China Historical GIS

The China Historical Geographic Information System (CHGIS) project began in 2001; the basic work is scheduled to be completed in 2006. Its main object is to create the authoritative common base GIS for Chinese history from the inception of a unified bureaucratic empire in 222 BC to the end of the dynastic period in 1911 AD. In the future, the GIS can be extended in time—forward to the present and backward to early history—and spatial detail can be added. It is an open-ended platform that can be used as the basis for the digital representation of many kinds of spatial and temporal data.

The geographical core of CHGIS is a comprehensive digital compilation of administrative units and the human settlements at which they had their administrations, all of which have been georeferenced and documented at each stage of their historical development. This is possible over the span of more than 2,000 years because of the government's long tradition of conducting land surveys and household registration, holding censuses, and compiling national administrative geographies. In addition, for the last thousand years of Chinese history in particular, CHGIS aims to include cities and towns outside of the administrative seats of county and prefectural government to enable study of urban, economic, and cultural development that are not adequately recorded in central government sources. By the eleventh century the population had reached about 100 million. The state apparatus did not expand with the increase in population and it was no longer able to control the ownership and distribution of land or to limit commerce to official markets. The extraordinary increase in commercial activity outside of state control brought with it unprecedented urbanization and new commercial networks. The fact that market towns might grow larger than the county seats under whose administration they fell points to the need for the GIS to recognize both economic networks and administrative structures.

Tracing the development of non-administrative towns is made possible by the appearance in the twelfth century of a new kind of historical source—the local gazetteer (*difang zhi*)—which compiled place-specific information about settlements in the county, religious establishments, schools, population, markets, tax quotas, arable land, crops, names and dates of civil service degree holders, and more. Many included maps. Over 8,000 such gazetteers are extant.

The point of creating a base GIS for Chinese history is to make it possible for users to map their data—whether population reports, tax quotas, military garrisons, or religious institutions—onto historically accurate administrative and settlement geographies. By downloading the base GIS, researchers can join their own datasets to it and create new data layers appropriate to their projects. They can analyze the CHGIS data, test hypotheses about spatial relationships, generate historical maps for research, teaching, and publication, and—because CHGIS provides an

internationally available and authoritative platform—share their data with others. By the summer 2005, continuous time series for seven of the eighteen core provinces were completed and made available through CHGIS v.3.

At the same time, CHGIS serves two other functions.

- It is an *historical gazetteer*. Researchers can use CHGIS to find information about a specific place, to see when it existed, where it was, where it belonged in the administrative hierarchy, and what historical documentation exists for these findings. This means that almost any place-name found in historical texts can be accurately located. The CHGIS search engine, which functions as the primary historical gazetteer server, is a free, Web-based utility that currently receives between 20,000 - 50,000 search requests per month.
- It is an *electronic atlas*. Because CHGIS has adopted a "continuous time series" approach—that is, it traces all known boundary and settlement changes over time, so that users are free to decide which moment or moments they wish to view—it may be used it as a source of maps of the known administrative structure and settlements of China for any year between 222 BC and 1911 AD. Users can do this for themselves, generating maps as they need them, or they may consult and download sample maps from the series of maps based on CHGIS data.

The core content of CHGIS is being created by China's primary national center for historical geography, the Center for Historical Geography at Fudan University in Shanghai. Many of the scholars there who were involved in the authoritative, multi-volume reference work, the *Historical Atlas of China* (*Zhongguo lishi ditu ji*, 1982–1987), are now conducting new, more detailed and precise research for the CHGIS project. CHGIS goes beyond the atlas in providing a continuous time series rather than particular moments in time; it takes into account far more primary sources and modern research; it specifies relationships to the administrative hierarchy; it provides exact longitude and latitude coordinates; it provides beginning and ending dates for historical places; and it includes source notes. The completed work will supercede any existing historical administrative geography of China in terms of temporal range, spatial accuracy, and documentation of sources.

The source notes linked to the spatial objects and administrative and settlement data in the GIS are of particular importance and cannot be found in any printed historical atlas. They consist of extracts from the historical sources used to determine administrative changes, point locations, and boundaries. Historical texts, with bibliographic citations, are quoted directly from primary and secondary sources in Chinese and are accompanied by commentaries in which the editors provide written justifications for their choices. In this way the core research being done to create the database is exposed to the users for their reference.

All CHGIS place-name records are compiled in English transliterations (Pinyin) and Chinese characters (both simplified and traditional).

In addition to these primary records, the CHGIS data model allows for variant place-names. Currently the database contains place-name records in several vernacular scripts: Chinese, Japanese, Russian (Cyrillic); and several romanized forms: Pinyin, Wade-Giles, and Non-standard Variants. We are working on expanding the entry of vernacular equivalent names in Tibetan and Mongolian. In this way, the CHGIS database functions as a multilingual historical gazetteer, easily expanded to include any vernacular script input in Unicode UTF-8 character set encoding.

The raw datasets of CHGIS are made freely available to the public for unlimited and unrestricted non-commercial use in two of the most widely used standard GIS data formats: ESRI shapefiles and MapInfo tables. CHGIS data is mounted on Harvard University and Fudan University servers, where it can be browsed, searched, mapped, and downloaded using ordinary Internet browsers without any additional software clients or plug-ins. In the United States, all CHGIS data will remain permanently available through the Harvard Geospatial Library. As electronic formats change, it will be migrated to new formats.

CHGIS Resources Online

- Harvard University: http://www.fas.harvard.edu/~chgis
- Fudan University: http://yugong.fudan.edu.cn/chgis

—Peter Bol, Harvard University
—Jianxiong Ge, Center for Historical Geography, Fudan University

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HGIS Project of Korean Culture

Since August 2002, Korea University's Institute of Korean Culture (IKC) has carried out a project named the *Electronic Cultural Atlas of Chosun Korea* (ECA-CK). The research team consists of thirty professors and thirty graduate students in the fields of geography, history, philosophy, literature, and folklore. The culture that was developed during the Chosun dynasty (1392-1910) became the foundation for the culture of modern Korea. This project is aimed at transferring the various cultural phenomena of the Chosun dynasty into digitized information and then transforming this information into maps. We hope that the GIS database that is the basis for the ECA-CK will provide a new research methodology for the study of culture throughout the Chosun period.

The present state of development of the ECA-CK can be summarized in three parts. First, the basic framework for the project has been developed. The unit forming the atlas' geographical framework is the county (*GunHyun*), beginning with the 330 counties that served as administrative districts of the original Chosun dynasty. The culture of the