EWHA WOMANS UNIVERSITY
DEPARTMENT OF ART HISTORY



Experiential Heritage Theater

Cultural Worldmaking and Applied Art History

Chenchen Lu

Associate Director
CAMLab | Faculty of Arts and Sciences
Harvard University

20260113

The Future Experience of Cultural Worlds



Immersive Projection



VR/AR



LED/Holographic Screens



Game/Website



Interactive Installation

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An Incubator of Interdisciplinary Projects of
Research, Curation, and Creation

Humanities

History of Art and Architecture
Archeology
Cultural Studies
Religious Studies
Literature
Philosophy
Regional Studies
Musicology
Sociology
…



Media Practice

Film
AR/VR
UI/UX
Data Visualization
Interactive Installation
Game Design
Machine Learning
Architecture
Stage Design
Sound Design
…

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Cognition | Aesthetics | Multimedia Storyliving

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ACADEMIC









CREATION













EXHIBITION







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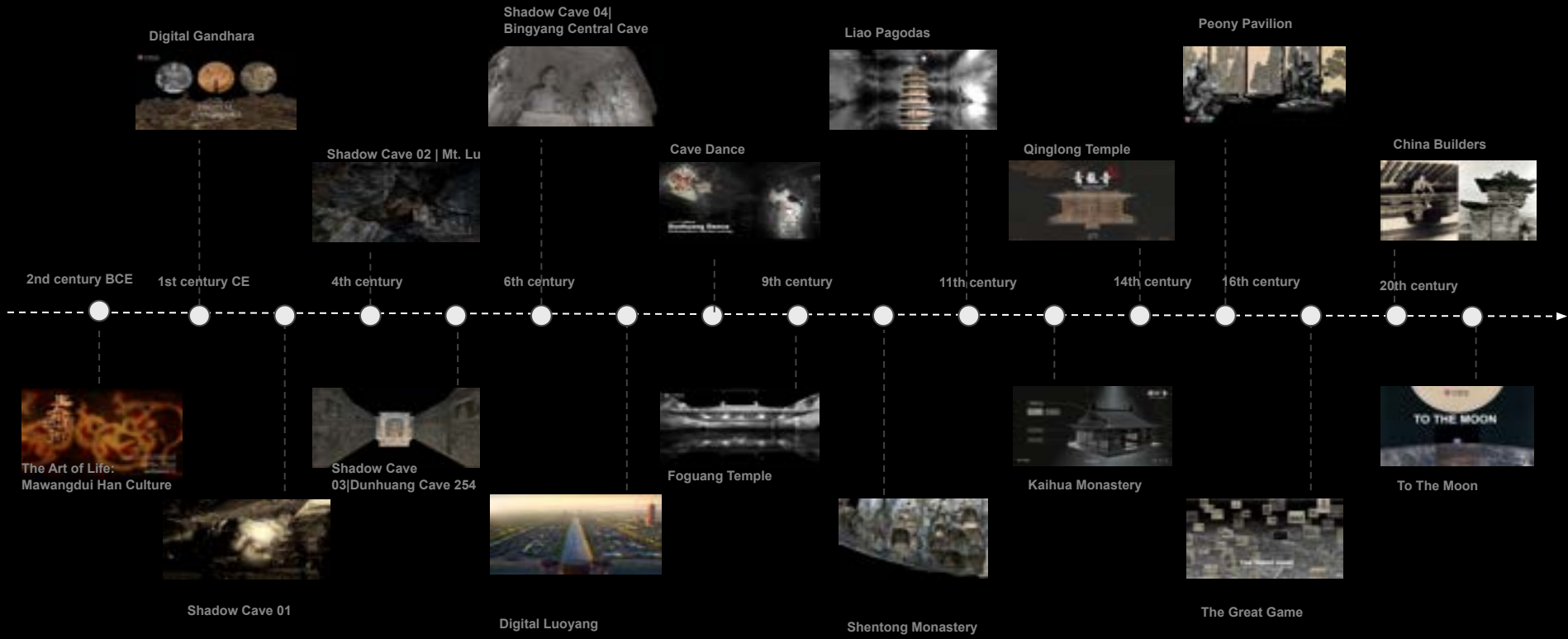

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CAMLab Projects



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Cultural Worldmaking

01 Fragmented Worlds

02 Immovable Worlds

03 Conceptual Worlds

04 Invisible Worlds

Cultural Worldmaking

01 Fragmented Worlds

02 Immovable Worlds

03 Conceptual Worlds

04 Invisible Worlds

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[CAMLab Digital Buddhist Sites]

DIGITAL GANDHARA

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Digital Gandhara

1. **Digitalization and Mapping of Archeological Sites in Gandhara**
2. Digital Database of Gandhara Collections in Afghanistan and Pakistan
3. Global Provenance Research on Gandhara Artifacts
4. AI-Powered Gandhara Site Reconstruction

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3D Model of Taxila, Pakistan

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Digitalization of Gandhara Sites









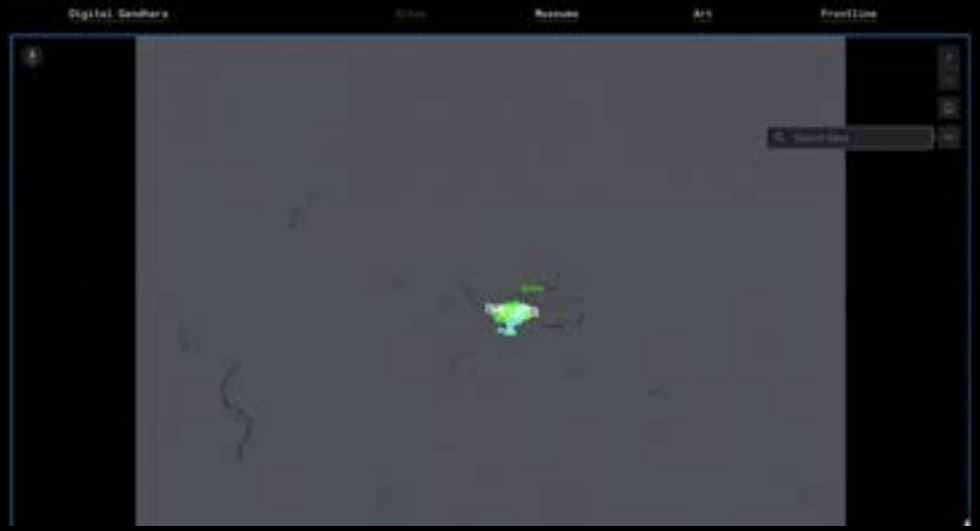
UAV LiDAR (ALS) | UAV Photogrammetry

3D Database Of Archeological Sites

Hadda
Jamal Garhi
Pipplan
Ranigat
Shingadara
Taxila
Thareli
Takht-i-Bahi
Sirkap
Mohra Moradu
Bhamala
Tokar Dara
Butkara
Amuluk Dara
…

GIS Mapping of Gandhara Sitesc



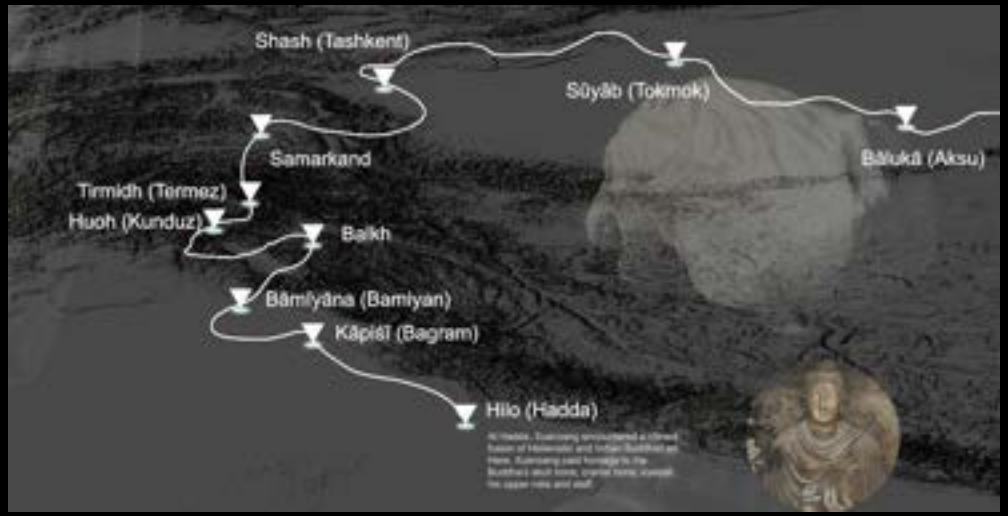








Storytelling Application of GIS Mapping of Gandhara Sites:
Journey to the West: Tang-dynasty Monk Xuanzang's Pilgrimage to India





Xuanzang
(玄奘, ca. 602–664)



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Storytelling Application of GIS Mapping of Gandhara Sites:
Journey to the West: Tang-dynasty Monk Xuanzang's Pilgrimage to India





Teaching Gallery | CAMLab Cave | Harvard Sackler Museum





Digital Gandhara

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4. AI-Powered Gandhara Site Reconstruction

Digitalization of Gandhara Artworks in Peshawar Museum







Digitalization of Gandhara Artworks in Peshawar Museum



Photogrammetry Model

Structured-Light Scanned Model



653 photographed and 3D scanned artworks in Peshawar Museum

Digital Database of Gandhara Art

Digital Gandhara

1. Digitalization and Mapping of Archeological Sites in Gandhara
2. Digital Database of Gandhara Collections in Afghanistan and Pakistan
3. **Global Provenance Research on Gandhara Artifacts**
4. AI-Powered Gandhara Site Reconstruction



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Global Provenance Research of Artwork from Loriyan Tangai

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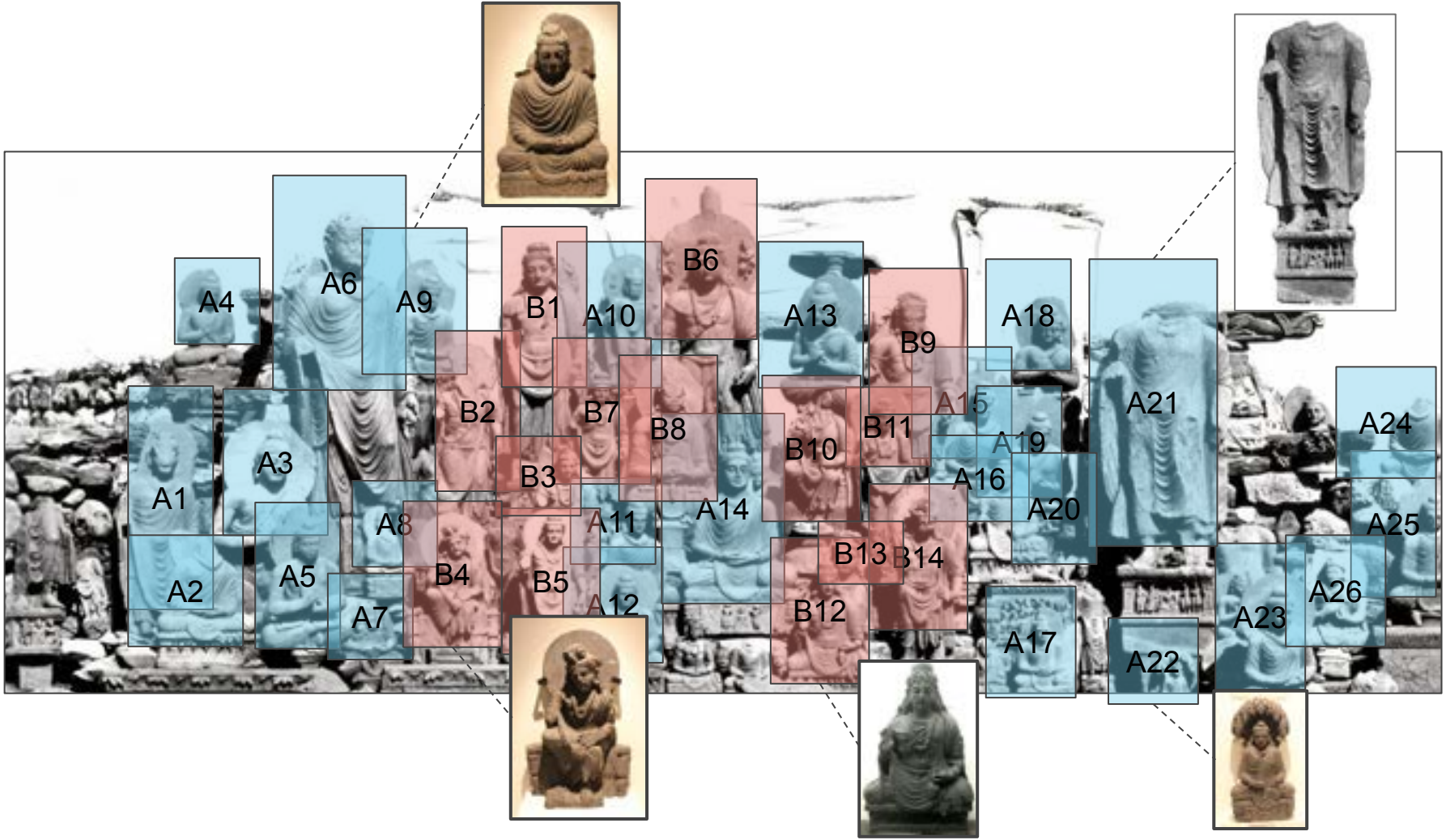
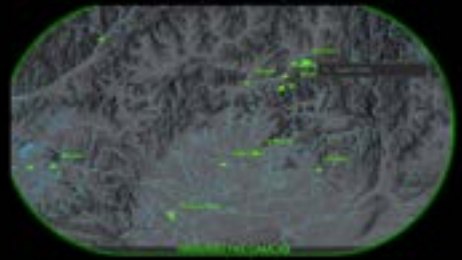
Global Provenance Research of Artwork from Loriyan Tangai

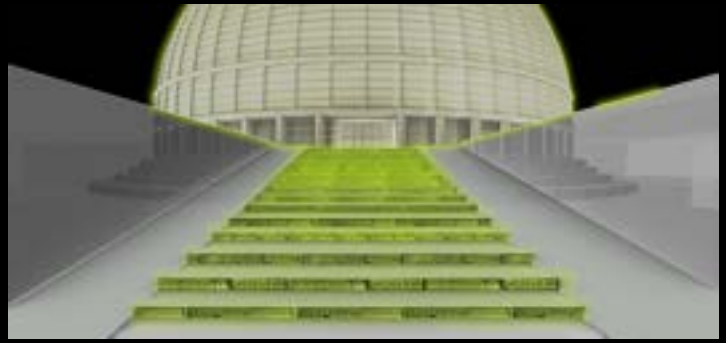

A4
A6
A9
B1
A10
B6
A13
B9
A18
A21
A24
A1
A3
B2
B7
B8
B10
B11
A15
A19
A16
A20
A25
A2
A5
A8
B3
A11
A14
B13
B14
A7
B4
B5
A12
B12
A17
A22
A23
A26

Global Provenance Research of Artwork from Takht-i-Bahi











Digital Gandhara

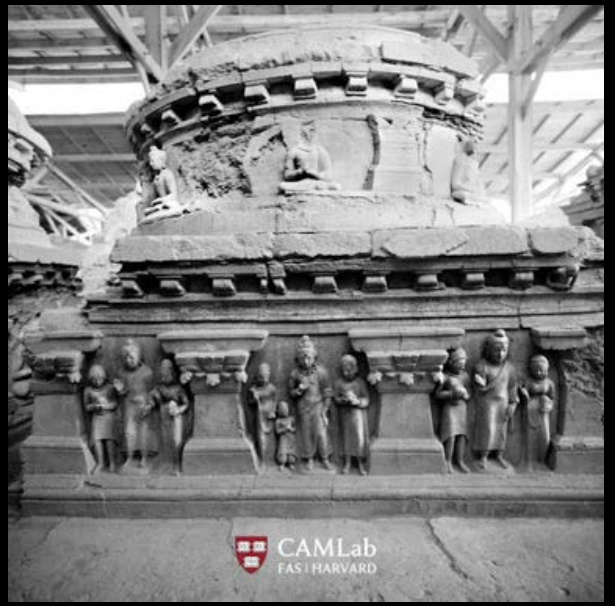
1. Digital Database of Archeological Sites in Gandhara
2. Digital Database of Gandhara Collections in Afghanistan and Pakistan
3. Global Provenance Research on Gandhara Artifacts
4. **AI-Powered Reconstruction of Destroyed Sites**

Site Reconstruction

Tepe-shotor, Hadda, Afghanistan



Hadda After 2001 Destruction

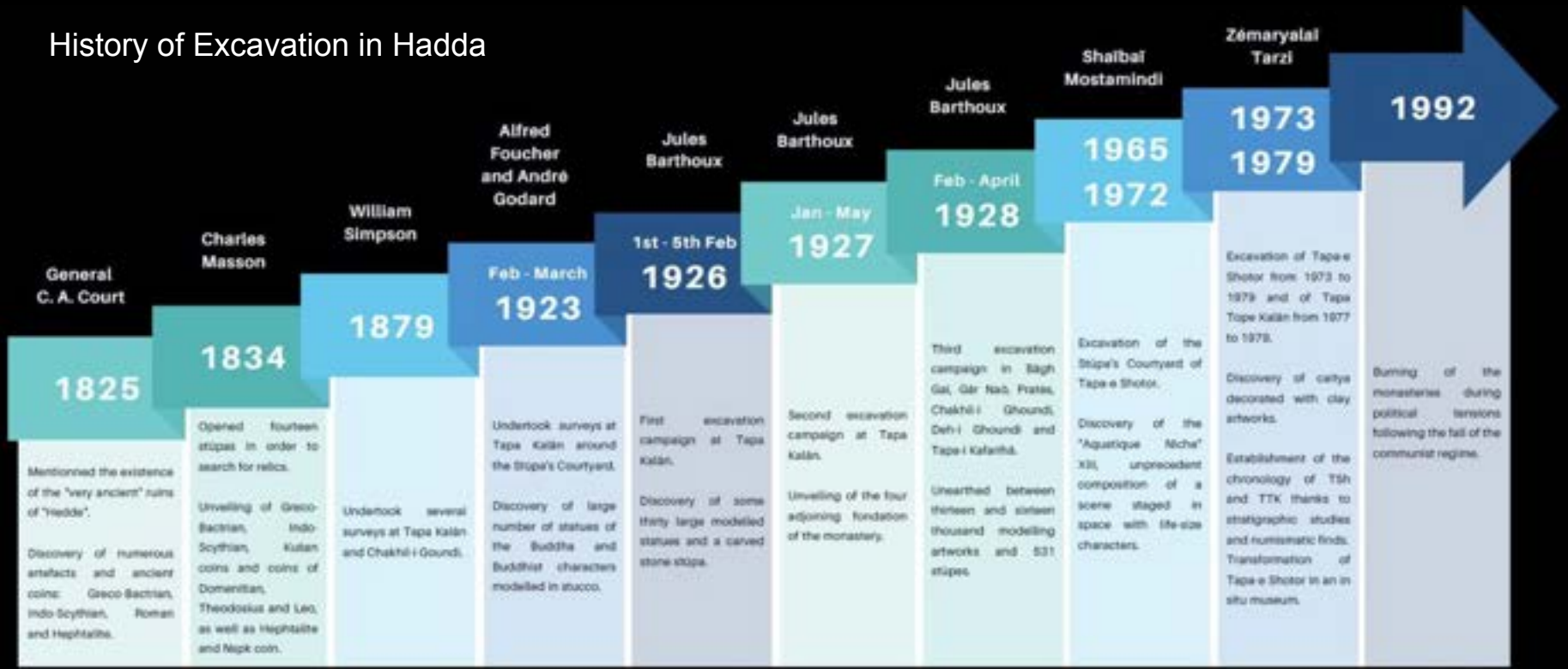


Archival Photos of Hadda Before 2001 Destruction

Site Reconstruction

Tepe-shotor, Hadda, Afghanistan

History of Excavation in Hadda



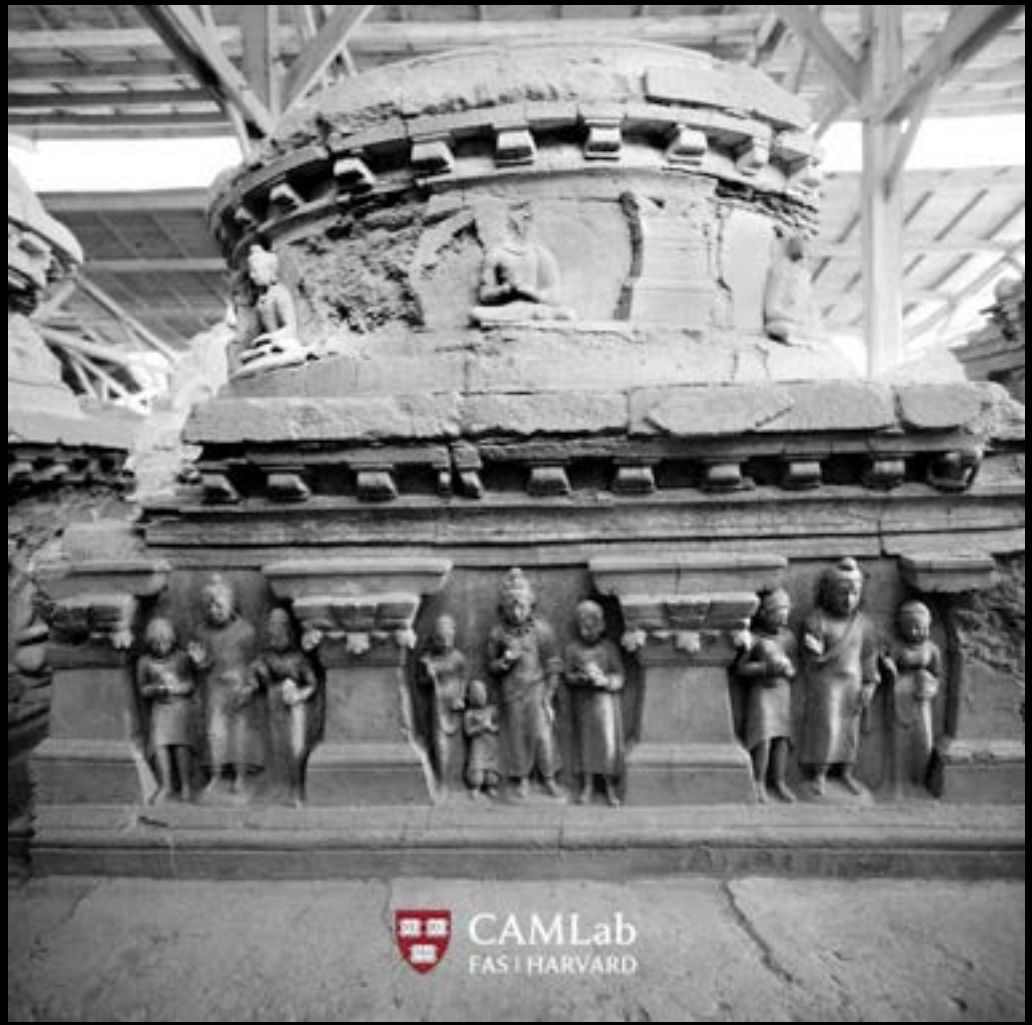


Photo Archives of Hadda

- The Huntington Archive
- Marek Gawecki Archive
- Josephine Powell Archive
- John Max Rosenfield Archive

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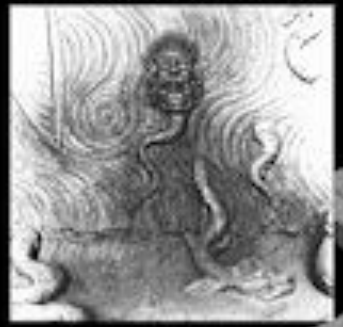

Site Reconstruction

Tepe-shotor, Hadda, Afghanistan



Hadda After 2001 Destruction



Digital reconstruction of Tepe-shotor before destruction

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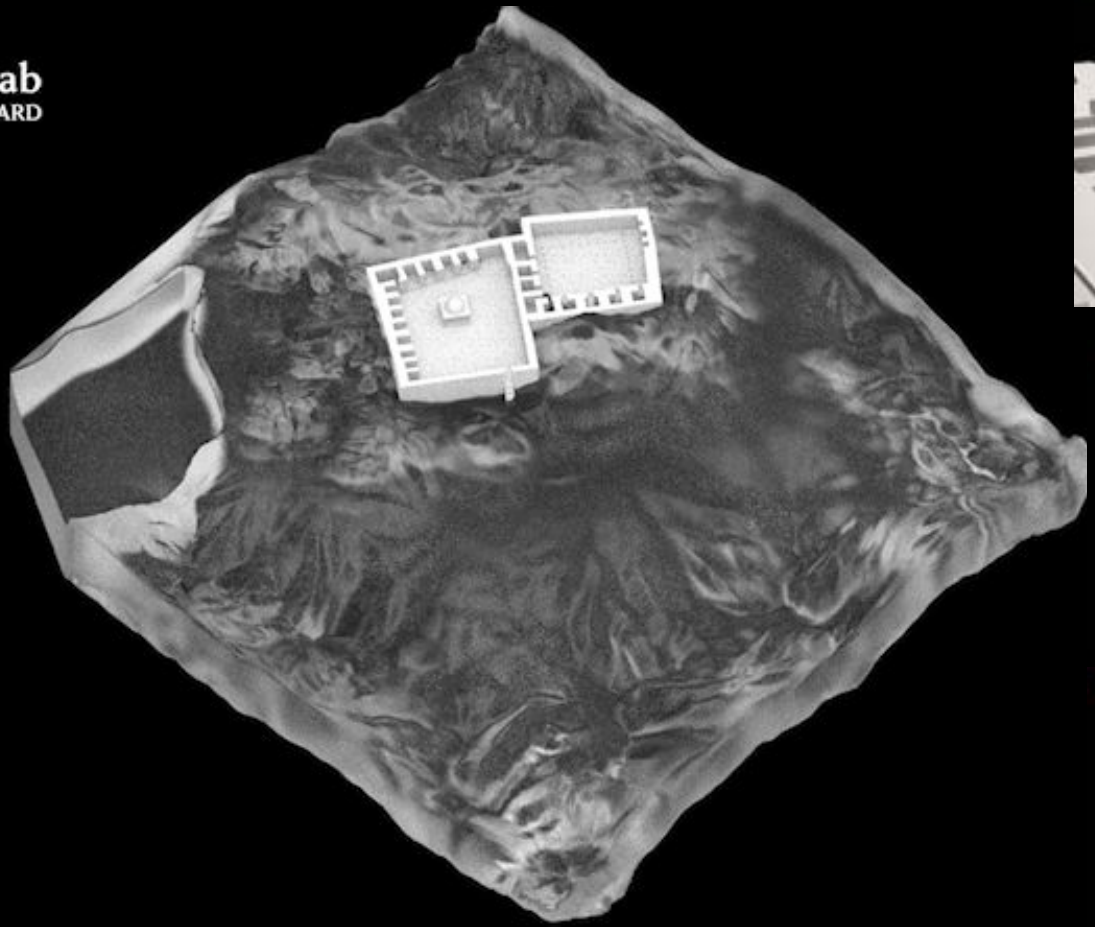

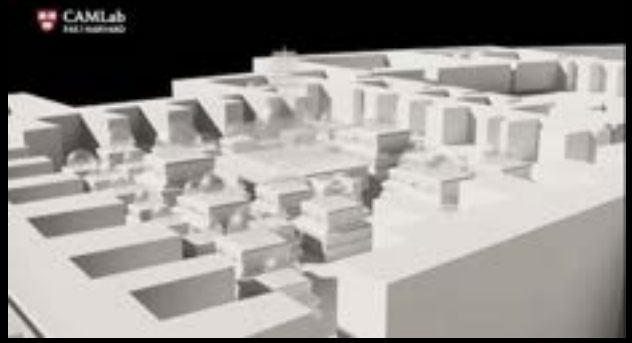





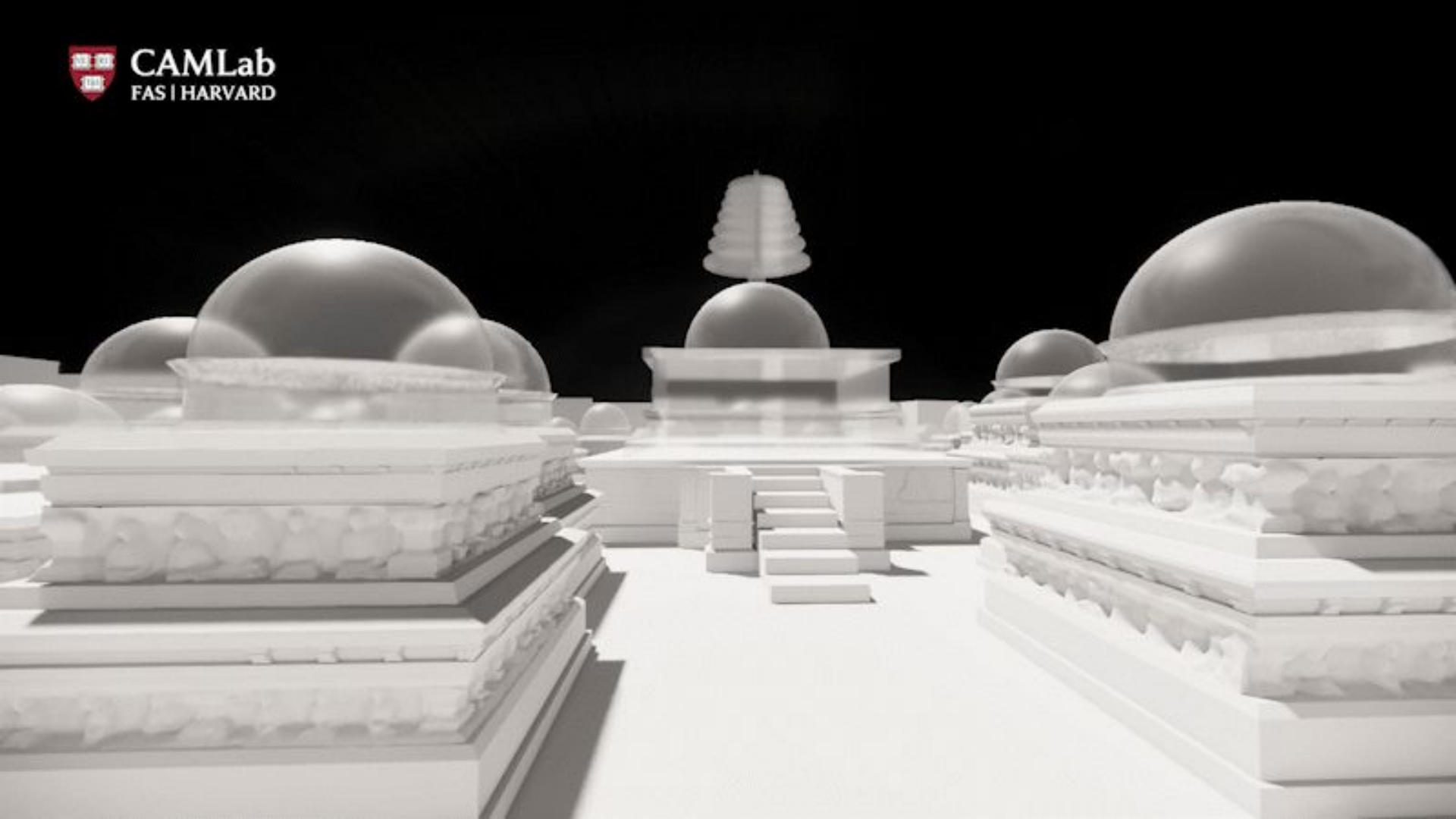
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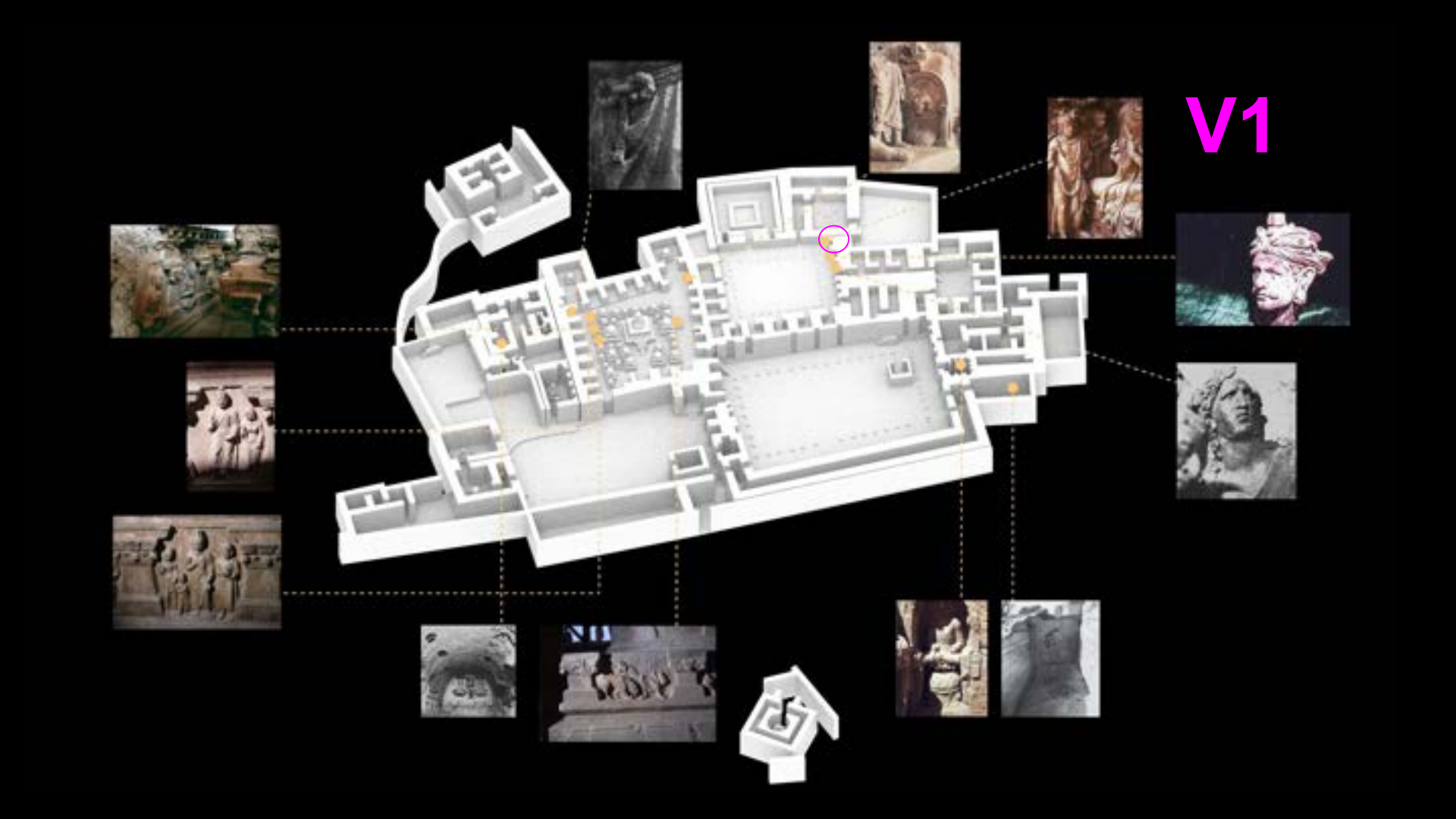
Grotto A, Tapa-e Shotor Monastery in Hadda, Afghanistan



Grotto A, Tapa-e Shotor Monastery in Hadda, Afghanistan


V1

Site Reconstruction

Tepe-shotor, Hadda, Afghanistan | A.I.-Powered 3D Reconstruction of Sculptures and Reliefs

V1



Archival Photo



AI-Generated 3D model



Archival Photo



AI-Generated 3D model





Site Reconstruction

Tepe-shotor, Hadda, Afghanistan | A.I.-Powered 3D Reconstruction of Sculptures and Reliefs

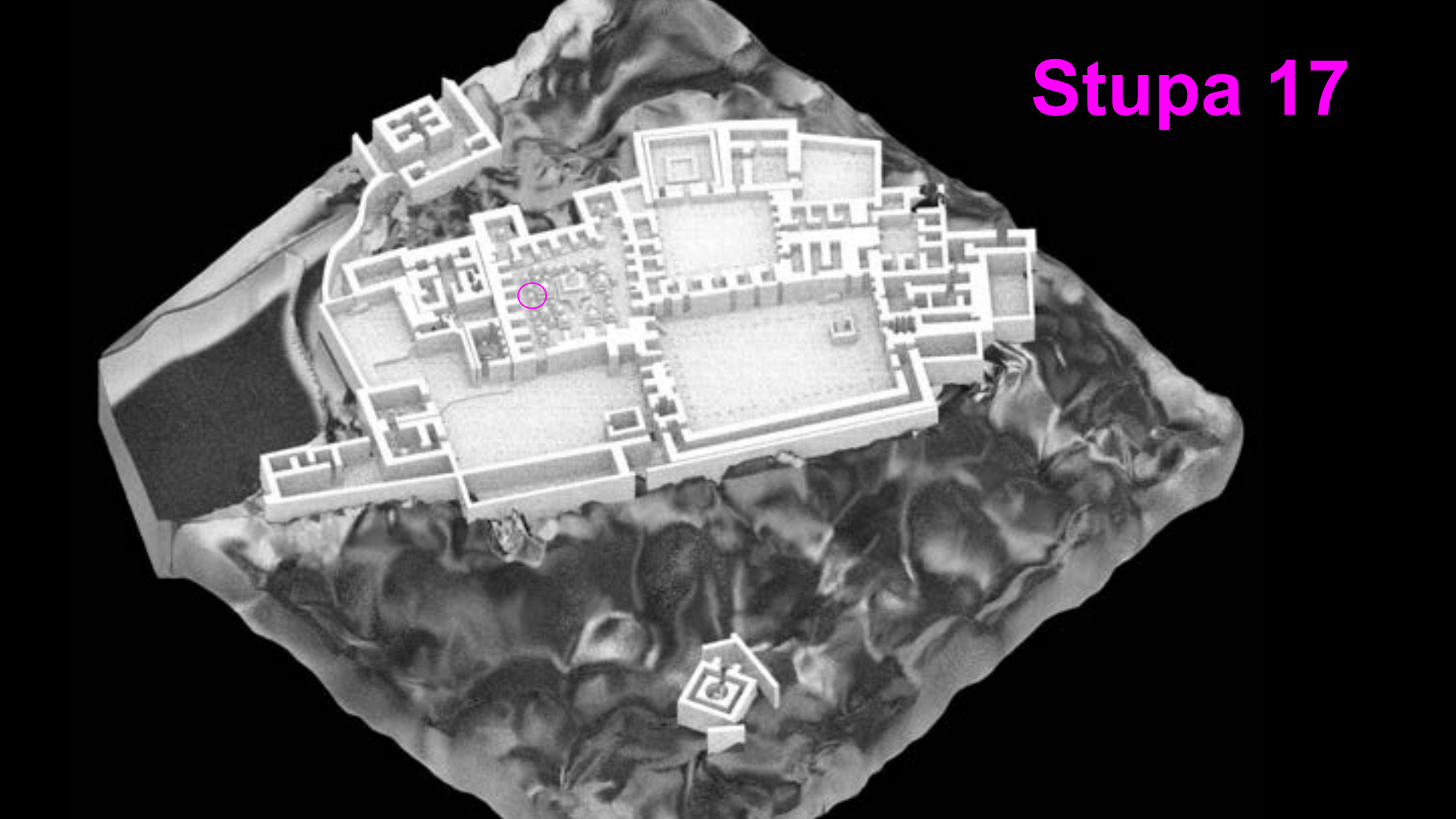
V1



Archival Photo | Marek Gawecki Archive



AI-Generated 3D model


Stupa 17

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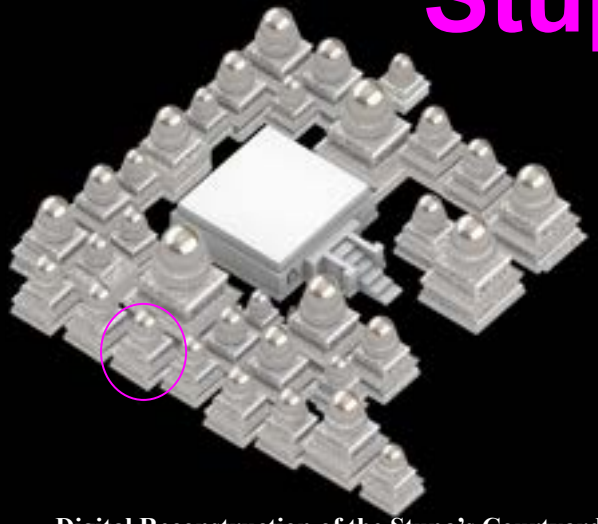
Stupa 17





Digital Reconstruction of the Stupa's Courtyard





Digital Gandhara | Museum Experiment

Rewoven Worlds:
Artwork in Context

Cleveland Museum of Art X Harvard FAS CAMLab

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Dispersed Objects Identification





Figures Bearing Offerings, probably from Hadda
Cleveland Museum of Art



Harvard Art Museum

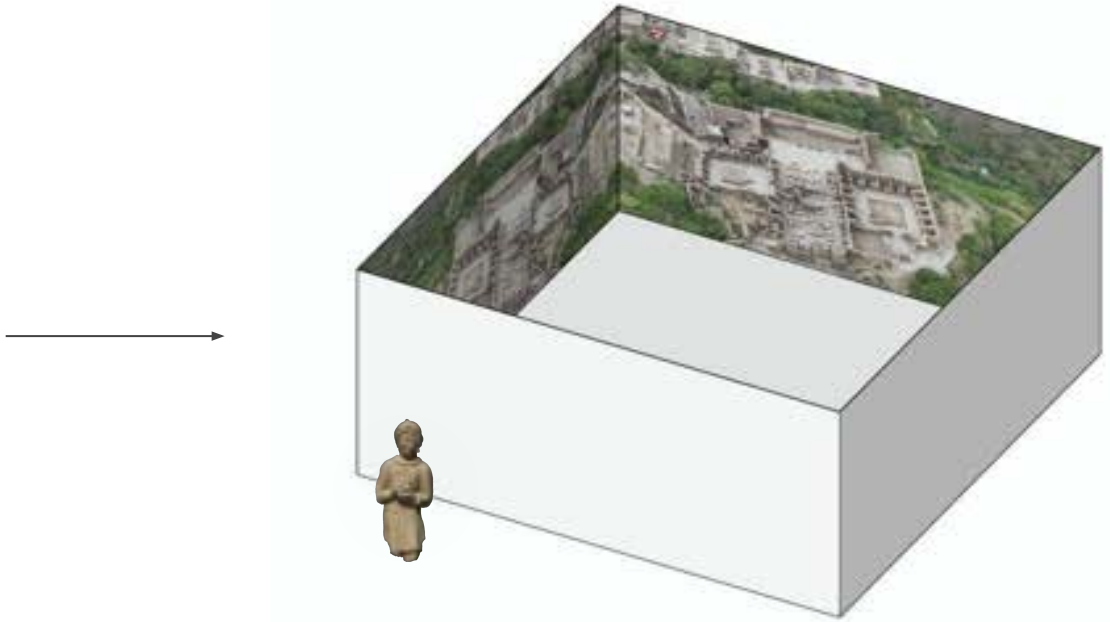




Digital Gandhara | Museum Experiment

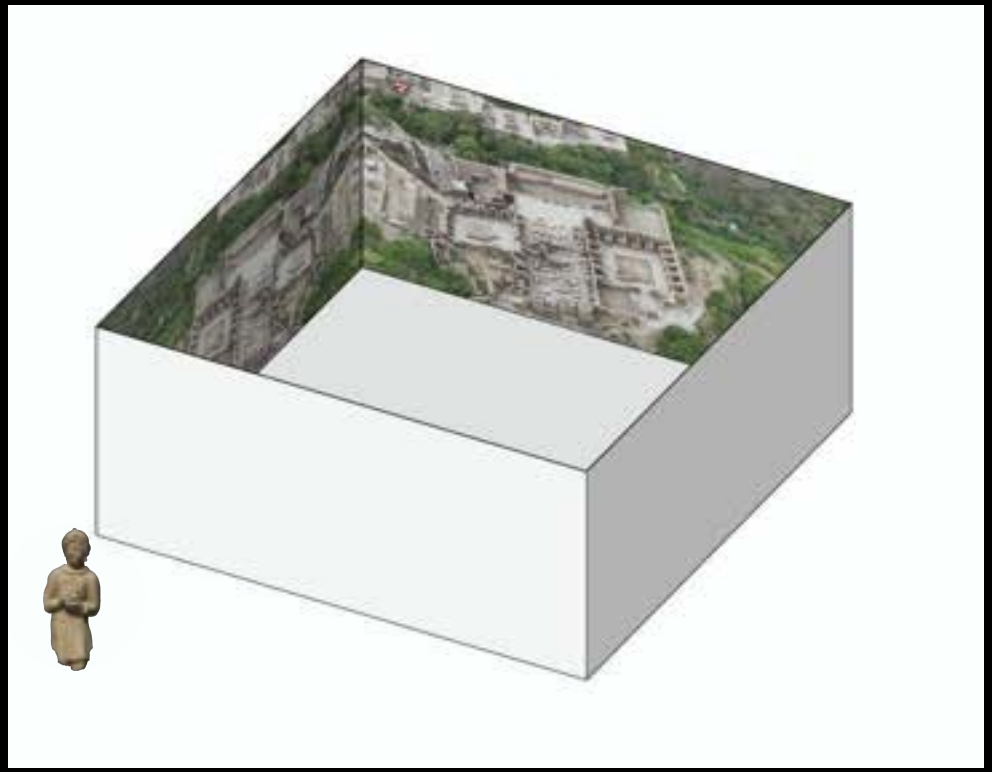


Figure Bearing Offerings, Hadda
Cleveland Museum of Art



Rewoven Worlds: Artwork in Context
An Immersive CAVE Space

Digital Gandhara | Museum Experiment







Rewoven Worlds: Artwork in Context
An Immersive CAVE Space

Rewoven Worlds

Artwork in Context

Cleveland Museum of Art X Harvard FAS CAMLab

01 Haddha, Gandhara





02 Xiangtangshan Caves, Hebei





03 Xiuding Temple, Henan





… …

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Cultural Worldmaking

01 Fragmented Worlds

02 Immovable Worlds

03 Conceptual Worlds

04 Invisible Worlds

Embodied Architecture

Immersive Buddhist Monuments Series



Foguang Temple
Tang Dynasty
8th Century

山西·佛光寺
唐



Kaihua Monastery
Song Dynasty
11th Century

山西·開化寺
宋



Yingxian Timber Pagoda
Liao Dynasty
11th Century

山西·應縣木塔
遼



Xinglong Temple
Yuan Dynasty
13th Century

山西·青龍寺
元

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釋迦塔

EMBODIED ARCHITECTURE

Buddhist Pagodas of the Liao Dynasty
(916-1125)

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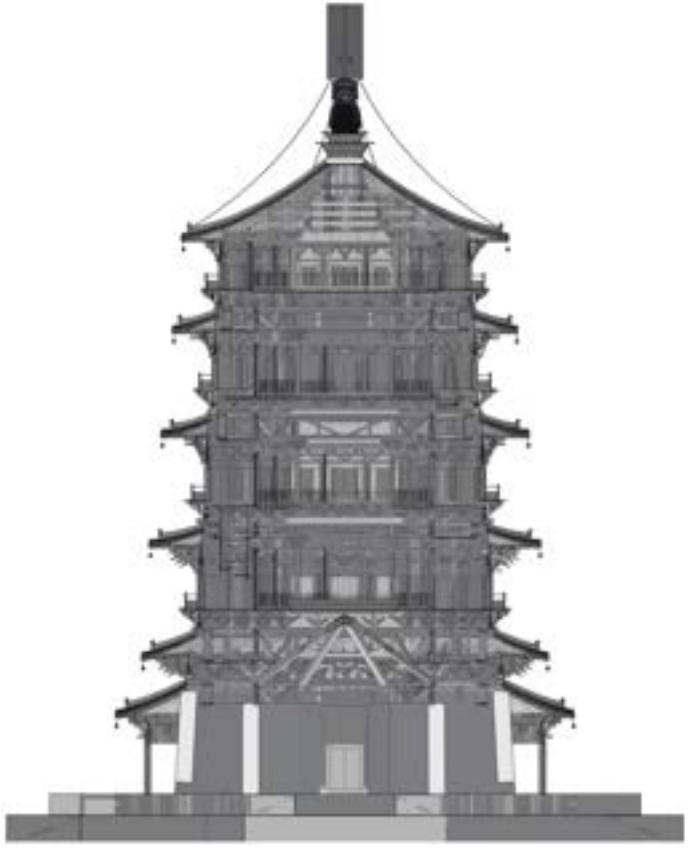



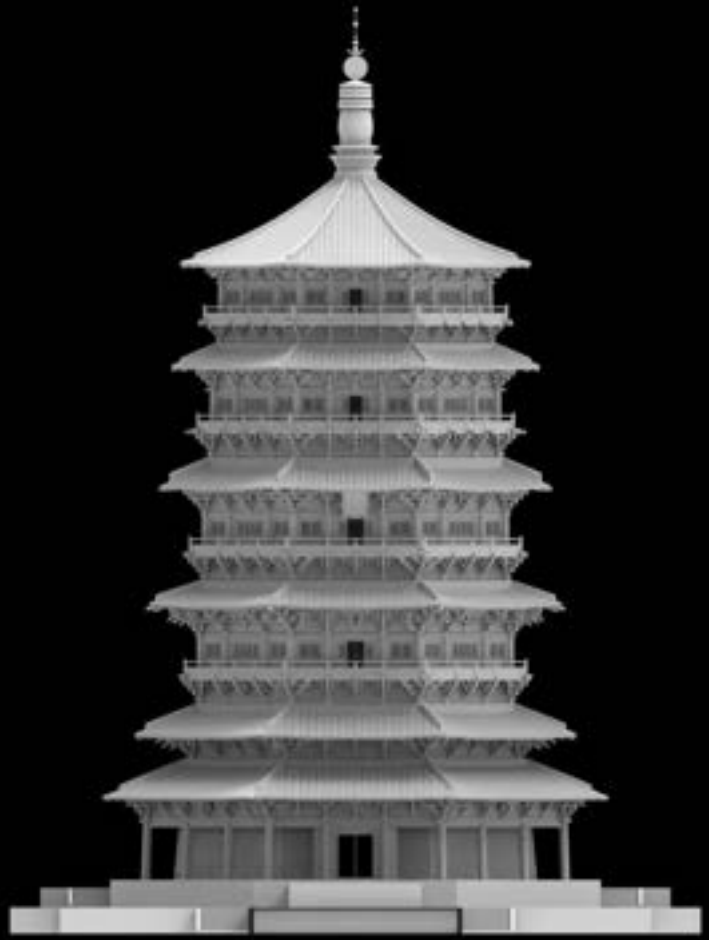



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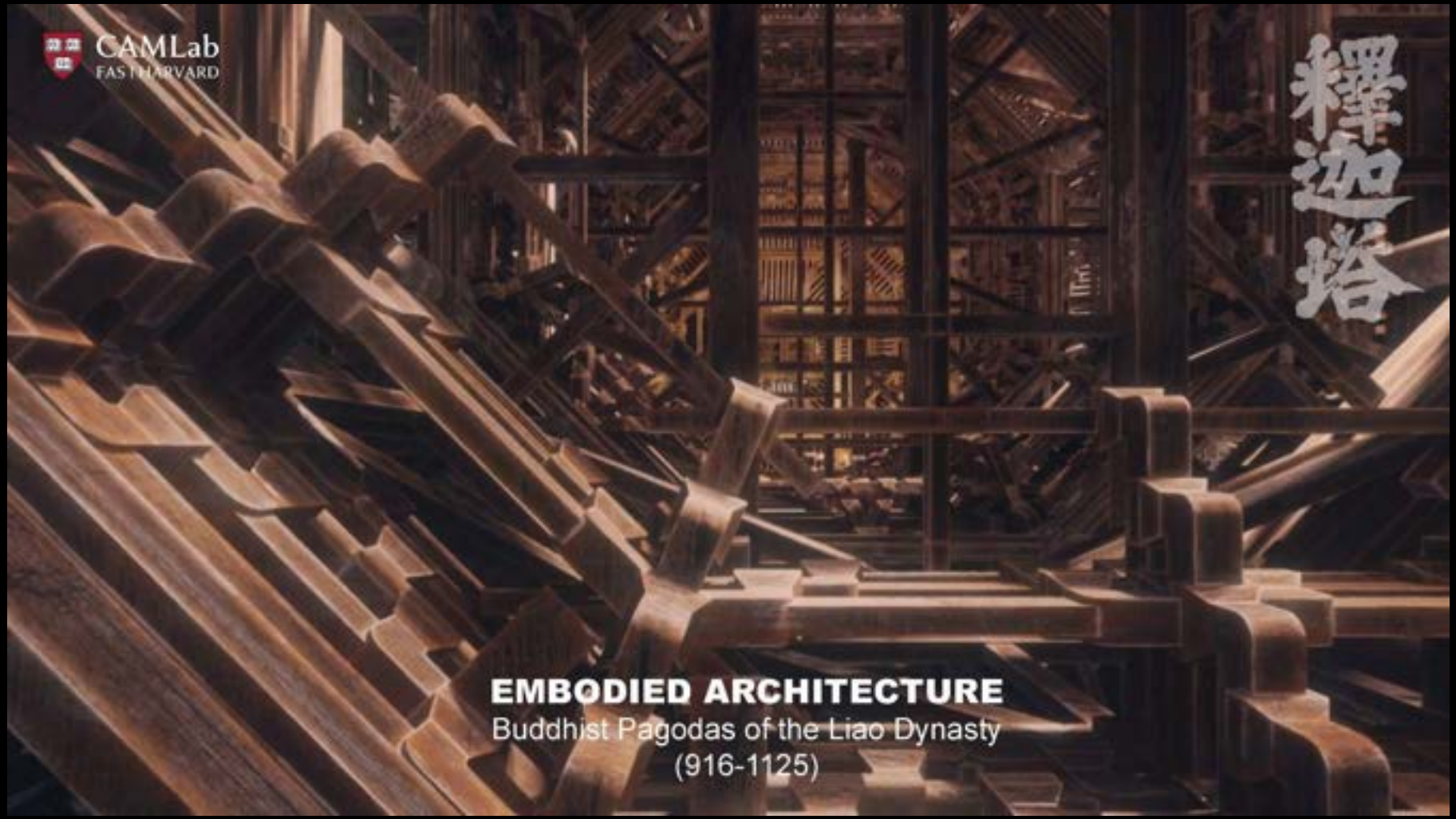
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釋迦塔
EMBODIED ARCHITECTURE
Buddhist Pagodas of the Liao Dynasty
(916-1125)

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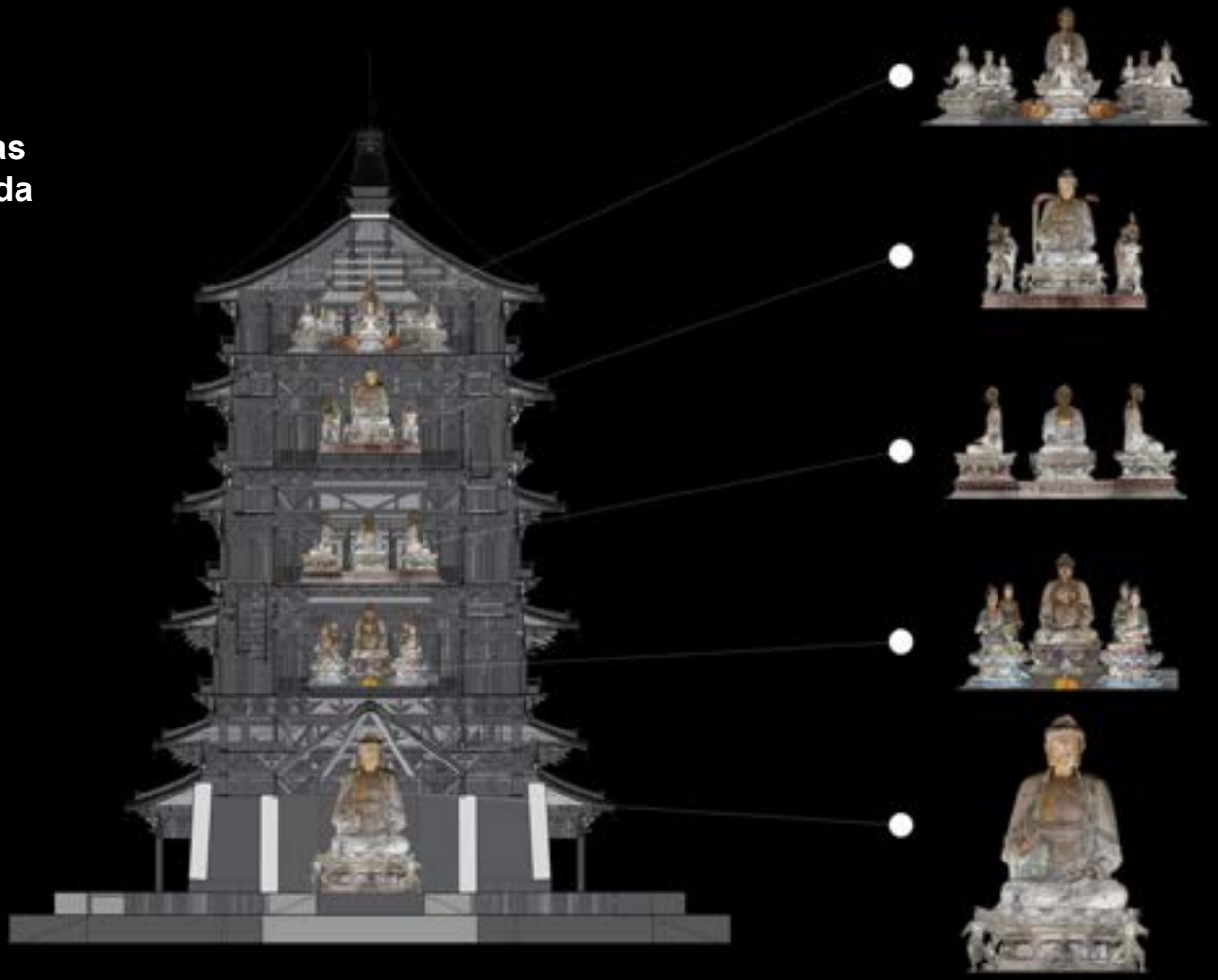
Sculptural Buddhist Mandalas in the Yingxian Timber Pagoda



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Sculptural Buddhist Mandalas in the Yingxian Timber Pagoda

5th floor




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EMBODIED ARCHITECTURE
Buddhist Pagodas of the Liao Dynasty
(916-1125)


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Immersive Storytelling of the Buddhist Cosmology and Ritual Experience of the Buddhist Mandalas in the Yinxian Timber Pagoda

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CAMLab Cave | Immersive Art-historical Classroom | Embodied Architecture



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釋迦塔
釋迦塔


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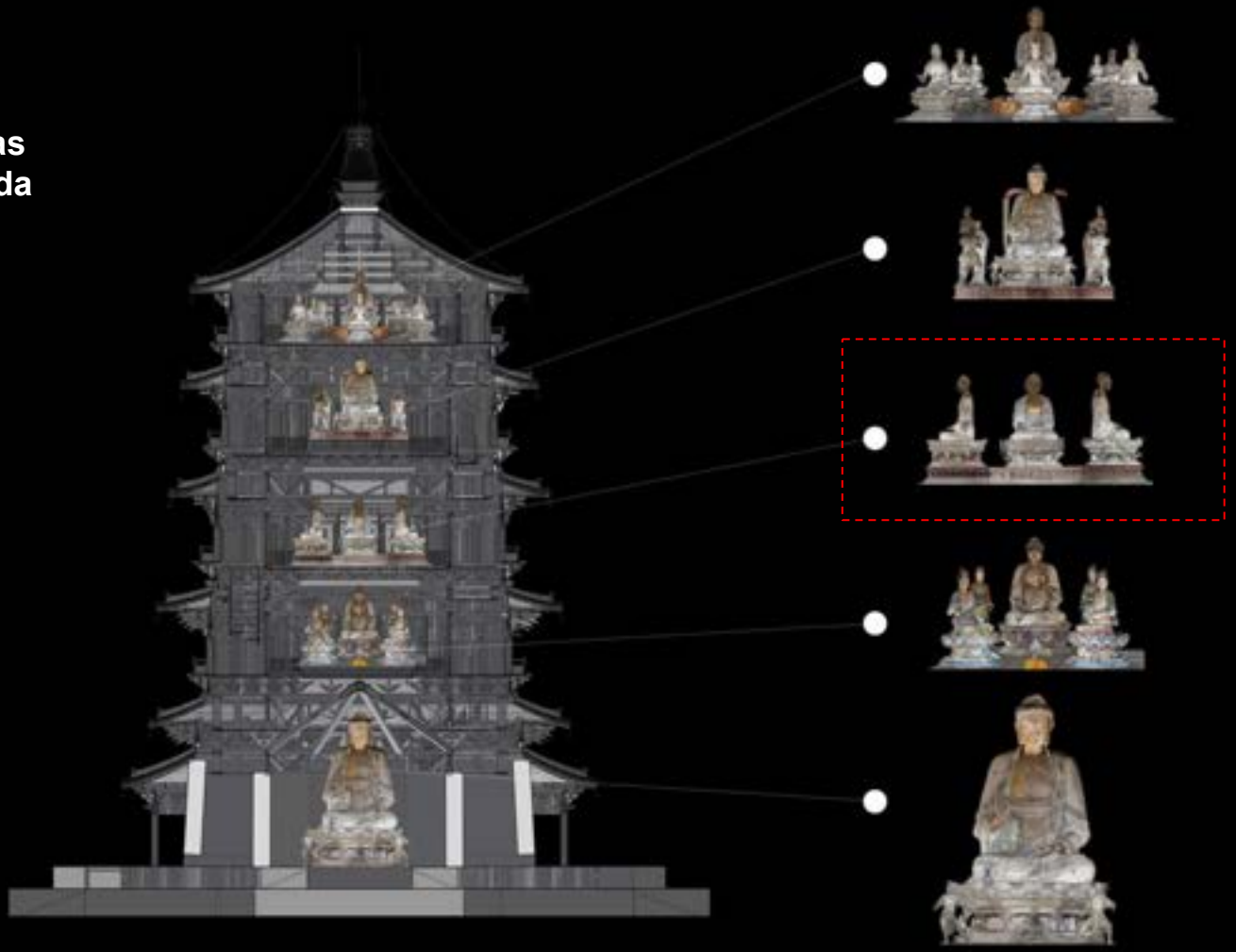
Sculptural Buddhist Mandalas in the Yingxian Timber Pagoda





E
阿閦鞞佛
象座
大圓鏡智
金剛平等現等覺身



S
寶生佛
馬座
平等性智
義平等現等覺身



W
阿彌陀佛
孔雀座
妙觀察智
法平等現等覺身



N
不空成就佛
迦樓羅座
成所作智
業平等現等覺身

"五智成身会" | Meditation Process: Fivefold Meditation







N
不空成就佛
迦樓羅座
成所作智
業平等現等覺身

W
阿彌陀佛
孔雀座
妙觀察智
法平等現等覺身

C
毘盧遮那佛
獅子座
法界體性智
自受用身

E
阿閦鞞佛
象座
大圓鏡智
金剛平等現等覺身

S
寶生佛
馬座
平等性智
義平等現等覺身

五轉成身I 五法成身I 五相成身觀

金剛頂瑜伽中發阿耨多羅三藐三菩提心論 / 瑜伽總持釋門說菩提心觀行修行義

不空　譯

所以求菩提者，發菩提心，修菩提行，既發如是心已，須知菩提心之行相，其行相者，三門分別，諸佛菩薩，昔在因地，

發是心已，勝義，行願，三摩地為成，乃至成佛，無時暫忘，

唯真言法中，即身成佛故，是故說三摩地於諸教中，闕而不言，
一者行願，二者勝義，三者三摩地，

...
我見自心，形如月輪，何故以月輪為喻，謂滿月圓明體，則與菩提心相類，凡月輪有一十六分，

...
五方佛位，各表一智，
東方阿閦佛，因成大圓鏡智，亦名金剛智也，
南方寶生佛，由成平等性智，亦名灌頂智也，
西方阿彌陀佛，由成妙觀察智，亦名蓮華智，亦名轉法輪智也，
北方不空成就佛，由成成所作智，亦名羯磨智也，

凡修習瑜伽觀行人，當須具修三密行，證悟“五相成身”義也，

所言三密者，一身密者，如結契印召請聖眾是也，二語密者，如密誦真言文句了了分明，無謬誤也，三意密者，如住瑜伽相應白淨月圓觀菩提心，
次明 五相成身者，
一是通達心，二是菩提心，三是金剛心，四是金剛身，五是證無上菩提獲金剛堅固身也，
然此五相具備方成本尊身也，
...
欲求妙道，修持次第，從凡入佛位者，即此三摩地者，能達諸佛自性，悟諸佛法身，證法界體性智，成大毘盧遮那佛，
凡今之人，若心決定，如教修行，不起于座，三摩地現前，應是成就本尊之身，

讚菩提心曰:
若人求佛慧　通達菩提心
父母所生身　速證大覺位




CAMLab Cave | Immersive Art-historical Classroom | Embodied Architecture



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Sentient beings once deluded, now recite the precepts of the master,
Taking the precepts, they soon assume Buddha's positions.
Three Sages - Vairocana, Manjusri, Samantabhadra
The Bodhisattvas Manjusri and Samantabhadra pronounce myriad teachings and open up equal number of dharma-gates.
釋迦摩尼佛
釋迦摩尼佛還至本道場
衆生聽聞我本願戒
衆生受佛戒即入諸佛位

CAMLab Cave | Immersive Art-historical Classroom



Interactive Installation of the Timber-frame Structure
Of Yingxian Pagoda

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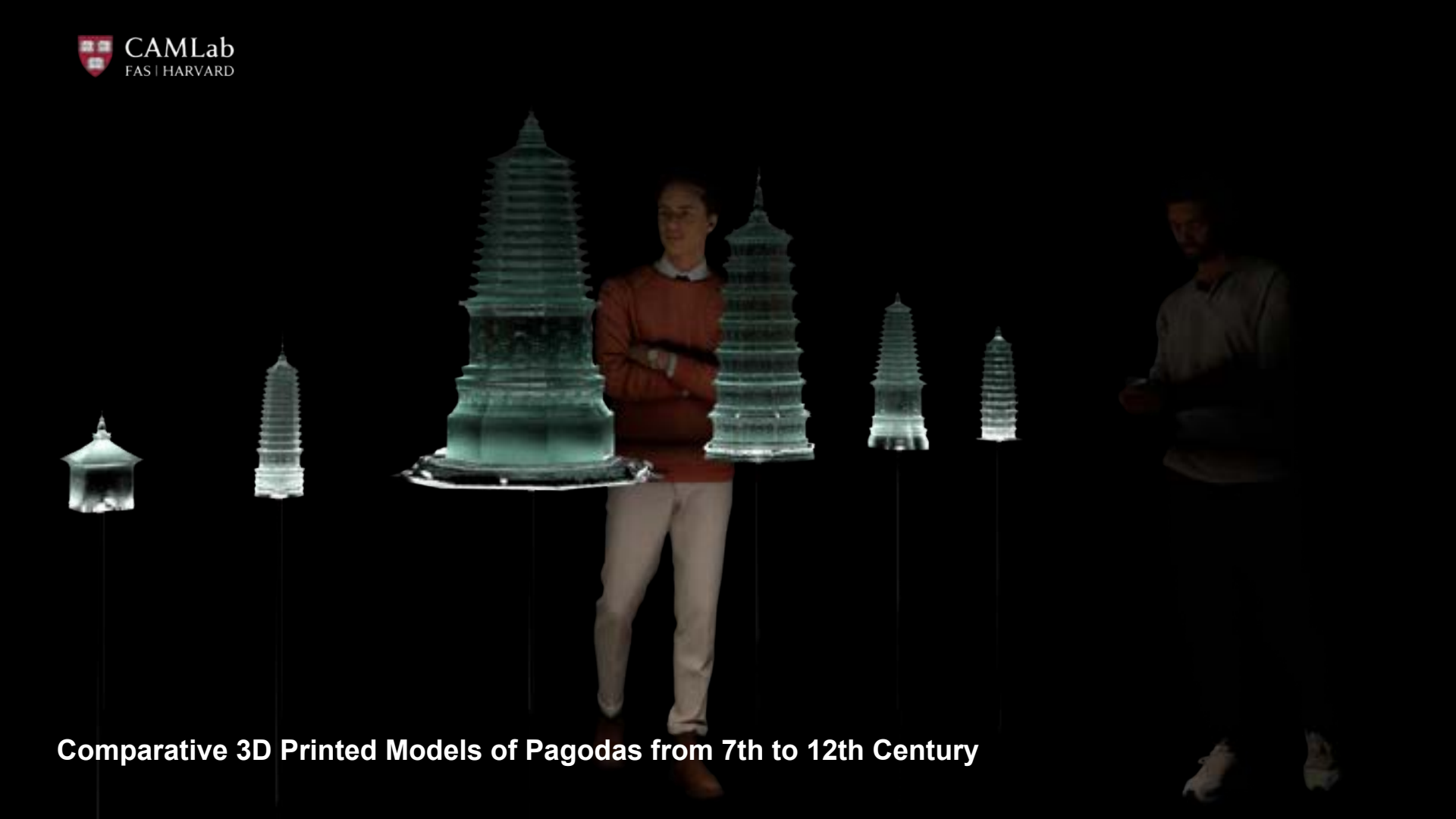

Comparative 3D Printed Models of Pagodas from 7th to 12th Century

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CAMLab Cave | Immersive Art-historical Classroom



Holographic Projects Liao-dynasty Pagodas

Embodied Architecture

Immersive Buddhist Monuments Series



Foguang Temple
Tang Dynasty
8th Century

山西·佛光寺
唐



Kaihua Monastery
Song Dynasty
11th Century

山西·開化寺
宋



Yingxian Timber Pagoda
Liao Dynasty
11th Century

山西·應縣木塔
遼



Xinglong Temple
Yuan Dynasty
13th Century

山西·青龍寺
元

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Immersive Art History Classroom



Foguang Monastery 佛光寺

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Immersive Art History Classroom



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Cultural Worldmaking

01 Fragmented Worlds

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04 Invisible Worlds

From Material Form to Conceptual Imagination


生命藝術
THE ART OF LIFE
生命艺术——马王堆汉代文化沉浸式数字大展
THE ART OF LIFE: Multimedia Exhibition of Mawangdui Han Culture
2024 6/8 ▸ 2025 2/16
湖南博物院特展一厅

Mawangdui Tombs

2nd Century BCE

Extraordinary Preservation:

It contains one of the oldest and best-preserved human bodies in the world.

Rich Array of Artifacts:

Excavations revealed silk paintings, lacquerware, jade objects, and textiles. Notably, the textiles found are among the best preserved in early civilizations.

Ancient Medical Documents:

The tombs yielded one of the oldest compilations of medical documents.



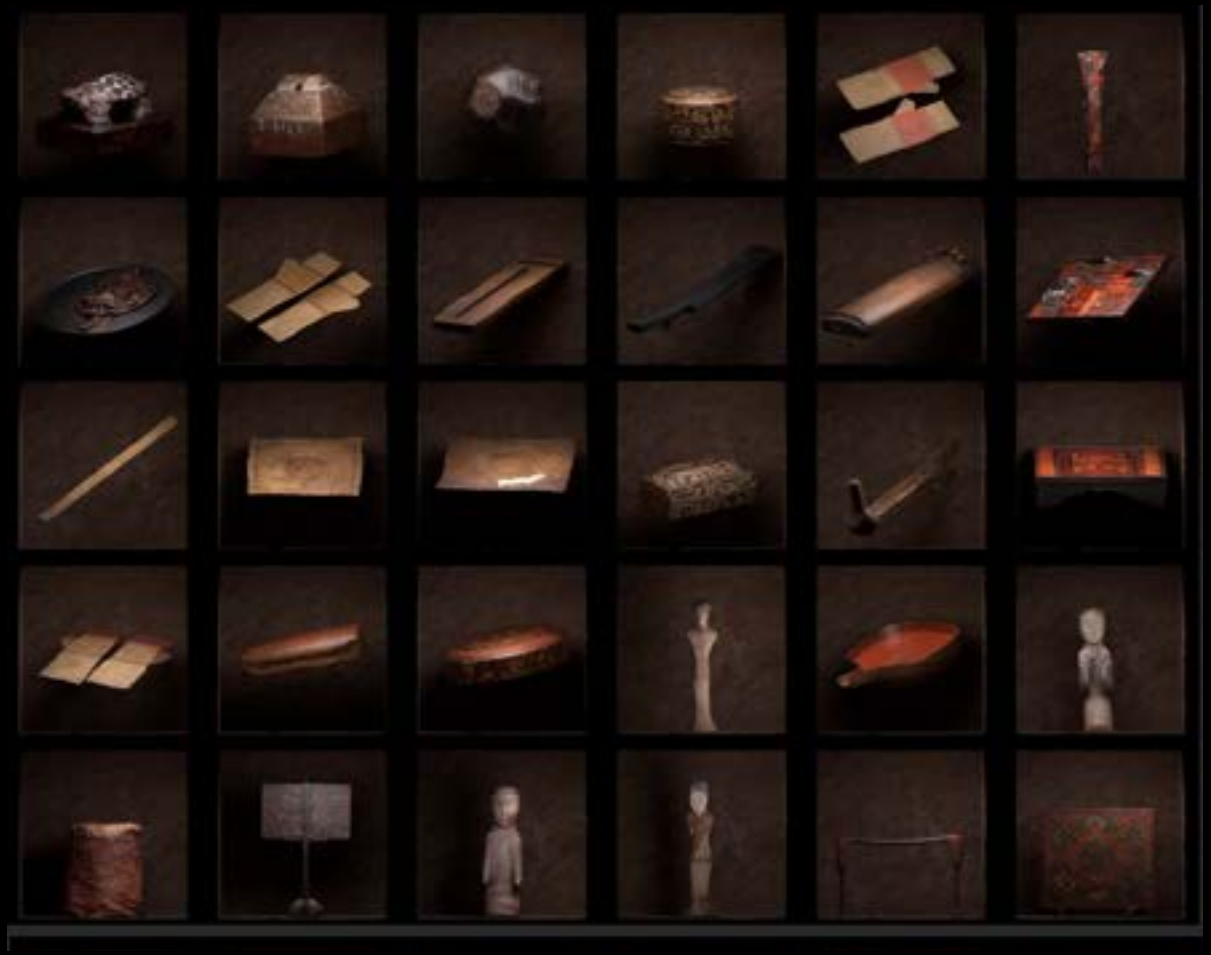


1972 | The Discovery of Mawangdui Tombs



Mawangdui Tomb, 2nd Century BCE







1

Cosmos

Constructing the Ideal World of Life

2

Yin and Yang

Cyclical Flow of Life's Four Seasons

3

Life

Journey of Afterlife Transformation



THE ART OF LIFE 生命藝術




THE ART
OF LIFE



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Art of Life：Cosmos

生命藝術：第一幕「時空」



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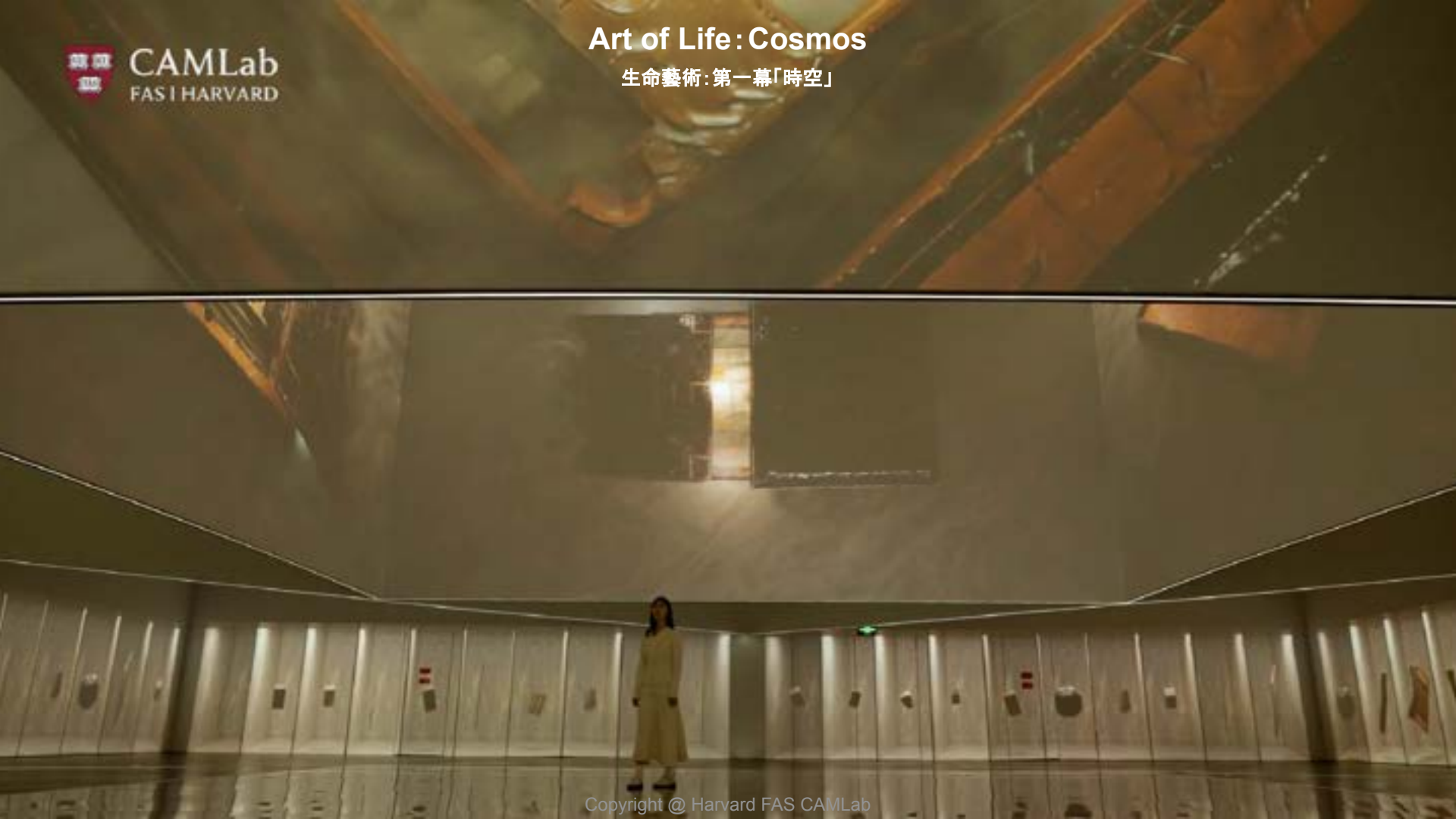
Art of Life：Cosmos

生命藝術：第一幕「時空」



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1

Cosmos

Constructing the Ideal World of Life

[Mawangdui Tomb Chamber Artifacts]

2

Yin and Yang

Cyclical Flow of Life's Four Seasons

[Mawangdui Four-Layer Lacquered Coffin]

3

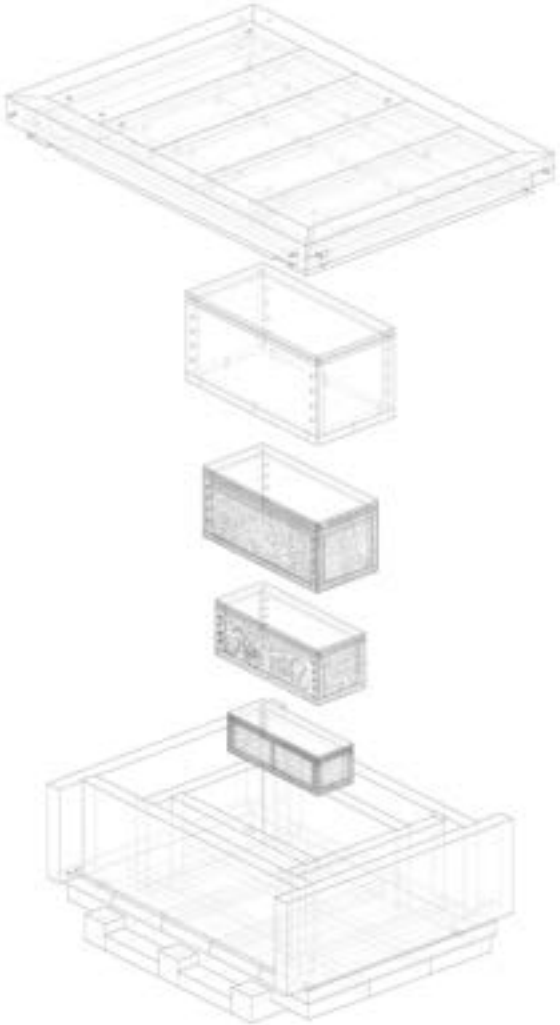
Life

Journey of Afterlife Transformation

[Mawangdui T-Shaped Silk Painting]



THE ART OF LIFE




1
2
3
4

1 2 3 4



Mawangdui Four-Layer Nested Lacquered Coffins

1 2 3 4



Four Stages of Qi as a Generative Process of Life



Mawangdui Four-Layer Nested Lacquered Coffins

1



Winter | Death

Winter:
In this month … **Heavenly qi rises and Earthly qi sinks.** Heaven and Earth no longer communicate; they close off and thus winter is formed.

– *Lüshi Chunqiu*

Winter:

it transforms again and returns to death
– Zhangzi

2

Spring



In this month, the Heavenly qi descends and the Earthly qi rises. Heaven and Earth harmonize with one another, and grasses and trees flourish and stir with life.
春:
是月也, 天氣下降, 地氣上騰, 天地和同, 草木繁動。

– Lüshi Chunqiu





3

Summer









3

Summer



Utmost yin is solemn and austere; utmost yang is blazing and radiant. The solemn force issues from Heaven, the radiant force emerges from Earth. **When the two interact and communicate,** harmony is formed—and **living things are thereby generated.**

至阴肃肃，至阳赫赫；肃肃出乎天，赫赫发乎地，两者交通成和而物生焉

– Zhuangzi





4

Autumn

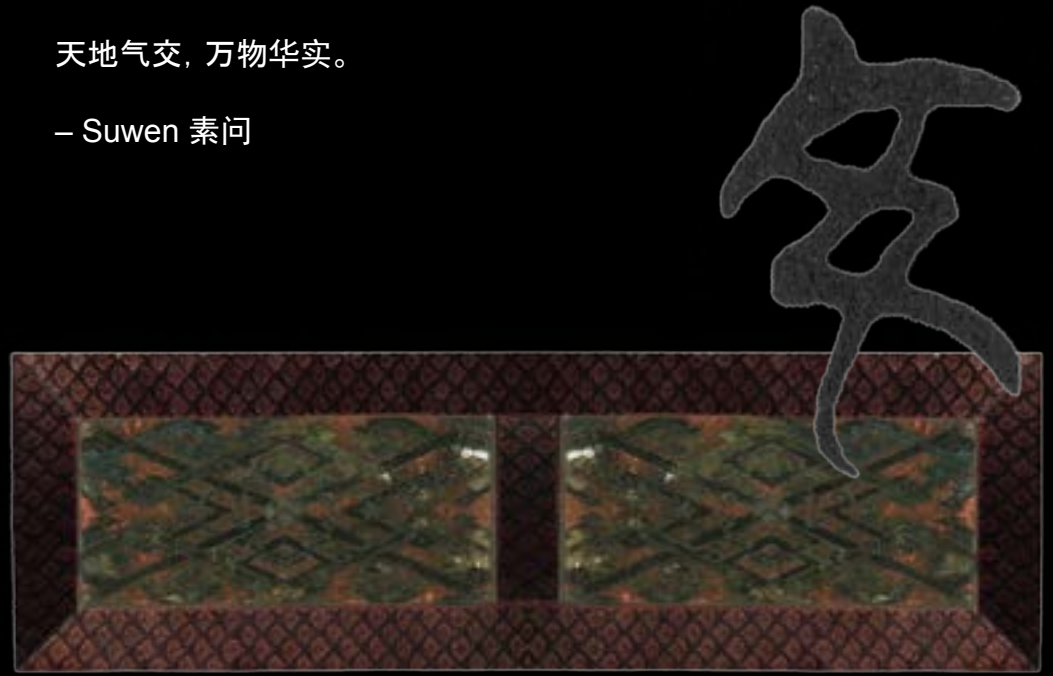
When the qi of Heaven and Earth intersect, all things blossom and bear fruit.

天地气交，万物华实。

– Suwen 素问







Mawangdui Four-Layer Nested Lacquered Coffins

Yin and Yang | Nurture Life

Amidst the confused, infinitesimal obscurity, **transformation gives rise to qi; qi transforms and produces form; form transforms and brings forth life. And now it transforms again and returns to death**. This is simply their mutual participation in the **circulating movement of the four seasons—spring, autumn, winter, and summer.**

– *Zhangzi*

“杂乎芒芴之间，变而有气，气变而有形，形变而有生。今又变而之死。是相与为春秋冬夏四时行也。”

——《庄子·至乐》

Four Stages of Qi as a Generative Process of Life



Art of Life：Yin and Yang

生命藝術：第二幕「陰陽」

Cyclical Flow of Life's Four Seasons











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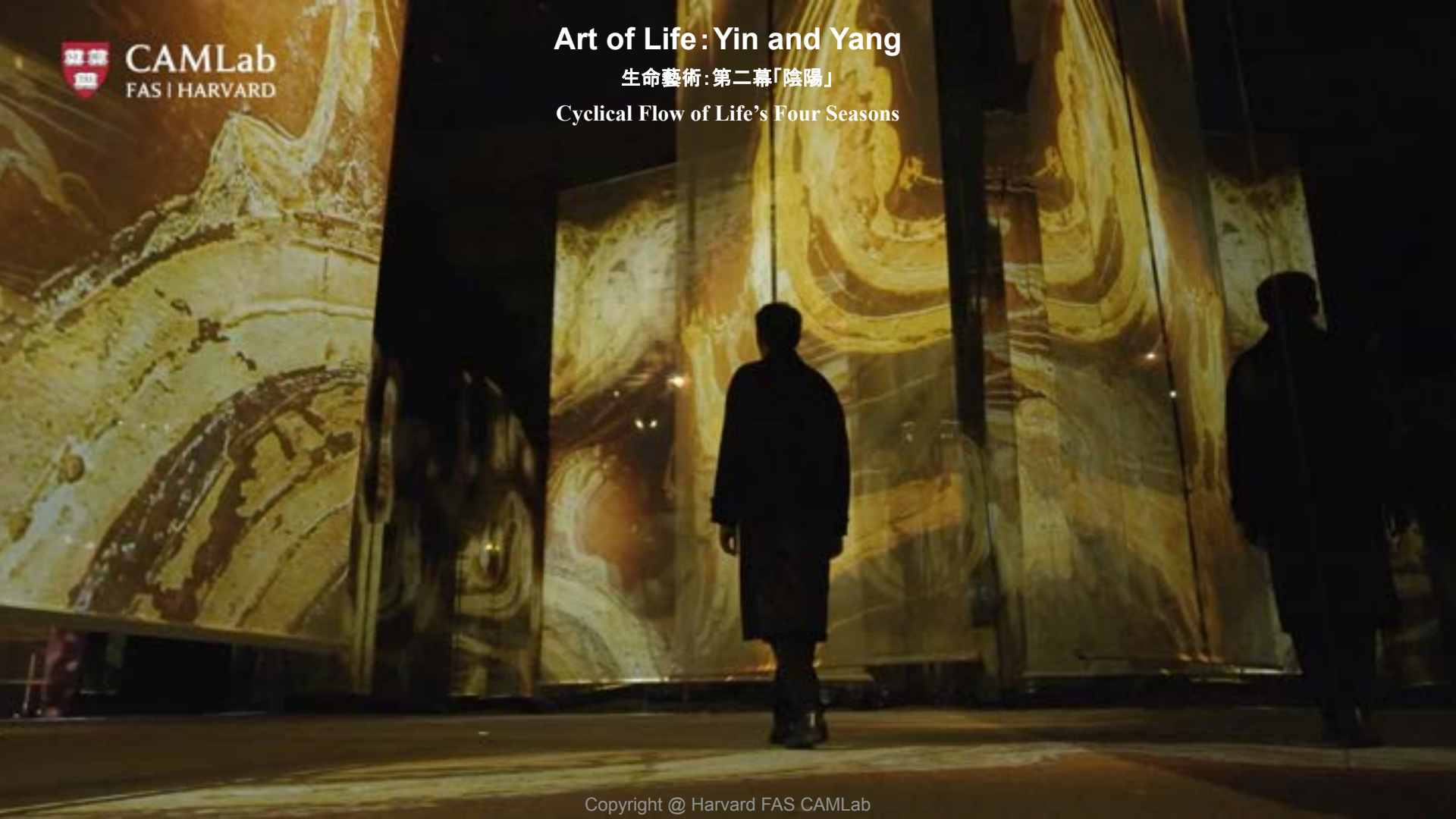
Art of Life : Yin and Yang

生命藝術 : 第二幕「陰陽」

Cyclical Flow of Life's Four Seasons



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Art of Life : Yin and Yang

生命藝術 : 第二幕「陰陽」

Cyclical Flow of Life's Four Seasons



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Art of Life : Yin and Yang

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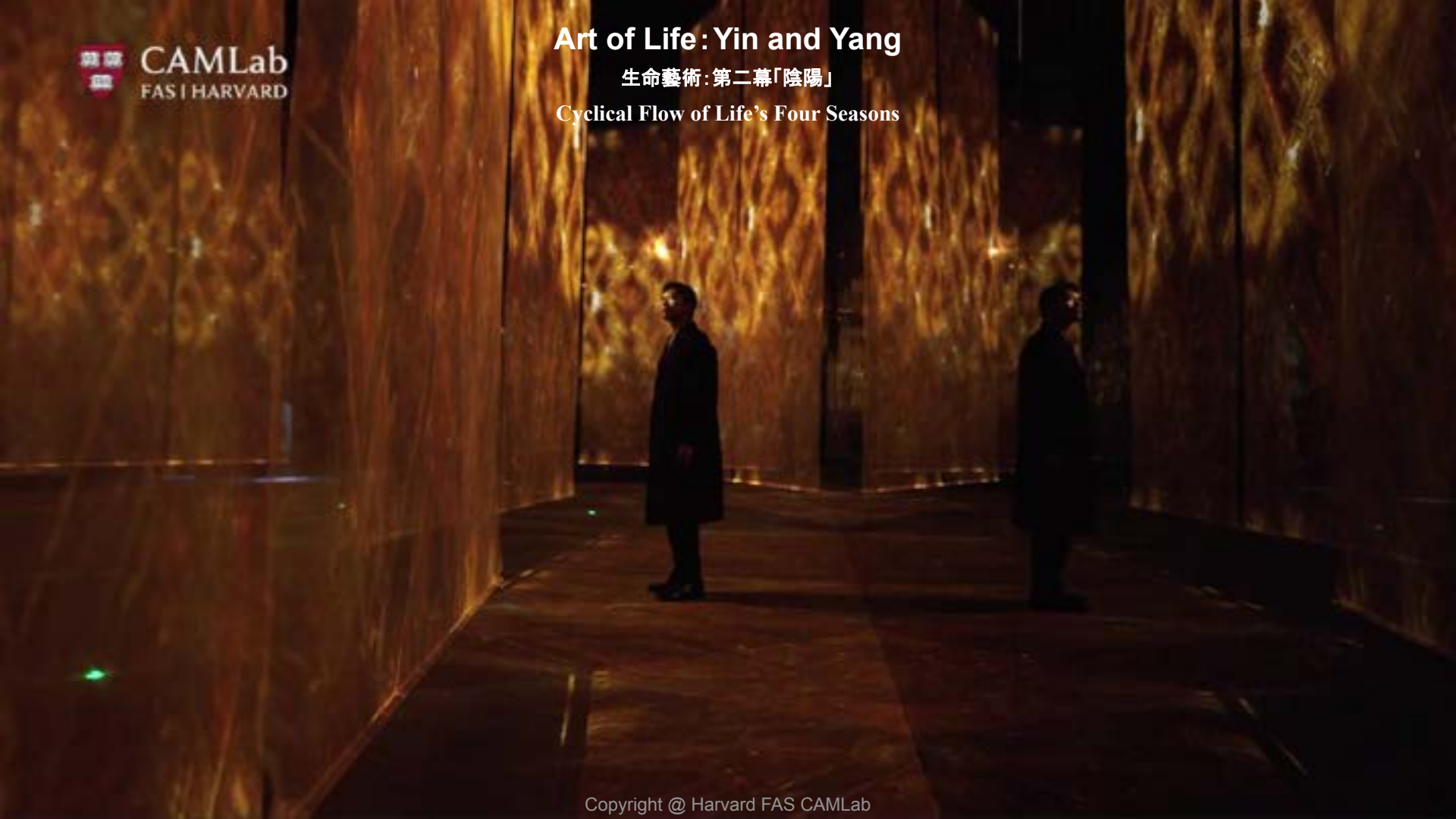
Cyclical Flow of Life's Four Seasons



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THE ART OF LIFE



Mawangdui T-shaped Banners









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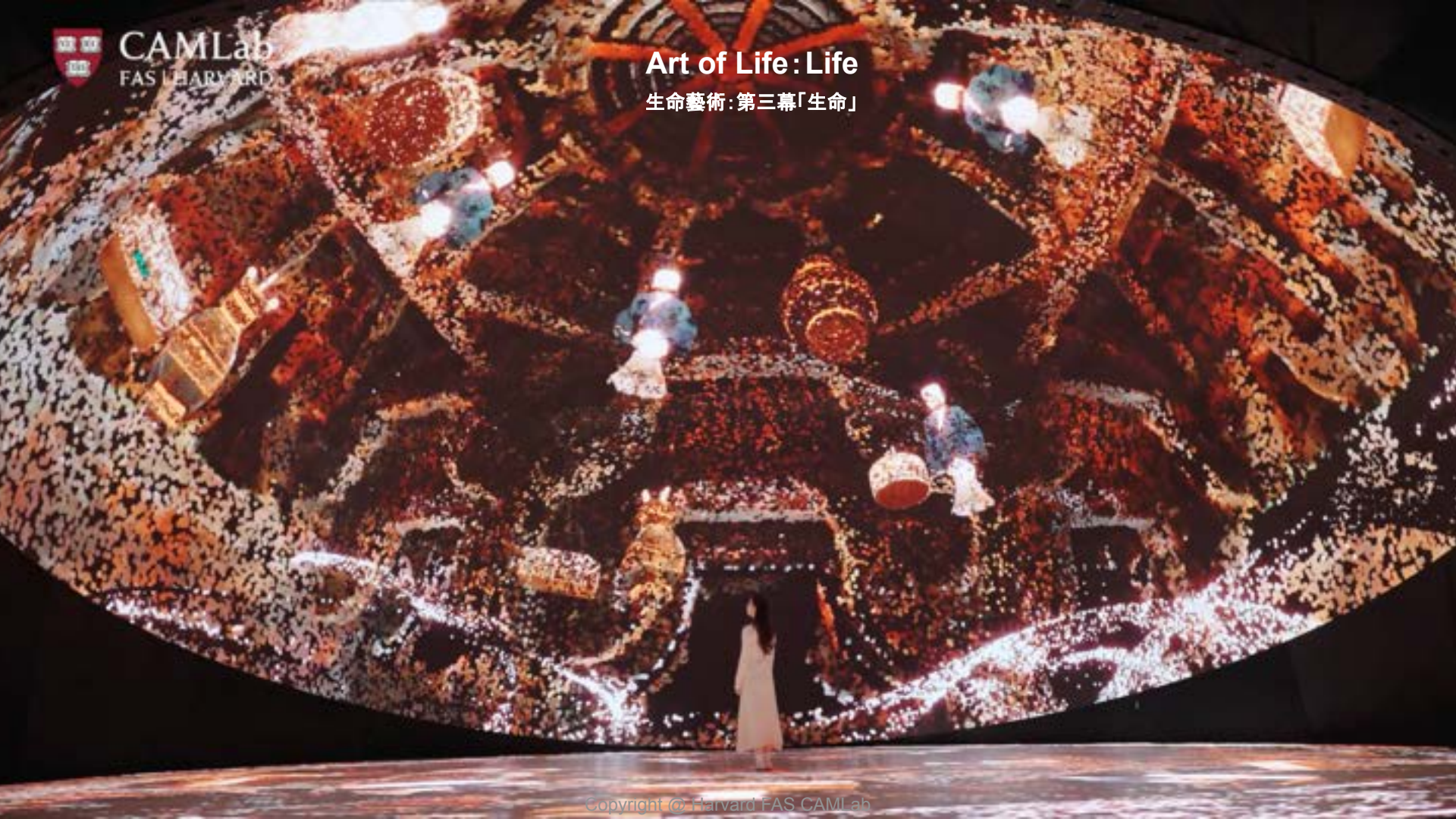
Art of Life : Life

生命藝術 : 第三幕「生命」



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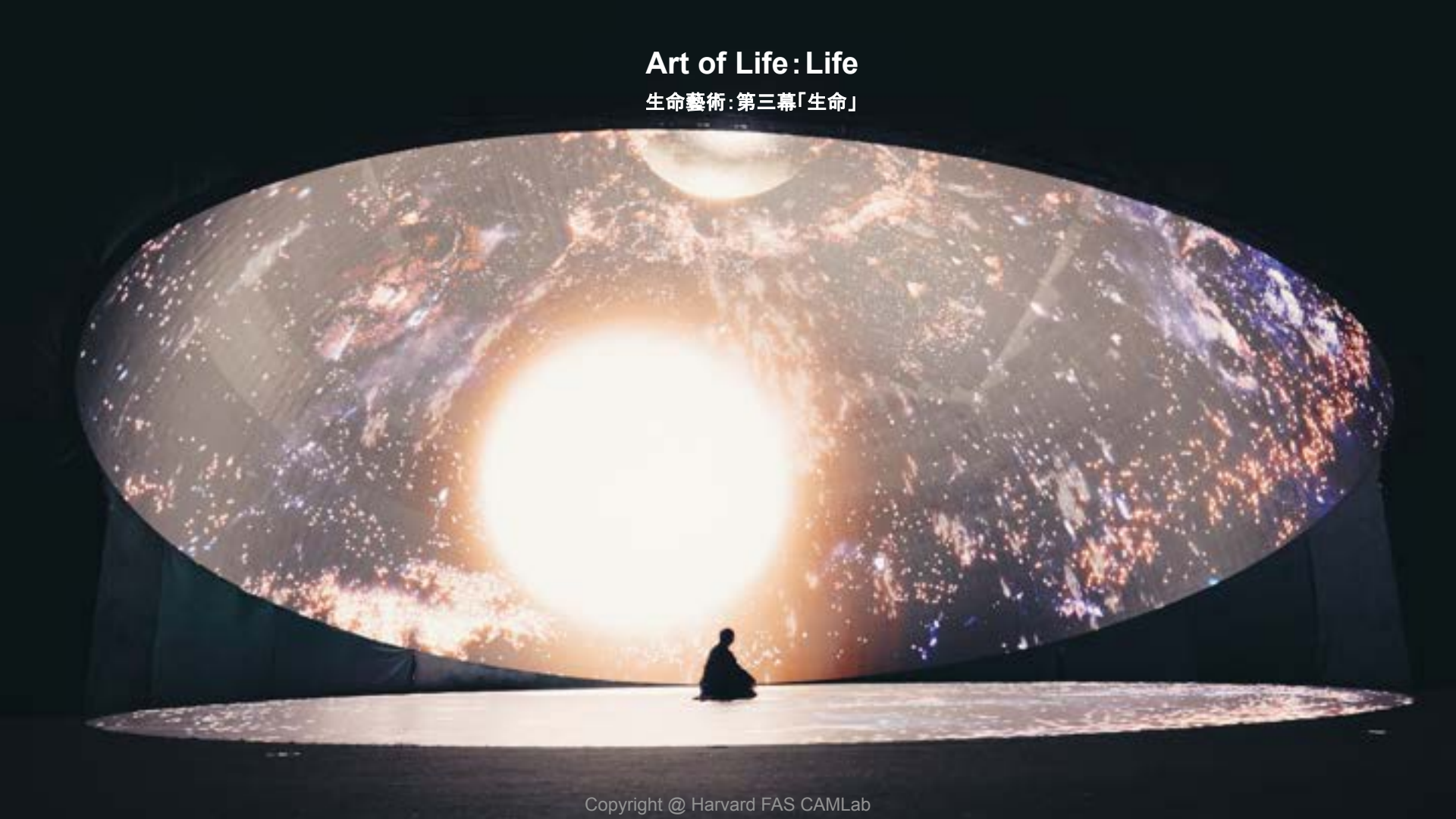

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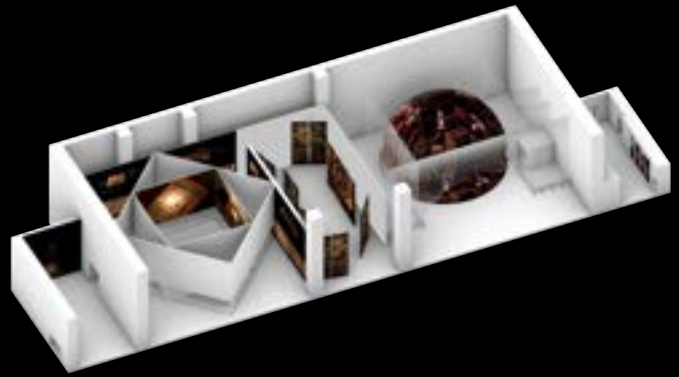
Certificate
2025 Global Awards for World Heritage Education Innovative Cases
Star of Outstanding



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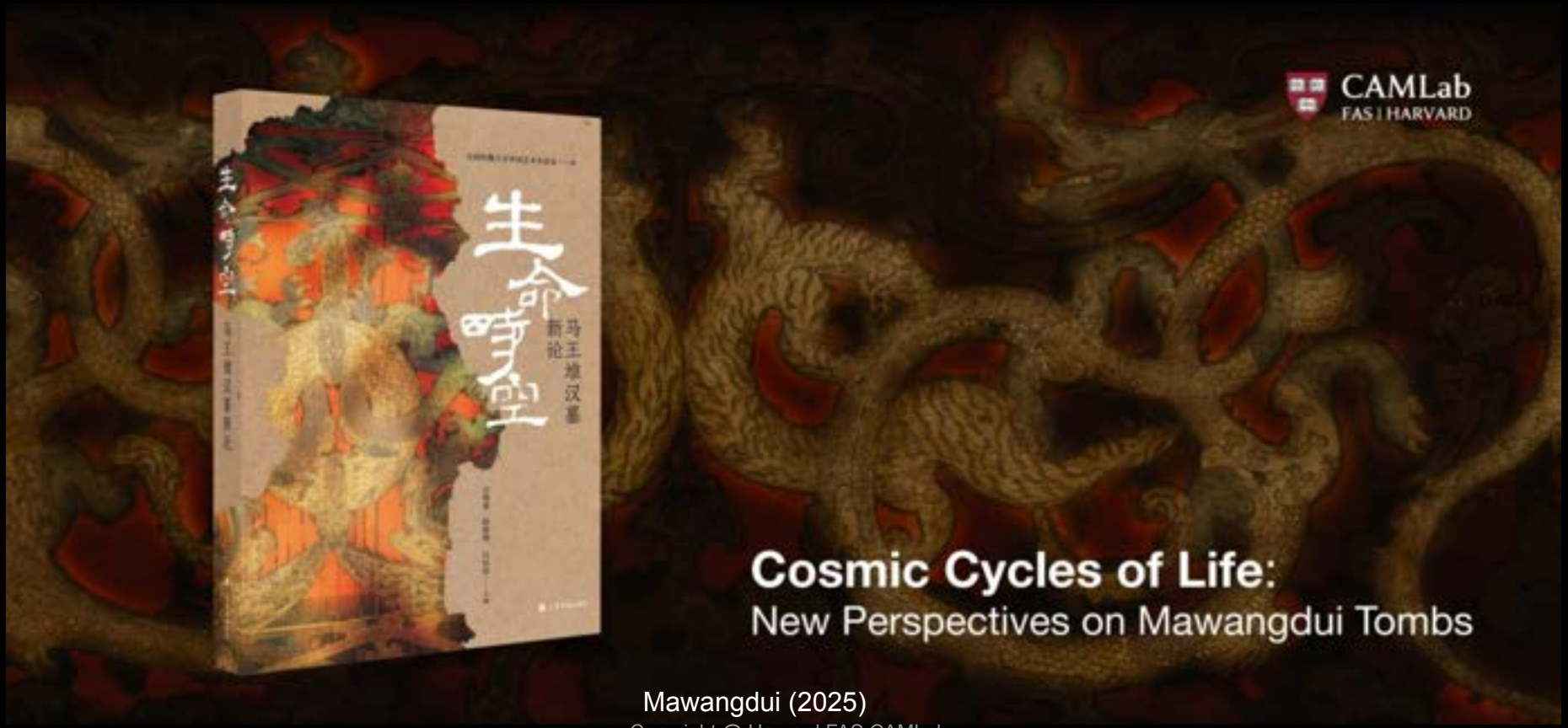

Mawangdui (2025)

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Cultural Worldmaking

01 Fragmented Worlds

02 Immovable Worlds

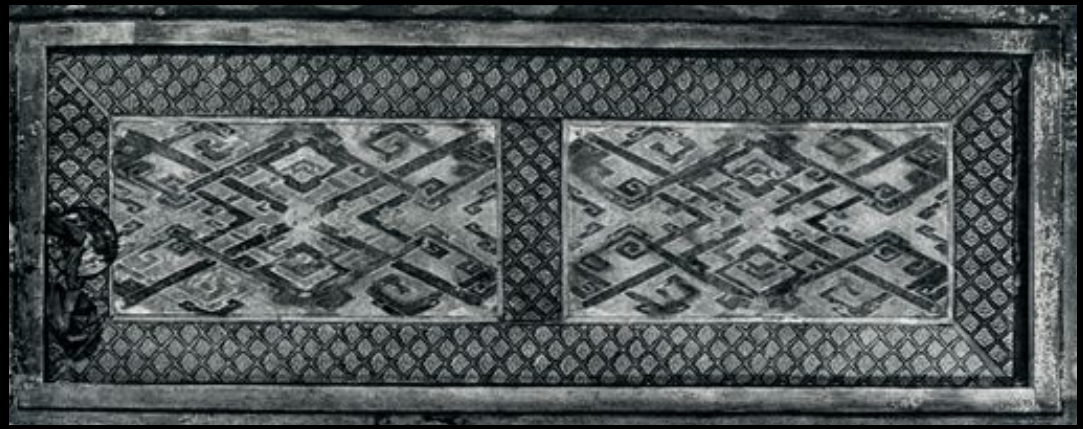
03 Conceptual Worlds

04 Invisible Worlds


Seeing the Unseen
01
Feathered Iridescence
Mixed Media, 2nd Century BCE



Innermost coffin of Mawangdui Tomb No.1



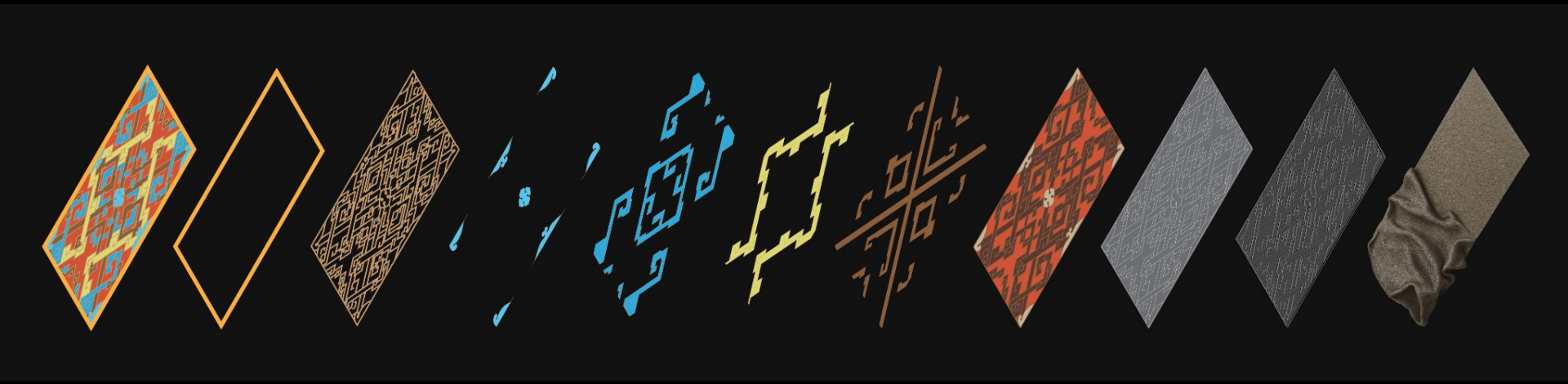



Pattern Created with Feathers

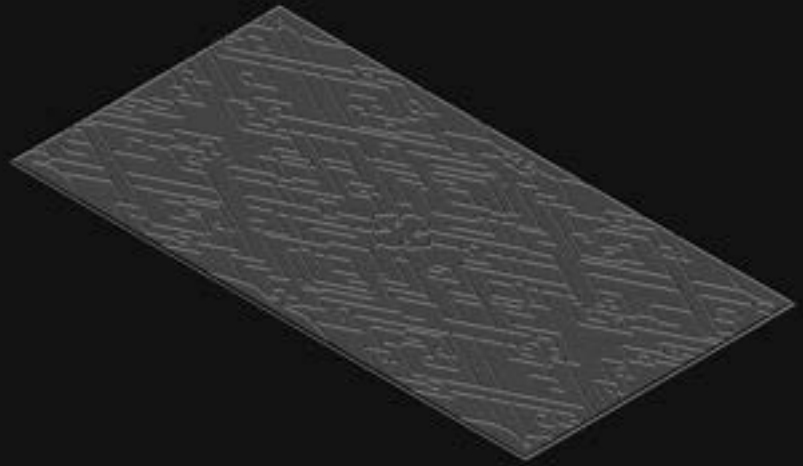
Pattern Created with Blue, Red, and Iridescent Black Feathers





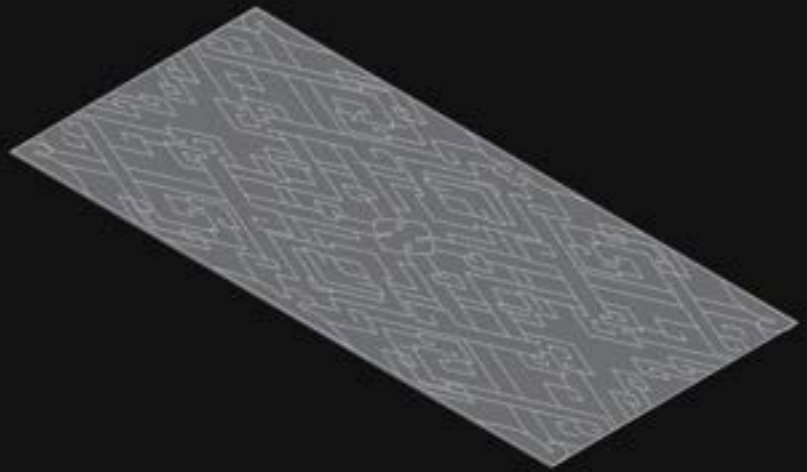


Reconstruction of the Making Process of Mawangdui Featherwork



Relief Printed Contour Lines

Contour lines of the ornamental design were impressed using a relief printing technique, ensuring precise and uniform outlines that guide the placement of feather elements.



Compositional Linework

The layout consists of densely arranged motifs such as diamond grids, persimmon calyxes, and cloud forms, rendered through printed or stenciled linework that defines the compositional logic for the later chromatic layering.



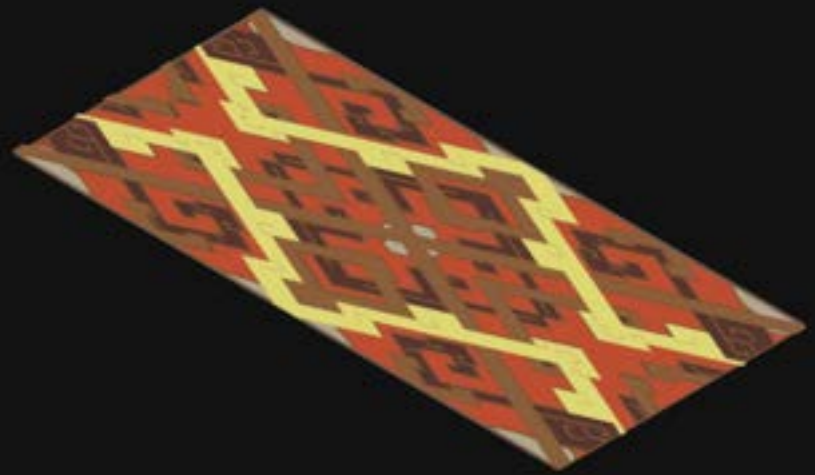
Red and Black Lacquer

Lacquer-like dyes in black and vermilion were applied to unpatterned areas of the textile, establishing a vibrant chromatic base while also acting as a viscous adhesive medium for attaching feather tufts.



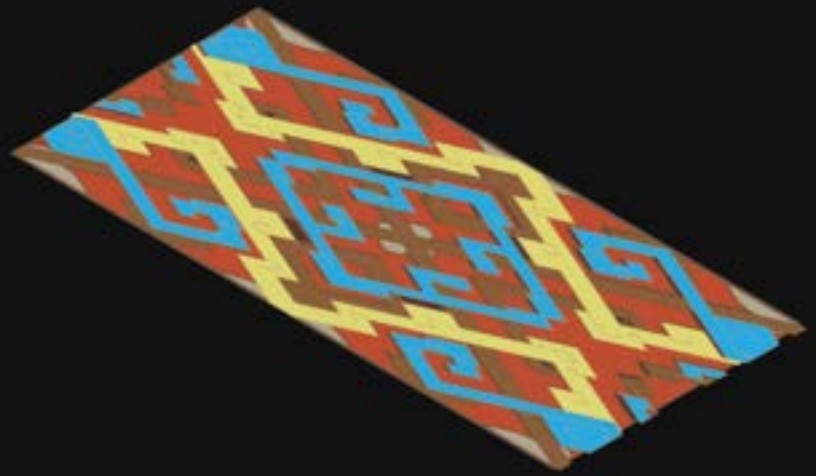
Brown Feather Tufts on Cloud Motifs

Brown feather tufts were overlaid onto the black-dyed ground, creating a textural and tonal density that reinforces the gravitas and tactile presence of the cloud motif.



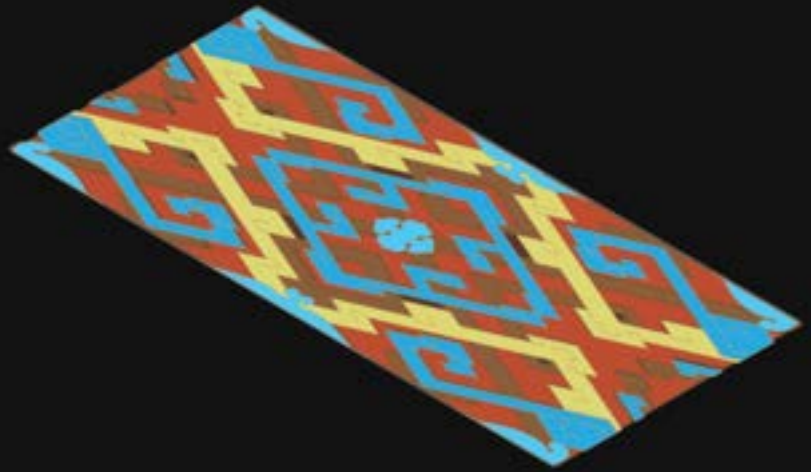
Yellow Feather Tufts on Cloud Motifs

Yellow feathers placed over the zones produce striking visual contrastof chromatic fields and reflecting the Han artisans' sensitivity to color hierarchy.



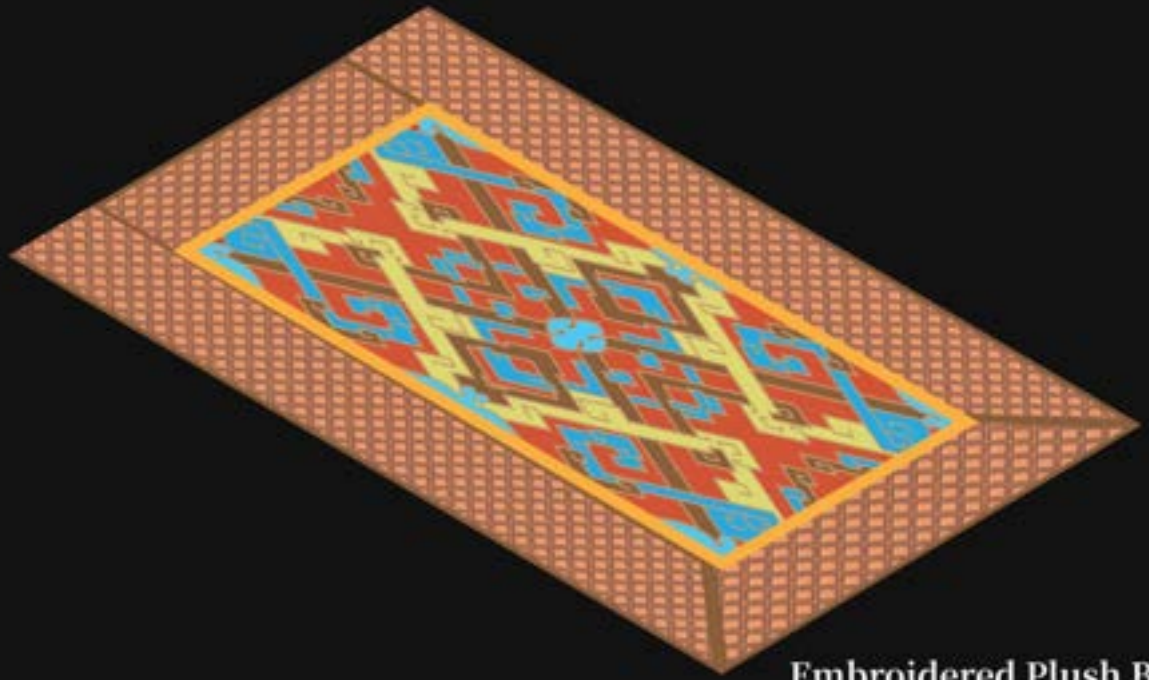
Blue Featherwork on Celestial Motifs

Blue featherwork was applied atop cloud and calyx motifs, imbuing the surface with a cool, luminous quality that symbolically evokes auspicious celestial phenomena and balances the overall palette.



Persimmon Motifs in Blue Feathers

Persimmon forms rendered in blue feather tufts function not only as decorative units but also as carriers of auspicious connotations, anchoring the cosmological iconography of the entire textile composition.



Embroidered Plush Border

A layer of plush diamond-pattern embroidery was stitched around the feather textile, functioning as a visual buffer that mediates between ornamental and structural zones, enhancing compositional coherence and spatial rhythm.

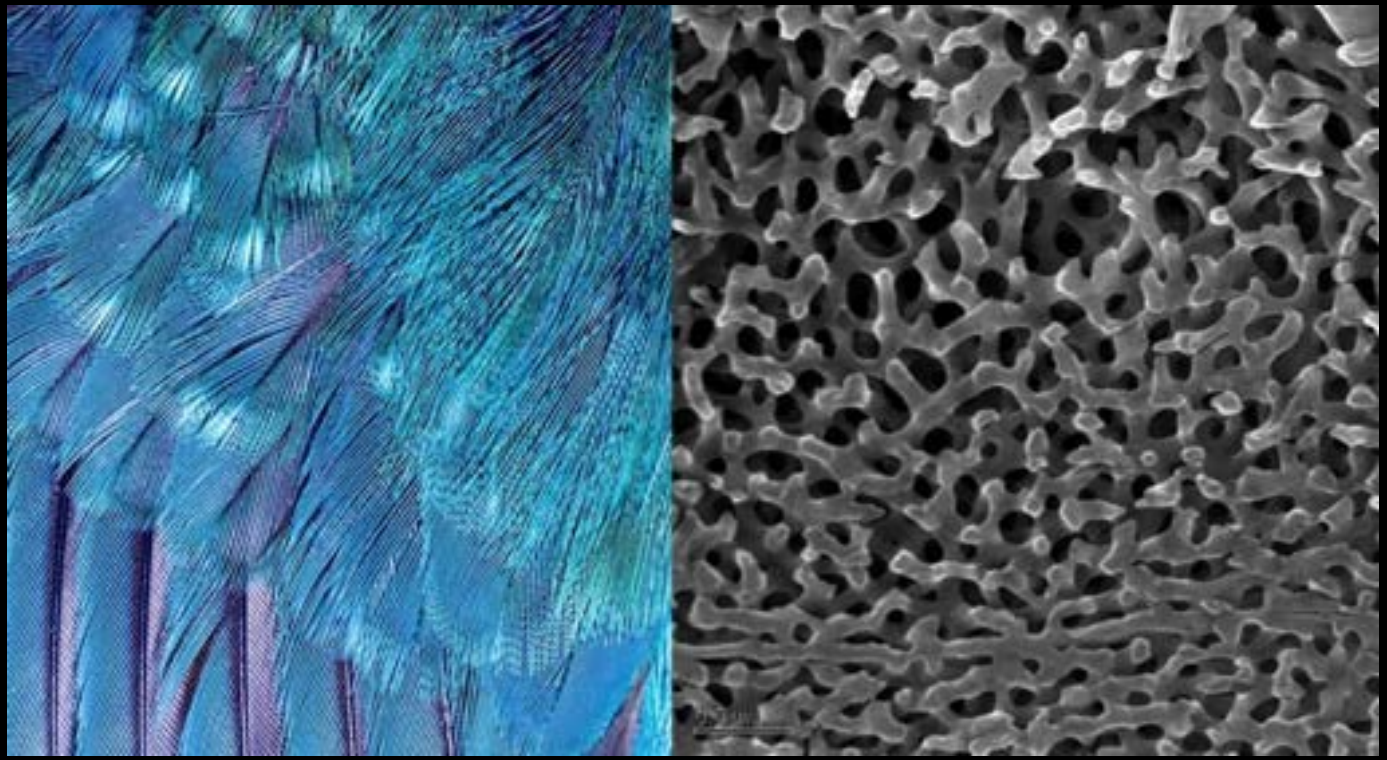






Blue Feather and Structual Light

nano-scale arrangement of keratin and air
within the feather barbules



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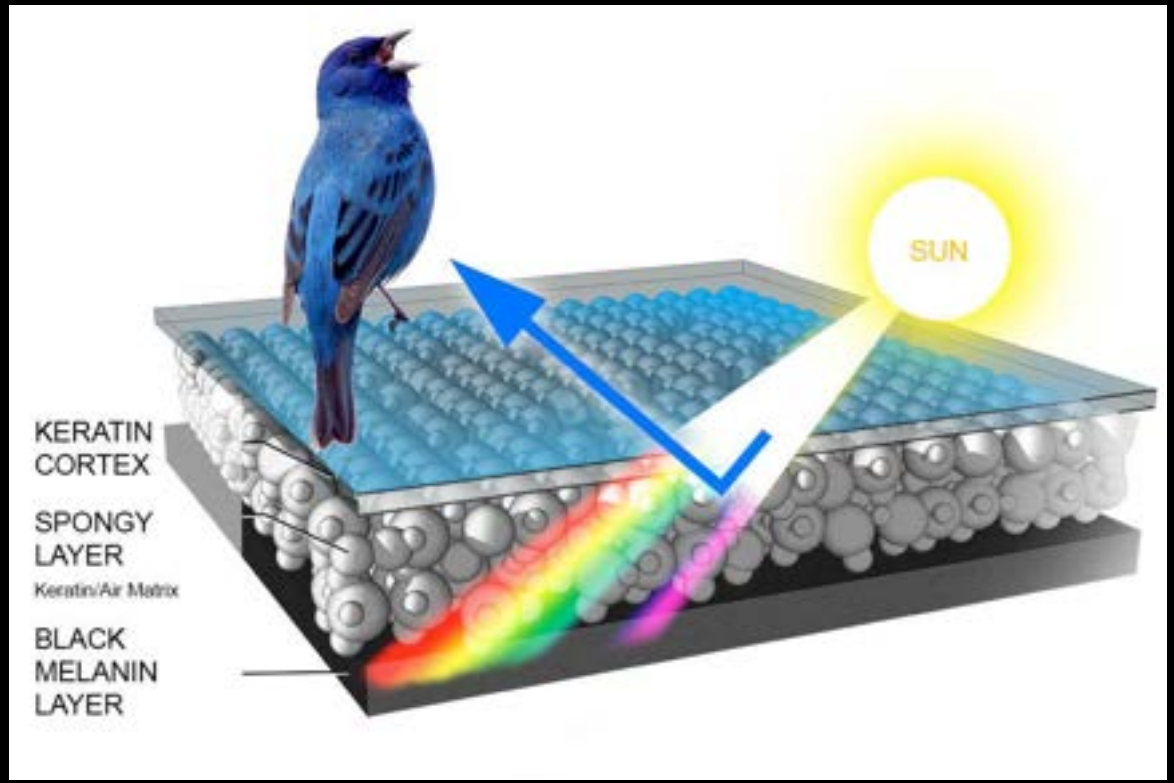
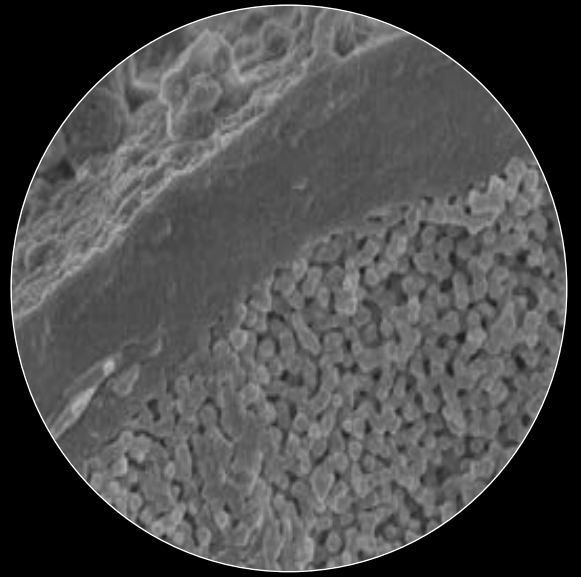




Identification of Feathers

Hunan Museum

Harvard CAMLab x Harvard Comparative Zoology Museum



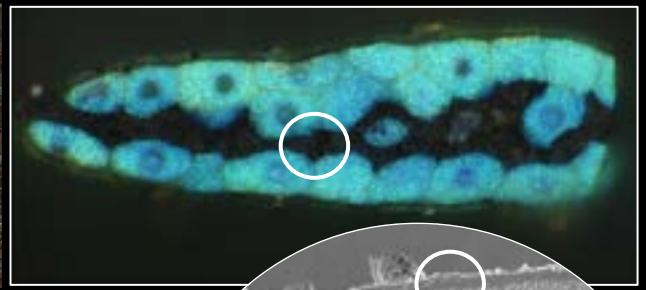










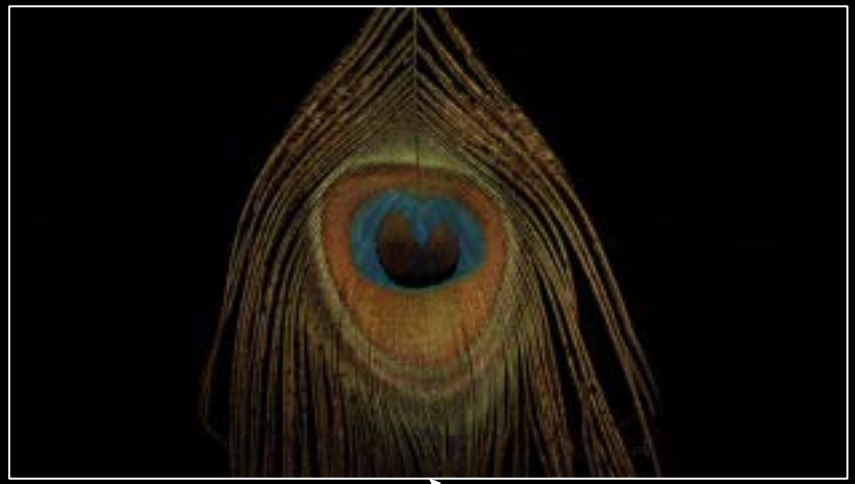




Interactive Digital Installation on the Bio-analysis of Mawangdui Feathers

Demonstrating the Research Process of Bird Identification

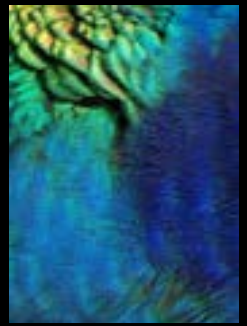
Interactive Digital Installation on the Structural Color of Feathers used in early Chinese Civilization



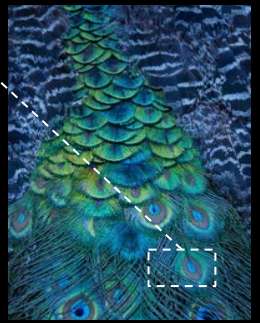












Feathered tomb

Blue and red kingfisher-feathered coverlets and pearl adornments — all shining together in dazzling radiance.

翡翠珠被，烂齐光些。
-《招魂》

翡: red kingfisher
翠: blue kingfisher

Feathered Immortality

After taking the elixir for four or five days, the body grows feathered wings. Lightly one ascends and rides upon floating clouds, and in an instant travels ten thousand miles.

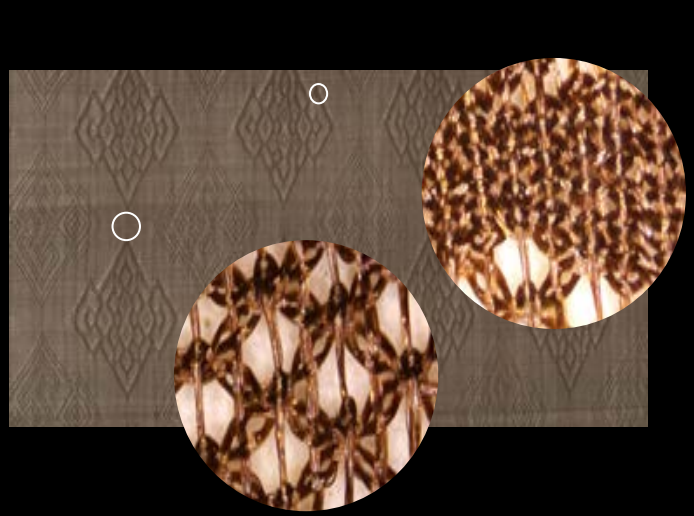
服藥四五天，身體生羽翼。輕舉乘浮雲，倏忽行萬里。
-《論衡》

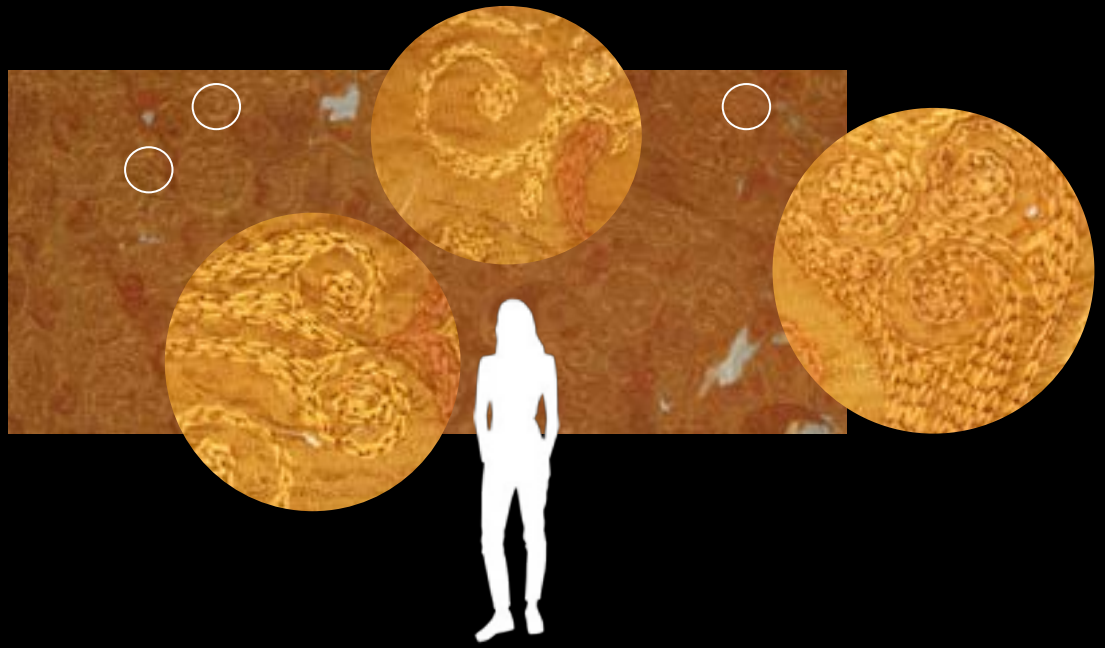
Roaming freely above and below, commanding the myriad spirits; the body grows fur and feathers.

遨遊上下，使役萬靈，體生毛羽
-《抱朴子》

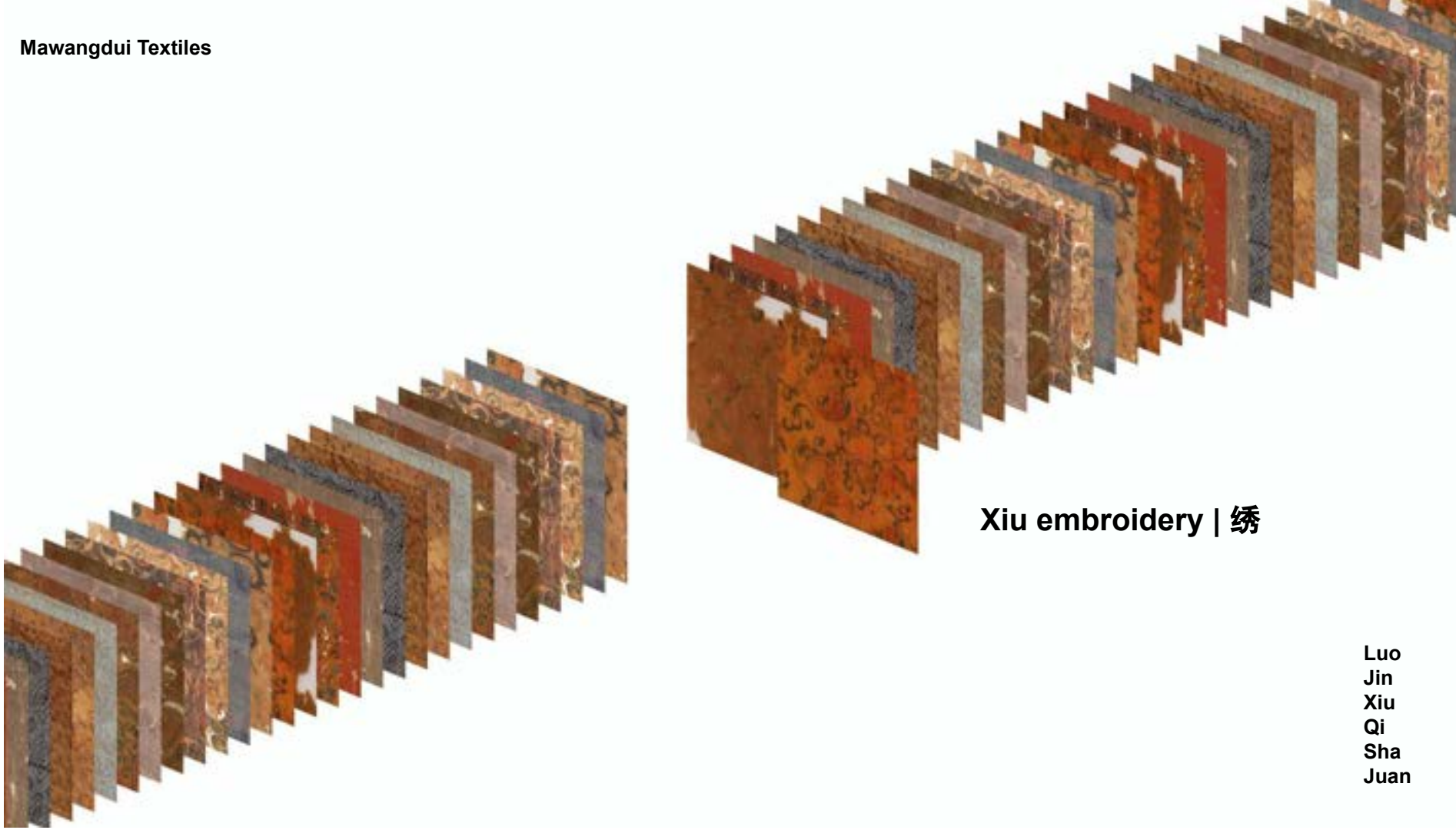


Seeing the Unseen 02: Looms of Life





Interactive Digital Installation on the Weaving Structure and Techniques of Mawangdui Textiles

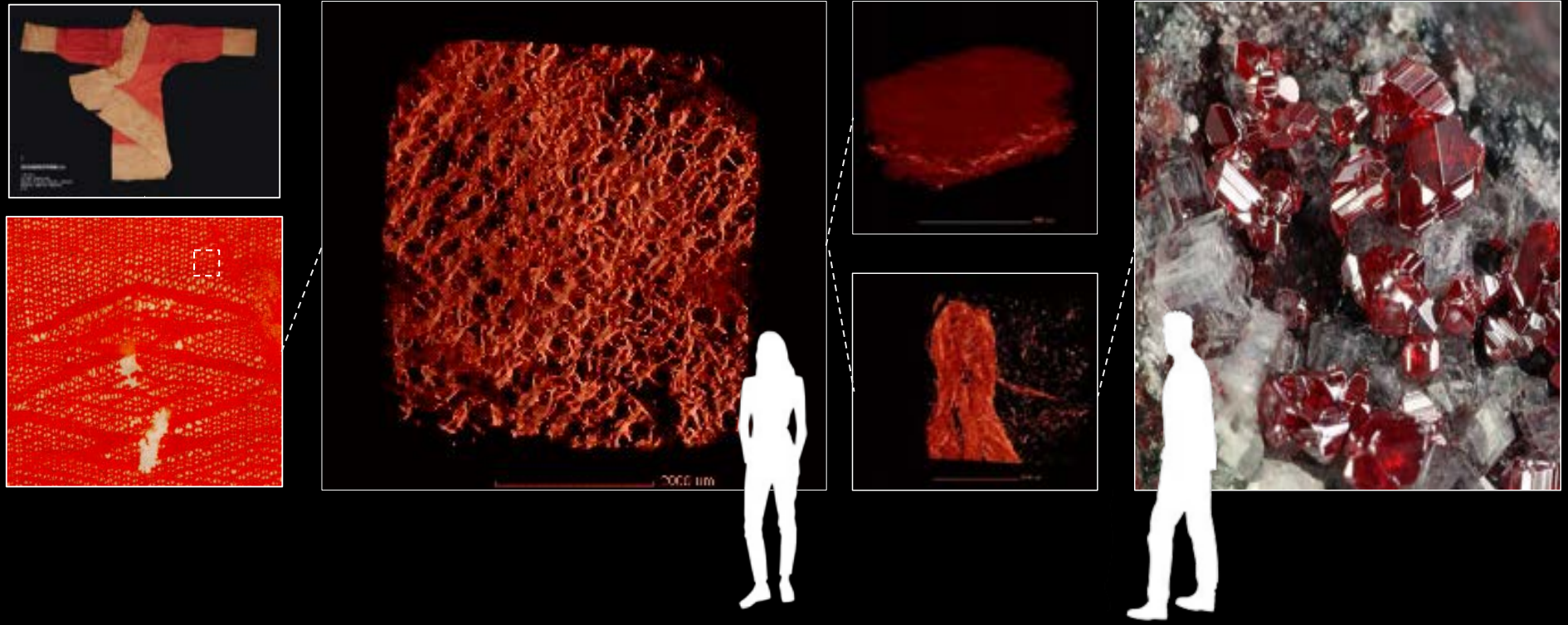


Xiu embroidery | 绣

Luo
Jin
Xiu
Qi
Sha
Juan


Mawangdui
Textiles

Seeing the Unseen 03: Alchemy of Color

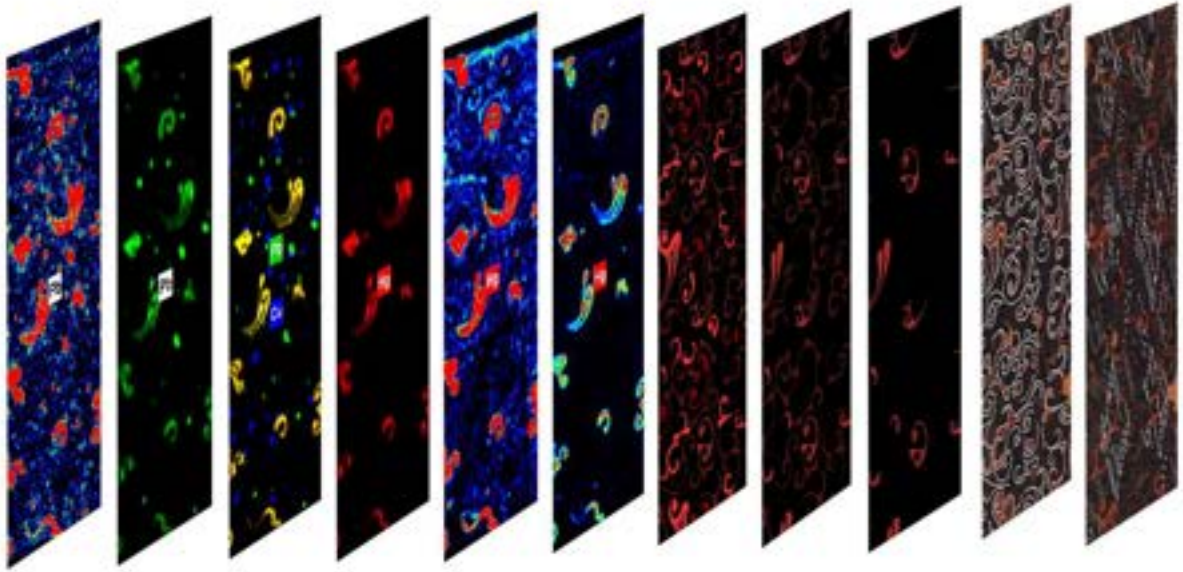


Interactive Digital Installation on the Mineral Pigments found in

Mawangdui Textiles

Mineral Pigments used in Mawangdui Textiles | Identification of Elements through XRF Mapping









Cinnabar

HgS

Mercury Sulphide

Cinnabar, a vivid scarlet to brick-red mineral with a quartz-like symmetry, is composed of mercury sulphide and possesses one of the highest refractive indices among minerals. Mined since the Neolithic period, it was highly prized both as a pigment and a source of quicksilver.

Central to Daoist alchemical practices, cinnabar was a key ingredient in elixirs of immortality such as the Three Envoys Elixir and Seven-Cycle Cinnabar, believed to harness transformative properties of mercury for life extension. Despite its sacred status, ancient sources acknowledged its toxicity; chronic exposure could result in mercury poisoning. Repeated sublimation was employed in an attempt to purify the substance. Major historical sources included Guizhou and Hunan.





Azurite

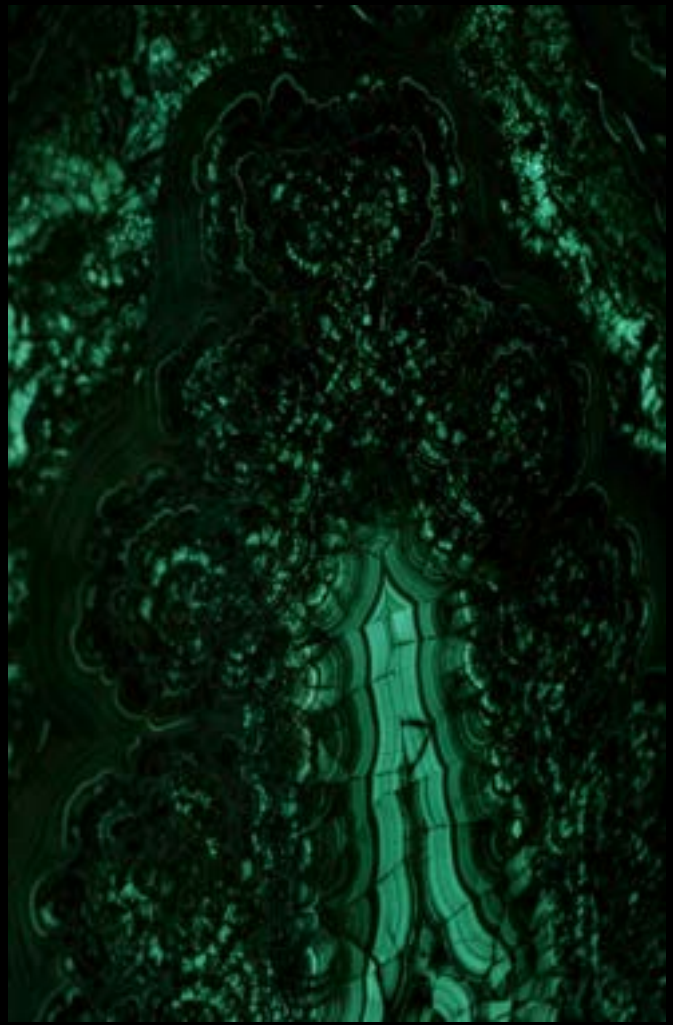
$Cu_3(CO_3)_2(OH)_2$

Copper Carbonate Hydroxide

Azurite is a deep blue copper-based carbonate mineral that occurs in prismatic crystals and nodular formations. Chemically unstable in air, it often converts to malachite over time. Although relatively safe in solid form, the powdered mineral can release bioavailable copper and must be handled with care due to its moderate toxicity.

In antiquity, azurite was not always clearly distinguished from malachite or verdigris, and the terms may have been used interchangeably. It was primarily sourced from the Tonglushan copper mines in Hubei.





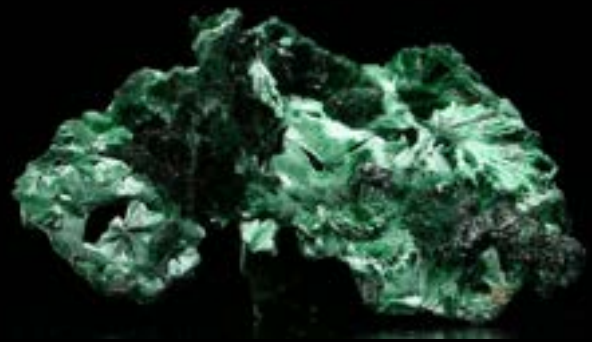
Malachite

$Cu_2CO_3(OH)_2$

Copper Carbonate Hydroxide

Malachite is a green copper mineral with nodular and laminar textures, valued for both its pigment and medicinal properties. Its toxicity arises from soluble copper compounds; thus, grinding and ingestion were discouraged.

In Daoist alchemical recipes such as the Empyrean-Roaming Elixir and Grand Unity Jade Powder Elixir, malachite played a vital role, and its laminar form was preferred for superior purity and efficacy. It was also used to seal alchemical vessels, as in the Six-One Lute. The primary historical source was the Tonglushan mine in Hubei.





Muscovite

$KAl_2(AlSi_3O_{10})(F,OH)_2$

Potassium Aluminum Silicate Hydroxide Fluoride

Muscovite is a silvery to grey mica mineral known for its sheet-like structure and elasticity, resulting from perfect basal cleavage. Non-toxic in solid form, it can irritate the lungs when inhaled as fine dust.

In Chinese alchemy, muscovite was employed to stabilize mercury and modulate its transformation in elixir preparation, thus playing a crucial role in the formulation of longevity substances. While some deposits existed in Xinjiang, Sichuan, and Inner Mongolia, muscovite was often imported.





Quartz

SiO_2

Silicon Dioxide

Quartz is a ubiquitous silicate mineral appearing in a range of colors and forms, including amethyst, citrine, and agate. In Chinese alchemy, quartz was incorporated into compounds like the Empyrean-Roaming Elixir and the Jade Fountain eye remedy, where it symbolized transformation and purification.

Despite its potential toxicity, it was sometimes ingested; historical accounts, such as those by Sun Simiao, report adverse effects like severe headaches, which were countered with antidotes such as "purple snow."



Seeing the Unseen 03: Alchemy of Color



Digital Installation on the Mineral Pigments found in Mawangdui Textiles

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Cultural Worldmaking

01 Fragmented Worlds

02 Immovable Worlds

03 Conceptual Worlds

04 Invisible Worlds

EWHA WOMANS UNIVERSITY
DEPARTMENT OF ART HISTORY



Experiential Heritage Theater

Cultural Worldmaking and Applied Art History

Chenchen Lu

Co-founder and Associate Director
CAMLab | Faculty of Arts and Sciences
Harvard University

20260113