ASSOCIATION OF CANADIAN MAP LIBRARIES AND ARCHIVES
BULLETIN

Preparing a two day GIS workshop for Arts and Humanities researchers

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Abstract
In winter 2018, Joël Rivard and Sarah Simpkin were approached to lead a two day (12 hour) workshop for arts and humanities researchers as part of the Digital Humanities Summer Institute: Technologies East (DHSITE) conference hosted by the University of Ottawa. The workshop, Introduction to Mapping and Spatial Methods for the Humanities, built upon a shorter offering presented by Sarah last year. It had a Historical GIS (HGIS) twist and was open in terms of datasets, software, and instructional materials. All of the activities and exercises referenced in this paper are available on the course website, found online at https://ssimpkin.github.io/dhsite2018/.

Keywords: Digital Humanities, Historical GIS, HGIS, Instruction, QGIS

Focus of the workshop

The workshop was advertised to scholars from a wide range of disciplinary backgrounds in the arts. In view of this, we felt that demonstrating multiple ways to create geospatial data from various sources (textual, existing maps, tabular data, etc.) would provide a good foundation for the students, even though their individual research interests were varied.

Building on our own interest in HGIS and local history, we chose to use historical data of Ottawa, Canada for the exercises. We downloaded fire insurance plans and city directories from Library and Archives Canada's website, and additional reference datasets from the City of Ottawa's open data website.

Geocoding and georeferencing operations were both introduced as methods to create geospatial data. The historical city directory was the basis for the geocoding portion, which allowed students to learn how to structure tabular data for use in a GIS application. The "historical factor" additionally exposed students to the nuances of working with changing street numbers and names, the importance of using other historical datasets as reference points, and the need to perform a quality check on the geocoding results.

As for the georeferencing operations, participants were shown how to georeference a fire insurance plan of the same geographic area that would be covered by the historical city directories. This allowed them to see how the neighbourhood blocks had changed over time through comparisons

with modern day datasets, and also provided a historical data layer that could be used to verify the geocoded address points.

The major components of the workshop were as follows:

1) Participants each took a unique scanned Fire Insurance Plan (FIP) of Ottawa from 1901 and georeferenced the image in QGIS. Each FIP covered a different set of city blocks within the same neighbourhood.

2) Information from the FIP was digitized by tracing buildings to create polygons. Additional information found on the FIPs was added as attributes to the polygons. For example, types of building materials.

3) Using the historical 1890 Ottawa City Directory, participants filled in a table with information about the residents who lived in buildings within the same geographic coverage as the FIP. Street names and address ranges that matched each FIP were identified and assigned in advance. This data table was then geocoded in QGIS.

4) A spatial join was conducted to copy the attribute information from the point file to the traced polygons of the building outlines from the FIP.

5) Building outlines from all of the students were combined into a single shapefile.

6) The group discussed potential display options for the dataset and the design decisions that might affect the final product. For example, would our users want to create a map for print production or would they rather create an interactive map to be published online?

Software selection

Since registration for DHSITE was open to the public, we wanted to make software choices that could be fully accessed by all of our students, even those without institutional affiliations.

After much deliberation and testing using a multitude of tools, we discovered that no one free online mapping tool would allow us to complete all of the operations that we wanted to show the participants. While Mapwarper allowed us to georeference an image, it didn't allow us to re-use the image in other tools that were powerful enough to digitize the features into vector files, let alone complete the spatial join. We tried embedding the georeferenced image in other applications as well as exporting it to Google Earth, but the digitizing tools in Google Earth were cumbersome to use for our purposes.

With this goal in mind, and through feedback received on the ACMLA listserv, we settled on QGIS. While we felt that desktop applications might be overkill for some users, QGIS allowed us to teach GIS fundamentals using software that could be used for more advanced functions down the road. We were also conscious of the fact that our workshop was not scheduled to take place in a computer lab, and students would be using their own laptops. QGIS is compatible with Windows, Mac, and Linux, which meant that the students' choice of operating system would not

affect their ability to participate. Ahead of the workshop, we also asked students to bring a mouse to class to make conducting the geoprocessing operations, such as tracing step, much easier.

The website we developed for the course was created using a static site generator called Hugo, and is hosted on Github.It offers a central place to keep course materials. The site provides step-by-step directions for the hands-on portions of the course as well as links to our slide decks and data sources.

Reflection

Only four students participated in the workshop this year. While the numbers for the workshop were low, the conversations that we had as a group were stimulating and made us think differently about how humanities researchers perceive GIS technology.

Each portion of the workshop featured both theory and practice, with lively discussions throughout. To introduce participants to both geocoding and georeferencing concepts, we started each session with warm-up exercises that would allow them to gain some understanding of the GIS concepts and would allow them to build from these concepts when we introduced them again in QGIS. The warm-up exercises were done using some online mapping tools such as Google Fusion Tables and Google Earth. The group seemed to enjoy these exercises and were enthusiastic about how quickly a web map can be produced.

Because there were two of us co-hosting the workshop, we could each alternate between speaking and circulating around the room to help with technical issues. For the hands-on activities, we created animated gifs (available on the website) to show participants the various steps. We went through them in class and then gave the participants some time to do the exercises themselves. This proved to be an effective way of delivering the session.

On the second day, we powered through and showed more intense GIS work. At the end, because we had some extra free time, we thought it would be a good idea to visit each individual student to discuss their research interests and to brainstorm the best ways to tackle their projects. The participants really appreciated this personal touch. We also gave them our email addresses in case they have additional questions and encouraged them to reach out at any point for help or guidance with their projects.

Despite the low attendance, we appreciated the opportunity to put together a series of lessons based around common HGIS tasks. It is our hope that these could eventually be offered as stand-alone workshops, as needed. We also invite you to reuse or adapt any of the lessons we created for your own teaching.

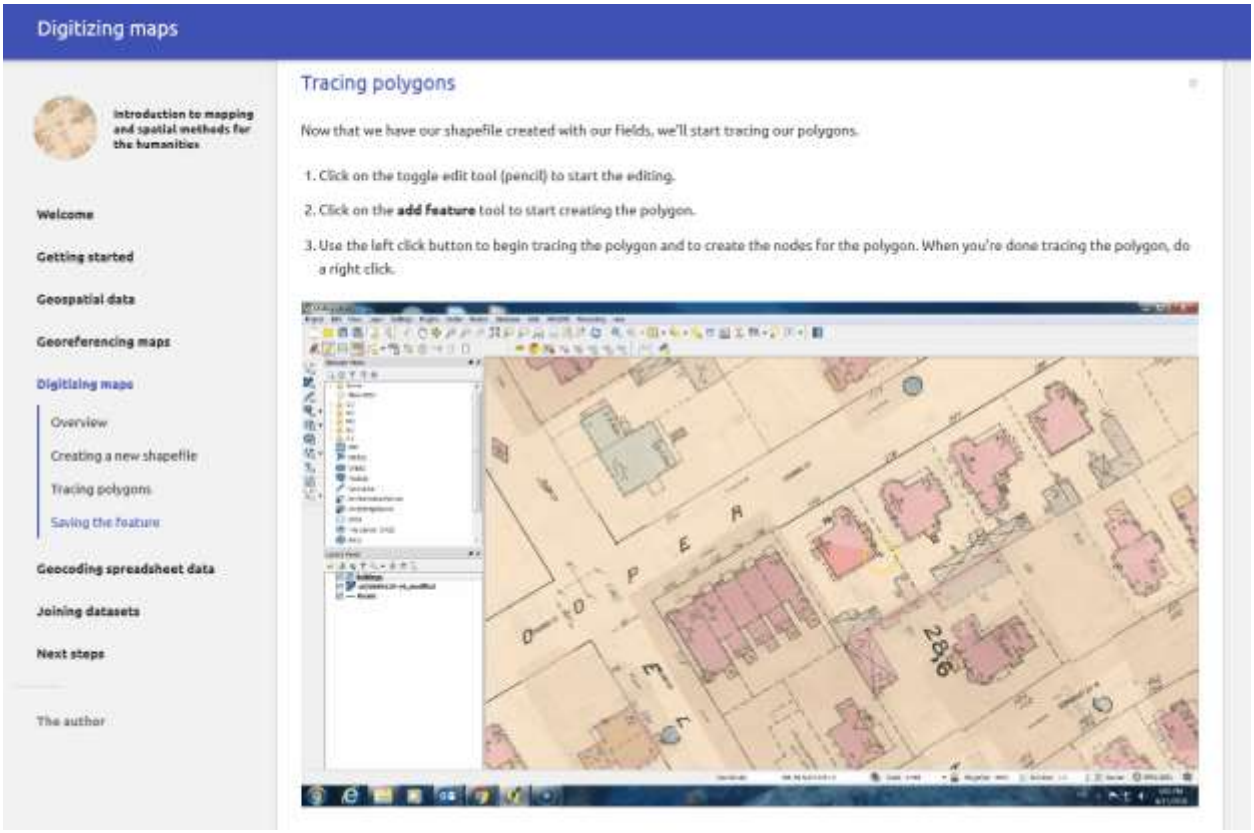

Figure 1. Screenshot of website showing instructions on how to trace polygons in QGIS

Thank you

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