

# THE ROLE OF LARGE ENTERPRISES IN MUSEUM DIGITIZATION

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## 1. Introduction

In recent decades digital technology has brought great changes to individual lifestyles and society as a whole. From the 1990s on, museums around the world began to explore the potential of digital technology for their field, seeking to enrich the cultural life of their societies and promote understanding of their own cultures abroad. As a global power and the world's third largest economy, Japan is one of the world's most highly developed and prosperous countries. It also stands as one of the leading countries for scientific research in such fields as military technology, medicine, and manufacturing, as well as culture and education. According to data released in 2008 by MEXT (the Japanese Ministry of Education, Culture, Sports, Science and Technology), there are over five thousand museums in Japan. In 2006, in response to the flourishing development of digital technology, MEXT founded the 'Museum Digitization Research Association', which is dedicated to using digital technology to transcend time and space, and to exploring new ways to present culture and museum collections. Years of effort have resulted in a preliminary framework bringing together industry, academia, government, and museums, propelling Japanese museums to the forefront of Asia and even the entire world in terms of the application of digital technologies.

## 2. Museum Digitization in Japan

Before the launch of the aforementioned project, many Japanese museums had already collaborated with universities or large enterprises to carry out similar research, yet each institution plowed its own furrow with little cooperation. State-level coordination is crucial for realizing a comprehensive, integrated system. MEXT's 2013 report on the digital museum project indicates that, while prestigious institutions of higher learning have played a leading role in the project, a number of large enterprises have also joined them. This structure makes intelligent use of each party's strengths: the institutions know how to do research, museums understand their collections, and large enterprises have an edge in terms of research and development as well as a keen sense of what can be commercialized. This means of development, combining industry, the government, and academia, was the desired approach in Japan.

### 3. The Role Played by Large Enterprises

According to the MEXT research report released in Heisei 25 (2013), the University of Tokyo has taken charge of implementing the 'digital museum' project, which is currently actively promoted by the Japanese government. Institutions and enterprises including the national broadcaster NHK, Toppan Printing Co., and Keio University are responsible for technology development, while museums such as Tokyo National Museum, the Railway Museum, the Tokyo Museum of Modern Art, and the Nara National Research Institute for Cultural Properties are active participants. In fact, in the course of this project, digitization is not the only field in which large Japanese enterprises have been involved. They also play an active role in other museum activities such as exhibitions and the commercial exploitation of museum research achievements.<sup>2</sup>

For this article I have studied the joint exhibition held by the Palace Museum, the Mainichi Shimbun newspaper, and the Edo-Tokyo Museum, as well as the Palace Museum research project in collaboration with Toppan Printing Co., in an effort to define the role large Japanese enterprises play in digitization. Based on first-hand observations and in-depth interviews conducted by the author with persons in charge of the projects, this article discusses the following five aspects of the subject:

#### 1. Organizational Structure and Functions

Departments dedicated to cultural initiatives exist in all large Japanese enterprises, and have the responsibility of seeking cooperation with important cultural institutions. Examples include Asahi Shimbun's 'Department of Culture' and the 'Office of Cultural Initiatives' at the Toppan Printing Co. Within news agencies, employees of these departments usually hold academic degrees in fine art, history, or related fields. On the other hand, cultural departments in other large enterprises are generally staffed by science or technology majors according to their specific research and development requirements. More importantly, in the process of collaborating with museums, large enterprises have succeeded in cultivating a number of employees who have a commercial grounding but who understand the culture and working practices of museums. Thanks to their business backgrounds they have a distinct advantage over museum professionals in the field of commercialization, and they therefore play a vital role in marketing the products created when digitization is applied.

#### 2. Curating Exhibitions

A unique and highly distinctive feature of the special exhibitions hosted at Japanese museums is that they are jointly organized by museums and media agencies. This task is often undertaken by Japan's four major newspapers: Asahi Shimbun, Mainichi Shimbun, Yomiuri Shimbun, and Sankei Shimbun. Important radio and television stations, such as NHK TV and NHK Broadcasting, are also involved in this process.<sup>1</sup>

<sup>1</sup> *Research on Curating Models of Japanese Museum Exhibitions*, The Forbidden City Publishing House, 2012, p. 358.

The 2008 Palace Museum travelling exhibition *Eternal Brush and Ink: Dynastic Calligraphy in the Palace Museum Collection*, held in Edo-Tokyo Museum, for instance, was co-sponsored by five institutions: the Tokyo Metropolitan Foundation for History and Culture, Tokyo Metropolitan Edo-Tokyo Museum, the Mainichi Shimbun, NHK, and NHK promotion. Of these, the latter three are large enterprises, and took on tasks including planning the exhibition's content, raising funds, managing the running of the exhibition, and marketing. To say that their involvement gave direction to the project and proved central to its success is hardly an exaggeration.

### 3. Research & Development

Founded in 1900, Toppan Printing Co. is Japan's second largest printing enterprise. In the 1990s, emerging digital technology dealt print publishing a heavy blow, forcing Toppan Printing to seek a new path through the application of digital technology. Benefiting from its long and extensive experience in print, Toppan Printing was able to combine its time-honored approach to color management and imaging with digital technology, and in 1997 it began research and development of virtual reality technology for use in museums. In the following decade it produced over thirty virtual reality programs for a number of important museums, and this approach to the presentation of cultural heritage has now become an essential part of exhibitions held by many Japanese institutions. Seeing Toppan Printing's strength in the virtual reality technology field, in 2003 the Palace Museum cooperated with the company to establish the Institute for Digitization of the Palace Museum Heritage, a joint endeavor that has so far seen the production of five virtual reality works featuring the Forbidden City. This collaboration enables us to examine closely the roles played by large Japanese enterprises in museum-based digitization.

Virtual reality is an integrated application of digital technologies in the field of computer graphics, requiring expertise in both technology and art. Bringing this technology to bear in museum exhibitions therefore calls for a command of the research and development process as well as skill in artistic expression. While museum professionals understand the collections of their institution and are well versed in art, however, they often find digital technology extremely challenging and difficult to grasp. The technological knowhow of research and development staff in large enterprises can make up for this shortfall. The cultural initiative team at Toppan Printing Co. specializes in fields including color management, three-dimensional scanning, computer graphic production, and program development, and therefore plays a key role in both data collection and the production of virtual reality programs. In 2011, with an independently developed large-scale scanner dedicated specifically to collecting cultural heritage data, the company carried out the scanning for Kyoto National Museum's program *Mirror Unearthed from an Ancient Tomb in the East Palace*. Its 2012 virtual reality production *National Treasure: the Seated Statue of Monk Jianzhen* also made use of 3D scanning to gather data on shape and color.

In addition to bringing technology to the service of museums, large enterprises are also involved in researching new technology. In 2009, Toppan Printing Co. worked with the University of Tokyo to launch the research and development program 'Mixed Reality (MR) Digital Museum'<sup>2</sup>. In 2011, it developed a further system called 'Virtual Experiences of Open-air Heritage Sites'.

<sup>2</sup> "Mixed Reality (MR) Digital Museum" is a research project commissioned by the MEXT, initially planned for 2010-2015, where the implementing institution the University of Tokyo com-

## 4. Marketing

Marketing exhibitions and the products of digitization is an integral part of developing digitization in museums. Because most are non-profit institutions, public museums commonly lack commercial awareness, let alone the necessary material and human resources for marketing and other commercial practices. The involvement of large enterprises, for which marketing is an essential tool for survival, undoubtedly helps to push the digitization process forward.

A case in point is the aforementioned collaboration between the media and museums in hosting exhibitions. The large news agencies provide extensive media exposure, which helps to bring more visitors to the exhibitions. On the occasion of Tokyo National Museum's 140th anniversary, Toppan Printing produced the VR program *Kyoto from the Inside and Outside: Scenes on Panels and Folding Screens* (Funaki version), while exact replicas of the artwork were also launched in the museum shop. Moreover, the gift shop also sold DVDs featuring virtual reality programs such as *The Forbidden City: Palace of the Son of Heaven* and *The Roman Empire: Pompeii Courtyard*.

## 5. Benefits and problems

### 1. Benefits

As non-profit institutions, museums more often than not suffer from limited budgets and staff. Japanese museums are funded by the state. This funding is barely sufficient for collections management, let alone the cost of exhibitions, technological research, and merchandising. Thanks to the mechanism of government-led collaboration with large enterprises, museums are able to cover the costs of holding exhibitions, making use of new technologies, and launching creative cultural products, without having to apply for more funding. Museums welcome these opportunities.

The same mechanism enables large enterprises to prove their social value, raise their public image, and increase recognition of and trust in their brand, making gains unachievable in the commercial sphere. At the same time, the promotion of exhibitions and technological accomplishments may also bring its own financial benefits.

### 2. Problems

Due to fundamental differences in the nature of museums and large enterprises, with the latter being intrinsically profit-oriented, collaboration can give rise to disagreement. Specifically, with enterprises providing funding, museums may lose independence in decision-making and become passive. Meanwhile, in the fields of technology research and promoting the achievements of digitization, views may diverge due to the different institutions' standpoints: where museums prioritize cultural expression over profitability, enterprises are certain to evaluate profits in the process.

In addition, while manpower from large enterprises can to some extent help balance and broaden the range of expertise in a museum, it may at the same time reduce the museum's incentive to cultivate its own multidisciplinary talents. In this sense, the collaboration can inhibit the creation of the museum's own digitization team in the long run.

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missioned Toppan Printing for development, and is aimed at further enriching sensory experience of visitors and achieving new means of presentation on the basis of virtual reality (VR).

#### 4. Conclusion

By actively promoting digitization in museums, Japan has found an approach that suits its own development pattern. The collaborative method allows the government to play a leading role, while putting the research and development strengths of large enterprises at the disposal of museums. Large enterprises provide a solid backing for museum digitization, removing the usual constraints of limited budgets or a lack of technical expertise. The benefits large enterprises stand to gain from this kind of collaboration, such as opportunities to prove their value to society and enhance their corporate image, help to motivate their active involvement, thereby forming a positive cycle of sustainable development.

When learning from experiences in Japan, it is essential to make use of the gains and mitigate the problems encountered. For museums, the greatest advantages of cooperative digitization lie in increased funding and expanded horizons for future development. However, museums still need to consider how best to fulfill their mission: to conserve, research, and exhibit cultural heritage, and to educate the public.

With the increasing rate of commercialization and the emergence of new opportunities, today's China also sees increasing collaboration between museums and enterprises. We have a lot to learn by investigating similar experiences in other countries. This article has studied the roles undertaken by major Japanese enterprises in museum digitization in an effort to provide first-hand information for museum professionals in China. It is the author's hope that the experiences of others will prove valuable for us. It is the author's hope that others' experiences can be valuable for us.

#### References

- [1] *Research on Curating Models for Japanese Museum Exhibitions*, The Forbidden City Publishing House, 2012, p 358.
- [2] *Digital Museum Research Report 2014*, Japan's ministry of science
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- [4] *The system of Digital Museum 2014*, Japan's ministry of science.

#### Summary

By actively promoting museum digitalization, Japan finds an idiosyncratic way to museum digitalization. The mode of collaboration, in which the government plays a leading role while large enterprises' R&D capabilities and museum's cultural dynamics are both allowed to give full play, turns these powerful enterprises into the solid backing of museum digitalization, provides a concrete solution to the common financial and technical challenges museums face in the process. In the course of such collaboration, large enterprises succeed in cultivating a number of talents who understand both business world and museum operation. Thanks to their experiences in the business world, compared with museum professionals, they play a more vital role in marketing the

potential commercial exploitation of related digital technologies. The benefits large enterprises could possibly gain from such mode of collaboration - realizing social values, enhancing corporate image, for instance - help to motivate their active involvement, thereby forming a positive cycle of sustainable development.