YAMAMOTO Kenta

The Gaihōzu Digital archives and their improvement

This presentation intends to give an account of the building process of the *Gaihōzu* Digital Archives[1] and consider the tasks for their improvement. It consists of the following contents: (1) the digitalization process of the maps, (2) the opening of the Digital Archives to the public, and (3) the tasks to be still to be undertaken. Finally, the future of the Digital Archives will be discussed.

The maps, called *Gaihōzu*, are now recognized as modern historical sources to be preserved carefully. However, most of them, printed on acidic paper, are not always well maintained. Some maps suffer marked deterioration from aging and should be preserved in a state of perfection. We have compared the following three ways to slow down the deterioration: (1) treatments, such as lamination, for preventing deterioration, (2) improving the air conditioning of the map storeroom, and (3) digital recording through scanning. We chose the last method because it will reduce the deterioration due to direct handling of the maps and encourage active use of the Archives through employing the digital images.

The digitalization of the maps was carried out along with the making of a map index. Researchers and students from the Department of Geography, Tohoku University, the Department of Geography, Kyoto University, The Kyoto University Museum, and the Department of Geography, Ochanomizu University participated in this project from 2004 to 2009. Finally, 14,310 maps were scanned, and the following four types of images of each map were stored.

(1) non-compressed TIFF images (360 dpi) for storage
(2) JPEG images (360 dpi) for publication.
(3) JPEG images (long side 2,000 pixels) for browsing on the digital archive web page.
(4) JPEG images (long side 480 pixels) as thumbnails for the web page.

The total amount of scanned data is more than 8TB and these images are stored in HDD (RAID 5). Altogether, four HDDs installed with the same data were separately deposited in the Department of Geography of Tohoku University, The Tohoku University Library, The Kyoto University Museum, and the Department of Geography of Ochanomizu University in order to safeguard against data loss through accidents, such as natural disasters.

The *Gaihōzu* Digital Archives were established in 2005 by the Tohoku

---

[1] http://chiri.es.tohoku.ac.jp/~gaihozu/ for English,
  http://dbs.library.tohoku.ac.jp/gaihozu/ for Japanese

University Library and the Department of Geography, Tohoku University, and published digital map images through the Internet with a search system, which provides metadata including bibliographical information of the maps concerned.

Users can search the maps database with four different methods. The first, "World Map Search", leads them from a world map to the areas concerned. The second, "Index Map Search", provides index maps of the areas to be searched. With the third, "Lists of Index Data by Regions", users start from the catalogue of the maps. Users can also start the operation from "Keyword Search".

However, only 6,719 of all the digitalized maps can be viewed on the Digital Archives at the present time. Digitalized maps of some regions, such as China or the Korean Peninsula, are not published yet because it is anticipated that the publication of maps of these areas may lead to an international reaction. Concerning this issue, it may be enough to point out that in China and North Korea the use of maps of large scales, such as topographical maps, is strictly limited for civilians. In order to publish the images of many topographical maps for an unspecified large number of people without creating conflict, it is necessary to deepen the international community's understanding of the purpose and role of the Digital Archives, even if the maps were made more than 65 years ago.

Another problem that the Archives confront is their maintenance. The Digital Archives have been controlled mainly by the Department of Geography, Tohoku University. However, the affiliation of the members concerned has changed rapidly along with the shifting of personnel, such as through job transfers. In order to maintain the Archives for long time, the departments of universities are not suitable. Transfers to some organizations, such as the National Archives, should be discussed.

The *Gaihōzu* Archives provide modern historical sources of the Asia-Pacific areas, not only for Japanese researchers and students, but also for foreign researchers and students. However, to this point, the Archives' searching device was developed only for speakers of Japanese. It is certain that a multilingual searching system will promote the foreign use of the Archives. The association of the Archives with the databases of other fields is also necessary to promote the active use of the digital images.