Digital Preservation of Borobudur’s Narrative Relief Wall

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<table>
<thead>
<tr>
<th>Country</th>
<th>Nat WHS</th>
<th>Cult WHS</th>
<th>Mixed WHS</th>
<th>Total WHS</th>
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<td>Cambodia</td>
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<td>China</td>
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<td>29</td>
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<td>41</td>
</tr>
<tr>
<td>India</td>
<td>5</td>
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<tr>
<td>Indonesia</td>
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</tr>
<tr>
<td>Japan</td>
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<td>Vietnam</td>
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<td>5</td>
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</tbody>
</table>

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)
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, 10th and 15th century
1. Magnificent monument

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

") image source: 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.
## 2. Narrative Relief:

<table>
<thead>
<tr>
<th>Location:</th>
<th>No. of Relief:</th>
<th>Manuscripts:</th>
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</thead>
<tbody>
<tr>
<td>Hidden Basement</td>
<td>1</td>
<td>160 Karmavibhangaas</td>
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<tr>
<td>Main wall of Gallery 0</td>
<td>1212</td>
<td>Decorative panels</td>
</tr>
<tr>
<td>Gallery 1, upper main wall</td>
<td>120</td>
<td>Lalitavistara</td>
</tr>
<tr>
<td>Gallery 1, lower main wall</td>
<td>120</td>
<td>Jatakas &amp; Avadanas</td>
</tr>
<tr>
<td>Gallery 1 Balustrade, upper</td>
<td>372</td>
<td>Jatakas &amp; Avadanas</td>
</tr>
<tr>
<td>Gallery 1 Balustrade, lower</td>
<td>128</td>
<td>Jatakas &amp; Avadanas</td>
</tr>
<tr>
<td>Gallery 2 Balustrade</td>
<td>100</td>
<td>Jatakas &amp; Avadanas</td>
</tr>
<tr>
<td>Gallery 2 main wall</td>
<td>128</td>
<td>Gandavyuha</td>
</tr>
<tr>
<td>Gallery 3 main wall</td>
<td>88</td>
<td>Gandavyuha</td>
</tr>
<tr>
<td>Gallery 3 Balustrade</td>
<td>88</td>
<td>Gandavyuha</td>
</tr>
<tr>
<td>Gallery 4 Balustrade</td>
<td>84</td>
<td>Gandavyuha</td>
</tr>
<tr>
<td>Gallery 4 main wall</td>
<td>72</td>
<td>Bhadracari</td>
</tr>
</tbody>
</table>
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).
Karmavibhanga:
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


http://www.konservasiborobudur.org, Department of Tourism, Indonesia, accessed date 14 Nov. 2011.