Mapping and Geospatial Analysis Guide

What, Why, How

What: Mapping is more than the production of static images. It is the spatial analysis of how people, places, and events - fictive or real - interact with and shape each other over time. By producing maps, we display our data across an additional dimension that may reveal unforeseen patterns or novel insights. We can also create dynamic maps that filter, symbolize, and compare features, allowing us to ask new questions about our data and produce new meaning.

Why: Texts, authors, and historical events can all be viewed and analyzed through a spatial lens. For instance, mapping the routes taken in the narrative of *Les Miserables* reveals something unique about each character's perspective. Or consider the movement of Renaissance artists who journeyed from city to city while producing the body of their work over several decades. As the lives of these figures intersected at specific places and moments, they created nodes of influence that produced innovative styles and techniques. Spatial approaches like these add a new dimension to our analysis.

How: We will use GIS applications to produce our spatially structured projects. GIS stands for Geographic Information Systems, a term that comprises a suite of mapping software applications and platforms. We can use maps as more than a static output or an attractive data visualization. GIS can be a tool of research and analysis in its own right. After identifying or creating a data set, we will bring it into a GIS software where we can begin to analyze our data through visualization. Finally, we can generate web-based applications that publish our analyses and allow other scholars to interrogate our data.

Project Types

Static maps for inclusion in papers/articles: Not all maps have to be interactive, nor must they be utilized in web-based publications. Static maps can still be powerful representations of data in the context of traditional papers and journal articles. The first phase of this approach will be using analytical tools within GIS to interrogate your data for spatial patterns, relationships, and trends. Once you have drawn your conclusions, it is best to consider making multiple maps of your data. Create a map to address or visualize each point you would like to make.

> **Recommended tool(s):** ArcGIS Pro; ArcGIS Online; QGIS
> **Output:** Precisely formatted static figures

Interactive maps for web-based publication: This approach foregrounds the map as the main product, culminating in the creation of a web-based interactive map or mapping application. The interactive maps will contain the results of your scholarly research and present your analysis. First, you create a webmap that visualizes and annotates your data with pop-ups. That map can either be embedded in a website or used as the basis of a new application designed through ESRI's drag-and-drop web application builder. Applications can also guide users through your narrative, animate your data over time, and allow users to filter layers to query your data for themselves.

> **Recommended tool(s):** ArcGIS Online; ArcGIS Instant Apps; ArcGIS Experience Builder
> **Output:** Web-based applications, either stand-alone or embedded in websites

StoryMaps: StoryMaps can be a powerful and user-friendly platform for creating engaging online publications of your research. They can incorporate custom maps produced in ArcGIS Online as well as text, videos, and even embedded 3D models, all through a convenient drag-and-drop user interface. It is important to keep in mind that, just like a traditional paper, a StoryMap project is only as good as the underlying scholarly analysis. As the name implies, the focus of StoryMaps, in terms of both structure and content, is usually maps. Thus, it is best to foreground the spatial aspect of your research or analysis in your text and in the presentation of your data.

> **Recommended tool(s):** ArcGIS Online; ArcGIS StoryMaps
> **Output:** Web-based publication of a spatial-focused research project

Mapping Rubrics

Standalone maps

	Exceptional	Good	Sufficient	Needs work
Map formatting	Clear attention to detail is given to the point that it is professional in level. Additional/custom formatting has been used to create elements such as legends, in-set maps, and basemaps to create a cohesive and polished visualization.	All data sets are clear and understandable. Layers are in a logical order, and all contextual elements (scale, legend, etc) are included.	Map has a legend, but one or two other elements may be missing or improperly formatted. (e.g., layers are not properly separated or in illogical order)	Map construction is attempted but is missing data layers or is unreadable.
Presentation of information through symbology	Different classes of data are able to be clearly differentiated from each other but are aesthetically complimentary.	One or more fields are used to create comparative and/or descriptive symbology. The color, shape, or size of symbols are well chosen to facilitate comparison and understanding of the data presented.	There is sufficient data, and some symbology has been used, but it is hard to parse due to size and color choices.	Needs more data to facilitate meaningful insight or data layers are undifferentiated via symbology.

| Analysis	One or more of the advanced analytical tools available within GIS have been utilized, and the results have been thoughtfully analyzed.	This comparison of spatial distributions, frequencies, or chronological periods has resulted in insightful analysis.	Some light analysis has been carried out, such as identifying simple spatial patterns.	Little or no spatial analysis has resulted from the creation of this map.
Additional elements (Optional)	Additional interactivity has been introduced to the map through the use of a web experience builder that is well-chosen and formatted for the specific content, narrative, and purpose of the map.	One or more additional elements have well-written text or informative figures, have considered configuration parameters, and are logically located in the map interface.	At least one additional element is present, such as charts, pop-ups, and time sliders, but not well configured.	No advanced elements are included in the map.

Storymap with embedded map

	Exceptional	**Good**	**Sufficient**	**Needs work**
Embedded Map	The design of the embedded map is tailored for its specific use within the storymap or web page, including targeted functionality and focused content. Multiple versions of the map may need to be presented in various locations of the page to achieve this effect.	The embedded map enhances the impact of the larger storymap or webpage through well-chosen location within the page, clear formatting, and functionality.	The embedded map is relevant to the specific context in which it is placed and has usable functionality in the format presented.	The embedded map is not configured well for the intended use within the storyamp or webpage, perhaps through inappropriate default extent scope or poorly chosen functionality.

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Contextualizing elements	Several story map tools are used that usefully present a variety of evidence, and the map is an essential aspect of the structure and narrative of the storymap.	In addition to text, one or more story map tools are used to create a well-rounded and engaging experience that incorporates the map into the narrative.	The text of the storymap presents an argument or narrative that clearly introduces the map and frames its relevance to the project.	The storymap contains an inadequate amount of supporting and contextualizing text. Maps are not clearly relevant or explicated.
Presentation of scholarly analysis	In-depth analysis of the maps is clearly presented through text/figures and ties in other forms of evidence, such as historical documents, images, or statistics.	Scholarly analysis of the maps is robust and well presented throughout the body of the text.	Maps are used as more than simple figures, with some basic analysis, but lacking a clear impact on scholarly interpretations of the evidence and/or the larger project narrative.	Any included maps are treated as simple figures, with little or no analysis of the map incorporated into the storymap project.

Examples

Visualizing Les Miserables
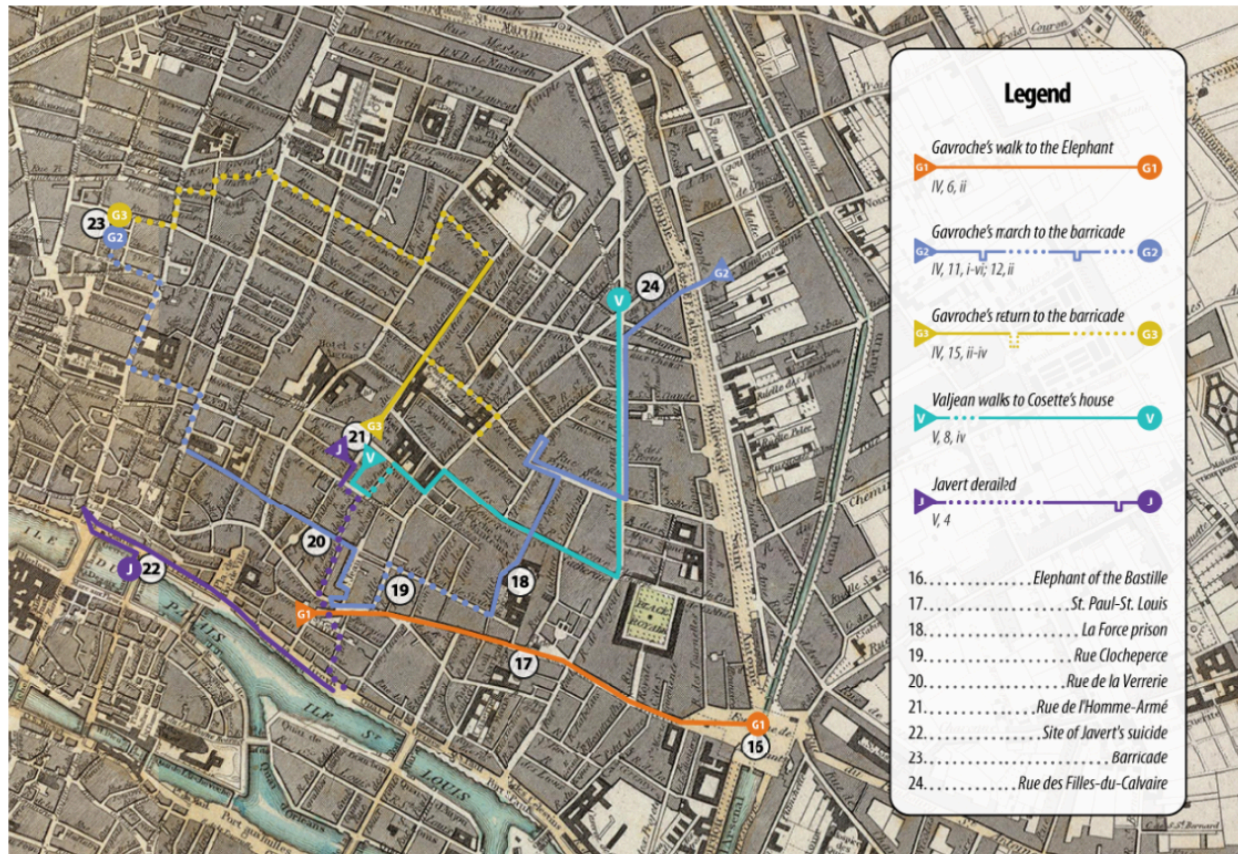
One of the most well-known literary DH projects, *Visualizing Les Miserables*, took several approaches to analyzing the text through visualizations. One of the more impactful approaches is the mapping of the routes taken by characters through Paris. The mere fact that Hugo plotted such detailed routes through the city is indicative of the critical role that the environment played in his narrative. Furthermore, the routes taken provide insight into the mental state of the characters. Javert is never seen going home; his procession has been his entire life. Compare Gavroche's meandering and uncertain initial march to the barricades with his much more direct and inevitable return.

Depression, Dust, and Steinbeck
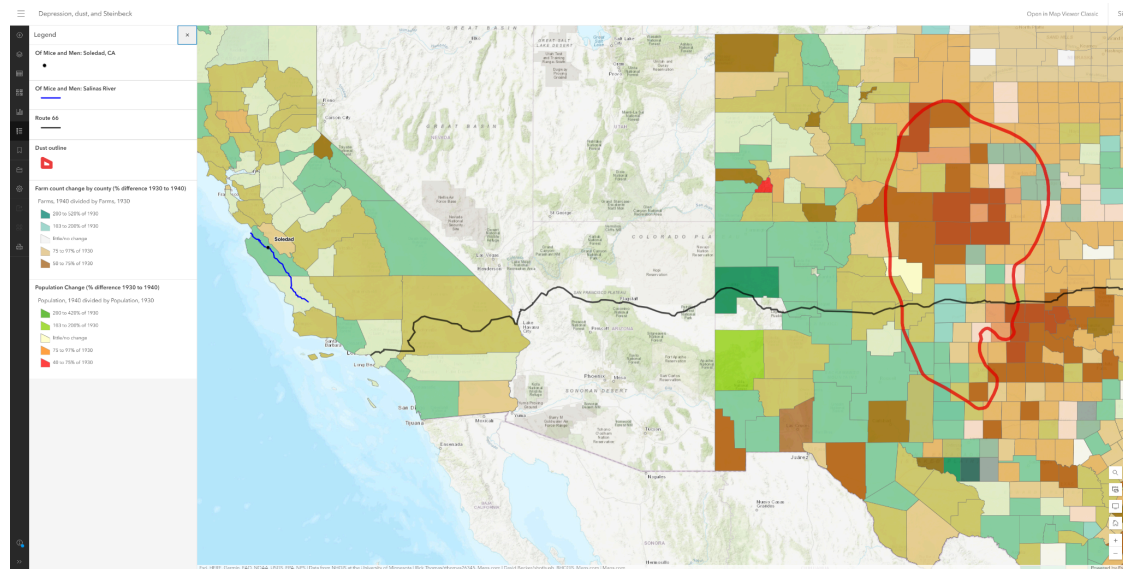
This interactive webmap visualizes the impact of the real world Dust Bowl crisis on the narrative of Steinbeck's novels. It visualizes the area of greatest drought, the population change in the counties of the affected areas in the midwest and the influx of population to California, and the routes taken by characters and real life migrants. It demonstrates how clearly Steinbeck's writing reflected and was informed by the real world plight of his day.

Mapping Segregation in Washington DC
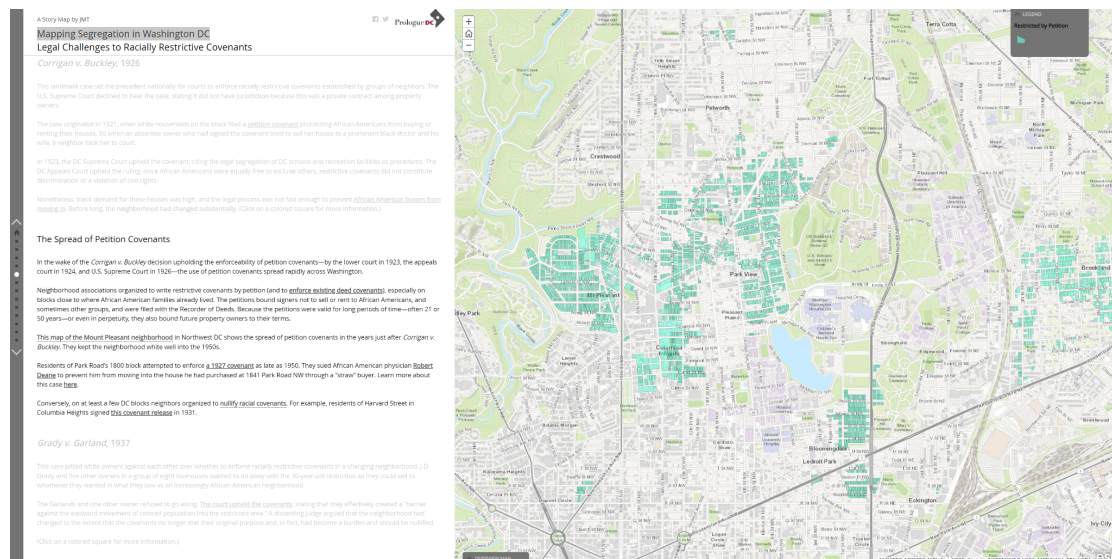
This story map examines the history of segregation in Washington DC, which has a clearly spatial aspect. It examines the impact of various legislative acts on communities over time, visualizing the changing demographics of DC neighborhoods through interactive maps. It also calls out the location of significant events in the history of the fight for DC's desegregation. While guiding the user through these maps, the storymap presents contextualizing images, text, and further research in a scrolling sidecar that accompanies the main map view.