

# Digital Preservation of Borobudur's Narrative Relief Wall















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## World Heritage in some countries

 <b>Country</b>	<b>Nat WHS</b>	<b>Cult WHS</b>	<b>Mixed WHS</b>	<b>Total WHS</b>
 Australia	12	3	4	19
 Cambodia		2		2
 China	8	29	4	41
 India	5	23		28
 Indonesia	4	3		7
 Japan	4	12		16
 Laos		2		2
 Malaysia	2	1		3
 Nepal	2	2		4
 Thailand	2	3		5
 Vietnam	2	5		7

» <http://whc.unesco.org/pg.cfm?cid=31> (end of October 2011)

# Indonesia:

- ✿ Borobudur Temple Compounds (1991)
- ✿ Komodo National Park, Flores (1991)
- ✿ Prambanan Temple Compounds (1991)
- ✿ Ujung Kulon National Park (1991)
- ✿ Sangiran Early Man Site (1996)
- ✿ Lorentz National Park, Irian (1999)
- ✿ Tropical Rainforest Heritage of Sumatra (2004)

# INDONESIA



Borobudur

# Japan

Buddhist Monuments in the Horyu-ji Area, Nara (1993)

Himeji-jo (1993)

Shirakami-Sanchi (Nat, 1993)

Yakushima (Nat, 1993)

Historic Monuments of Ancient Kyoto (Kyoto, Uji and Otsu Cities) (1994)

Historic Villages of Shirakawa-go and Gokayama (1995)

Hiroshima Peace Memorial (Genbaku Dome) (1996)

Itsukushima Shinto Shrine (1996)

Historic Monuments of Ancient Nara (1998)

Shrines and Temples of Nikko (1999)

Gusuku Sites and Related Properties of the Kingdom of Ryukyu (2000)

Sacred Sites and Pilgrimage Routes in the Kii Mountain Range (2004)

Shiretoko (Nat, 2005)

Iwami Ginzan Silver Mine and its Cultural Landscape (2007)

# Buddhist Temples in SE Asian Region



- ✦ Borobudur, Pawon, Mendut, Sewu, 800-950
- ✦ Angkor Wat, Cambodia, 1150
- ✦ Historic City of Ayutthaya, 1300
- ✦ Historic Town of Sukhotai, 1350
- ✦ Emerald Buddha [ Wat Phra Kaew ], Bangkok, 1785
- ✦ Shwedagon Pagoda, Yangon, 10<sup>th</sup> and 15<sup>th</sup> century



# 1. Magnificent monument



- Size: 123 x 123 meter
- height : 42 meter

“) image source: [en.wikipedia.org](https://en.wikipedia.org)



Main entrance is in East side  
towards Mount Merapi





# **Borobudur was built during Golden Age of Old Mataram Kingdom for 60 years (estimated)**

- ✦ Bhanu (752-775), first King of Syailendra Dynasty (Mahayana Buddhist)
- ✦ Wisnu (775-782), Candi Borobudur was started
- ✦ Indra (782-812), expanded the kingdom up to Cambodia
- ✦ Samaratungga (812-833), Candi Borobudur was completed
- ✦ Pramodhawardhani (833-856)
- ✦ Sanjaya Dynasty (Hinduism) 856 ~

## Detail Specifications:



Narrative reliefs: 1,460

Decorative reliefs: 1,212

Buddha Statues in open niches: 368 (originally 432)

Buddha statues on the terraces under circular stupas: 72

Number of Galleries: 4 (main wall & facing the top balustrade)

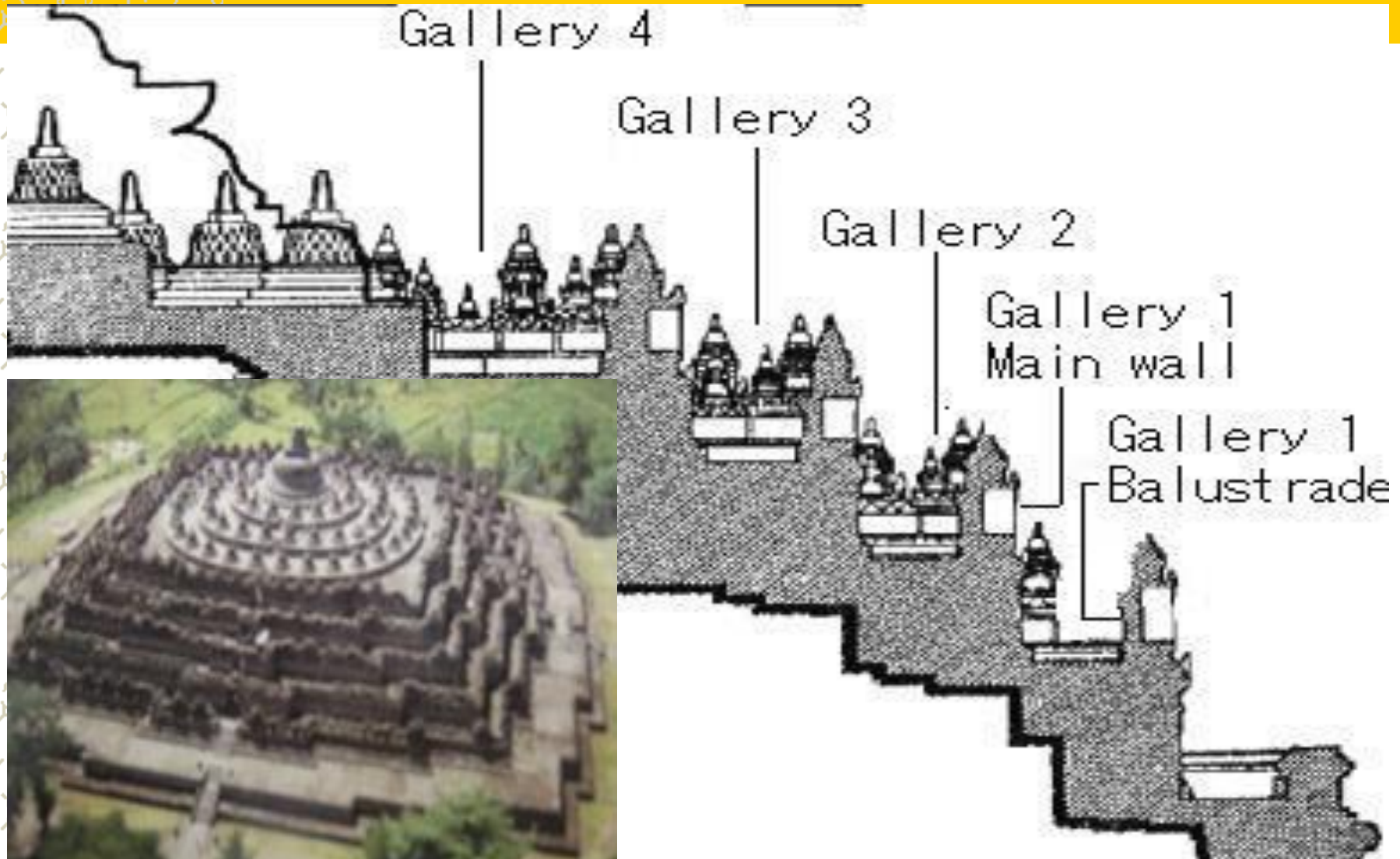
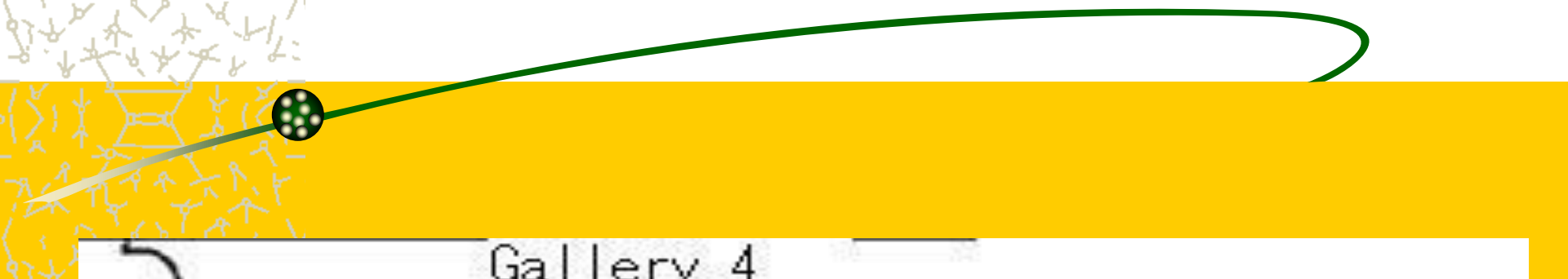
Total length of galleries: circa 2500 meters

Basement hidden with ~ 13,000 cubic meters of stone

Total volume of stone used: circa 55,000 cubic meters

Time to build Borobudur: about 60 years, and

Usage period: about 200 years.



Gallery 4

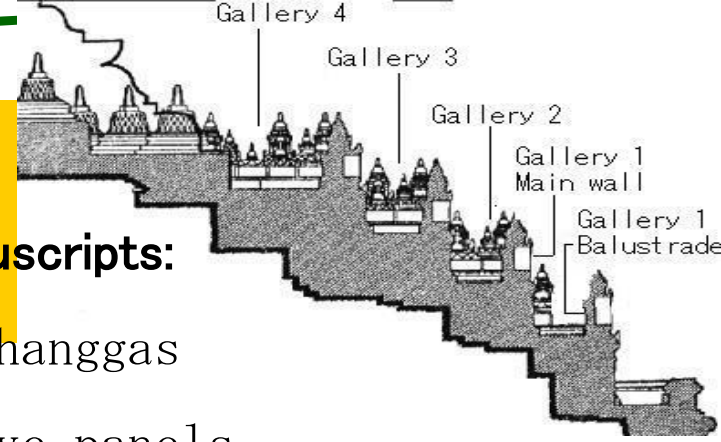
Gallery 3

Gallery 2

Gallery 1  
Main wall

Gallery 1  
Balustrade

# 2. Narrative Relief:



Location:	No. of Relief:	Manuscripts:
Hidden Basement	-1	160 Karmavibhargas
Main wall of Gallery 0	1212	Decorative panels
Gallery 1, upper main wall	120	Lalitavistara
Gallery 1, lower main wall	120	Jatakas & Avadanas
Gallery 1 Balustrade, upper	372	Jatakas & Avadanas
Gallery 1 Balustrade, lower	128	Jatakas & Avadanas
Gallery 2 Balustrade	100	Jatakas & Avadanas
Gallery 2 main wall	128	Gandavyuha
Gallery 3 main wall	88	Gandavyuha
Gallery 3 Balustrade	88	Gandavyuha
Gallery 4 Balustrade	84	Gandavyuha
Gallery 4 main wall	72	Bhadracari

# Some relief of Lalitavistara (life of Buddha, Shidarta G.)





# Jatakas & Avadanas



The entire 720 panel series represent former lives of the Bodhisattva (afterward the Buddha).

Image source: <https://artserve.anu.edu.au>

# Gandavyuha:

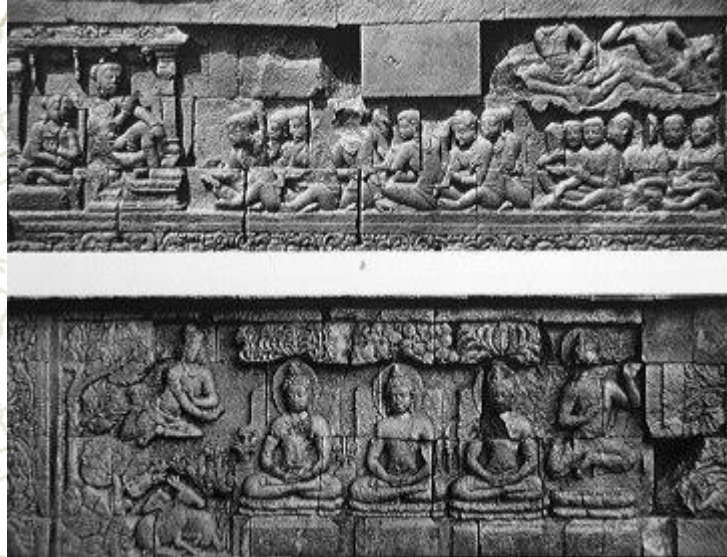
- ✦ 388 Gandavyuha reliefs represent son of a rich merchant (Sudhana) who travels the world in search of wisdom, and met 55 spiritual teachers to share their spiritual knowledge and experiences.



Image source: <http://www.borobudur.tv>



# Bhadracari:



72 Bhadracari panels present Ten Great Vows of the Bodhisattva Samantabhadra (Ultimate & Universally Good).

# Karmavibhargas:

Buddhist doctrine of cause and effect (karma) as well as good and evil



4 out of 160 hidden panels are shown on southeast parts of the temple (ground level).

# 3. Preservation effort & major restorations

1. van Erp Restoration, 1911
2. UNESCO, 1983



Image source: <http://www.borobudurparks.com>

# 4. Digital preservation & archive initiatives

 <https://artserve.anu.edu.au>

 <http://www.borobudur.tv>

 <http://www.youtube.com>

 German DVD Animation

 <http://www.gunarto.org>

## **5. Demand for further digital preservation projects**

- Digital Preservation & VRML Efforts for this UNESCO World Heritage & Cultural Treasures is needed for the benefits of our future generations**
- Especially from AGORAsia participants and other young scientists / engineers.**
- For the purpose of Education, Science, and Culture**

## 6. Concluding Remarks

- ✱ Candi Borobudur is used as Buddhist religious ceremony till now (Vaisak, June)
- ✱ Vihara near candi Mendut
- ✱ Biggest ancient Buddhist temples in ASEAN/world
- ✱ Historical and tourist site
- ✱ “Protection & Preservation with Digital Archive” is needed



**THANK YOU**



**Borobudur**  
temple

# References

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