Building Pedagogy into Project Development: Making Data Construction Visible in Digital Projects

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Abstract

This essay responds to two questions at the heart of the Invisible Labor in the Digital Humanities 2016 symposium at Florida State University: (1) what is at stake in making unseen work visible, and (2) how can DH projects equally distribute and value the labor involved in their construction? For us, the answer to these questions lies in privileging the pedagogical affordances of data construction by crafting a workflow that included undergraduates as intellectual partners, and using DH methods to visualize and make public this collaborative labor. By drawing on our work with Photogrammar, which visualizes federal New Deal documentary projects including photography and life histories, we highlight three strategies for making labor visible in the digital humanities. First, we discuss how this project served as a tool for teaching undergraduate students key methods in DH by giving them experience with conducting original research with credit on the public site. In this way, we explain how pedagogy can become a part of project development. Second, we argue that DH visualization techniques can make the labor behind DH projects visible. We focus on how Photogrammar uses a timeline and network analysis alongside the traditional "About" page to make visible all participants in the project. Third, we turn to an open discussion of the challenges faced in the politics of attribution when working with university, governmental and private historical organizations, including domain names and the use of organizational logos.

In an effort to justify new methods of social documentation, W.T. Couch (1939) declared, "The people, all the people, must be known, they must be heard. Somehow they must be given representation, somehow they must be given a voice and allowed to speak, in their essential character" [Couch 1939, x–xi]. His zeal for a new method of documenting social history reflected his belief in a more democratic vision of American expression, which also starkly contrasted with growing fascism in Europe during the 1930s. In order to give "the people their voice," he helped to craft the Southern Life Histories Project, which charged Federal Writers' Project (FWP) workers with interviewing and documenting the lives of everyday people in the American South. The collection is composed of nearly 1200 life histories that are entertaining, insightful, heartbreaking, and, on the whole, say as much, if not more about the writers than the interviewees. Because of the outbreak of WWII and political turmoil within the program, there is not much remaining evidence relating to the interviewees, the writers, the editors, or how precisely these life histories were written. Instead what remains are the stories themselves, while the labor behind them is obscured even rendered invisible. [1]

As many Digital Humanities (DH) scholars and workers know, this situation of having a product with little to no knowledge of the labor behind its construction is rather common. We create DH projects for particular audiences, but the decisions and labor behind their construction remain hidden as they are not the end goal of the projects. At the November 2016 Symposium on Invisible Labor in the Digital Humanities at Florida State University, Mark Algee-Hewitt referred to this issue as one of the great paradoxes of DH. In order to better understand this great paradox, the symposium centered on three key themes: (1) divergent expectations, (2) unequal labor, and (3) invisible work. Within each of these themes was a discussion of the core tension in collaborative DH projects about how to distribute and value labor, especially when decisions about the direction of research and allocation of funding are not evenly dispersed, which is often the case in the hierarchical system of the academy. [2]

In discussing these broader themes, the topic of student labor emerged, which by and large is an area that DH has yet to properly take on, especially undergraduate student labor. As Spencer D.C. Keralis explains in his poignant chapter on labor in *Digital Pedagogy in the Humanities: Concepts, Models, and Experiments*, "if there is a spectre haunting digital pedagogy, it is the spectre of labor" [Keralis 2016, 4]. This spectre results from the fact that students are often given what is thought of as the most mundane work, such as scanning material and data entry. Labor that is "rendered invisible, alienable, and is easily effaced and taken for granted" when looking at the final product. While such a labor structure is almost always uniformly bemoaned as unfortunate and unfair, few actually take the time and effort to work to disrupt it in their own DH work. In order to address this spectre of labor, we ask what would it mean to turn this seemingly mundane or taken-for-granted work into an opportunity to teach and re-envision undergraduate DH pedagogy? How can we use DH methods themselves as the means to represent such labor? This essay answers these questions by outlining our efforts to address labor inequities through our work with Photogrammar, which visualizes federal New Deal documentary projects including photography and life histories. For us, the answer to these questions lied in privileging the pedagogical affordances of data construction by crafting a workflow that included undergraduates as intellectual partners, and using DH methods to visualize and make public this collaborative labor.

We will begin with an overview of Photogrammar and the constellation of labor that the project has required, and then highlight two strategies for valuing labor and making labor visible in the digital humanities. First, we discuss how this project served as tool for teaching undergraduate students key methods in DH by giving them experience with conducting original research with credit on the public site. In this way, we explain how pedagogy can become a part of project development. Second, we argue that DH visualization techniques can make the labor behind DH projects visible. We focus on how Photogrammar uses a timeline and network analysis alongside the traditional "About" page to make visible all participants in the project.[1] We end by discussing politics of attribution when working with university, governmental, and private historical organizations, including domain names and use of organizational logos.

Context: Photogrammar, Southern Life Histories Project, and Data Construction

In 2010, Photogrammar began as a collaboration between Lauren Tilton and Taylor Arnold. Tilton was interested in the representational politics of the Farm Security Administration-Office of War (FSA-OWI) Information, which employed among the most influential documentary photographers of the century such as Dorothea Lange, Walker Evans, and Gordon Parks. They produced iconic photographs of the Great Depression that were often in support of the New Deal state and, with the onset of World War II, turned their gaze toward constructing an image of an affluent and strong nation ready for war [Stange 1986] [Trachtenberg 1988]. Yet, the collection was difficult to navigate through the Library of Congress website. Tilton reached out to Arnold, a statistician, and they worked together to scrape and map the 170,000 photographs from the collection. They developed a prototype, which then received an NEH Office of Digital Humanities grant.

With the grant, the collaboration extended to include Laura Wexler, who was the grant's Primary Investigator; Ken Panko and Trip Kirkpatrick, who served as Project Managers; Stacey Maples, who served as the Map Expert; and Peter Leonard, who served as an Implementation Coordinator. Tilton and Arnold were named Co-Directors. Over the next several years, they built the web-based platform for organizing, searching, and visualizing the 170,000 photographs from the FSA-OWI. In 2015, Courtney Rivard from the University of North Carolina, Chapel Hill joined the Photogrammar team with the idea of adding aspects of the Federal Writers' Project as a map layer. Then in 2016, Photogrammar received an ACLS Digital Extension Grant to place the FSA-OWI photographs in the larger federal effort to document America during the Great Depression. The grant included funding to build out several components including the addition of the Federal Writers' Project's Southern Life Histories Project from the University of North Carolina, Chapel Hill's Southern Historical Collection.

The Southern Life History Project (SLHP) was part of the larger Federal Writers' Project created under the New Deal as a way to put unemployed writers to work. In many ways, the SLHP marked a major shift in forms of documentary expression as its goal was to capture the life stories of everyday Americans from their own perspectives. W.T. Couch

saw these life histories as way to collect accurate and authentic accounts of the hardships of life during the Depression with special attention to marginalized voices such as African Americans, women, and working class individuals. For him, the South faced many problems that needed to be solved, but sociological data that focused on data and numbers obscured the realities of life and failed to move a general public to enact necessary changes. Instead he thought that real stories by real people constituted the type of evidence that had the power to create change. However, like other forms of documentation that purported authenticity, the life histories tell readers as much about their creators, in this case the federal writers, as they do the interviewees. Moreover, the writers' use of representational practices often demonstrate how racism, sexism, and inequality were perpetuated in stories of the quotidian. Because of their complicated composition, they serve as an important companion to the FSA-OWI photographs that were taken during that same time period. Both projects sought to document the American experience and negotiate the desires and needs of those who documented, those who were documented, and the funding agencies. Our goal was to bring together these life histories and the FSA-OWI photographs in the Photogrammar platform to allow users to explore the documentary work of the Great Depression era, and the reason many scholars have labeled it the "documentary decade" [Stott 1973] [Finnegan 2003].

When making the first version of Photogrammar, the project greatly benefited from decades of work by the Library of Congress to digitize the photos and to create the extensive metadata that accompanied them. This was not the case with the life histories. Like many other projects involving archival documents, the life histories layer necessitated creating, cataloguing, and organizing metadata from the archival material, together with marking up and cleaning the individual documents before the material was ready to be integrated into the Photogrammar platform. In this case, the metadata centered around the names, races, and genders of both the writers and interviewees for each life history so as to optimize search functionality within the collection as well as to generate visualizations that analyzed the collection in new ways. While this may seem a straightforward process, it was quite murky as the metadata had to be extrapolated from stories created through a writer's interpretation of an interviewee's life often written as a conversation that did not unfold in a linear progression.

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This data construction phase of the project is often the backbone of DH projects, especially those that use visualization and text analysis. While this process is crucially important, it is frequently the part of the project that receives the least attention and attribution. Such inattention is likely because data is often understood as that which is given, or as already existing [Rosenberg 2013]. One frequently hears a DH scholar talk about "their corpus" of books, photographs, or archival material. Yet, making these sources computationally tractable is a significant undertaking. Turning a PDF of a piece of writing into clean, plain text can take expensive software and people who manually correct errors. Organizing the sources online or for analysis often involves creating a tabular database; a process that requires creating metadata. Bringing attention to the constructedness of the process is one of the reasons Johanna Drucker argued for using capta, that which is captured, rather than the term data [Drucker 2011]. In reality, making a corpus requires countless decisions over what actually counts as data and how to create such data. Therefore, by referencing "the corpus" both the interpretative decisions in data creation and the labor that makes data available (particularly those who collect, store, and preserve these sources) are obscured through the singularity of the term. Moreover, data construction is just one component of the complicated labor network of digital projects. Responding to the work of scholars such as Amy Earhart, Miriam Posner, and Roopika Risam, Spencer Keralis explains:

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> The labor network necessary to produce digital projects is complex, ranging from the physical labor of maintaining hardware and the infrastructure essential to these projects, to hybrid labor "in which machines combine with humans to perform tasks" in software or with devices, to scripted tasks performed automatically within systems, to the writing of those scripts, to the knowledge work that serves as the intellectual foundation of a project, to the instrumentalized labor of workers who perform repetitive tasks that cannot be scripted [Keralis 2016, 4].

In efforts to re-envision the data construction phase of this project and dwell in the murkiness of its labor rather than to move past it as quickly as possible to get to the final product, we used the data construction phase as a pedagogical opportunity to teach students about the rhetorical nature of data. We aimed to animate the undergraduate classroom by including students in the decision process for one way of valuing labor is identifying opportunities and outcomes that

also benefit the person laboring. We accomplished this by building Rivard's new course-based undergraduate research experience (CURE) classes into the data construction phase of the project.

Building Pedagogy into Project Development

Many DH practitioners have noted the lack of opportunities available to undergraduate students to gain DH skills and experience unless they are able to join a research project run by a DH scholar in their university [Anderson, et al. 2016]. Moreover, the students who become part of such projects are often thrown into the projects and told to "figure it out" making for a challenging process of skills acquisition. This problem of giving undergraduates genuine research opportunities while at the same time teaching them necessary methods and research skills is one faced by most areas of the university. To address this issue, many universities have begun initiatives to incorporate genuine or "real" research projects into the classroom often in the form of CURE courses (Course-based Undergraduate Research Experience) [Ishiyama 2002] [Lopatto 2010]. While such courses are most common in STEM fields, we aimed to merge this approach with the project development of the life history layer of Photogrammar. In other words, rather than viewing data construction as a monotonous task that needed to be quickly accomplished, we used it to accomplish pedagogical goals that focused on undergraduate research and skill acquisition, thereby re-envisioning this labor as pedagogical in nature by shifting our understanding of the goal of data construction.

This approach of building pedagogy into DH project development was aided in large part by the organizational structure of the Southern Life History Collection (SLHC) and pedagogical resources made available by UNC, two factors that must be in place to enact this type of project development. The SLHC is located at the Southern Historical Collection on UNC's campus, which meant that students had easy access to the original archival material. Additionally, though written in the 1930s, the writers of the life histories already understood the importance of collecting data to organize its collection because at the beginning of almost every life history is a listing of extremely helpful metadata including information relating to the writer and the interviewee (see Figure 1). This easily discernible metadata that introduced a reader into the life history provided the beginning of metadata schema that could be used to organize the data that would be incorporated into Photogrammar. It would have been possible to simply use this schema to generate the data needed for the project ourselves; something that we could have done rather quickly. Instead, we decided to slow the data construction process down in order to turn it into a pedagogical opportunity to include undergraduates in a course-based setting. The importance of engaging students in the data construction process has been well-documented in the literature on statistical education, an idea that should be extended into DH pedagogy [Hydorn 2018].

Additionally, the decision to incorporate undergraduate pedagogical goals into the data construction process of the project was influenced by an initiative at UNC to promote CURE courses across campuses, which included providing faculty with resources on how to incorporate authentic research experiences within the structure of a class. At the same time, Rivard was collaborating with a faculty working group at UNC focused on bringing data studies into humanities curricula.[2] Therefore, UNC offered concrete resources and incentives to promote course-based undergraduate research that fostered the development of DH skills. Such resources and incentives allowed us the opportunity to take pedagogical risks.

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Date of first writing:        May 29, 1939
Person interviewed:           Noah Abraham Peterson (white)
Address:                      121½ East Martin St., Raleigh, N. C.
Occupation:                   Peddler
Writer:                       T. Pat Matthews
Reviser:                      Edwin Massengill
No. of words:                 About _1,900_


            I WAS BORN THAT WAY
```

Figure 1. Folder 617, in the Federal Writers' Project papers #3709, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.

Seizing these opportunities, we brought students into the project as collaborators in a new upper division, undergraduate course at UNC taught by Rivard on digital rhetoric in Spring 2016 and again in 2017.[3] Students were positioned as leaders of the North Carolina section of the Life Histories Collection, which constituted approximately 600 life histories. As will be explained in greater detail below, students were charged with creating a metadata schema for the inclusion of these life histories in Photogrammar, and then to use this data as the basis of a research project that they could publish in an undergraduate research journal. By bringing students into the Photogrammar project, Rivard aimed to demonstrate to students the ways in which data construction was a rhetorical act as students, themselves, were in charge of the decisions behind the data.

Such an approach of learning by doing is at the heart of recent advances in the field of digital rhetoric. Douglas Eyman defines digital rhetoric "as the application of rhetorical theory (as analytic method or heuristic for production) to digital texts and performances" that must provide methods for both evaluation and making [Eyman 2015, 44]. To teach students the methods of evaluation and making embedded with Eyman's conception of digital rhetoric, a number of scholars in Composition and Rhetoric have demonstrated the need to more specifically focus on information literacies and data literacies [Purdy 2011] [Sweeney 2012] [Vetter 2014]. To this end, Nathan Johnson argues for centering information infrastructure within rhetorical studies, explaining "infrastructure provides the invisible scaffolding for discovery, dissemination, access to information," and as such has real consequences for "public communication, knowledge, and political life" [Johnson 2012, 1]. Therefore, teaching students not only how to navigate, but also to construct information infrastructures is key to developing information and digital literacies.

These are, of course, the same goals that shape much of DH pedagogy as Alexander Reid explains. He writes, "the promise of the digital humanities lies in its potential to address the political, ethical, and rhetorical challenges of living in a digital age" [Reid 2015, 16]. Therefore, many in DH promote curriculum that allows for "tinkering" [Sayers 2012] and as Burdick, et. al. explain "hands-on, experiential, and project-based learning through doing" [Burdick, et al. 2016]. However, this approach has often led to what Brandon Locke calls "tool based literacy" in which students develop "'tech skills'...through narrow technology that limits potential outcomes and often monetizes user-created content" [Locke 2017]. Such an approach can be helpful as it allows for "low stakes" [Anderson 2008] tinkering, but it does not train students in, as Locke states, the "critical evaluation of digital media and the means to produce them" [Locke 2017].

We argue that cataloguing, indexing, and curating archival materials offer one avenue for teaching students data and information literacies while avoiding a tool-based approach.[4] This approach simultaneously demonstrates the consequences that information infrastructure has on shaping knowledge about the past. As Graban, et. al explain, "the means of archival organization are rhetorical acts deploying arguments about relations, power dynamics, and gate-keeping methodologies and should be treated as such" [Graban 2015, 237]. Therefore, inviting students to come into a project in which they were responsible for creating the system used to describe archival materials put them in the driver's seat of this powerful act of shaping the information infrastructure of our DH project. Specifically we charged students with: (1) creating a metadata schema for the inclusion of the life histories as layer for Photogrammar, (2) generating metadata for ten life histories, (3) marking up three life histories with XML, (4) giving a Skype presentation to Tilton outlining their rationale for the metadata and mark-up schema, and (5) creating data visualizations from the metadata to construct an original argument that they then were encouraged to publish in *People, Ideas, and Things*, an undergraduate research journal at UNC.

Knowing that they had the power to shape the infrastructure of the life history layer helped motivate students to think critically about their decisions, especially those involving their metadata schema and tagging decisions. For example, students deeply struggled over how to tag gender and racial categories. There are many instances in the life histories in which the writers named women with their husbands' names as was common at the time as seen in the story of Mrs. Jake Bowen in Figure 2. Students had to decide whether to tag her with her husband's first name, i.e. Jake, or read the story for context clues for her first name, Virginia. Therefore, they grappled with whether or not to
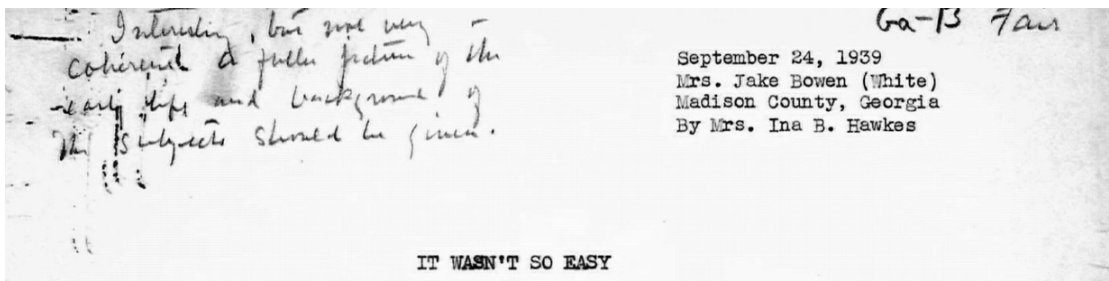
Figure 2. Folder 162, in the Federal Writers' Project papers #3709, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.

replicate the documentation system of the federal writers to maintain authenticity or employ more inclusive practices in line with contemporary standards. These are the same issues faced by archivists today, so we looked to articles such as Duarte and Belarde-Lewis' excellent piece, "Imagining: Creating Spaces for Indigenous Ontologies" to learn about ideas such as co-locating and composing for audiences represented in the collections rather than colonialist naming practices [Duarte 2015]. This led students to also decide to co-locate racial categories. The federal writers used racial categories common to 1930s, which the students found unacceptable and impractical for a contemporary user, so they chose to use multiple terms for each racial category. One student, Julie Hayes, explained this point in her final paper, which was published in UNC's *People, Ideas, and Things* journal. She stated, "this procedure [of data construction] involved much rhetorical decision-making; for instance, outdated racial terms were replaced with more contemporary and searchable words, thus reflecting the shifts in social norms in regard to race and the resultant changes in language" [Hayes 2017]. Therefore, by thinking through the consequences of their tagging systems, students understood their work as knowledge production.

In order to encourage students to think about how to make their decisions transparent by documenting them, they included them in their XML headers with interpretation tags within the project description (see figure 3). After tagging their life histories and marking them up, students used Tableau to visualize their data. Here they looked for patterns in the archive by analyzing it from a distance [Underwood 2017], an approach that had never been used to analyze this collection. Knowing that they were looking at the collection in new ways because of the data that they constructed gave them a profound sense of accomplishment, and positioned them as knowledgeable researchers in their own right. Moreover, their decisions fundamentally shaped the infrastructure of the Photogrammar project. Therefore, students learned digital skills such as data visualization, mark-up, and database management while developing critical digital literacies that saw data construction as knowledge making. Though we could have certainly come up with a metadata schema for the life histories more quickly in a few weeks rather than over the span of a year, the pedagogical affordances of this approach were an important end in themselves, and gave students the opportunity to work on DH project that is legible and transferable to their future endeavors. In order to focus on transfer, Rivard spent the last week of the course helping students translate their classwork into points on their resume as well as addressing how to discuss the project in an interview. As a result of this focus on transfer, a number of students have used the project to secure internships and summer research opportunities.

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```
        </projectDesc>
        <editorialDesc>
            <interpretation>
                <p>The gender of interviewees, writers, and revisers was inferred by using
                context clues such as in-text pronouns or occupations. Gender was not
                capitalized throughout.</p>
            </interpretation>
            <interpretation>
                <p>When pieces of metadata were missing or unavailable, the category was left
                blank, not null or void.</p>
            </interpretation>
            <interpretation>
                <p>For consistency, only people and places were capitalized.</p>
            </interpretation>
            <interpretation>
                <p>Conventional English grammar rules were used throughout.</p>
            </interpretation>
            <interpretation>
                <p>For the geoDecl, coordinates are extracted using the Google Maps software
                for the locations given by the life history. Coordinates are listed as (
                latitude, longitude) to match the Google Maps' format. If no exact location
                is given, an approximation is made in order to improve the accessibility of
                search. Each geoDecl tag is also given a degree of certainty in which 1 is a
                precise address,.75 is a given street name, .5. is a given city, and .25 is a
                given county.</p>
            </interpretation>
            <interpretation>
                <p>If the life history contains one column of header information, the mark up
```

Figure 3. XML mark-up by a student of a life history. Students provided a description of their decisions in the interpretation tag.

Together with these course-based experiences, many students at UNC and the University of Richmond were eager to participate in the Photogrammar project, which led us to hire Research Assistants (RA). We tried to find a balance between the needs of the project and the kinds of experiences the RAs sought by working with each RA to identify the type of work that would help them accomplish their scholarly and professional goals. A number of students who were in Rivard's classes — Carla Aviles, Karissa Barrera, Kayley Bryson, Sarah Moody, Sara Siemens, Elizabeth Bonesteel, Grace Hildebrand, Scott Robinson, and Lacie Morrison — asked to continue to work on the project to gain experience that they could put on their resumes. Grant Glass, a UNC English graduate student, also helped with some text encoding to explore different theoretical methods that he was planning to use in his dissertation. At the University of Richmond, three students — Bal Artist, Emeline Blevins, and Emily Maanum — worked with Tilton and Arnold at the University of Richmond. They expressed interest in being a part of DH research beyond the Introduction to Digital Humanities course that they took with Tilton. Blevins, for example, was interested in developing DH skills with an eye toward jobs in museums and graduate studies. They worked alongside the students at UNC to add metadata to the life histories. Because they did not receive course credit, Richmond students collected hourly wages according to university compensation rules. This growing group working on Photogrammar required us to reevaluate how to give them credit and make their important labor visible. `19`

Visualizing Project Labor

With an expanding set of collaborators, we wanted to highlight that certain people contributed in different ways. Valuing labor means recognizing the various ways people contributed, particularly those who put significant work into a project. In order to make visible labor, we supplemented traditional approaches of attribution with DH visualization methods. This resulted in our utilization of three different forms of acknowledging labor: (1) a page on the site listing and describing textually the Photogrammar team, (2) a timeline capturing the length of time by contributor by component on the project, and (3) a network visualization. While each form has it benefits and drawbacks, we believe that taken together they better reveal the kinds and degrees of labor necessary to build Photogrammar. `20`

The most common form of acknowledging labor is the *About* or *Team* page. It often features a list of participants and their roles starting with the PI or Director followed by other team members. It is linear and hierarchical. In the case of Photogrammar, a Team page is available as a subsection of the About page. It lists the people involved and their role. Such a page is particularly well suited for explaining the current state of the project. When one lands on such a page, `21`

they expect to see who, at that moment, is the current team and their role. If one has a comment or question, they know who to contact.

Yet, there are drawbacks. The long list of students involved does offer a form of credit, but it reads as a list that risks obscuring the amount of work contributed. Those who are no longer involved in the project are often last, regardless of the amount of work or time they spent on the project. Another challenge is when roles shift. For example, Arnold and Tilton started Photogrammar but could not serve as Primary Investigators on the grants since they were graduate students, and later they were no longer affiliated with Yale University. As a result, the Team page does not capture the four months Arnold and Tilton spent building a prototype of Photogrammar or writing the NEH grant before extending the project to include the larger team. It also does not make clear when Project Management shifted from Ken Panko to Trip Kirkpatrick. Certain students also moved from working within the classroom to Research Assistants.

In order address these issues to more fully represent the labor in the project, we sought strategies for how to balance acknowledging labor while giving participants control over how their labor is documented. We heeded the advice outlined in "A Student Collaborators' Bill of Rights", developed by Miriam Posner and colleagues, to give students control over how their role is represented. Students may want to reframe their work according to their career aspirations as well as decide to no longer be affiliated by removing their name [DiPressi 2017]. To address these issues, students were invited to create a GitHub page and provided with a guide to developing their professional profile on the site. We then linked these sites to their names on the Team page. The students then can customize their GitHub pages to outline their roles on Photogrammar. As students move throughout their studies and graduate, they can alter their profiles to meet their current needs. Moreover, students did not have to develop a GitHub page, but the option was available so that they could have control over how their labor is framed.
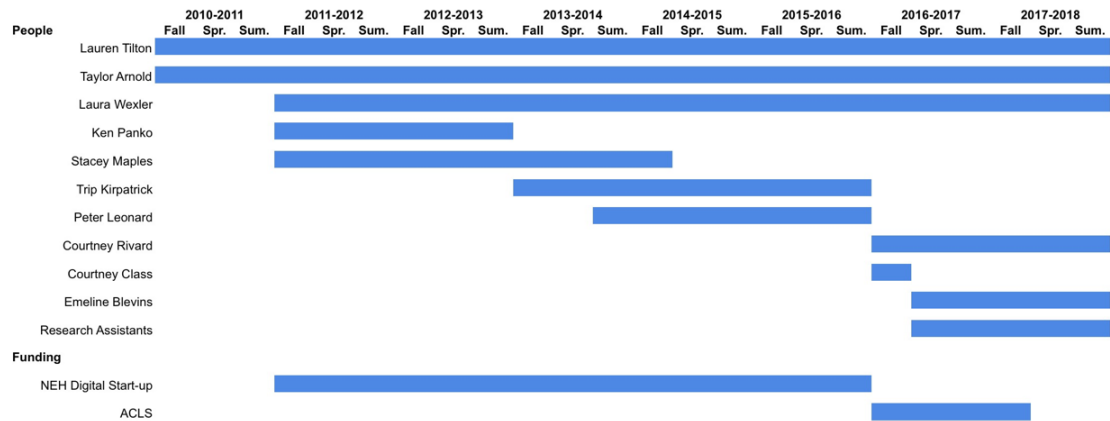

Figure 4. Photogrammar will feature a timeline that outlines the labor and funding involved in the project.

Yet, even when text is written to describe the work by a member of the team, this can still make it difficult to capture the amount of time spent on the project for the different contributors. To address these issues, we turned to a timeline to capture the shifts in labor and funding within the project. For each component of the project, we assigned the person to the time span they worked. Work is broadly conceived to include physical as well as affective labor. Here we can see the shifts in the project including the new collaboration with Courtney Rivard and the UNC, Chapel Hill, which then resulted in an ACLS grant. This strategy helped reveal how multiple institutions of higher education became involved, an important aspect considering that student labor was used at Yale University and then University of Richmond and UNC, Chapel Hill. Yet, the timeline still has drawbacks for it assigns a particular task to each person obscuring how interconnected and collaborative the process was and continues to be. Here we turned to another visualization technique — networks.
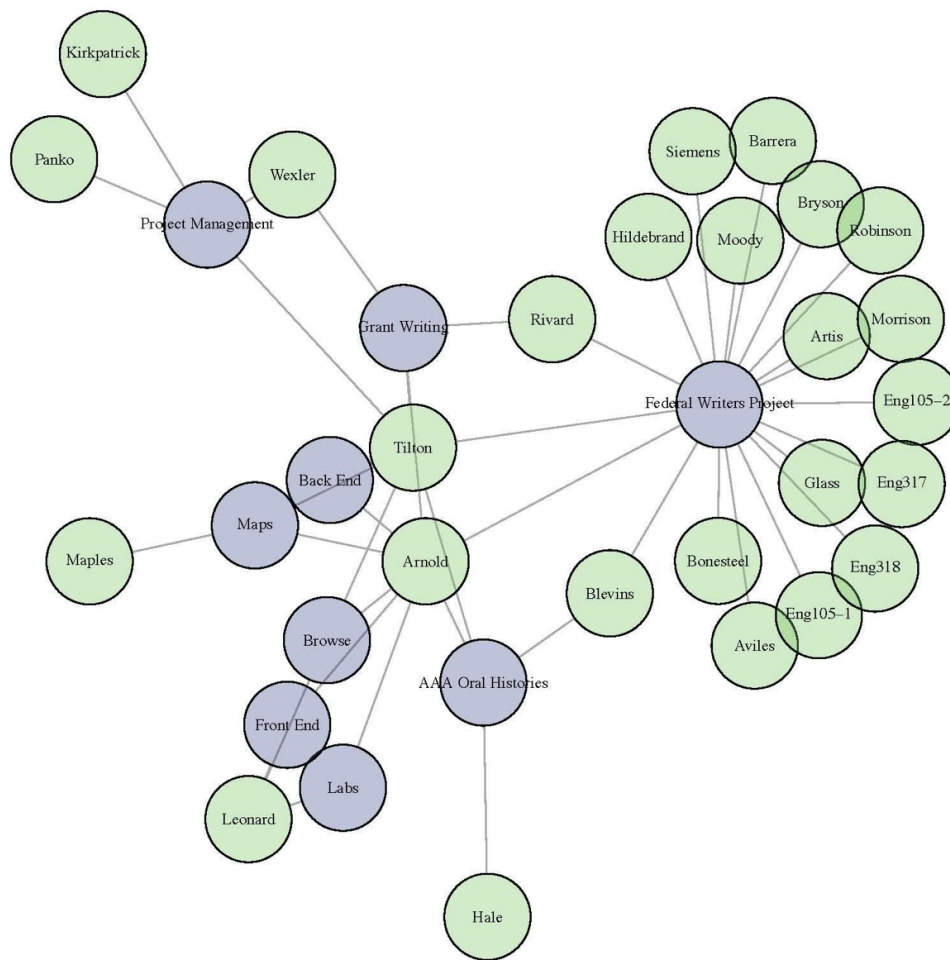
Figure 5. Photogrammar is using a network visualization to show who worked on which components of the project. The network is an example of work through 2017.

Network analysis is particularly well suited for revealing collaboration and labor for it literally visualizes connections and interactions between people. The bimodal graph connects each person to the component of the project they helped build. In this case, labor included creating data or building a digital components and includes people who contributed 1-2 days or several months of work. We recognize that one drawback of networks is their ability to represent time, making it difficult to denote the amount of labor; an issue the timeline helps address albeit imperfectly. This strategy was particularly important for acknowledging student labor. Whereas undergraduate student labor in the classroom was noted at the course level in the timeline, each student who served as a research assistant is a node and connected to the Photogrammar component they worked on, which in most cases was the life histories. We developed a network visualization particularly to increase the visibility of student labor. The new visualizations of labor and GitHub links will be a part of a new version of Photogrammar that will be released in 2020.

While these three methods help reveal a significant amount of the work on Photogrammar, the issue of crediting labor is also why we will be changing Photogrammar's URL from photogrammar.yale.edu to photogrammar.org. While the Photogrammar team did develop some new metadata about the FSA-OWI photographs, it is deeply indebted to decades of work by the Library of Congress to digitize the photographs and build the initial metadata [Arnold 2017]. When the project was released, media outlets such as CNN and Gizmodo incorrectly credited Yale for releasing the photographs.[5] This is despite the fact that the About the Collection page outlines the work by the Library of Congress on the collection and each photo includes a link back to the Library of Congress. Yet, the URL sent the message that Yale owned these photographs. The issue is particularly acute as we will be including documents from the Southern Life Histories Collection, which is housed at the University of North Carolina, Chapel Hill Southern Historical Collection in the

next version. The new URL, we hope, will help signal that the project is a multi-institutional collaboration and ask people to look more closely at who is contributing to the project. This will be augmented by logos from the participating institutions and funders when possible.

Conclusion

Valuing the creation of the data undergirding DH projects is an ongoing challenge. While it can be a mundane and monotonous task, data construction is an interpretive, iterative, and inexact process. These very conditions necessitate acknowledging and making visible the intellectual work that undergirds DH data. Yet, it can be difficult as it asks us to be reflexive about who is doing what and under what conditions. Such a challenge is why we framed data construction as a pedagogical opportunity for undergraduates and used DH methods to make visible the labor behind Photogrammar.

<div style="border:1px solid">27</div>

Our collaborative work with students was fundamentally motivated by a concern to make sure student labor on Photogrammar served pedagogical goals rather than just the labor needs of the project. Once we decided to work with undergraduates, we have and continue to explore ways to give students credit with a focus on increasing their visibility in the project alongside mechanisms such as course credit and monetary compensation. These issues extend to how Photogrammar gives credit to the partnerships that have made the project possible. Our process has shortcomings and is not ideal for all projects. Moreover, invisible labor will continue to haunt Photogrammar as it does across DH and the academy. It can be difficult as it asks us to be reflexive about who is doing what and under what conditions. Yet, we believe that revealing our process and approaches by using methods that are now central to DH is a part of the work we need to be doing as a field.

<div style="border:1px solid">28</div>

Notes

[1] These visualizations of labor will be a part of a new version of Photogrammar that will be released in 2020 at photogrammar.org.

[2] Additionally, Courtney Rivard is indebted to the leadership of Kelly Hogan and John Bruno who helped to create the CURE program at UNC. Additionally, special thanks is extended to the collaborative work produced by the working group on data in the humanities — Melanie Feinberg, Jan Hannig, Tessa Joseph-Nicholas, Ryan Shaw, Dan Anderson, and Malina Chavez.

[3] The course was part of new minor (Composition, Rhetoric, and Digital Literacy) and attracted many students from that growing field, but it also brought together students from Computer Science as well as other students looking to fulfill a writing intensive requirement. The course did not have any requirements or prerequisites, which meant that students came in with a wide range of abilities.

[4] Rivard has made this argument in relation to teaching first year writing, see "Turning Archives into Data: Archival Rhetorics and Digital Literacy in the Composition Classroom." College Composition and Communication. (June, 2019).

[5] For examples, see [Estes 2015] [Groetzinger 2015] [Long 2015].

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