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The Newsletter is a free periodical published by the International Institute for Asian Studies (IIAS). As well as serving as a forum for scholars to share research, commentary and opinion with colleagues in academia and beyond, The Newsletter is also a window into the Institute.

In this issue, Françoise Vergès reflects on the symposium Reclaiming the ‘workshop’ as collaborative pedagogy held at Brown University, USA, in the framework of the IIAS programme ‘Humanities across Borders: Asia and Africa in the World’ (p.49). On page 50, Rituparna Roy shares the topics discussed during the conference Partition in Bengal, including her idea of and work on a Kolkata Partition Museum. Other reports are those on the symposium River Cities: water space in urban development and history, held in Surabaya, Indonesia (p.44-45), and the Leiden Summer School Asian food: history, anthropology, sociology (p.48).

IIAS research programmes, networks and other initiatives are described in brief on page 52-53, preceded on page 51 by a more elaborate description of the goals and activities of the newly established Leiden Centre for Indian Ocean Studies. Pages 56-57 provide more information about the Double Degree in Critical Heritage Studies of Asia and Europe, including the experiences of four students with the programme. Information about the IIAS Fellowship programme can be found on pages 54-55.
Digital Buddhology

Di Luo

Buddhist studies in the digital age is faced with immense opportunities, challenges, and problems both old and new. By using the word ‘Buddhology’, we encourage readers to think of not only text-based Buddhist studies but a cross-disciplinary field where art, architecture, and material culture are an integral part of the term in question.

In this issue’s ‘China Connections’, we invite readers to look at the exciting development of digital Buddhology in present-day China. Highlighted here are recent digitization projects by Peking University, Zhejiang University, and the research institutes at the world heritage sites of Dunhuang, Yungang, Longmen, and Dazu, some involving international collaborations such as with the Getty Center and Harvard University.

Conservators, researchers, curators, and educators from around the world work toward the common aim of preserving Buddhist cultural heritage – texts, images, objects, monuments, and entire sites – by exploring and adopting, all the while pushing the forefront of, digital technologies. Contributors of this issue demonstrate how Buddhist canonical work and manuscripts in multiple languages and media have been made available through open-access online databases; how Buddhist monasteries and their ancient wooden buildings and century-old murals are recorded and experienced through Virtual Reality; and how rock-cut cave temples with their monumental statues are captured using laser-scanning or photogrammetry and reconstructed for conservation as well as education purposes. The benefits of the application of digital tools are immediate, certain, and manifold: they make quick and precise documentation, allow (in some instances) for a greater accessibility to and searchability of Buddhist materials, and provide excellent research and educational materials.

The very practice of digitization forces us to reconsider the very meaning and significance of the ‘cultural heritage’ itself. Concerns have been made as to how much a digitally recorded or reconstructed piece of work can be considered an extension to that heritage and the protection thereof, while much of the ‘aura’ of the original has been lost during the process of digitization. On the other hand, some have advocated for the ‘digital life’ or ‘digital afterlife’ of Buddhist art and architecture, as Buddhist practitioners actively engage themselves with all kinds of digital tools and platforms in their religious routines. We hope that you find some answers, but more importantly further questions, from the five essays presented in the following.

Di Luo is a Postdoctoral Fellow at the Center for Global Asia, NYU Shanghai
dl9@nyu.edu

As a Postdoctoral Fellow of the Getty Center in Los Angeles, I have been inspired by the digitized cave temples of Dunhuang. In 2016, created a projection-based installation at the Getty Center in Los Angeles. According to Garson Yu, founder and creative director of ARChive, this project "gives more volume or immersive experience than regular VR".

In China, the restoration of the Thousand-Armed Bodhisattva Guanyin, which is part of the Honggong Dazu Rock Carvings, showcases the usage of 3D printing for heritage conservation. The 3D printed model, made in 1:3 proportion to the original, became an important reference for the restoration team during the process. Some 3D-printed parts were also blended with the authentic heritage item (fig.1).

Projection mapping, along with restoration, can further be utilized in creating engaging narratives and messages for cultural heritage. By using a special 360-degree dome shader, it was a year-long process to merge the 2D photographs and merge them into the 3D geometry for the entire cave. Collaborating with the Getty Conservation Institute on the narrative, ARChive has created a "fluid experience" in the physical environment other than the heritage site.

In this case, projection mapping, along with VR, stimulates public interest in and core for cultural restoration. It also reveals the fluidity of digital heritage across cultures, regions, and identities. Even with the collective devotion, cultural heritage continues to face the threat of human activities ranging from vandalism to theft and wars. Education is key to raising and cultivating the awareness for preservation. With the joint efforts of academia, governmental organizations and industry, the finalized projects can be transformed into education materials. Digital storytelling, computer-aided drawing, and cyber-archiving can be integrated into the STEAM curriculum (Science, Technology, Engineering, Arts, and Mathematics) to help students comprehend the intangible values of heritage (method, techniques, context) and further cherish the existing yet endangered cultural properties.

Good practices of conservation, from cultural objects to architecture and the entire heritage sites, can be further revitalized by digital narrative and storytelling. The latest animation released by the Dunhuang Academy was inspired by the digitized painting in Cave 254. Mr. Chen Haitao and Mrs. Chen Qiong, the directors of the animation, integrated the rich imagery of the Buddhist stories of 'The Great Departure' and "The Attack of Mara" from the Mogao Cave 254 into animated infographics (fig.2).

Their interpretation of the cave painting and artistic recreation has given the piece more profound meanings. The follow-up premiere and workshops at Beijing in late 2016 further revitalized the original painting and contributed to public and Higher education.

Fig. 1: Restoration of the Thousand-armed Bodhisattva Guanyin in progress. Image courtesy 3Ders.org

Fig. 2: Animation film directed by Chen Haitao and Chen Qiong. Image courtesy Dunhuang Academy.
The Kaihuasi (開化寺) is a Buddhist monastery located about 17 km northeast of the city of Gaoping (高平) in southeast Shanxi province. The monastery was established in the 6th century and expanded in the late 9th to early 10th century under the supervision of the Chan Master Daoyu (道豫). The Kaihuasi is especially known for its main hall, the Daxiongbaodian [大雄寶殿] (Mahāvīra Hall), which was built in 1073 during the Northern Song. The interior of the Daxiongbaodian is decorated with exquisite Buddhist mural paintings that have been preserved from the 11th century.

In 2017, a research team of the Experimental Teaching Center for Virtual Reality and Simulation in Archaeology of Peking University used Virtual Reality (VR) technology to record the monastery including the main hall and its murals. First, the team deployed drones to take pictures of the monastery complex from an aerial view. Then panoramic photography was used to record both the interior and exterior of each building (Fig. 1). In order to virtually reconstruct the building structure and mural paintings in the Daxiongbaodian, the team took 480 high-resolution photographs that had been taken. The links to the panoramic photographs were pinpointed on the aerial picture according to the real locations where the photos had been taken. The links to the 3D models with surface texture were also displayed on the map.

Aside from documentation, this VR project has also been applied to enhance the experience of virtual visitors. In the spring of 2017, the Arthur M. Sackler Museum of Art and Archaeology at Peking University exhibited high-resolution 3D copies of the wall paintings from the Kaihuasi. In addition to viewing the paintings in two dimensions, visitors wearing a VR headset and immerse themselves in the virtual scene of the Daxiongbaodian to appreciate the paintings and the building structure in their original spatial context. VR would help museums to redesign and/or upgrade traditional exhibitions, and to protect historical architecture from potential damages made by flocking visitors. Using the VR technology to document art and architecture is only the team’s first step.

The Kaihuasi is only one example in the team’s database called VR-Heritage that stores hundreds (currently around 150) of temples and buildings dated from the 10th century to the early 20th century. This database can help scholars, professors, and students to discover new problems and generate new research topics. For example, the team has developed several themes such as ‘Song-Jin architecture in southeast Shanxi’, ‘Yuan-Ming architecture in Sichuan’, and ‘Liao pagodas in Inner Mongolia and Liaoning’. Most of the objects are Buddhist architecture or monuments.

The benefits and challenges of the application of VR and other digital technologies will be further discussed in a panel titled ‘Digital Humanities and New Directions in Studying East Asian Art and Architecture’ at the 2018 Annual Conference of the Association for Asian Studies (AAS), to take place in Washington D.C. this March. The panel, organized by Professor Lala Zuo, will present more for academic use in 2 or 3 years.

The Region

Longmen Grottoes: New Perspectives

Fletcher John Coleman

On 25-26 October 2017, Harvard University welcomed a team of experts from the Longmen Grottoes Research Academy to inaugurate an international joint-initiative focused on digital conservation and restoration. An enduring legacy to Chinese art, the UNESCO World Heritage Site of the Longmen Grottoes represents over a millennium of religious and creative activity. The ‘Longmen Grottoes: New Perspectives’ workshop brought together Longmen Grottoes Research Academy researchers with specialists on Buddhist art from across the globe to promote cutting-edge efforts at digital preservation, archaeological work, and documentary projects taking place at Longmen.

Spearheaded by Eugene Wang, Abby Aldrich Rockefeller Professor of Asian Art at Harvard University, and Hou Xue, Director of the Material and Information Center at the Longmen Academy, the two-day event was centered on overviews of recent digital programs at Longmen. Tasked with addressing centuries of damage and dispersal of the magnificent limestone grotto sculptures, the Longmen Grottoes Research Academy began a comprehensive digital program of 3-D scanning over a decade ago. Having built an extensive database of over 15,000 images across the globe, the Academy plans to build a site museum of digital restorations, as well as a comprehensive program of 3-D scanning and virtual reality technologies. The precision of the digital data has also driven exciting new archaeological discoveries in the eastern cave district at Longmen.

With technological efforts reaching a mature phase at the Longmen Grottoes, the Research Academy has turned its attention to the digital restoration of sculpture removed from the Longmen complex over the past century. The ‘Longmen Grottoes: New Perspectives’ workshop represented the inaugural partnering of Harvard University and the Longmen Academy to address a new range of digital conservation technologies. The ‘Longmen Grottoes: New Perspectives’ workshop brought together scholars from a range of disciplines to address new research methods.

The ‘Longmen Grottoes: New Perspectives’ workshop brought together the Director of the Material and Information Center at the Harvard University, and Hou Xue, Director of the Material and Information Center at the Longmen Grottoes Research Academy. Given the scope of the project and the significant contribution of technology to the long-term conservation of the site, the workshop brought together long-term partners from the Harvard University and the Longmen Grottoes Research Academy to begin a comprehensive program of 3-D scanning and virtual reality technologies. The precision of the digital data has also driven exciting new archaeological discoveries in the eastern cave district at Longmen.

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Throughout history, Buddhists have used all available means to encode and transmit the ever-increasing volume of their textual heritage. After the death of the founder of Buddhism, the early community organized the transmission of a sizable corpus with the help of mnemonic recitation techniques. The earliest Indian epigraphy as well as the earliest manuscript fragments in Indian languages are connected with Buddhism, and the earliest extant printed book, dated 868 CE, is a Chinese translation of the Diamond Sutra.

Today, in the twilight of print, text is largely produced, transmitted, and stored digitally and, for better or worse, cultural heritage information is being digitized ever more comprehensively. In the field of Buddhist studies, texts were a natural starting point for digitization. Buddhist texts exist in a bewildering range of languages and genres, and there are several large canonical collections in Pāli, Chinese, Tibetan, Mongolian, and Manchurian that overlap in complicated ways. Many texts have also survived in Sanskrit and prakritic languages, sometimes complete in the monasteries of Nepal and Tibet, sometimes fragmentary in the sands of Central Asia. Then there are modern translations into Japanese, Korean, Vietnamese, French, English, German, etc.

Since the late 1980s, various digitization projects have started to digitize these riches, scanning manuscripts and producing digital full text editions. Distributed online, vast amounts of Buddhist literature are now available, equally and freely, to the wider public. The effects on Buddhism of making all its texts available to all believers with an Internet connection are not yet fully understood, but the impact could be significant—comparable to that of the adoption of writing in Buddhism (which played a major role in the emergence of Mahāyāna) or the discovery of printing in Europe (which was a condition for the Reformation).

Where to find Buddhist canonical texts online in reliable form? For Pāli the most widely used digital corpora are the Chattha Sangāyana corpus, the Buddha Jayanti corpus, and the digitized version of the Pāli Text Society edition. For early Buddhist literature in general, SuttaCentral offers parallel full text in ancient languages and the largest number of translations from Pāli texts into modern languages. It also makes all its data available in an exemplary fashion for download.

For the Chinese canon there is the Taiwanese Chinese Buddhist Electronic Text Association (CBETA) corpus, and the Japanese SAT Daizakyō Text Database. Translations of Chinese Buddhist texts are less readily available online. An online bibliography of translations from the Chinese Buddhist canon shows that so far about 520 of c. 5000 pre-modern Chinese Buddhist texts have been translated into European languages, but not all of them are available digitally.

Other projects offer scans of manuscript collections that contain a large amount of Buddhist material. The International Dunhuang Project, for instance, offers scanned images of the manuscript witnesses for Chinese Buddhist texts, and the Digital Library of Lao Manuscripts preserves the rich heritage of Laoiania.

Most of these datasets and initiatives are openly accessible, and many, but unfortunately not all, projects share their data freely via their websites or version controlled repositories such as Github. The digital data on offer now surpasses by far any single canonical print collection in terms of volume, acquisition cost, searchability, and portability.

While the digitization of texts has been quite successful, others aspects of Buddhist heritage digitization are less advanced. With a few notable exceptions, such as the Huntington Archive, the high-and digitization of images, objects, and spaces has just begun. Many museums today make digital images of their holdings available, but an archive with faceted search across institutions and geared to Buddhist iconography still needs to be built. The 3D scanning and printing of Buddhist objects and sacred spaces are still at an early stage of development, but have strong potential for both teaching and research.

For scholars, one of the benefits of digitization is that we are now able to use computational methods to explore the language, the historical geography, the social networks and other facets of the Buddhist tradition in new ways. Individual researchers have taken steps in this direction using computational analysis, for instance, to re-assess the attribution of translations, or to create data for historical social network analysis. The challenge is now to integrate these new approaches into mainstream research and for graduate programs in Buddhist Studies to include training in digital methods and datasets.

Notes
1. http://biddhism.net/tools/ibibis/
2. www.huntingtonarchive.org and www.huntingtonarchive.edu
3. See the attribution database by Michael Radich http://digitallibrary.newyorkhistorynyc.org or emerging datasets for historical social network analysis http://biddhism.net/tools/sacred

At present, the team has conducted digitization work at more than a hundred archaeological sites, museums, and cultural institutions across twenty different provinces, cities, and autonomous regions in China. Our work encompasses large-scale monuments such as historic architecture and Buddhist cave temples, and museum collections ranging from textiles to paintings, calligraphy, porcelains, and statues. We aim to maintain state-of-the-art technological standards in the process of scanning, archiving, preserving, and presenting cultural objects and sites.

Recently, with the collaboration of the Yangong Academy, we have successfully printed a to-scale 3D model of the rear chamber of Yungang Cave 3. This marks a significant advance in the digital conservation and reconstruction of cultural heritage in China.