

Finding Common Geographic Features in Old Maps and Photographs for Reconstructing Historical Landscape – A Data Criticism Approach for Silk Road Ruins

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This paper discusses how maps and photographs can be used for reconstructing historical landscape. Maps and photographs are different representations of the landscape, and they can be linked by finding common geographic features or coordinates. This is now easy because a map and a GPS device share the common geographic coordinates, so a photograph with a coordinate can be directly linked to a location on the map. However, old photographs do not have geographic coordinates, so the location should be estimated from a caption or a text describing the photograph with the visual interpretation of the photograph. Old maps also have problems in accuracy, so a geographic feature on an old map cannot be identified on modern maps due to the error of the coordinate. Hence the integrated interpretation of old maps and old photographs requires finding common geographic features or coordinates so that those sources are linked by commonalities.

Our research question is how to find commonalities in different sources, especially non-textual historical sources such as maps and photographs, to create links across sources. Linkage of sources across space, time and types allows researchers to navigate through different sources to improve our understanding on historical landscape. We are now developing a tool to support these tasks, such as ‘mapping’ which supports the one-point registration of two maps on the fly, and a place-name database, which supports the integration of site’s information with photographs and locations. These tools are based on the idea of “data criticism,” which focuses on the quantitative analysis of non-textual digital historical sources. Linkage of sources by common geographic features leads to a conceptual reconstruction of historical landscape, and a consistent and systematic interpretation of maps and photographs can be achieved under the context of conceptual reconstruction. We illustrate the result from this approach on the case study of Silk Road ruins.

Most of the maps and photographs introduced in this paper are accessible at Digital Silk Road Website <http://dsr.nii.ac.jp/geography/>