Possibilities in the Spatial Humanities through Digitally Archiving Old Photographs Using GIS

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abstract

Digital Humanities (DH) is expected to generate new knowledge within the traditional humanities, which include history, literature, and the arts. DH utilizes computational media to conduct research on concepts such as consciousness and awareness, and then analyzes, integrates, and presents the outcomes. GIS has become widespread within DH research. This study aims to consider the archiving of various information concerning Kyoto using GIS. It also aims to understand landscape value in Kyoto. Historical Geography can be described as geography emphasizing temporal factors. The essential work process is the reconstruction of individual landscape components as precisely as possible. It also identifies when and under what kind of conditions the landscape components were formed. In addition, this study explores the history of these components by examining how they functioned and what kind of transformations they underwent. Kyoto has existed for over 1,200 years of history. Therefore, to research the urban history of Kyoto, it is necessary to collect information about Kyoto through literary works, paintings, photographs, and intangible cultural features like festivals (including the Gion Festival), traditional arts, and memories. This information was not simply listed in a database, but was presented along with applicable geospatial information, such as maps, as a platform linked to a place. The digitalization and construction of a GIS database will be useful for integrating information about Kyoto. In addition, a GIS database will be beneficial for the reconstruction of individual landscape components.

Introduction

This study aims to reconstruct the landscape of the past by cross-referencing various documents related to place, such as maps, picture maps, photographs, literature, and memories.

Historical Geography can be described as geography that emphasizes temporal factors. The essential work process involves reconstructing the components of an individual landscape as precisely as possible while identifying the age and condition of the landscape's components.[1] In addition, it also explores the history of the area being assessed by asking how these landscape components functioned and what kind of transformations they underwent.

This research focuses on the landscape of Kyoto (Fig. 1), and reveals the local history buried in the current landscape by using old photographs digitally archived by GIS and the information connected to them based on location information.
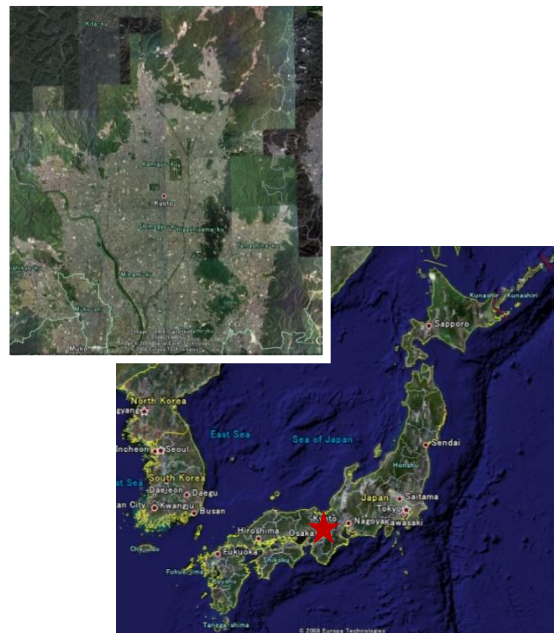

Figure 1. Study area.

Additionally, this study examines the intrinsic value of the landscape of Kyoto, which is regarded as traditional and historical.

1. Archiving Various Forms of Information About Kyoto Using GIS

In this chapter, we describe both the collection process for information relating to Kyoto and the construction of a GIS database. Kyoto has existed for over 1,200 years. As a result, it is necessary to collect various forms of relevant information about Kyoto, such as literature, art, maps, and photographs, to investigate the area's urban history.

The digitalization process and the construction of a GIS database both serve useful purposes in order to preserve and share information about Kyoto. The Digital Archive of the Historical City of Kyoto that we aim to produce features contents including literary works, paintings, and photographs, as well as intangible cultural features, such as festivals (including the Gion Festival), traditional art, and memories. This information was not simply listed in a database, but was presented along with applicable geospatial information, such as maps, as a platform linked to a place.

The Virtual Kyoto Project was conducted to reconstruct the historical landscape of Kyoto using historical GIS.[2] The project was split into the following four phases: a) archiving geo-referenced materials, such as current digital maps, old topographic maps, cadastral maps, aerial photos, picture maps, street photos, landscape paintings, archaeological site data, and historical documents; b) creating a database of all existing buildings, including early modern buildings and buildings like shrines and temples that are of particular historical and cultural significance; c) creating 3D virtual reality models of the buildings mentioned above; and

d) estimating and simulating the land use and landscape changes that occurred over the study area using the aforementioned materials.

In this process, paper maps and statistical information were scanned and digitized, including an interim total of 1:20,000 scale maps (*kaseizu*) and old aerial photographs of Kyoto taken in 1928 (Showa 3). Of particular value are the large-scale maps of Kyoto made from the late Meiji era to the Taisho era, as these resources offer great insight into restoring the landscape of the city of Kyoto. These include the "Kyoto Cadastral Map" (1:1,200-1:2,000 scale) of 1912 (Taisho 1), the "Urban Planning Map of Kyoto City" from 1922 (1:3,000 scale), and the "Large-Scale Maps of Kyoto City (*Kyoto-shi meisai-zu*)" (1:1,200 scale), which were produced from 1926 to 1951.
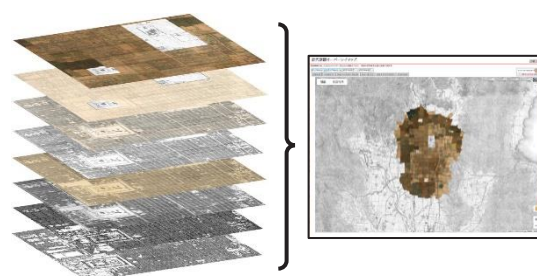

Figure. 2
Overlaying maps of modern Kyoto.
(https://www.arc.ritsumei.ac.jp/archive01/theater/html/ModernKyoto/)

In 2016, we published the overlaying maps of modern Kyoto, which focused on the era spanning from the Meiji Era to immediately after the Second World War. The archives incorporated in this process include a "tentative topographic map" from the middle of the Meiji Era, the "City Planning Basic Maps" from the Taisho to early Showa Eras, and an "official topographic map" that was published in 1912 (Taisho 1). One of the major advantages of this web-based map system is that it can display several maps as overlays over Google Maps.

Using these GIS databases, both the distribution of land values in the Meiji-Taisho era

and the social geography of Kyoto have been clarified. These viewpoints offer new insights into modern Kyoto, while digitalizing and constructing GIS databases also makes it possible to overlay several maps and complete uncertain parts of documents or maps through comparison. Digitalizing and constructing GIS databases can, therefore, overcome a number of issues related to the use of existing private maps, making them useful documents for studies that can help generate new findings.[3]

In the next chapter, we would like to consider the history of two landscapes.

2.　Solving the Landscape

2-1.　The Gion Festival

The Gion Festival is one of the most famous festivals in Kyoto. Currently, its most important event is the Yamahoko procession, a parade of decorated floats, which is viewed from the roadside.

Figure. 3
(Photo taken by Tokichi Kato (1960))

This photo was taken in the 1960s (Fig. 3). In this photo, many people gather around the Yamahoko procession. The people are close to the procession here, while the procession's current appearance and atmosphere are different. In addition, at the Gion Festival, many people buy *chimaki* (charm against bad luck). However, those who know
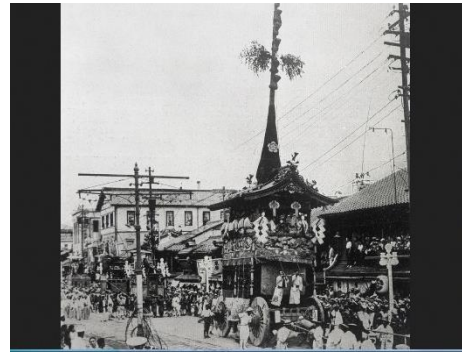
Figure. 4
(Photo taken by Yutaka Kondo)

the old Gion Festival say that they did not buy *chimaki* then. Instead, *chimaki* were thrown away from the Yamahoko. In this photo, it is clear that people are waiting for the *chimaki*, which is why the Yamahoko and the audience were so close to each other (Fig. 4).

In addition to this festival event, the Mikoshi Togyo (parade of *mikoshi*, i.e., portable shrines) was also looked forward to.

The Gion Festival originated in the Heian Era. However, since the customs of this festival have changed little by little, what we experience now is different from what people experienced in the past. The Gion Festival is a traditional festival, but the present-day festival is not historical in this sense. Perhaps, the people living in the *hoko-machi* (float-supporting communities) who have tried to maintain the tradition are especially interested in preserving its history

Because the Yamahoko floats are so beautiful, they are called "moving museums," and many people admire their beauty. However, the Gion Festival has changed, and residents and tourists hold different views on the festival.

2-2.　An Approach to the Hirano Shrine

Figure 5 shows a photograph of an old Japanese house. It may not be a *kyomachiya* (Kyoto's traditional townhouse), but it is a house that has felt history.This is the north side of the Kitano

Figure. 5

Figure. 6
(*Kyoto-shin-hyakkei*, p.313)

Tenmangu Shrine, which is a way to the Hirano Shrine. Now, it is a quiet residential area. What can be imagined about this old wooden building?

Figure 6 is a photograph from the early Showa era, about 1930. [4] The two buildings look very similar, as these photos were taken from approximately the same place.

In addition, let us look at the maps produced during this time (Fig. 7). A restaurant is painted in

Figure. 7
(**"Large-Scale Maps of Kyoto City" (1926)**)
(https://www.arc.ritsumei.ac.jp/archive01/theater/html/ModernKyoto/)

one map. In the other one, a map produced around 1950 shows a restaurant, as well (Fig. 8).

Figure. 8
(**"Large-Scale Maps of Kyoto City" (1951)**)
(https://www.arc.ritsumei.ac.jp/archive01/theater/html/ModernKyoto/)

According to previous research,[5] it is said that there was once a busy *hanamachi* (geisha district) in this area. Through the *Miyako meisho zue* (*Illustrations of Famous Places in Kyoto*),[6] we can see that there were also *ochaya* (teahouse) businesses in the early modern times.

From this traditional Japanese building, we have considered the history of this place and have reconstructed its individual landscape components as precisely as possible. here was once a different landscape here, though this building retains the look of its time.

Conclusion

The Virtual Kyoto Project has generated a vast quantity of geospatial GIS data, including a wide variety of old maps, old aerial photos, cadastral maps, and wide-ranging registrations and directories on *kyomachiya*. Using this database, we can reconstruct and recognize the history of Kyoto's landscape.[7]

Historical GIS has quickly been accepted by scholars in the fields of historical geography and urban history for both quantitative and qualitative study and as a result has continued to develop. The construction of GIS databases forms the foundation

of historical GIS, and in future work we will continue to explore how to apply historical GIS to historical study. Our next challenge involves restoring the urban landscape of Kyoto's past in the modern period by using the historical GIS database.

Interdisciplinary research is progressing as a result of the use of archived information, which offers a treasure trove of historical and geographical information that can be useful for research in both Digital Humanities and Spatial Humanities.

Notes

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2) Keiji Yano, Tomoki Nakaya, and Yuzuru Isoda (Eds.). (2007). *Virtual Kyoto*. Kyoto: Nakanishiya.

3) Keiji Yano, Tomoki Nakaya, Tatsunori Kawasumi, and Satoshi Tanaka (Eds.). (2011). *Historical GIS of Kyoto*. Kyoto: Nakanishiya.

4) Osaka-Mainichi-Shinbunsha (Eds.). (1930). *Kyoto-Shin-hyakkei*. Tokyo: Shinjidaisha

5) Masahiro Kato. (2017). *Modern Kyoto.* Kyoto: Nakanishiya,

6) Rito Akisato. (1780). *Miyako meisho zue.*

7) Nnaomi Kawausmi, Nnaoko Itaya, Tomoki Nakaya, Hirotaka Sato, Yuki Tanizaki, and Kazuma Maeda. (2017). Reading a History of Local Landscape through 'Memory Mapping': A Case of the Area in Front of Ninnaji Temple, *Journal of the Japanese Institute of Landscape Architecture*, 81(1), 22-25.