

Project Summary

Overview

The *Orbis Initiative* (OI) project aims to build a large repository of historical geospatial network data, and to create software tools and documentation supporting data creation, ingest from existing sources, data conflation, basic network measures and analyses, and cost model development. The OI database and tools will be a unique new system of resources, expected to see widespread use for historical research and education in the social sciences and humanities. The system will become a significant and permanent new element of scholarly cyberinfrastructure, publicly accessible from high-performance servers hosted initially by Stanford University Libraries and ultimately, multiple partner institutions.

Intellectual merit

Geospatial networks are the circulatory system for the movement of people, goods, and knowledge on earth. Data about their historical development at local, national, regional, and global scales constitute important evidence for analysis and explanation of current political and societal circumstances, including the geographic dimensions of resource disparities. The spatial distributions of populations defined by such demographic characteristics as wealth, ethnicity, and political persuasion can often be explained by the historical activity and processes dependent upon geographically embedded networks. Network infrastructure both enables and results from many kinds of spatial interaction, including commerce, migration, territorial control, and cultural diffusion. The evolution of transportation technology and infrastructure over the long span of human history is interwoven with innumerable kinds of social, economic, and political change, and with the diffusion of knowledge and cultural practices.

Historical network data is sparse, difficult to find, and often not readily amenable to computational analysis. Many holders of such data would willingly add it to a global commons, given the technical means and lower cost, a reputable and sustainable repository to hold it, and assurances their contributions would be publicly acknowledged and cited upon re-use.

There is also a vast and largely untapped store of network data that exist only on historical maps. High-resolution scans have been created for hundreds of thousands of these, and many are publicly available under flexible licenses. The *Orbis Initiative* will begin making large quantities of that data actionable for research and education, by facilitating the digitization of network features represented on historical maps into a stable, accessible repository, and by providing tools for its effective use. The project will leverage recent advancements in web browsers, web mapping technologies, open-source software development, and large-scale community-sourcing of data – which are together enabling a new generation of geodata portals and map-centered scholarly publications.

Broader Impact

A historical geospatial network database will support a large and varied array of research studies aimed at understanding the global and regional processes leading to current geo-political, economic, and societal circumstances. As such, it will contribute to greater historical and geographic literacy amongst the general public and policy-makers, through scholarly and journalistic interactive publications, and formal education.