# Republican Beijing in GIS Perspective: What More Can GIS Tell Us?

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This is a reflective report of a historical GIS project on Beijing's urban culture during a period when the city was not the capital of an empire or an effectively unified nation-state. It is between the fall of the imperial order and before the Japanese occupation and the establishment of the People's Republican of China.

The project is more or less complete and our website will be online in the near future. It is open to the public and allows users to download our data free insofar as the downloaded dataset will not be used for commercial purpose. Apart from data for downloading, our website will also provide basic functions of displaying data, overlaying chosen data, and exporting user-generated maps. We also plan to allow users to provide feedbacks and even new data, which hopefully in the long run help to enrich the contents of the dataset and enhance its quality and reliability.

In this paper, I will report what the project is about and try to address the question of "What more can GIS tell us?" primarily based on the experience of our project.

Our project description is as below:

*Title-* **Beijing in Transition: A Historical GIS Study of Urban Cultures, 1912-1937 (**燕京思遷錄：民國時期北京都市文化的歷史地理信息研究**)**

*Subject-* Modern Chinese urban history

*Creators/ownership-* Billy So (Principal Investigator; History, CUHK) and Lin Hui (Co-investigator; Institute of Space and Earth Information Science, CUHK)

*CUHK project manager*: Zhang Peiyao (PhD candidate in GIS)

*CUHK participant*: Michael Ng (PhD candidate in History, Adjunct Assoc Professor at Centre for East Asian Studies)

*Spatial location-* Beijing city (not including suburban districts and countryside)

*Temporal coverage-* 1912-1937

*Contributors-* Peking University (Center for Historical Geography and Center for Medical History), Peking Union University (Faculty of Arts and Science), Shandong Dong University (Law School)

<u>Base maps</u>

We have found three large-scale maps of 1914, 1918, and 1937 to form the core of our base map with temporal sequence over the 25 years period of our project. The scale of these maps ranges between 1:5,000 and 1:8,000. The 1937 one (1:5,000) has been georefernced and incorporated into the GIS system as part of its data. This one was the base map of the project.

<u>Thematic information: location and input</u>

Our data were mainly collected from the collection of the Beijing Municipal Archive and other online materials made available by major libraries in Beijing like the Capital Library and National Library. I also had chance to visit archives of Institute of Modern History in Academia Sinica, the Library of Congress and Rockefeller Archive Center near New York City; and found useful data there too.

we were able to create more than 300 layers of information in our system. In order to organize our urban cultural data, our project has identified six cultural spheres for data collection, which constitute the main contents of our database. They are:

**Urban morphology** (i.e., city planning and structure, major government buildings, major landmarks, urban population patterns, and transportation patterns,…)

**Legal cultures** (i.e., police forces, military police, crime rates, medication, court systems, civil and criminal litigations, lawyers and law firms,…)

**Medical cultures** (i.e., traditional health care providers, modern hospitals and clinics, public health services, Chinese and western drugstores, patterns of common and infectious diseases, hygienic facilities,…)

**Market cultures** (i.e., firms and shops of major businesses, banking and pawnshops, manufacturing enterprises, guilds, temple markets, urban taxation, land price, wage patterns, poverty patterns,…)

**Religious cultures** (i.e., temples, churches, properties, membership, leadership, welfare services,…)

**Education cultures** (i.e., schools, universities, professional education organizations, traditional education providers, literacy providers,…)

These six cultural spheres are selected due to the fact that: a) data are relatively accessible; b) each sphere represents an important aspect of the urban cultural transformation in Republican China, e.g., the introduction of Western laws and medicine and their interaction with the traditional legal culture and medicine; c) potential interrelatedness of these spheres. For instance, Western medicine and

education were implanted through missionaries; new legal frameworks and municipal administration reform based on Western models affected market institutions, behaviors and performance; urban morphology changed following new mentalities in health care, law and order, education, and religious beliefs, and so on.

The object of observation in this study is the spatial phenomena of cultural transformation in the above six cultural spheres amid the unprecedented cultural diversification in a Beijing liberated from the dominating imperial ideological control.

The main theme of inquiry is how such cultural changes over time can be systematically observed in spatial patterns and be further elucidated through the GIS analysis. This objective has to be subject to the constraint of availability of information. As of today, it is clear that the information available to us cannot constitute a clear time-line of changes through these 25 years for many of the subject matters. It is only in some cases like medical service and legal culture where certain inquiries on changes over time are possible. Notwithstanding, the gap of information may still be filled in by later researchers and in particular the users of this dataset.

To recap, the objectives of our projects in broader term are: a) for advancement in fields of GIS in history, in Chinese history, modern Chinese history, Chinese urban history, geography, multidisciplinary history, and so on; b) for reflection of broader methodological and theoretical issues; and c) for promotion of participatory and collaborative scholarship. There are three main deliverable objectives: a) to develop a GIS dataset of historical information on six selected urban cultural spheres; b) to document the spatial patterns and changes in each of these urban cultural spheres; and c) to explore possible relationship among these patterns.

In the following parts of the paper, I will give some reflections on our experience, including the immediate benefits as well as difficulties and limitations as we encountered. Furthermore, our Beijing project experience gives me some inspiring food of thoughts and we may address a range of theoretical issues transcending the immediate concern of Republican Beijing. A list of examples of these issues are as below:

Qualitative vs. quantitative?
Spatial vs. non-spatial?
Two variables vs. multiple variables?
City politics vs. urban socioeconomic phenomenon?
Traditional urban culture vs. urban modernity?
Structure vs. expression? And ultimately,

What is urban cultural change?

I will then explore the possible contribution of this GIS project towards a better understanding of modern Chinese urban history. The discussion begins with an overall view of GIS in Chinese historical studies and the Classical scholarship on Republican Beijing by Sydney Gamble. Against this backdrop I will move on to sketch the newer approaches to the issue of modernity vs. tradition in Republican Beijing, namely the Civil society approach (Strand), Tradition in modernity approach (Novey) and that of Cultural studies approach (Dong).

In short, the first approach takes tradition and modernity as a dichotomy; the second sees tradition and modernity as something divergent but mutually complementary and at times co-existing; the third approach takes tradition as constructed cultural product in modernity.

In the following section, I will make use of some visualized data from the GIS dataset to revisit the meaning of Beijing culture, with focus on the market sphere. In the concluding remarks, I will argue that there could be many answers to this question of what more can GIS tell us. One example is the way we may use GIS to explore an understanding of historical urban culture through a multivariate, empirical, quantitative, and yet more holistic, and by definition also qualitative, approach. In other words, it may allow us to tap in the broad range of disciplinary knowledge about a city's culture and comprehend them in a spatial framework that enhances the complementarity of such disciplinary knowledge. After all, city can be perceived as an organic whole rather than just a random aggregate of its parts (law, health, market, etc.). Any part of an organic whole may not be fully understood without taking into account the other parts, and in fact, the entirety of the city in itself. So GIS may facilitate a more holistic synthesis of the compartmental knowledge about individual aspects of a city and allow us to enjoy an overview of the forest.