Data Analysis and Visualization Tools for GeoHumanities

Betul Czerkawski
Arizona State University

Abstract

GeoHumanities is an interdisciplinary field, which combines geography, arts, and humanities. At the intersection of these three disciplines, GeoHumanities' purpose is to use space, place, landscape, and environment to tell the stories of cultures, nature, and heritage of various ethnic groups. The GeoHumanities Forum at the Royal Holloway University (2021), GeoHumanities is a relatively new field of study. It incorporates similar humanities fields, such as environmental humanities, spatial humanities, and urban humanities under its umbrella. At its core, GeoHumanities uses geographic information to address of the questions posed in the humanities fields. As geographical information systems (GIS) and data visualization tools advance they become an integral part of scholarly research endeavors. GeoHumanities is also evolving into a field where data-driven approaches are commonly used by scholars. This paper is a review of digital tools available to the GeoHumanities scholars and to evaluate what degree these digital tools may support the investigation of various social science, humanities questions, and issues via visualization techniques.

Keywords:

visualization; GeoHumanities; research analysis software

Using Digital Technologies to Visualize GeoHumanities Questions

Social science and humanities scholars study culture through language, literary materials, historical texts, and other textual resources. If these resources are linked to a landscape or a map, the viewers can visually see rich representations of the locations, events, and their relationship to the text-based narratives. It should be noted that using visualization software in humanities research goes beyond of data viewing preferences of an individual. Data visualization can help users see connections, patterns, errors, mistakes, and disconnections represented in the data while simultaneously increasing the data analysis and interpretation capability of scholars.

GIS software applications are available to humanities scholars for analyzing geospatial data. These applications were not necessarily developed with 'humanities' in mind. Using digital technologies to visualize GeoHumanities questions allows humanities scholars to analyze geospatial data to further understand the relationships between disciplines and

their interactions. After a review of several programs, three applications were selected for further exploration. The main criteria for selection included ease of use, compatibility with various humanities disciplines and cost of the program.

Omeka (https://omeka.org/) & Neatline (https://neatline.org/)

Omeka is an open-source tool that can either be installed on a server or run through Omeka's website. The open-source version, also called Omeka Classic, launched in 2008 to help museums, libraries, and archives to digitally store their collections and exhibitions free of charge. In 2010, the web-based version, Omeka.net was launched to provide a fee-based support service. Using Omeka.net, individuals and organizations can circumvent server installation or management issues (Omeka, 2021). Many museums and libraries use Omeka to save and organize their archives.

The open-source nature of Omeka allows researchers to develop plugins to further develop the software to fit specific research purposes. Neatline is the GeoHumanities plugin used with Omeka.

Neatline links archives, artifacts and textual data with modern or historical maps and timelines, but it does not function as a standalone. Omeka and Neatline are free and stable tools available to social sciences and humanities scholars. Server installation requirements and low level media integration with textual data are limitations that should be considered by scholars.

Listed below is an example of a Neatline project.

Figure 1: The Whiskey Rebellion-Neatline

More information about this project can be found at: http://maptherebellion.com/interactive-map

ArcGIS StoryMap (https://www.esri.com/en-us/arcgis/products/arcgis-storymaps/overview)

Maps are not only used for data visualization purposes, but they are also to tell stories. ArcGIS StoryMap is one of the best examples of this type of program, which enables its users to create maps to view on a desktop computer or an app on a mobile device. Users may upload their data, perform spatial analyses and use various visualization tools to interpret data. ArcGIS StoryMap is web-based proprietary software, so users need to pay a fee to use the program. Depending on the type of the user (available categories are creator, professional and storyteller) the user is presented with various pricing options. A limited functionality public option is free of charge allowing anyone access to this data to enhance their experience.

ArcGIS StoryMap comes with several templates. Users start their story with templates or other built-in options. Multimedia content, such as videos, images, graphics as well as 3D content can also be uploaded into the program. Users have access to a wide range of help files, videos and screen shots if they encounter any problems.

Listed below is a project completed using ArcGIS StoryMap.

Figure 2: Preserving Significant Places of Black History

More information about this project can be found at: https://storymaps.arcgis.com/stories/2e2f8343e7254e948f5a0d3699ba91fd.

StoryMap: https://storymap.knightlab.com

StoryMap is an open-source web-based program, designed and administered by Northwestern University's KnightLab. This program helps users tell stories using digital content. Users can upload their images, maps, works of art, artifacts, or sound files on the StoryMap website and use their templates, or presets, to start off their projects. In addition to StoryMap, Knightlab has other plugins such as Scene (a virtual reality tool), StoryLine (data visualization tool), Juxtapose (a map comparison tool), and Timeline (a timeline creation tool) Additional works in progress include beta tools for environmental science scholars, journalism scholars and students.

Like most open-source software, StoryMap has an active online community to support its users.

Listed below is a project completed using StoryMap.

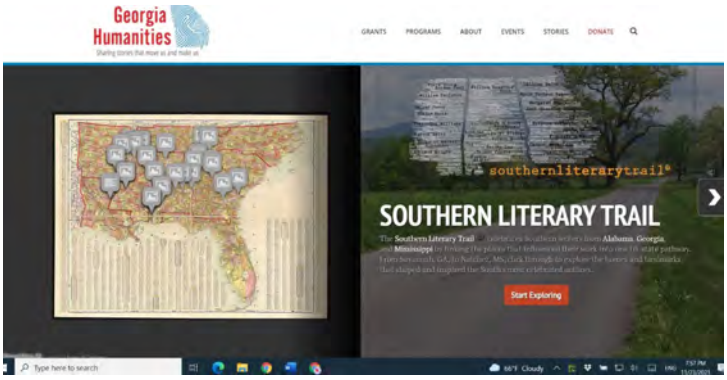

Figure 3: Southern Literary Trail- StoryMap

More information about this project can be found at:

https://www.georgiahumanities.org/southern-literary-trail-story-map/

Conclusions

GeoHumanities is associated with "transformative thinking, creative interactions, illuminating lost histories, extending conversations, choreographing new relations and imagining and propelling us toward new futures" (Hawkins et. al., p. 212). When telling geohumanities stories, most social sciences and humanities scholars use large sets of qualitative data to make sense of issues and problems relevant to their fields. In the past, making sense of data was a tedious process as holistically organizing text-based or hard-to-digitize artifacts was a time consuming, laborious task. With the advance of digital tools, and most recently visualization tools, scholars may now work with large sets of data, integrate them with a variety of media sources and visually evaluate their meaning for further understanding. Each of the programs evaluated have advantages and limitations; therefore, the selection process will depend on the individual scholar's research purpose, their comfort level with the technology, and the type of data required.

References

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Additional Resources:

- Tableau https://www.tableau.com/

Tableau is the most used, commercial visualization tool. Although not specifically for GeoHumanities, it can be used to facilitate place-based data analysis and visualization.

- Humanities GIS at George Mason University: https://infoguides.gmu.edu/geohumanities/tools

This is a great website that provides information about all the major GIS programs currently in use.