

## Spatial Approaches to the Past: Story Maps in the History Classroom

*Looking at maps in textbooks or lectures is a fundamentally different experience from creating a map yourself...when I was making my first mapping project, I had to really wrestle with the map.*

–Student in “HIST 3401: Early Latin America to 1825” at the University of Minnesota

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WHEN WE READ the above statement in a student reflection paper, we knew that the digital assignments we developed offered students a powerful approach to study history. These assignments used the online platform Story Maps, which allows students to create digital geographic information systems (GIS) maps of past people, places, and events and combine them with text, images, and other multimedia.<sup>1</sup> We have implemented this platform in several undergraduate history classes and found that Story Maps changes how students analyze primary sources, draw historical conclusions, and communicate their findings. This article discusses our experience implementing Story Maps in three different courses and suggests a path for bringing digital spatial approaches to history education more broadly.

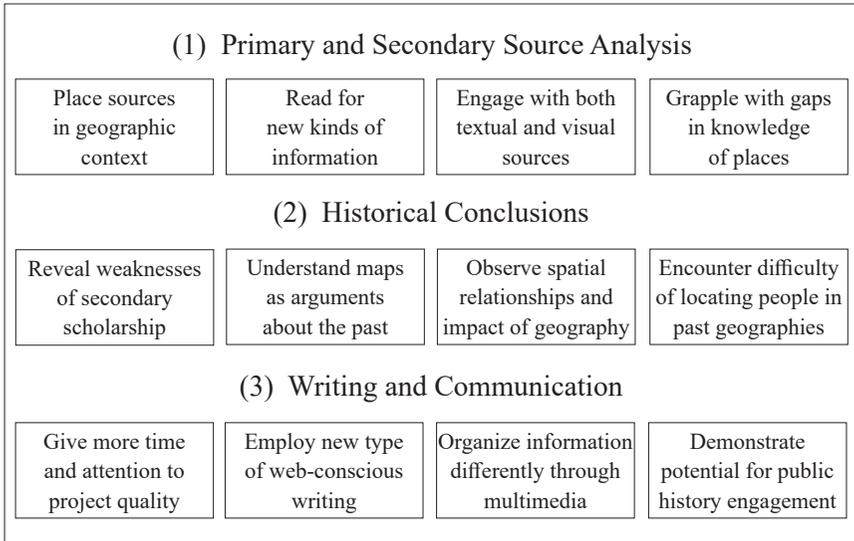
The need for spatial approaches to history education grows out of the long emphasis placed on spatial thinking across the humanities. In 2006, the National Research Council published *Learning to*

*Think Spatially*, which argues that, while place-based thinking is pervasive across all disciplines, it is not necessarily intuitive and “spatial literacy” must be taught at all levels of education.<sup>2</sup> Since then, many social science and humanities educators have recognized the need for spatial literacy, especially in disciplines where spatial approaches are already implemented in research, and have therefore designed problem-solving activities that build on this new approach to course content.<sup>3</sup>

This same trend can be seen in the discipline of history, where maps and spatial data are now regularly employed in much historical scholarship.<sup>4</sup> The most popular spatial tool among historians is GIS, which overlays layers of geo-located information to build maps that reveal spatial patterns and relationships.<sup>5</sup> While many historians are using GIS to explore spatial questions in their own research, a smaller number have brought it to their classrooms. Some instructors have built their own GIS web-maps to visualize spatial relationships while leading in-class exercises, and others have had students make simple maps with prepared data to come up with spatial questions.<sup>6</sup> Traditional GIS software, however, can present a steep learning curve and is often intimidating to students and instructors alike.

Story Maps provides a smoother entry point for instructors and students to apply spatial thinking to their disciplines. Rather than relying on maps alone, the platform contains familiar elements, such as text and images, that make it more appealing to new users. Recent research on Story Maps has highlighted teacher interest in the platform and explored its potential for digital scholarship, but has yet to consider the benefits of students building their own story maps.<sup>7</sup>

This prompted us to form a group of faculty and academic technologists at the University of Minnesota, known as the Story Maps Curriculum Team (SMCT), to support teaching with Story Maps across the College of Liberal Arts.<sup>8</sup> We came together in 2018 to address growing interest from faculty to incorporate digital mapping into classes that did not typically use GIS or other mapping approaches. The SMCT continues to partner with instructors to design Story Map-based assignments that encourage spatial thinking, teach basic GIS skills, and have students walk away with finished digital products.<sup>9</sup>



**Figure 1:** Key areas in which Story Maps changed students’ approach to history. The headings represent pillars of historical research and writing, followed by the different lessons observed across the courses discussed here.

Instructors from the History Department have been especially willing to try Story Maps in their classes, with the SMCT working with twelve history classes over three semesters (Fall 2018, Spring 2019, and Fall 2019) for a total of approximately 150 students. Students were primarily advanced undergraduate history major students, although several other majors were also represented. At the end of each course, we evaluated our approach by collecting written feedback from students, conducting interviews with instructors, and hosting a conversation with a small group of students about their experience with Story Maps. After looking at the evaluations and interviews, we recognized that students in each class gained proficiency in three key historical skills: their ability to (1) closely analyze primary and secondary sources, (2) draw novel conclusions from evidence, and (3) communicate their findings.

This article proposes a framework for the areas in which Story Maps helped teach these skills (see **Figure 1**). Our conclusions are drawn from the students’ written responses, discussion session, instructor interviews, and our own observations in working with three specific history courses conducted at the University of Minnesota

in the 2018-2019 academic year: “Early Latin America to 1825,” a “Hands on History” methods course, and “Daily Life in Europe: 1300-1800.”<sup>10</sup> The assignments we designed for each course reflect the range of how we have applied Story Maps to different time periods or fields and, in each case, students transformed how they do history through their role as map makers.

### **Course One: “Early Latin America to 1825”**

In Fall 2018, the SMCT worked with the honors section of Professor Sarah Chambers’ Latin American history to 1825 course. Chambers wanted her students to think about the role of Latin America’s geography in its history, and thought Story Maps offered an effective tool to achieve this goal. However, Chambers was hesitant to introduce a new platform to her class of over thirty students and decided to test out Story Maps with the course’s four honors students.

As a replacement for a set of quizzes, Chambers had these students collaborate on a story map about the early modern Spanish silver trade. The assignment was designed as an in-class project that required students to come to class having read a different secondary source, have a discussion about what they found, and design a story map that reflected different aspects of the same topic. This assignment only took approximately two weeks, but students’ resulting story map applied a new geographic lens to secondary scholarship that led them to both confirm and challenge the underlying claims of that scholarship.

#### *Assignment Structure*

Before this assignment began, the SMCT led the students in a workshop on the basics of ArcGIS Online and Story Maps. The students were then given the assignment prompt, which required each student to cover a different aspect of the silver trade and assigned a corresponding reading from one of the course textbooks (**Figure 2**). From these texts and some additional research, each student identified locations pertaining to their topic and created an ArcGIS Online web-map, using map notes to place relevant points and sketch other features. Next, students wrote a short description of their topic and the places relevant to it, which served as their story map’s text. Then, in

### Mapping the Spanish Silver Economy: Group Story Map

In this assignment, you will create a Story Map that displays some of the location at the heart of the Spanish silver trade. This will be completed as a group projected, with each student focusing on one of the following aspects of the industry:

- The urban organization of Potosí as it relates to the silver economy (drawing especially from Bakewell, 61-64).
- The movement of labor from indigenous communities to Potosí (drawing from Stavig).
- The importation of goods (e.g., textiles, mules, coca leaves, etc., into Potosí from elsewhere in South America (drawing from Andrien and outside research).
- The export of silver from Potosí to ports and then global markets (drawing from Andrien and outside reserach).

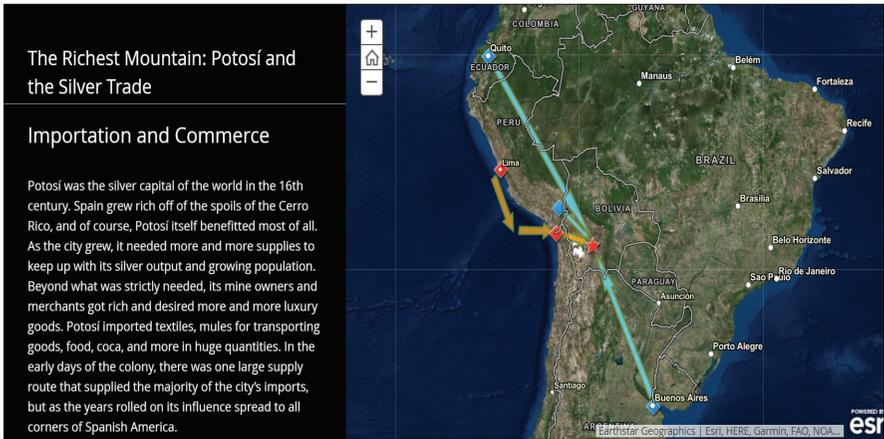
Each group member will individually conduct research on a set of locations pertaining to their topic, map these points, and write a short description and analysis of these places. Then in class, you will compile your maps into a group Story Map. **Make sure to discuss beforehand who will focus on which topic!**

**Figure 2:** Excerpt from the assignment prompt for “Early Latin America to 1825,” indicating sources assigned to each student.

class, they combined their prepared web maps and texts into a group story map using the “Journal” template and discussed how mapping these locations changed their perspective on each topic (**Figure 3**). Lastly, they revised their respective sections on their own time, collectively wrote an introduction and conclusion, and shared the finished story map with the instructor. At the end of the assignment, students wrote reflection papers and participated in a conversation with the SMCT about their experience building a story map together.

### *Results*

It was clear from the completed story map that the project impacted how these students approached historical research and writing, but this became ever more apparent in their written responses



**Figure 3:** “The Richest Mountain: Potosí and the Silver Trade,” a story map produced by students in “Early Latin America to 1825.” Full student story map available at <<https://www.arcg.is/1jGWrk>>.

and conversation with the SMCT. Each student expressed that this project gave them new ways to analyze scholarship, draw conclusions, and present their arguments. These observations form the key learning areas that we observed in the other courses as well.

**Source Analysis:** Actively mapping the information they were reading led students to focus on different kinds of information in their sources. This spatial approach not only familiarized them with Latin American geography, but also encouraged closer reading and a critical lens the geographic assumptions of scholarship.

On a basic level, working with maps gave students better attention to the historical geography of Latin America. One student remarked, “working with maps was useful because I have very limited knowledge of Latin American geography and space. I was able to learn far more than I normally would have about how the countries (and historic boundaries) of the region are laid out.” This context, however, also shed new light on the sources. For example, another student originally thought the route described for the Spanish silver caravans seemed indirect, as it descended from the Andes to the coast before heading north to Lima. It was only after tracing this route in the context of the Andean mountains that they understood it was easier for caravans to follow one valley to the coast and then go by

ship rather than cross multiple peaks and valleys. Conclusions like this would have been lost in the details of the sources if the students had not taken the time to place them in their geographic contexts.

The search for spatial information and the process of representing this on a map also encouraged these students to spend more time with their sources. One student expressed frustration at the slow pace of the assignment, pointing to the sheer amount of time spent reading sources and creating detailed map layers based on them. Despite this frustration, this student expressed that the active mapping experience was more revealing than examining static maps. The sources were rarely clear about the location of places described, demonstrating that historians make judgment calls when placing historical people, places, and actions. Much of the learning in this course came from students, like the one quoted at the start of this article, having “to really wrestle with the map.”

Historical Conclusions: This project also taught the students important lessons about historical research. The spatial perspective of Story Maps empowered the class to critically analyze secondary scholarship in new ways and emphasized the challenge of locating marginalized people in historical places and narratives.

Several students expressed that a spatial perspective on history revealed weaknesses in the secondary scholarship with which they worked. As they created their own maps, they noticed that the locations of cities, routes of movement, and natural features described in some scholarship simply did not add up. In their group project discussion, the class noted that the trade route described in their textbook didn’t seem to account for the presence of the imposing mountain ranges they observed, and so did not seem to be the most likely route. The texts also described many places abstractly and students were unable to verify their location, leading them to read their textbook differently and question its authority on the geography of Latin America. One student further remarked that “not questioning the location of cited locations could potentially allow flawed research to get published.” The students left equipped with a new tool for evaluating history scholarship.

The mapping process also highlighted the challenge of locating indigenous peoples in colonial geographies. The class already recognized the difficulty of recovering marginalized voices from

the historical record, but they came to realize that this applied to knowledge of indigenous geographies as well. This was most clear when examining the labor drafts (the “*Mita* system”) that supported Spanish mining processes. One student noted that an article abstractly described the communities from which indigenous laborers were drafted, listing out a series of names without giving context. If students had not grappled with mapping these communities’ locations, it would have been very easy to skip right over these names without even considering where they were from. Another student equated “the lack of maps, both colonial and modern, tracking the existence indigenous communities” to a form of “cultural erasure.” This sobering conclusion demonstrates the ability of the mapping process to reinforce powerful lessons about the production of history.

Communication: Beyond its spatial lens, Story Maps also proved transformative to how Chambers’ students approached historical writing. The digital nature of the platform encouraged them to dedicate more time to a new style of writing and to build projects with the potential for public communication.

In their reflections, all four students agreed that they gave significantly more attention to their Story Map projects than they normally do for traditional essay assignments. Students expressed that they have been in the routine of writing essays for years and can produce them in a single night, as if on “auto-pilot.” This was not the case with Story Maps. The platform’s spatial capacity, ability to combine many kinds of sources, and digital writing format all prompted the students to ask more questions and rethink how to present a multifaceted historical argument. The class also liked the change of pace. One student remarked that it often feels like learning history is just an “endless series of essays, but I appreciated getting the opportunity in this class to do something different for a change.” The chance to make a story map was refreshing and facilitated new types of learning that did not go unnoticed by the class.

Lastly, the students recognized the public potential of Story Maps. Whereas they may never look at a paper again after turning it in, a story map felt like a finished product that could be shared to a wider audience. Recognizing this, they took care to ensure that their projects were not only sound in their arguments, but also

aesthetically pleasing and employed visual media to the best of their ability. One student expressed that while it was a lot of work, in the end, they were proud of what they produced and wanted to share their work with others in a way they never would with a paper.

### *Challenges and Conclusions*

Chambers' students were also clear about the challenges of this project. In the evaluations and interviews, they expressed frustrations with the technology. Some issues came from limits they encountered in the platform, with one student expressing frustration at the limited font choices Story Maps offers. Others wanted to make more complex maps, but simply did not have enough familiarity with GIS nor the time to learn the platform.

Every student also mentioned that the projects took much more time than they expected. Because they were reading closely for new types of information, working with multiple media formats, and doing all of this in a new technology, the project was quite time consuming. They expressed that simply writing essays would have been easier, which reinforces that more scaffolding is needed when working with Story Maps in order to spread out work time. These students also recognized the platform's ability to tell spatial stories, but found it challenging to form spatial questions about all content and would have liked more guidance on how to apply mapping to their topics. Lastly, they expressed a desire for clearer guidelines on the number of words to write for each Story Map section and help with finding relevant images, especially for pre-modern topics.

Chambers found it essential to have academic technologists in the class to help with the assignment building and teach the platform to the students. This may limit how often she could incorporate this type of assignment, based on availability of academic technology support. Chambers also found grading these assignments challenging. Unlike an essay, she had to evaluate additional elements, including map pop-ups, images, scale, and different writing styles. This could be overcome with additional experience, learning from other faculty doing this type of assignment, and more clarity from academic technology staff. Much of the feedback from these students and Chambers has been incorporated into other assignments the SMCT has since designed. Despite these

challenges, Chambers expressed that she would absolutely teach with Story Maps again and like to implement it beyond her honors section with the entire course.

### **Course Two: “Hands on History”**

In the same semester as Chambers’ course, the SMCT also worked with Professor Ann Waltner’s “Hands on History” class. The course, which is required of all history majors, used the theme of twentieth-century Shanghai to introduce students to the historical research process, types of primary and secondary sources, and the different lenses historians take to their work. Waltner was interested in Story Maps as a digital approach to historical research and a tool that students might use in their future work.

For her Story Map assignment, Waltner wanted groups of students to contextualize primary sources within the geography of the city, but allowed the SMCT to design the details of the prompt. The assignment looked slightly different for each group, based on what set of sources they chose to work with. The first set of sources included British police records (in English) that listed crimes, along with their locations and dates. Initially, Waltner wanted all students to map this data, but since the data was extensive and all on microfilm, she decided to make this source only one of several options to work with. Waltner also had access to several tourist guidebooks from the 1910s and 1920s. These guidebooks had advertisements for a variety of businesses, lists of resources for tourists, and suggested walking tours, making them the best sources to work with for most groups.

Locating the places mentioned in the guidebooks and police records proved quite the challenge and required significant detective work on the part of students. Students had to closely read hundreds of pages of material for spatial information, such as addresses or mentions of landmarks, rather just overarching narratives. Often, there was not enough documentation to determine locations, and so additional sources, such as historical postcards, photos, and maps, were used to speculate where buildings once stood. Resources for finding these sources, such as historical image databases, were provided to students to save time and incorporate additional media into their projects. One complicating factor in determining locations

was that street names and addresses have changed significantly in Shanghai since the 1920s. This required the SMCT to geo-reference historical maps of the city. This was a complicated task, but, in the end, gave students a much better experience. The overlaid maps allowed students to compare Shanghai's historical and contemporary street names, which they also navigated using a book that lists these equivalent street names.<sup>11</sup> Overall, students had to navigate several primary and secondary sources to determine locations and reconstruct the historical geography of early twentieth-century Shanghai.

### *Assignment Structure*

Waltner intended this assignment to get students exploring data, not perfecting final digital products. Therefore, expectations were largely left open-ended and the assignment was set as a low part of the final course grade. The assignment prompt described the goals of the project, with an emphasis on asking spatial questions, and outlined the general requirements of what each group should include in their Story Map (**Figure 4**).

The assignment was scaffolded over several class periods. First, the SMCT gave students a short introduction to the Story Maps platform and the various types of information, such maps, text, and images, that they would include in their projects. In the same class period, students logged into ArcGIS Online, uploaded the geo-referenced historical maps, and practiced placing points. In a second session, students received the assignment prompt and chose groups and topics. They also explored the various types of primary sources and learned how to convert spatial information into CSV spreadsheets of locations. The SMCT held several "open work time" sessions for students could get help as they needed. Groups worked during this time or outside of class to gather data and put together their stories, which they presented in a final class meeting.

### *Results*

Since the assignment was not worth a large portion of the final grade, the resulting projects were largely exploratory and varied greatly in completeness. Waltner felt that most students were

### Mapping Twentieth-Century Shanghai: Group Story Map

Goals of the Project: This assignment will introduce a new digital approach to historical research and presentation. Making a Story Map will teach you the following skills and lessons:

- How to transfer primary source information into usable spatial data.
- How to work in conjunction with a variety of different source types (maps, guidebooks, images, etc.) to draw historical conclusions.
- How to present spatial conclusions and historical information in a digital format.
- Realizing the difficulties of mapping historical events and places. Every source provides a different level of detail and can be mapped with varying degrees of accuracy.
- Understanding the spatial relationship between historical places. Examples:
  - Why were these types of businesses where they were? Where are these places concentrated in relation to the wider Shanghai area?
  - Are there places described in the guidebooks colonial spaces? If so, why are they located where they are instead of other parts of the city?

Requirements: You have a lot of freedom with this assignment and can pursue many avenues of research, but the following items are required of your Story Map:

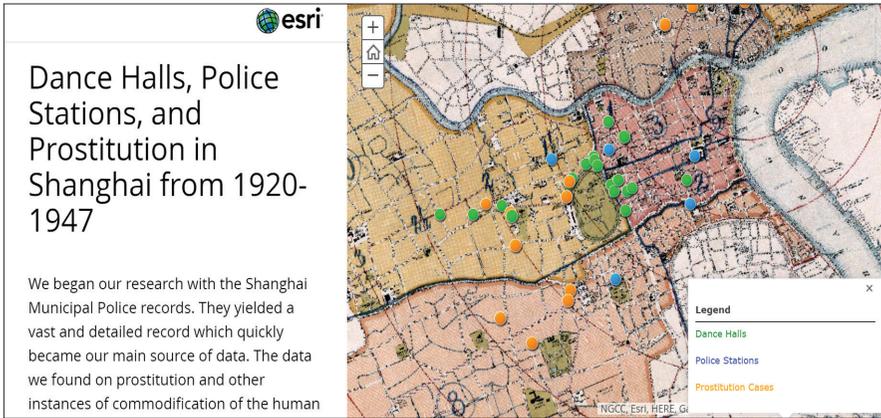
- Map at least 8 places (for the whole group) to be presented in your main stage.
- Have images for each place (use the modern street view if none are available).
- Have a descriptive paragraph about each location, making sure to provide its date of construction (if a building), purpose, and significance to your project.
- Have intro and conclusion sections that tie these places together into a comprehensive story. In these sections, make sure to zoom out a larger view of the Shanghai map, as this will allow you to reflect on each place's relationship to Shanghai's larger landscape.
- This project must draw a spatially based conclusion that demonstrates the perspective mapping adds to historical analysis.
- Each student must also submit a one- to two-page reflection paper about any observations you have about the ease/difficulty of mapping historic places. Please also reflect on your experience using the Story Map as a tool to build this assignment.

**Figure 4:** Excerpt from the assignment prompt for “Hands on History,” indicating specific goals and requirements of the project.

very engaged and the assignment caused them to delve deeper into the material than they would have if writing a traditional paper. The assignment even seemed to engage a different set of students. One group in particular was not very involved at the beginning of the course, but ended up diving deep into the police records and producing a story map that went far beyond the project requirements. Waltner observed that these projects pushed students to engage in much closer reading of primary sources, structure their writing around a new format and types of media, and recognize spatial relationships between different sources.

Source Analysis: The mapping process led students to engage more closely with primary sources, as was the goal of the assignment. Even when sources clearly stated addresses, they were often still difficult to pin exact locations on the map. For example, the police records listed an address next to all arrest records, but when students went to locate an address, they might find the street name had changed or the entire street rerouted. Even when they could identify the street, the numbering system was entirely different. To get past this barrier, students had to read the arrest accounts closely for any references to the surrounding area, looking for the name of nearby landmarks or businesses. If they found such a reference, they would have to look in another source, be that the guidebooks, historical images, or postcards, to locate that landmark or business. After consulting multiple sources, they would make an informed guess as to the arrest location and repeat the same process for each entry they were mapping.

Rather than simply entering data, the mapping process required students to engage in the kind of deep digging into primary sources that characterizes the archival work of historians. Students were asked to do their best in determining locations, documenting the reason they chose certain locations, and citing the sources used to make those determinations. Waltner emphasized to students that gaps in conclusive information were part of doing historical research. Students were graded not on finding the exact/correct location, but rather on showing that they had thoroughly explored the sources available to them in order to arrive at either a conclusive location or additional questions.



**Figure 5:** “Dance Halls, Police Stations, and Prostitution in Shanghai from 1920-1947,” a story map produced by students in “Hands on History.” Full student story map available at <[www.arcg.is/nDz58](http://www.arcg.is/nDz58)>.

**Historical Conclusions:** All groups succeeded in mapping locations from primary sources, but some were able to observe new spatial relationships by visualizing their data. One group went far above the requirements of the assignment by working with the police records to explore the relationship between Shanghai’s police stations, dance halls, and prostitution activity (**Figure 5**). The students poured over police incident records describing prostitution arrests, tracked down the home addresses of the accused prostitutes, and paired their findings with the locations of popular night clubs and police stations. This group found that most dance halls concentrated around a central district and a major road leading into it, with several police stations relatively nearby. When it came to prostitution arrests, however, they observed that few were in the vicinity of night clubs, with most in different districts of the city where prostitutes tended to live near brothels. These spatial conclusions were preliminary, but the mapping process led students to ask different kinds of questions and look for new patterns of historical evidence.

**Communication:** The Story Maps platform also required students to think differently about how they presented information. The platform’s many layers of information, divided between side panels, pop-ups, and images, required students to structure their projects

differently from a paper. Students wrote higher-level analysis and their general narrative in the side panel area of their story maps. Meanwhile, detailed information and analysis about specific points were delegated to the pop-ups on the map. Images were included in both places, often serving as primary sources that helped support students' arguments. Together, these elements required writing on several layers of narrative.

This type of writing proved a challenge to some students and took longer than a traditional paper. Many students expressed that they spent more time on this project than other assignments. However, Waltner observed that, rather than just requiring more effort, Story Maps made students write about their topics and sources differently, even more than she expected. She expressed that the additional time on this project was worth it because students “were learning new ways of looking at material and that is important.”

### *Challenges and Conclusions*

Finding appropriate data for students to map is a major challenge in any Story Maps project, and this assignment was no different. The data that lent itself to mapping in this assignment included addresses and descriptions of walking itineraries, but such firm spatial data was not consistent across all sources. The numerous changes to Shanghai required students to work very hard to determine locations, and many places could not be located with certainty. While frustrating to students, such challenges encouraged them to do the work of historians by examining many sources to draw conclusions. For Waltner, the challenges students encountered in their mapping are “simply frustrations of doing historical work—and what Story Maps did was concretize that frustration for the students.”

Some minor challenges arose from the fact that this was a new type of assignment. Some students felt like this assignment was too difficult and time-consuming, and several struggled with the lack of structure. Other challenges were inherent in the technology. The Story Maps platform does not allow editing by multiple people at the same time. Due to the nature of how students do their work, they struggled to schedule times when they would each work on the site. The SMCT encouraged students to use collaborative Google tools, such as Docs, Folders, or Sheets, to schedule time and share

resources or data. Despite these challenges, Waltner expressed that she plans to use Story Maps again in future courses. The main changes would be to start the assignment earlier in the semester and make it worth more of the final grade. Overall, this assignment was a success and Story Maps has since been incorporated into three other iterations of this same course.

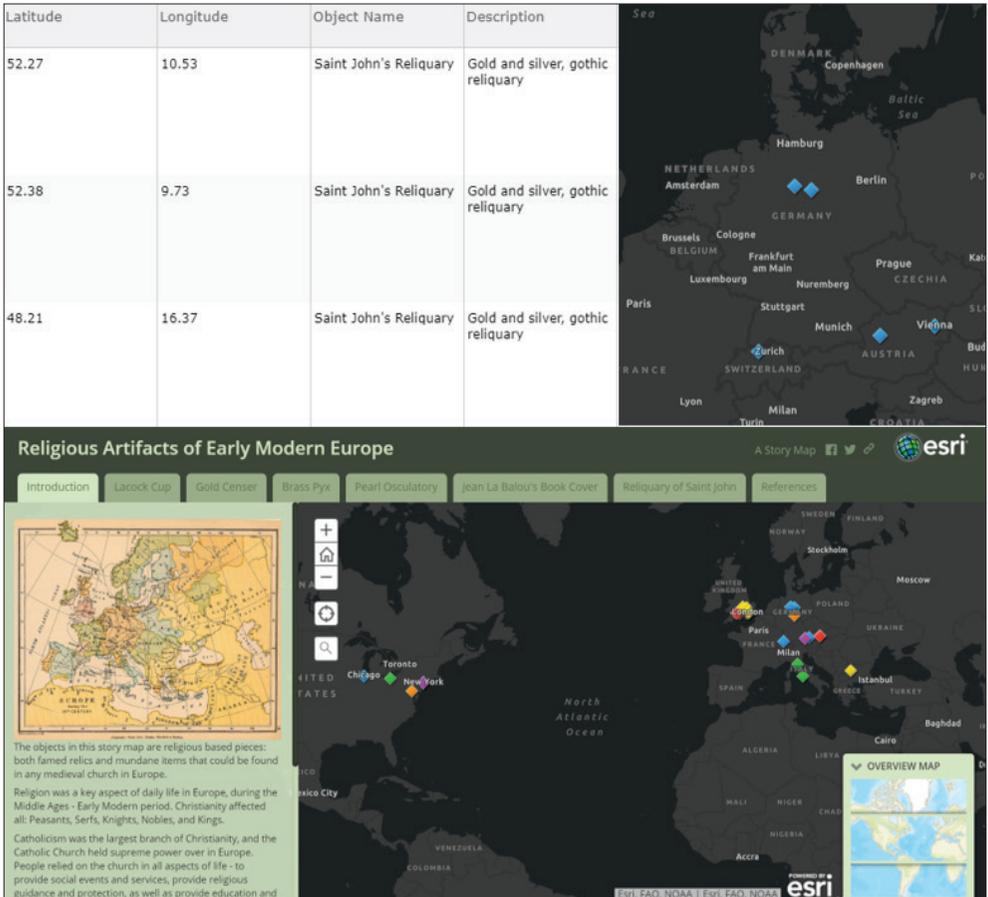
### **Course Three: “Daily Life in Europe (1300-1800)”**

In Spring 2019, the SMCT collaborated with instructor Jan Volek on an assignment for his upper-level course on daily life in early modern Europe. This course took a social history approach by focusing on the material culture of “ordinary” people in late medieval and early modern Europe. Volek wanted students to deeply engage with material culture, and so approached the SMCT knowing that Story Maps would enable students to display, describe, and place historical objects in geographic context.

For their final projects, students picked a series of related objects from museum catalogs. Each student created a story map that showcased their respective objects, described and analyzed them in detail, and mapped their place of origin, current home museum, and places they went in between. This latter task made students grapple with issues of object provenance and the difficulty of tracking objects before they end up in museums. Volek’s primary goals with this assignment were for students to engage closely with a set of objects, pair their visual elements with descriptive text, and present these objects in a clear and comprehensive manner. Notably, Volek did not initially make the spatial takeaways of the mapping process a stated goal of the assignment.

#### *Assignment Structure*

To achieve his goals, Volek spread out the assignment across the semester, scaffolding it so students moved from text, to map, to story map. Students began by selecting their topics and objects, then, using information from museum catalogs, they created data spreadsheets for each of their objects. This provided the basis of their spatial data, as each row in the spreadsheet referenced geographic coordinates correlating to the object’s location at



**Figure 6:** The steps students took to create their story maps. They moved from a data spreadsheet for each object (top left), to a simple web map (top right), to a story map with all their points, images, and object descriptions (bottom). Full student story map available at <<https://www.arcg.is/9qW5i>>.

different points in time and paired it with a description, date, and other information. Students then participated in an in-class mapping workshop run by a member of the SMCT. After creating web-maps from their spatial data, students were ready to move into Story Maps, for which they used the “Series” template (process depicted in **Figure 6**). By the end of the course, each student had created a story map displaying at least five objects and presented these in class.

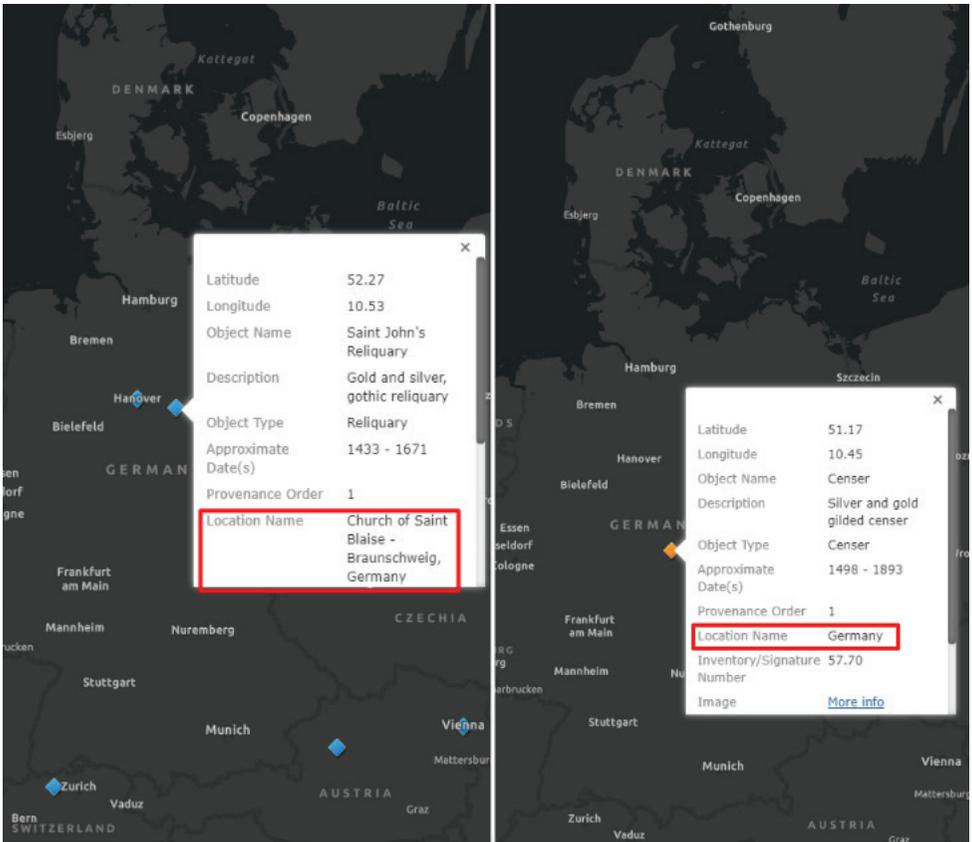
## *Results*

Most of the resulting projects clearly met or exceeded Volek's expectations for the assignment, but some story maps fostered skills outside his original goals. While designing the assignment, Volek was focused on Story Maps as a digital presentation platform and did not emphasize its spatial capacity. However, looking back, he observed his students engaging in valuable spatial thinking. The mapping process itself forced students to grapple with gaps in object provenance, the difficulty of tracing everyday objects in time and space, and surviving material culture's bias towards elite histories.

Source Analysis: Students' main "sources" for this assignment were the objects themselves and catalogs from the museums they reside in. As students used these sources to attempt to locate where objects originated, the current museum that houses them, and anywhere else they have been in between, they repeatedly struggled to identify precise places. By linking together object chronology and geography, students revealed gaps in provenance and realized the difficulty of identifying objects' precise dates or places of origin. For example, one student was able to pin a piece of religious art to the specific monastery for which it was made, but only got as precise as "Germany" with another object in the same project (**Figure 7**).

Even when students did know objects' origin points, they ran into lacunae of what happened to them before they ended up in their current museums. Students told Volek that the mapping process was frustrating and resulted in varying levels of accuracy both across the whole class and within the same projects. However, by grappling with provenance gaps, students experienced the real difficulty of establishing historical context.

Historical Conclusions: It became clear that the difficulty of tracing provenance was not shared equally by all objects. Instead, students found that everyday objects were much harder to locate than exceptional items owned by elite historical actors. For example, one student attempted to map the origin of different types of early modern clothing. It became immediately apparent that simple clothes, such as a basic wool shirt described as from "sixteenth-century Northern Europe," were usually attributed to broad geographic and temporal



**Figure 7:** These pop-ups highlight the different scales of geography at which students were able to locate objects. One object could be identified with a specific church (left), whereas another object was broadly attributed to “Germany,” which did not even exist as a political entity at the time of the object’s creation (right).

contexts. Meanwhile, elite clothes, such as suits of armor, could be connected to the palaces of specific political leaders within set years of their reigns. The problem was already set up by the tendency of museums to only collect and preserve remarkable objects of the wealthy, leaving common items, such as everyday clothes, in ambiguity and out of display. The mapping frustrations that came out of this disparity allowed Volek to emphasize to his students that even material approaches to the past struggle to break free of history’s bias towards the elite.

Communication: Most students' story maps met Volek's usual history writing standards, and effectively combined images of their objects with detailed descriptions and provenance maps. The objects students chose ranged from the ordinary to the extraordinary, with some students mapping common items like clothing, while others chose elite objects. Notable examples include one project that focused on a series of pomanders, which were portable containers used to disperse perfumes. This project stood out for the time and care that went into it, as the student went as far as to represent each map point with an image of its corresponding object, giving it a professional aesthetic.

Efforts like this were influenced by the nature of Story Maps as a digital platform, as its potential to be shared with the public encouraged students to put in extra work to make their projects comprehensible and compelling communication pieces. This met Volek's goal of having students dive in and grapple with material culture, as students came out in the end as "experts" about their types of objects. It also compelled them to engage in a new kind of writing. Students began by writing object descriptions in a traditional paper format, but then had to revise these when uploading them into their story maps. The new versions of these descriptions had to incorporate visuals of the objects themselves with interactive maps, which meant students could not rely on text alone. This task was not easy for all students, as many continued to include large blocks of text in their projects. It did, however, force many to try to get as much value out of each sentence as possible.

### *Challenges and Conclusions*

While this assignment had positive outcomes overall, a few challenges became evident during and after it was complete. While the pace of learning the technology is sometimes an issue for classes working with GIS, Volek actually voiced that the mapping workshop could have waited until later in the course and been given less attention, as his students tended to pick up on this rather quickly. This ease of the technology did have some notable exceptions, namely, that some students had trouble finding latitude and longitude for their points and even confused these two in a few instances. If this assignment were repeated, the introductory workshop would

need to better explain how to find and enter geographic coordinates into data spreadsheets. Volek also expressed that he felt comfortable with teaching the technology by the end, but certainly needed the guidance to begin, reinforcing the need for an academic technologist to help instructors conducting these assignments for the first time.

The larger issues that arose had to do with students' writing. Although it was generally good, Volek wished he had the students do more writing earlier. Students put lots of time into their maps, but only did the bulk of their writing towards the end and did not have much time to receive feedback and revise their work. In the future, Volek would have students turn in the description texts for each of their objects before having them adapted into the story maps. Another improvement would be to have more spatially driven questions in the prompt and have the grading rubric require students to comment on what their maps reveal about their objects. Many students clearly came to spatial conclusions, but they could bring these out more in their object descriptions and introduction or conclusion sections.

Despite these issues and areas to improve on, Volek voiced that he would certainly do a Story Maps assignment again. The platform's digital format and mapping process encouraged students to engage in a higher quality of presentation and led them to new historical lessons on gaps and elite biases in object provenance. Volek believes that much of this learning happened outside the classroom, as the spatial perspective of Story Maps fostered new kinds of historical thinking beyond those emphasized in class. By placing, or attempting to place, objects in their spatial and temporal context, students encountered the complexities of working with material culture and the degree to which it can reveal the lives of everyday people in the past.

### **Conclusions, Reflections, and Future Directions**

The courses discussed here reflect the consistent impact of Story Maps on student learning that we have observed across multiple history courses and fields. In each class, the instructors felt that Story Maps transformed the way students analyzed primary sources, the types of historical conclusions they developed, and the way they communicated this information. Whether an intentional

goal of the instructor or not, the spatial lens brought by the mapping process was central to how students rethought their approach to historical research and writing.

Working with these courses was, in many ways, a learning experience and several challenges had to be addressed along the way. First, every class experienced difficulty working with new technology. The SMCT developed procedures to teach students these tools and to alleviate some of the known challenges. These solutions included creating groups in ArcGIS Online for students ahead of time, making sure instructors owned all groups and could view projects, and reminding students to save their work frequently and not edit story maps at the same time. The SMCT also created presentations and written guidelines to give students enough training to work with the platforms without being overwhelmed. The in-class workshops were used to teach project steps that tend to be confusing, such as sharing maps with a group, creating a spreadsheet and saving it as a CSV file, symbolizing their data, and sharing their final story map with the instructor. Even with these resources, students ran into frustrations with the technology and process, such as losing work because of a browser crash, writing over each other, and difficulty finding quality visuals. Despite this, most students were able to figure out the platform and produce quality work.

None of the instructors involved had previous experience with GIS or Story Maps and all expressed that the in-class workshops were essential to the success of their assignments. While the instructors could clearly see the role of spatial thinking and analysis in their areas of expertise, they were new to creating assignments using spatial data. The SMCT helped them develop assignments by writing custom prompts that worked with spatial questions and the available sources, setting goals and expectations, and developing grading criteria and rubrics. Traditional academic standards, such as citation styles and word or page counts, do not transfer over well into Story Maps, so the instructors and the SMCT developed different requirements based on existing departmental and course-level expectations. It was often challenging to decide on expectations and communicate them to students.

Due to continuing demand for teaching with Story Maps, the SMCT designed a website ([storymaps.umn.edu](http://storymaps.umn.edu)) that provides samples of student work and assignment prompts, materials for

instructors to develop and evaluate assignments, and technical how-to guidelines. This site is a work in progress and is frequently updated with new student story maps, assignment examples, and updated technical instructions. Although the SMCT wants to empower instructors to independently teach with Story Maps, all instructors so far have expressed that they need continued support from academic technologists. GIS software changes rapidly and it is unreasonable to expect instructors to maintain a high level of expertise in these tools. While instructors who have previously taught with Story Maps become well-versed in the creation of assignments, most still need outside support for teaching the technology.

Since working with these three courses, the SMCT has directly helped teach Story Maps in twenty courses at the University of Minnesota as of Spring 2020, nine of which have been other history classes. This number is only expected to grow as more faculty become aware of Story Maps and its ability to bring a spatial lens into the classroom. Story Maps presents an opportunity to make students not only historians, but also map-makers—and, in doing so, transform how they approach and communicate the past.

## Notes

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1. GIS technology is a popular type of digital mapping software. The most popular GIS platforms are developed by the company Esri, whose Story Maps platform we use due to its flexibility and availability to students on our campus. Both Story Maps (<https://storymaps-classic.arcgis.com/>) and ArcGIS Online are proprietary software, but many K-12 schools, colleges, and universities already have enterprise access. There are, however, other open-source platforms that can be used for similar projects. For example, see StoryMapsJS by Northwestern University's Knight Lab (<https://storymap.knightlab.com/>).

2. National Research Council, *Learning to Think Spatially: GIS as a Support System in the K-12 Curriculum* (Washington, DC: National Academies Press, 2006).

3. Stacy Rebich Hespanha, Fiona Goodchild, and Donald G. Janelle, "Spatial Thinking and Technologies in the Undergraduate Social Science Classroom," *Journal of Geography in Higher Education* 33, suppl. 1 (2009): S17-S27.

4. For examples of this trend and the potential of maps to transform historical work, see Anne Kelly Knowles and Amy Hillier, eds., *Placing History: How Maps, Spatial Data, and GIS Are Changing Historical Scholarship* (Redlands, CA: Esri Press, 2008).

5. GIS has been embraced in fields of economic and social history, but also pre-modern history, where it offers a new way of visualizing limited primary sources. More modern historians are also starting to employ GIS. For works on the potential, but also the limits, of GIS in history, see Alexander von Lünen and Charles Travis, eds., *History and GIS: Epistemologies, Considerations and Reflections* (New York: Springer, 2013); and Ian N. Gregory and Alistair Geddes, eds., *Toward Spatial Humanities: Historical GIS and Spatial History* (Bloomington, IN: Indiana University Press, 2014).

6. For example, see Chris Bunin, "Using Geospatial Technologies to Explore the Layers of our Past," *The American Historian* (May 2018): 12-15; Emily McGinn and Meagan Duever, "Building Maps: GIS and Student Engagement," *Library Hi Tech News* 35, no. 4 (August 2018): 9-12.

7. Caitlin Strachan, “Teachers’ Perceptions of ESRI Story Maps as Effective Teaching Tools” (M.A. thesis, University of South Carolina Columbia, 2014); Amelia Kallaher and Alyson Gamble, “GIS and the Humanities: Presenting a Path to Digital Scholarship with the Story Map App,” *College & Undergraduate Libraries* 24, no. 2-4 (2017): 559-573.

8. The work of the SMCT has been supported by two Academic Innovation Grants from the College of Liberal Arts and is composed of staff from various centers at the University—namely, Liberal Arts Technologies and Innovation Services (LATIS); Digital Arts, Sciences, and Humanities (DASH); University Libraries; and U-Spatial support services.

9. These efforts culminated in the creation of a website (<https://storymaps.umn.edu>) that provides many of the resources developed by the SMCT and examples of student Story Maps produced in courses at the University of Minnesota. All of the Story Maps examples and assignments discussed here can be found on the site.

10. All classes used the original Story Maps platform, now called “Classic Story Maps” after the introduction of the new Story Maps (<https://storymaps.arcgis.com/>) in 2019. Esri will continue to support the original Story Maps until at least July 2024.

11. Paul French, *The Old Shanghai A-Z* (Hong Kong: Hong Kong University Press, 2010).

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