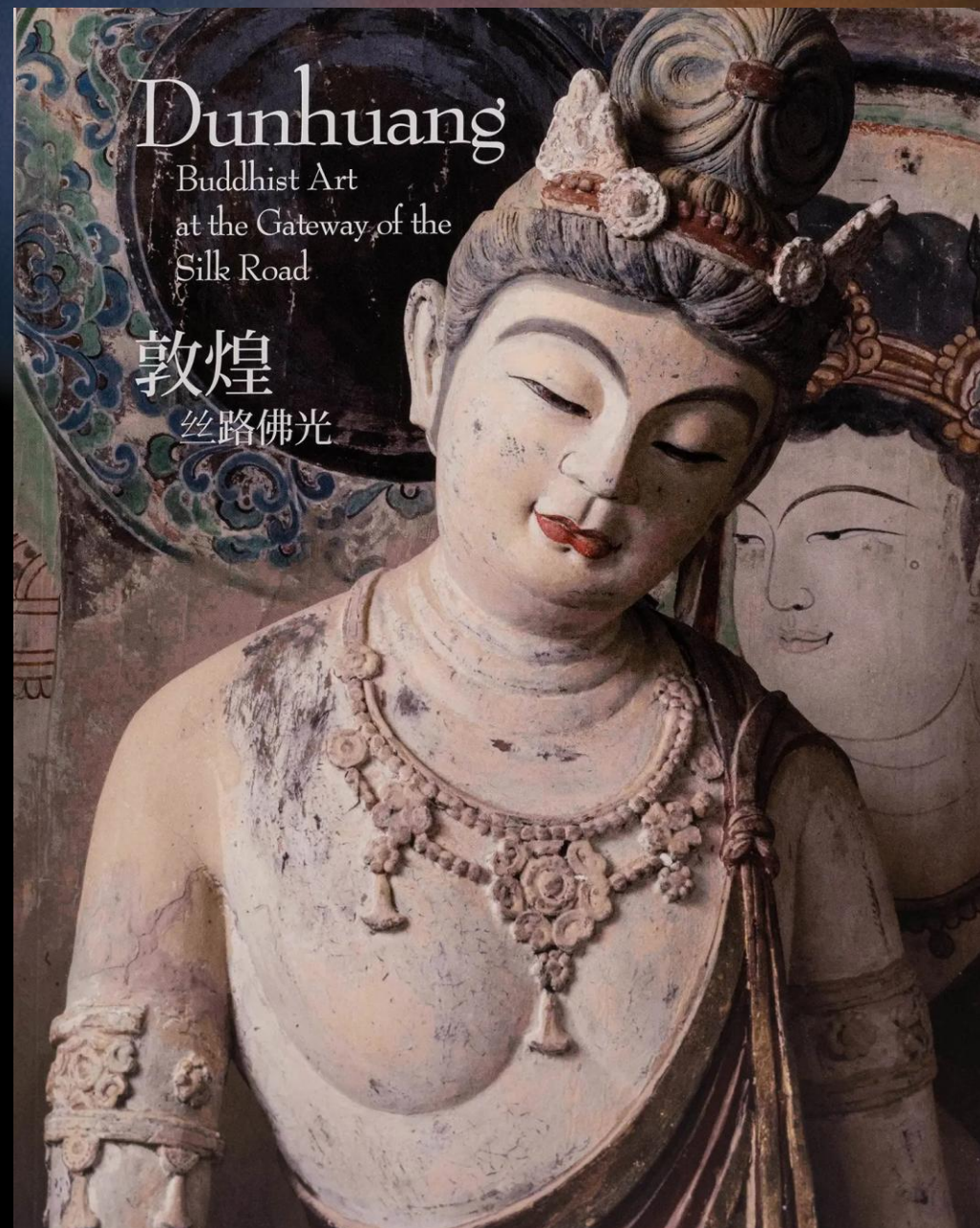


The Tabira Gate, which stands at the centre of Ashur, suffered 70% damage when Isis attacked the city in 2015

YouTube



Dunhuang Mogao Cave 敦煌莫高窟



Located in Dunhuang, Gansu Province, China, at the edge of the Gobi Desert.

A key Silk Road hub for trade, cultural exchange, and religious activities.


Founded in the 4th century CE as a Buddhist meditation and pilgrimage site.

Number of Caves – Over 700 caves, with 492 decorated caves containing murals and sculptures.

<https://www.e-dunhuang.com/index.htm>

Enter Mogao Grottoes Here

Enter the keyword (e.g.Apsaras) here and click the se

 SEARCH



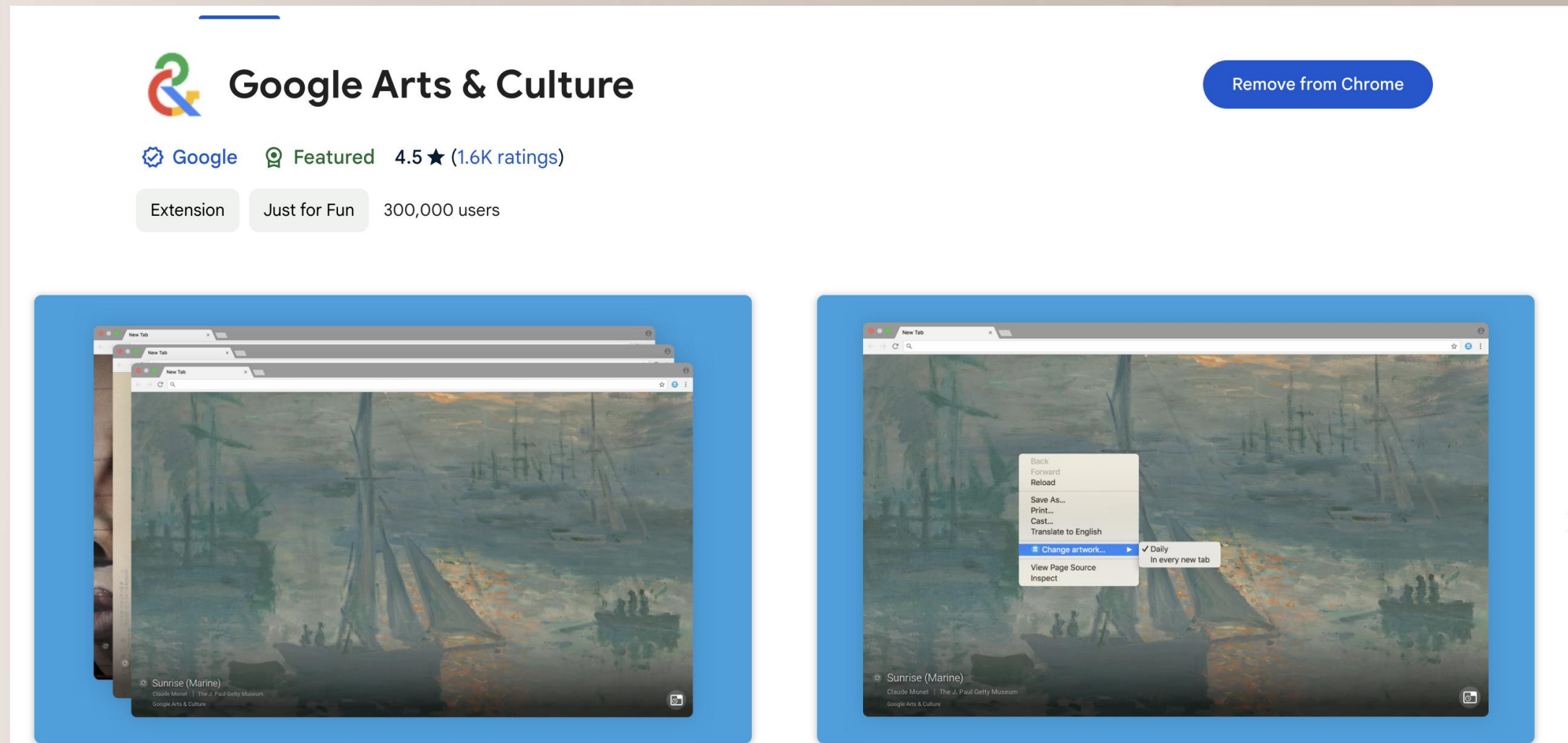


Some cultural heritage sites are endangered and may disappear in the future—how can we still visit and experience them?

How can we explore and experience tangible cultural heritage without physically visiting the site?



Digital Cultural Heritage



Web browser extension
from Google Arts & Culture





Categories



Artists

13 851 artists



Mediums

241 mediums



Art Movements

126 art movements



Historic Events

643 historical events



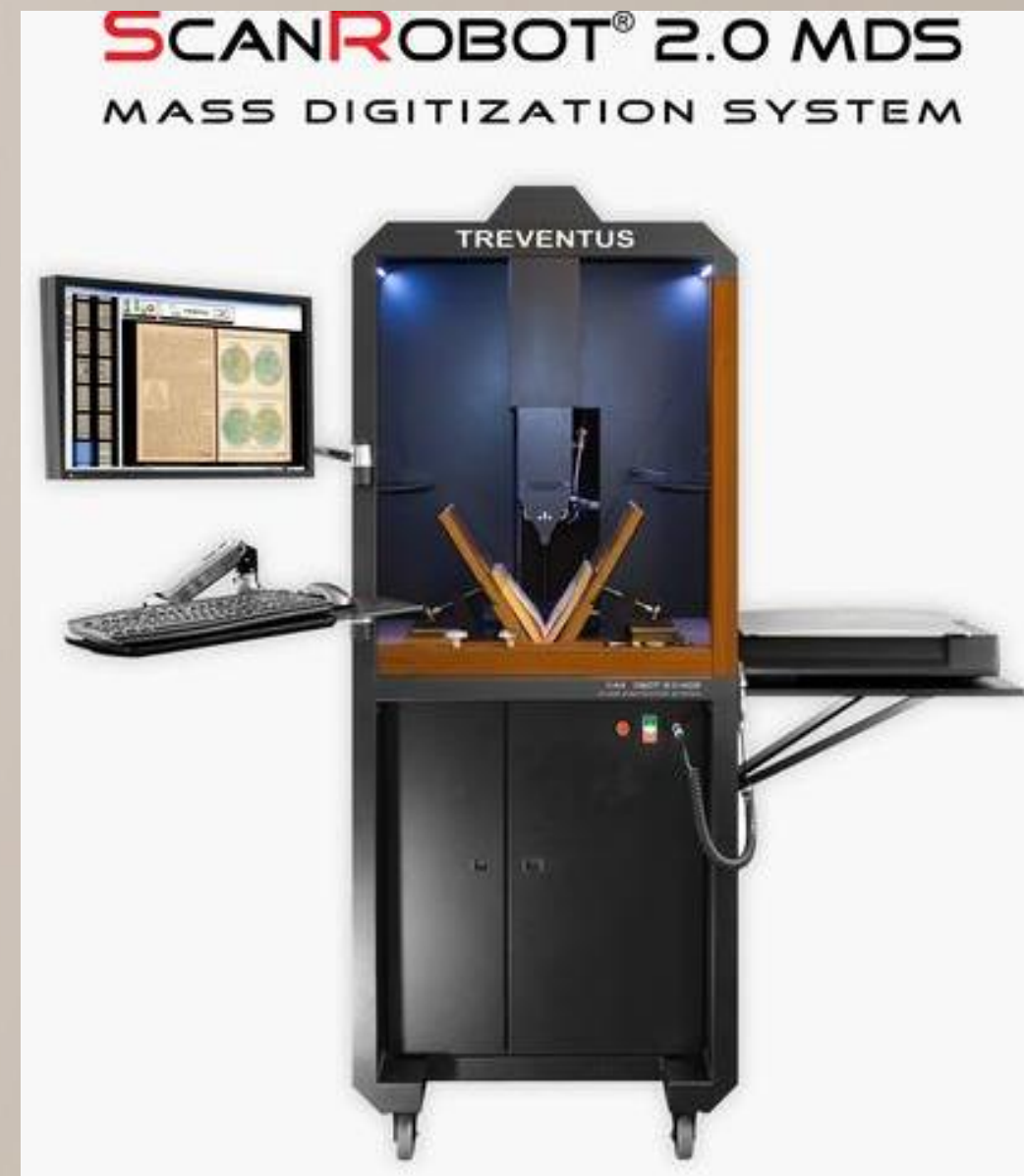
Historical Figures

9 721 historical figures





Digitization: converting information from a physical format into a digital one, which can involve **2D and 3D digitization**



- 2D digitization: Creating digital images from flat sources like books and artwork using scanning or photography.



The Milkmaid
Johannes Vermeerca. 1660





The Milkmaid

Johannes Vermeer (1632–1675), oil on canvas, c. 1660

A maidservant pours milk, entirely absorbed in her work. Except for the stream of milk, everything else is still. Vermeer took this simple everyday activity and made it the subject of an impressive painting – the woman stands like a statue in the brightly lit room. Vermeer also had an eye for how light by means of hundreds of colourful dots plays over the surface of objects.

On display in 2.30: Gallery of Honour

Metadata

Artwork type
painting

Object number
SK-A-2344

Dimensions
height 45.5 cm x width 41 cm


Physical characteristics
olieverf op doek

[View all data](#)



Metadata

- Metadata is a map, and it is a means by which the complexity of an object is represented in a simpler form.



Preview of EU006022.jpg

Special Instructions:

Filename	EU006022.jpg	Uncompressed size	51810 Kb
File Size	3941.44 Kb	Dimensions (pixels)	3554 x 4976
Last Modified	07/09/2012	Dimensions	30.09 x 42.13 cm / 11.85 x 16.59 inch
Colour space	RGB	Resolution	118.11 ppc / 300.00 ppi

Caption

Baroness names Ex Kaiser ' s daughter in law in a divorce suit The Baroness Von Plettenberg who it is reported has named Princess Eitel Friedrich , daughter in law of the Ex Kaiser in a divorce suit against Baron Von Plettenberg as one of the parties with whom the Baron is alleged to have carried on an intrigue 13 March 1923

Keywords

Black and White , Monochrome , 20th Century , Central News , 1920s 1920's 20s 20's twenties , Portrait , Pearl necklace , Woman , europeana photography

Information

Credit : TopFoto.co.uk
TopFoto.co.uk
Photographer: FotoWare fotostation

Local Caption



(Left) **Court painters**

The Qianlong Emperor in Court Attire

Qing dynasty, Qianlong period (1736–1795)

Hanging scroll, ink and colours on silk

© The Palace Museum



(Right) **Hyacinthe Rigaud** (Catalan-French, 1659–1743)

Louis XIV in Coronation Mantle

1701–1712

Oil on canvas

The Palace of Versailles, MV 3563

© Château de Versailles, Dist. RMN © Christophe Fouin

1

轉花變字水法問樂鐘

清中期，十八世紀
銅鍍金、琺瑯、玻璃
故宮博物院

Musical automation clock with spinning-flower decoration

Mid-Qing dynasty (18th century)
Bronze with gilding, enamel, glass
The Palace Museum

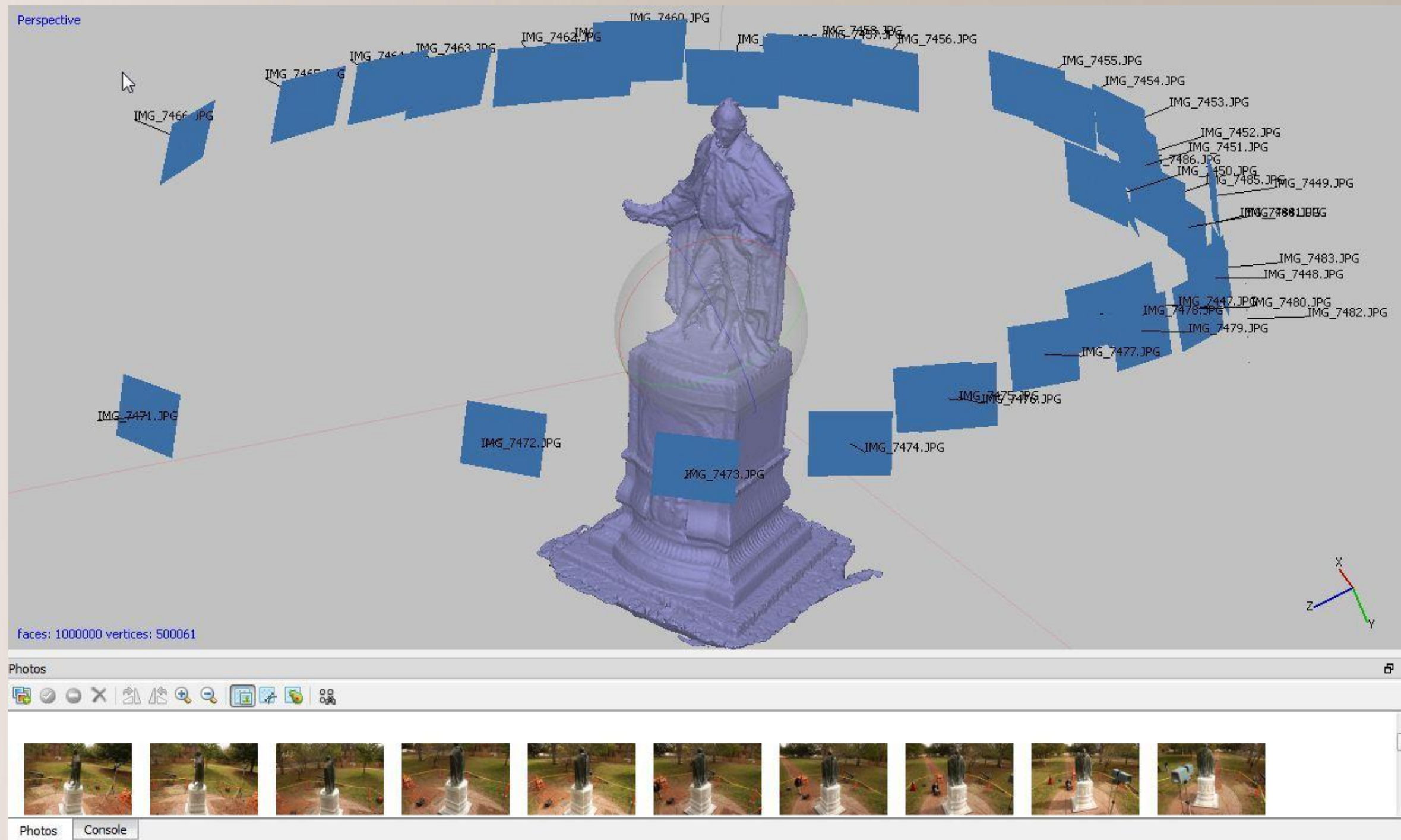
作為歐洲傳教士入華口岸和對外貿易中心，廣州自康熙年間就發展出造鐘技術。乾隆年間，廣東地方官員常向清宮進貢廣州製鐘錶。廣州鐘錶的特點之一是多裝飾有色彩鮮艷的各色琺瑯。此即為一例，鐘身兩側飾有麗多彩的幾何紋飾琺瑯嵌片。

As a gateway for European missionaries and a hub for foreign trade, Guangzhou has maintained a rich clock-making tradition since the Kangxi period. During the Qianlong period, Guangzhou clocks were frequently presented by Guangdong officials as gifts to the Qing court. Guangzhou clocks are characterised by their vibrant enamel decoration. This example features colourful geometric enamel inlays on both sides of the clock body.





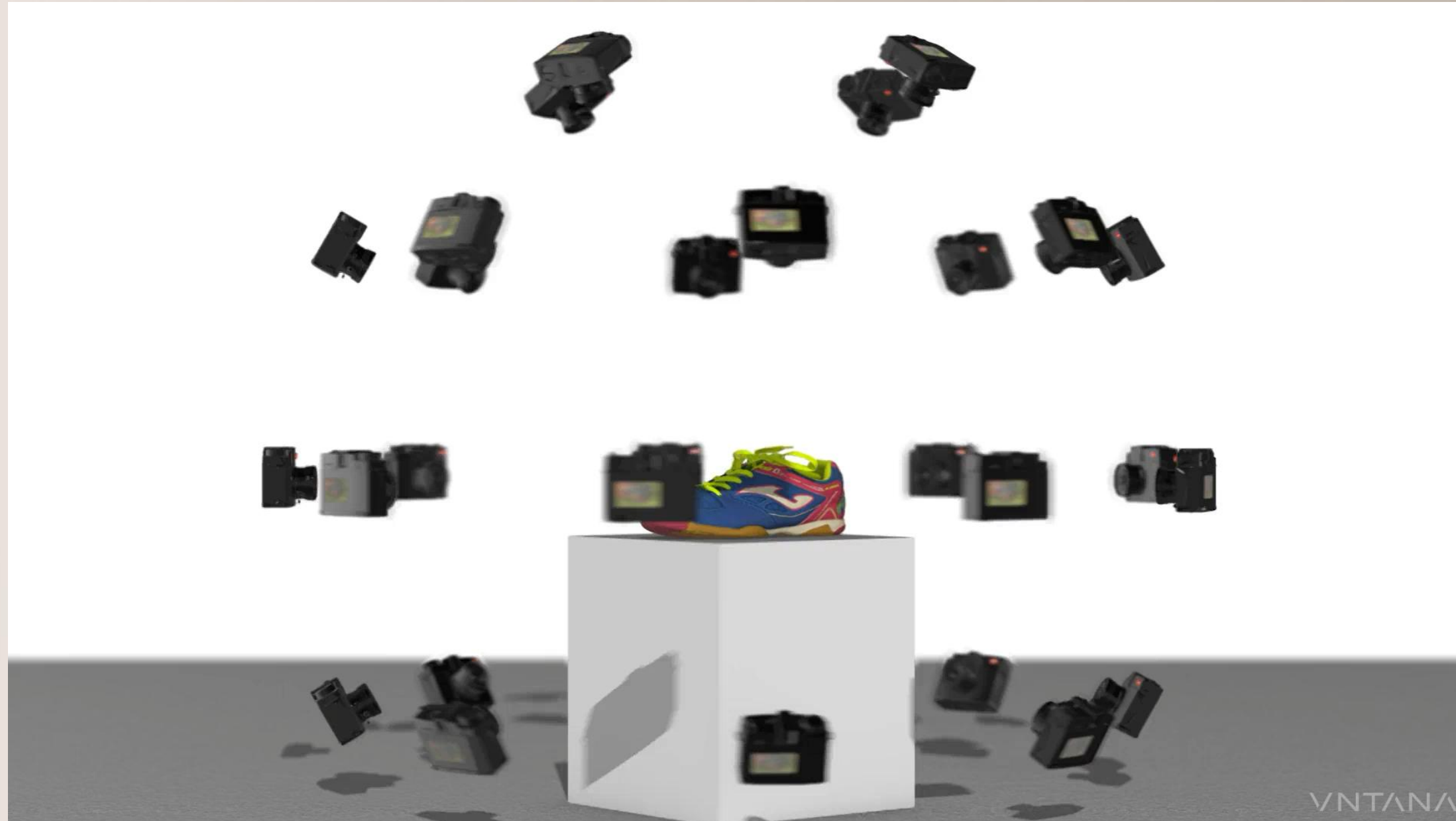
Digitization: converting information from a physical format into a digital one, which can involve **2D and 3D digitization**



- 3D digitization: Capturing the complete 3D shape of objects and artifacts as digital 3D models through techniques like 3D scanning or photogrammetry



Digitization: converting information from a physical format into a digital one, which can involve 2D and 3D digitization



photogrammetry?

It's a technique that uses overlapping photographs taken from multiple angles to reconstruct a 3D model of an object or space.

Digitizing 3D Collections for Museums

Sketchfab CANCEL

Model Name	Views	Comments	Favorites
Example: Alexander the G...	18.5k	1	76
A queen from the Lewis ...	24.4k	6	249
The Rosetta Stone	475.1k	25	558
Lewis Chess Set	51.9k	8	462
A marble head of Vespasian	5.8k	4	93
A statue of Roy, High Pri...	13.7k	2	223
Black steatite cippus	3.8k	3	54
Statue of A'a [animated]	5.4k	3	82
(Unlabeled)			
(Unlabeled)			
(Unlabeled)			
(Unlabeled)			



Bronze Age Spearhead SL.746

3D Model



MicroPasts PRO

FOLLOW

264

2k

44

Download 3D Model

+ Add To

Embed

Share

Report



Bronze Age Spearhead SL.746

3D Model

MicroPasts PRO
FOLLOW

264 2k 44

Download 3D Model + Add To </> Embed ↗ Share

Report



3D print of a bronze age spearhead, downloaded from Sketchfab



Duke of Mao Tripod (毛公鼎), National Palace Museum, Taipei

BC 1046-BC 771, 499 characters on the bronze recording the Duke of Mao's contributions to the state governance



Duke Mao Tripod 毛公鼎

3D Model



8N Films Official

FOLLOW

170

685

29

Download 3D Model

+ Add To

</> Embed

Share

Report

Triangles: 58k Vertices: 29k [More model information](#)

<https://sketchfab.com/3d-models/duke-mao-tripod-54225cbe44eb4feb8fc26ecbe45b1557>



The MicroPasts team taking photos of a British Museum hoard, 2016

“We used a technique called photogrammetry and the resulting output was rendered in 3D software. Ideally anyone, an individual or institution, should be able to replicate our methods to create 3D representations of archaeology or artworks.”

British Museum

Why the British Museum released 3D models



Increase Global Access: Allow interactive exploration of artifacts beyond physical visits

Hand on Engagement: 3D models enhance understanding of forms, materials, and manufacturing

Immersive Experience: Immersive virtual reality and augmented reality applications

Cultural Industry: 3D printed replicas for souvenirs

How to 3D scan the space?



Chaozhao Hungry
Ghosts (Yulan)
Festival

香港佛教三角碼頭盂
蘭節的小壇 (2021)





**Seeking for what I remembered about
my grandma's house.**

2018 -2019

Hungry Ghost Festival (盂蘭節/中元節)

農曆七月十五開鬼門關

“Virtual Reality Yu Lan Festival Tour”,
developed by Hong Kong Shue Yan
University
<https://yulanvrtour22.hksyu.edu/>





Mr. Lam, the 91-year-old owner of the iconic 金城海味 seafood store, which has stood in Kowloon City for 66 years, reminisces about the generations of patrons introduced through family ties and highlights the shop's numerous **'antiques.'**

- **Impending Demolition:** Urban development plans threaten the existence of Nga Tsin Wai Road, risking the loss of vital historical and cultural landmarks
- **Preservation of Cultural Heritage:** Risk of losing stories, traditions, and memories integral to cultural identity



Interview Questions

劉生你好，跟住想問一下茶葉店既由來？
點解會開一間茶莊？

點解一開始會選擇這區為店址？

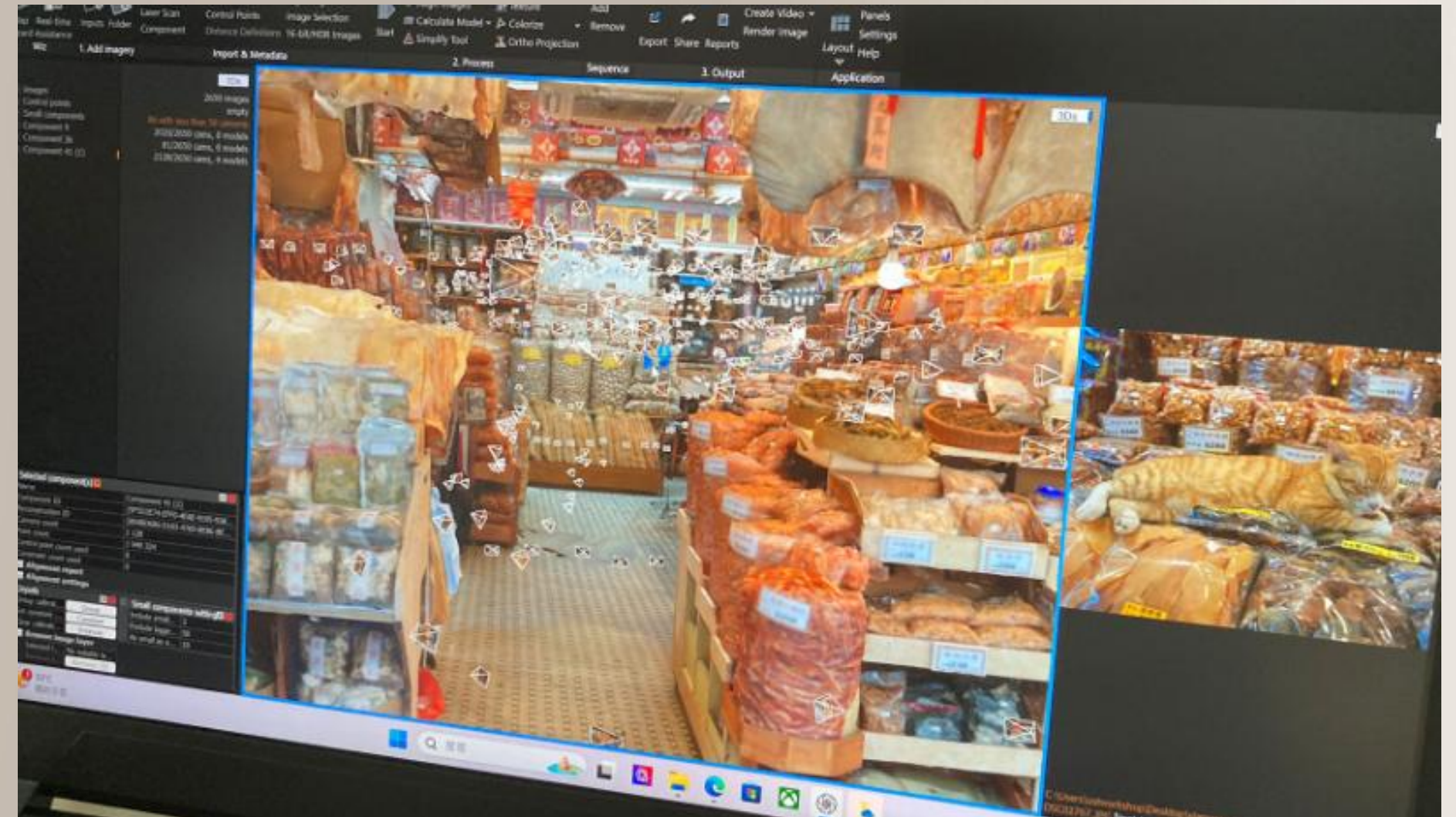
咁樣點解會命名為源茂興記茶莊既？

由之前的報道知道你地茶莊的招牌係鐵觀音，想請問下點解鐵觀音是需要烘培嘅？其他茶葉需唔需要烘培？只有鐵觀音需要用火來烘培？

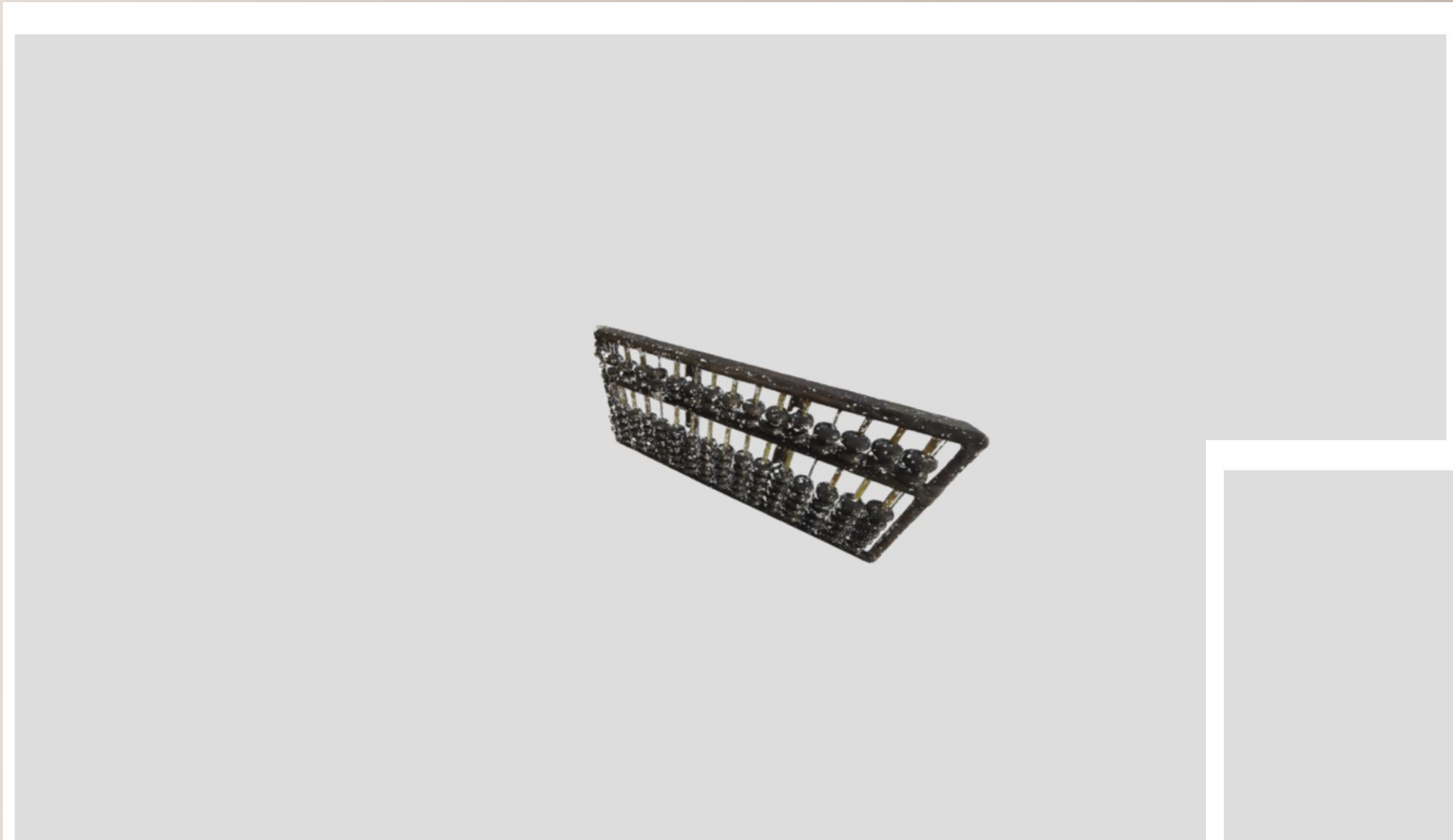
以前喺明報報道裏提及過D鐵觀音茶葉是會以錫罐裝著既，點解會用錫罐裝住嘅？咁樣用玻璃瓶裝有沒有它的好處？

唔同鐵觀音茶葉的命名係咪有各自嘅意思？

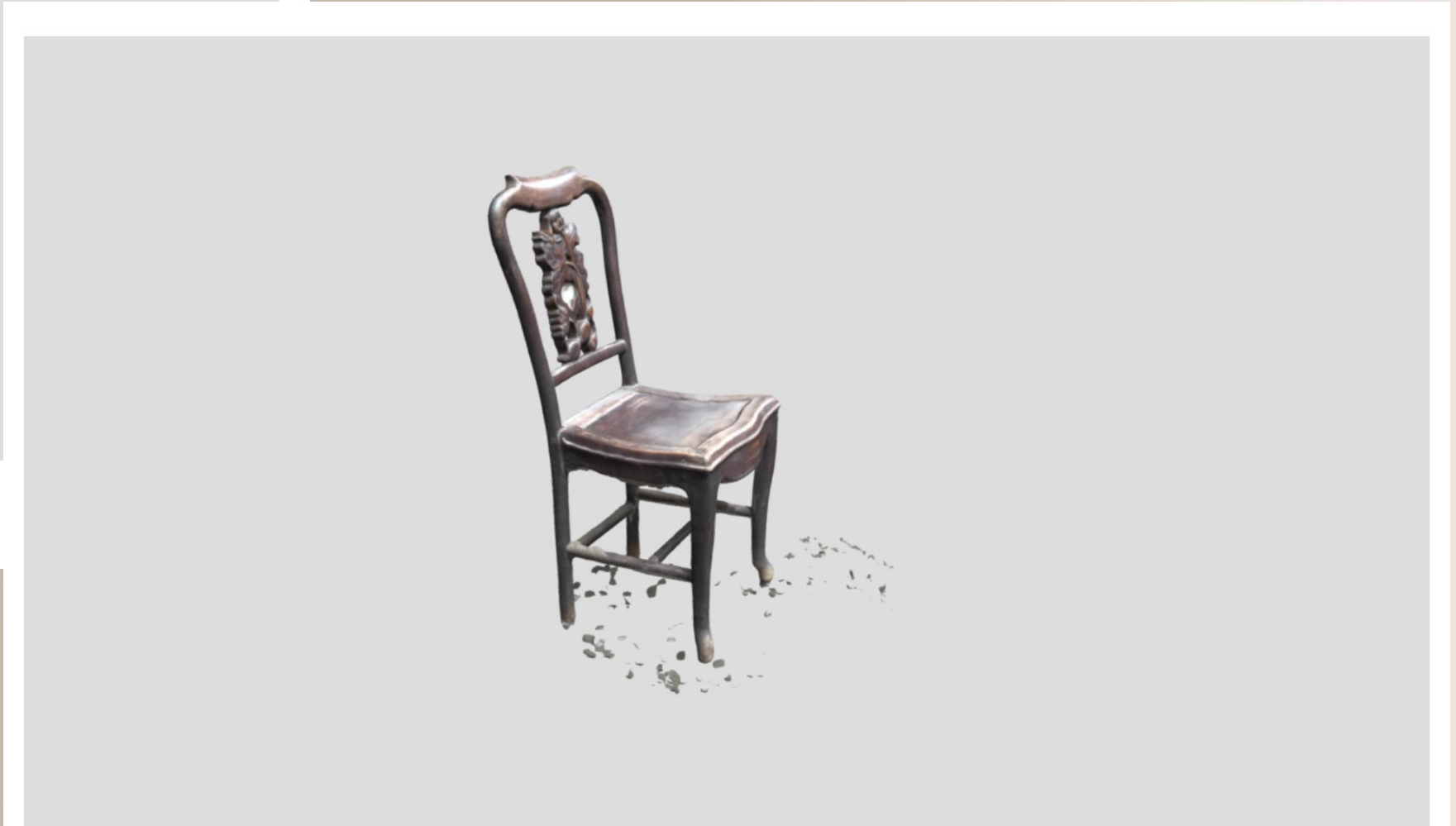
1. Photography & Scanning (Photogrammetry Software – RealityCapture)
2. 3D Data Processing & Reconstruction (RealityCapture + Blender)



3. 3D Modeling & Scene Setup (Unreal Engine + Blender)

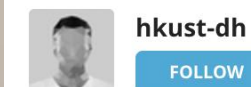


[Draft only] 金城海味 - 算盤
3D Model



[Draft only] 源茂興記茶莊 - chair
3D Model

<https://sketchfab.com/3d-models/draft-only-chair-a72e0a274fc7483984b200756b2668e6>



源茂興記茶莊

翠竹地黃

源茂興記





Step 4: Deployment & Interaction Setup

VR Scene Deployment

- Convert GLB files to FBX format and optimize them for VR compatibility.
- Set up the scene for VR headset interaction, ensuring smooth performance.
- Implement user movement, spatial audio, and realistic physics for immersion.

(Unreal Engine – To build and export interactive VR & desktop scenes.)



Want to Learn How to Digitally Recreate a 3D Virtual Space (Digital Cultural Space)? Start Here!

1. *Photography & 3D Scanning*

 Goal: Capture real-world objects and spaces digitally.

 Software & Tools:

- Photography Basics – Start with any camera or smartphone.
- Photogrammetry Software – RealityCapture, Agisoft Metashape, or Meshroom (Open-source).



Want to Learn How to Digitally Recreate a 3D Virtual Space (Digital Cultural Space)? Start Here!

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2. 3D Data Processing & Reconstruction

 Goal: Convert raw scans into clean, usable 3D models.


 Software:

- RealityCapture – For processing scanned images into 3D models.
- Blender (Free) or ZBrush – For refining, cleaning up, and fixing the models.



Want to Learn How to Digitally Recreate a 3D Virtual Space (Digital Cultural Space)? Start Here!

3. 3D Modeling & Scene Setup

 Goal: Create a digital environment with textures and lighting.

 Software:

- Unreal Engine – For scene setup, lighting, and VR deployment.
- Blender – For creating and modifying 3D models.



Want to Learn How to Digitally Recreate a 3D Virtual Space (Digital Cultural Space)? Start Here!

4. VR pr desktop Deployment

 Goal: Make the 3D space interactive in VR / desktop environments.

 Software:

- Unreal Engine – To build and export interactive VR & desktop scenes.
- Unity (alternative) – Another popular game engine for interactive experiences.
- Oculus SDK (if using VR headsets) – For VR compatibility.

*Consider:
How to digitally
recreate Jamia
Mosque?*

香港中環些利街30號
回教清真禮拜總堂
Jamia Mosque



重要通知

2024年3月24日至4月1日開放時間之特別安排



香港故宮文化博物館
Hong Kong Palace Museum

參觀 展覽 活動 研究 學習 館藏 支持我們 關於我們

登入 | 繁 | 購物車

香港故宮文化博物館特別展覽
Hong Kong Palace Museum Special Exhibition

THE HONG KONG JOCKEY CLUB SERIES
香港賽馬會呈獻系列

清代皇家園居文化

圓明園

YUAN MING YUAN
Art and Culture of an Imperial Garden-Palace

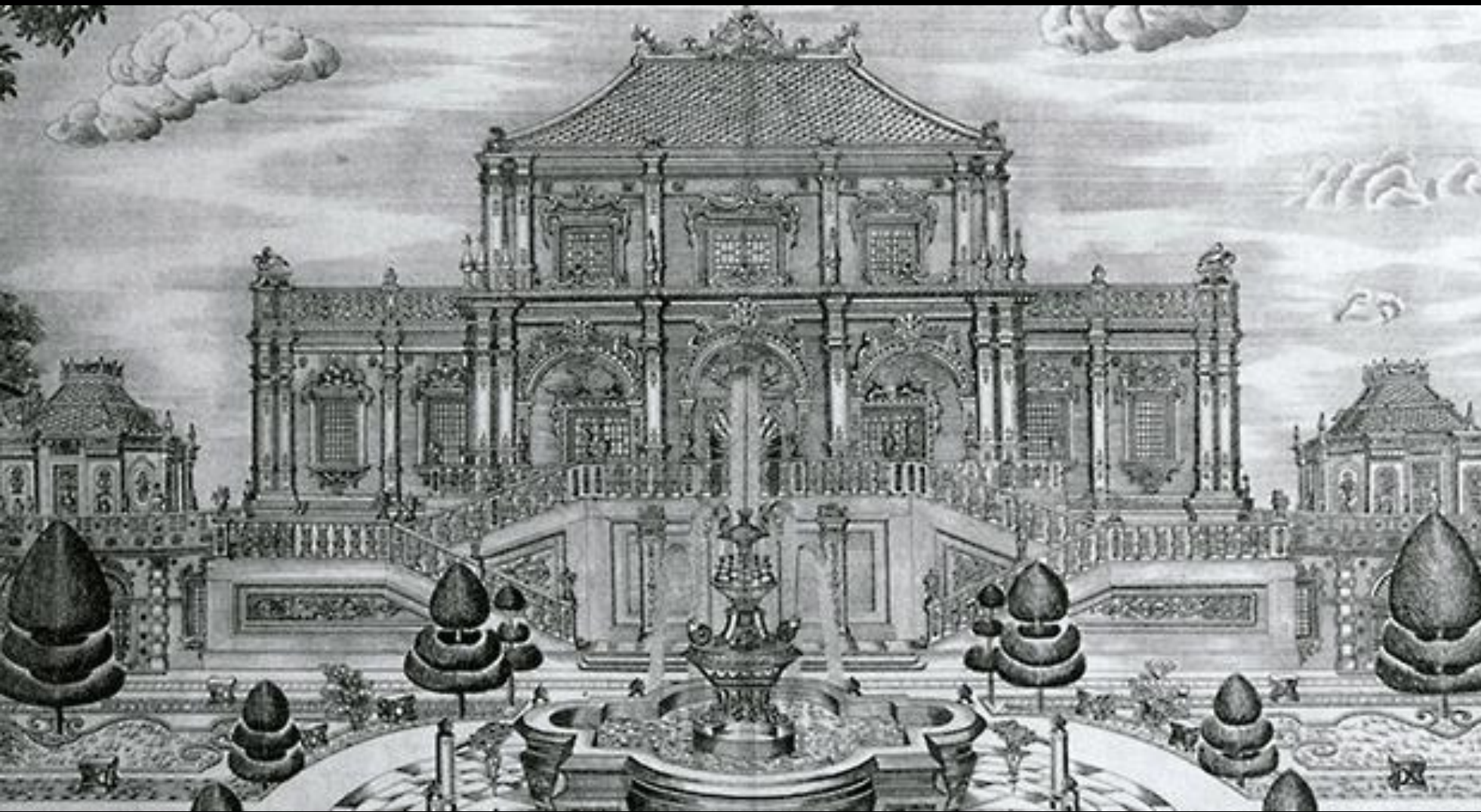
預約參觀 >



Old Summer Place

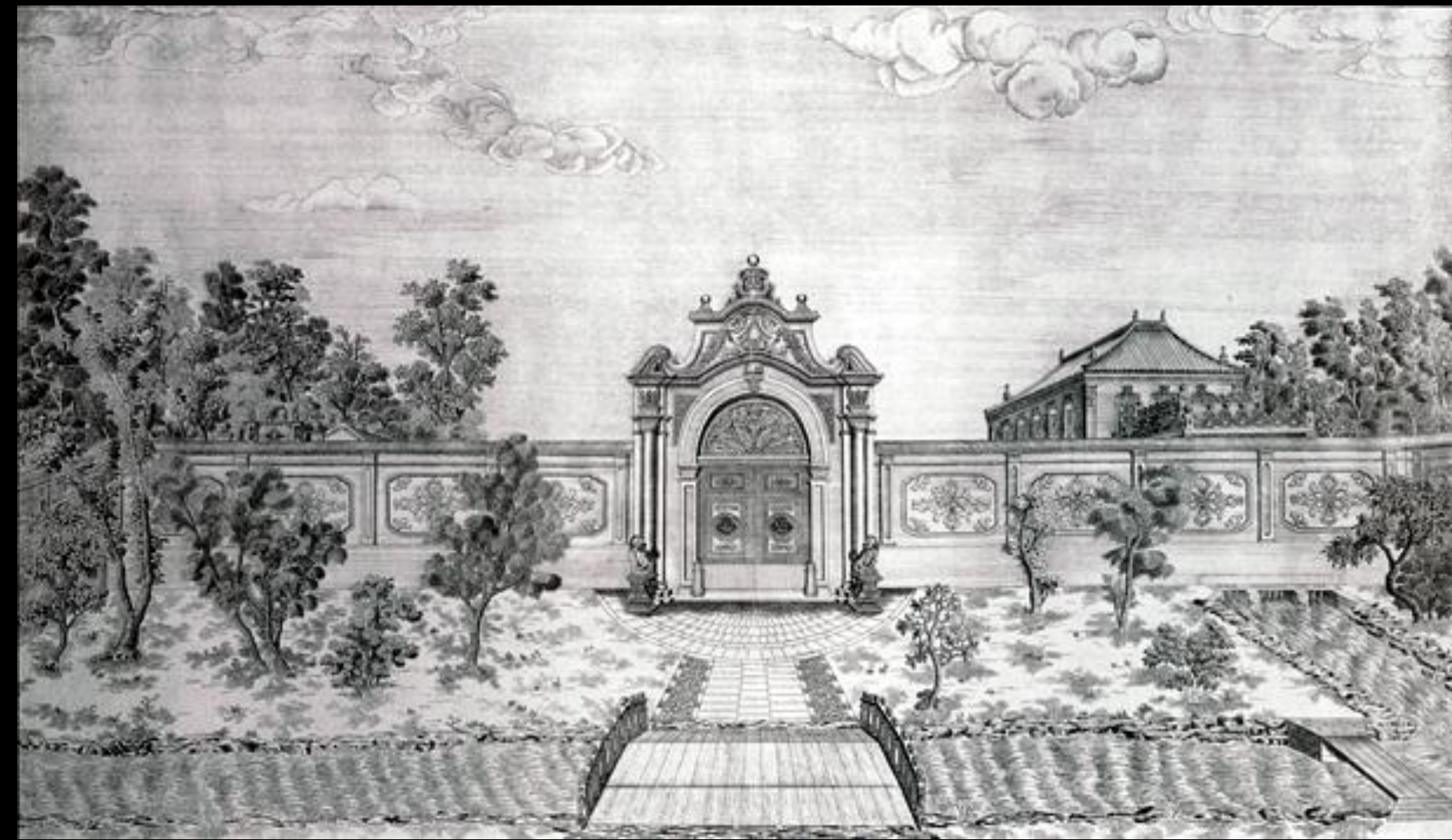


- built throughout the 18th and early 19th centuries as the main imperial residence of Qing emperors
- Looted and burned down by British French Troops in 1860



A set of 18th-century engravings by Chinese court artist Yi Lantai documents the European-inspired section

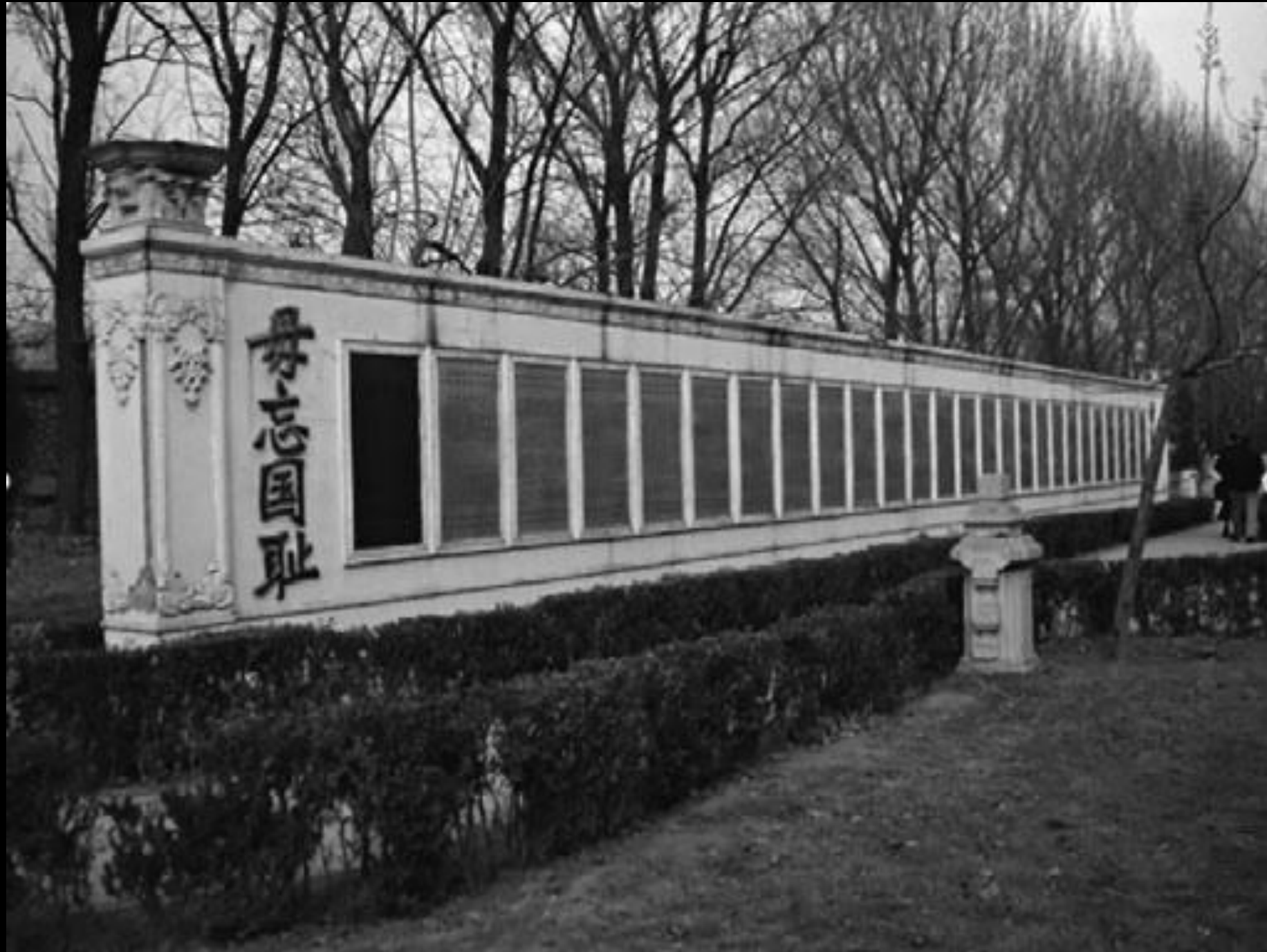
The northern side of the Xieqiu, one of the main palaces.



This was the northern façade of the gate to the Maze, viewed from within the Garden. On the other side of the wall, the Reservoir can be seen.



Illustration of the looting of the Haiyantang by British-French forces, 1860



'Do not forget the national shame', a sign outside the gate of Old Summer Palace

Cultural heritage or the palace
of shame

“Patriotic education”

Restore it or not



The most photographed ruin in Yuanmingyuan Park today is the arched gate that stood behind the Great Fountain (Dashuifa 大水法), with the ornate columns of the Yuanyingguan standing slightly elevated behind it.



Question:

- Colosseum in Rome, are also presented as ruins, so why is it that the old summer palace has always been discussed whether it should be restored? Do you want it to be rebuilt?



3. Metaverse and the Future of Art Education



Metaverse:
a virtual space where billions of users will move,
interact, and operate across different but
interoperable worlds, basically build a Second Life

The starry night Stereo VR experience



https://www.youtube.com/watch?v=G7Dt9ziemYA&ab_channel=VRMotionMagic

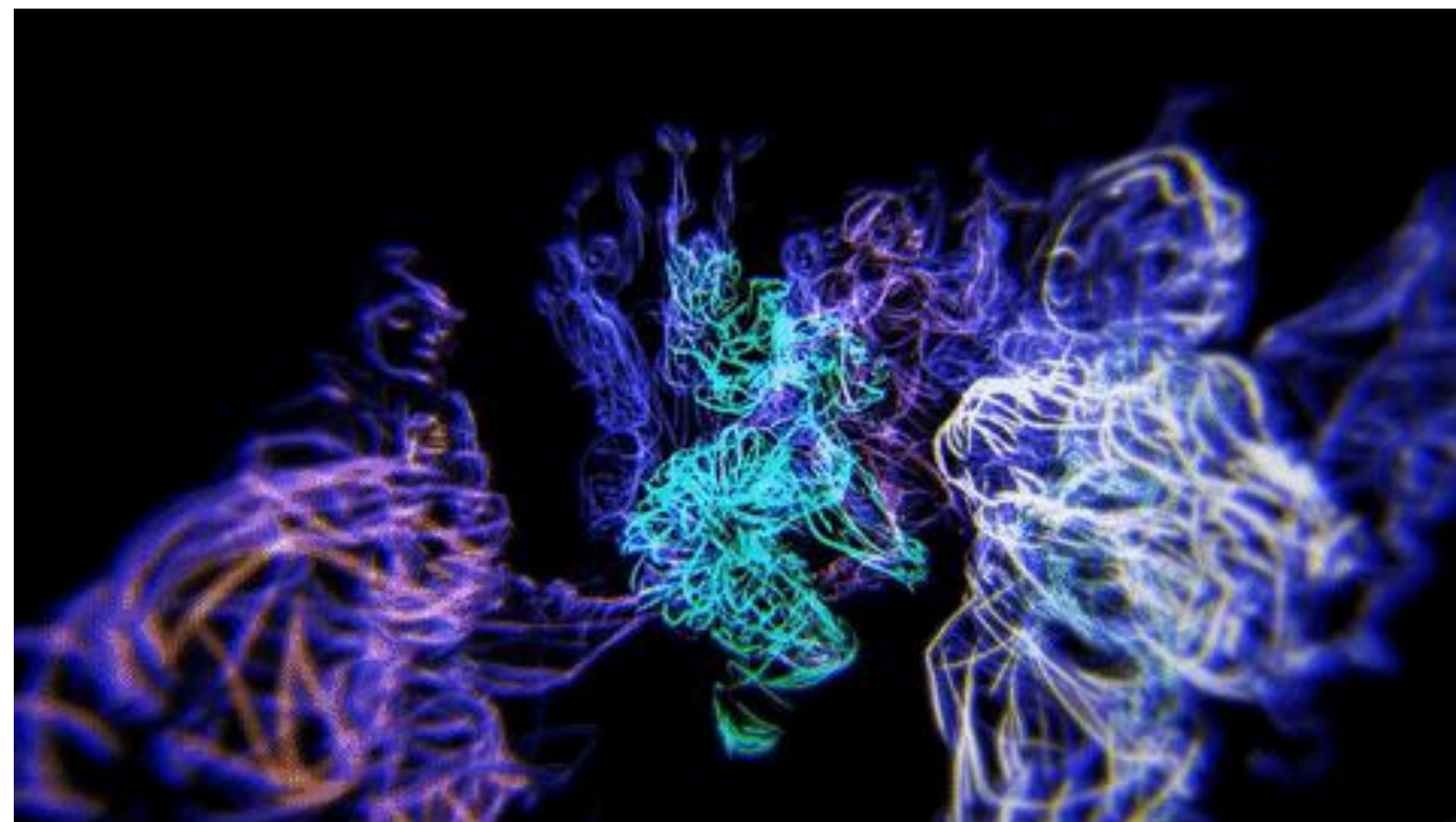
Metaverse: the Utopian Future of Immersive Digital Environments

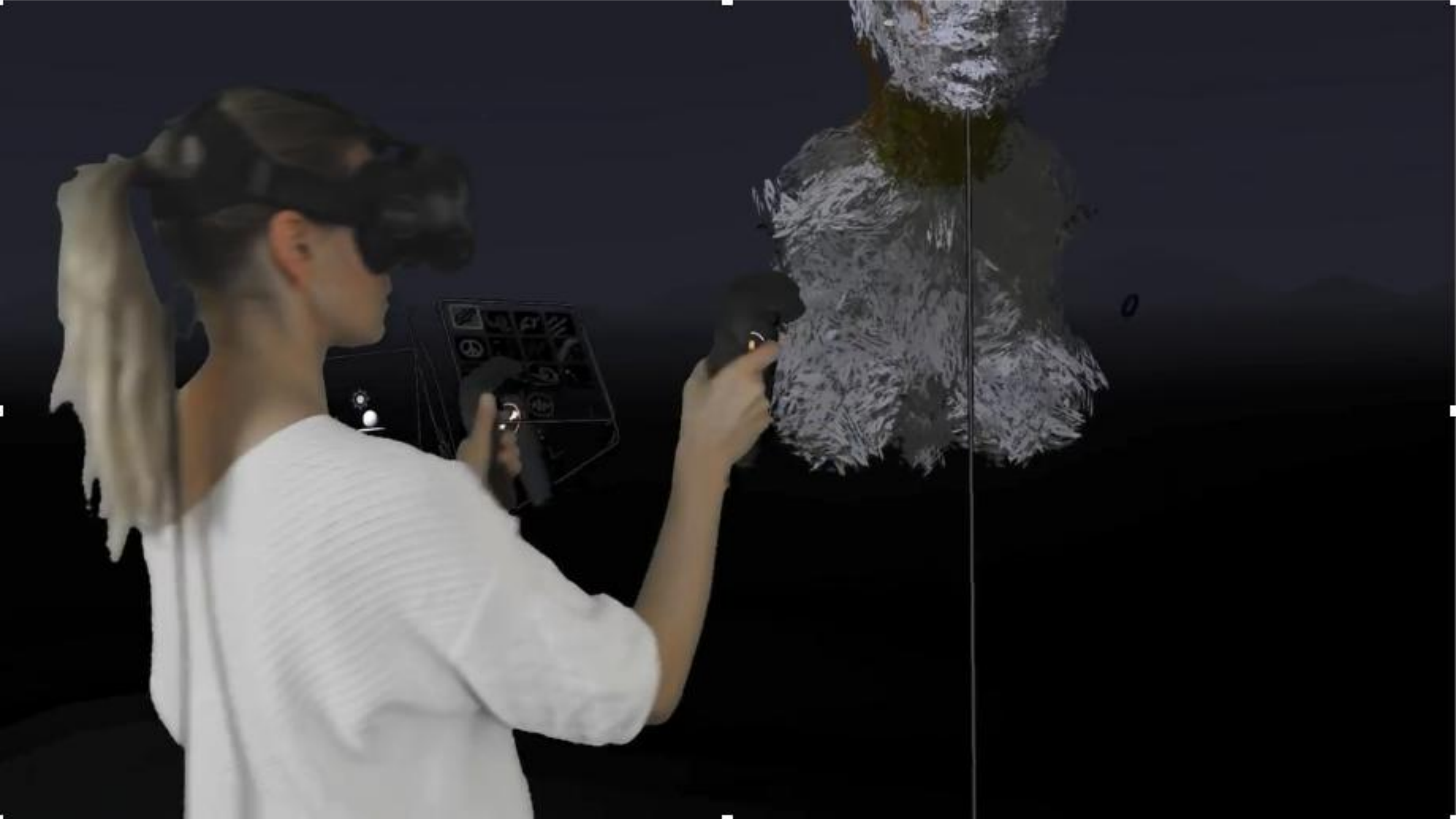


In October 2021, Mark Zuckerberg, the chief executive of Facebook, announced that the company would change its name to Meta and become a “metaverse company,” and laid out the vision of the metaverse.

https://www.youtube.com/watch?v=_SAL2JZxpoGY&t=2s&ab_channel=GuardianNews

Tilt Brush





Becoming Performance Art

