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## Chapter 27

# DIGITAL HUMANITIES

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Digital humanities, a relative newcomer to the media scholar's toolkit, is notoriously difficult to define. Indeed, a visitor to [www.whatisdigitalhumanities.com](http://www.whatisdigitalhumanities.com) can read a different definition with every refresh of the page. Digital humanities' indeterminacy is partly a function of its relative youth, partly a result of institutional turf wars, and partly a symptom of real disagreement over how a digitally adept scholar should be equipped. Most digital humanities practitioners would agree that the digital humanist works at the intersection of technology and the **humanities** (which is to say, the loose collection of disciplines comprising literature, art history, the study of music, media studies, languages, and philosophy). But the exact nature of that work changes depending on whom one asks. This puts the commentator in the uncomfortable position of positing a definition that is also an argument.

For the sake of coherence, I will hew here to the definition of digital humanities that I like best, which is, simply, the use of digital tools to explore humanities questions. This definition will not be entirely uncontroversial, particularly among media scholars, who know that the borders between criticism and practice are quite porous. Most pressing, should we classify scholarship on new media as digital humanities?

New media scholarship is vitally important. But a useful classification system needs to provide meaningful distinctions among its domains, and scholarship on new media already has a perfectly good designation, namely new media studies (as outlined in Chapter 24 in this volume). So in my view, the difference between digital humanities and scholarship about digital media is praxis: the digital humanities scholar employs and thinks deeply about digital tools as part of her argument and research methods.

Can one produce digital humanities scholarship about new media? Absolutely, if the use of digital tools to research, compose, or disseminate one's work is an integral part of one's argument. But one can also produce non-digital humanities work about digital media. With Steven Jones, I recognize that "some topics and approaches simply live at the fractally uncertain border between the two fields" of digital humanities and media studies. (Video game and software studies come to mind; see chapters 25 and 26 of this volume.) Nevertheless, I am relatively stern, compared with some other digital humanities scholars, about where I draw the line.<sup>1</sup>

For all its brevity, this definition of digital humanities emphasizes several crucial aspects of the field: hands-on engagement with digital tools and a focus on the humanities question at stake. Moreover, with my use of the word "explore," rather than "answer," I mean to emphasize that humanities questions do not tend to have cut-and-dried answers. The conscientious digital humanist, then, uses technology in her work not to draw definitive conclusions about her source material but to open new possible ways of looking at it.

Why might a media scholar be interested in digital humanities methods? First, digital technology makes it possible to incorporate audio and visual material directly into media scholarship, meaning that the media scholar can produce an argument in conversation with the object of her study, rather than describing in words a work the reader might never see. Curtis Marez, for example, enriches his 2013 multimedia essay on Cesar Chavez's video collection with annotated film clips, audio, and photographs.<sup>2</sup> Digital humanities methods also make it possible to examine shots from many works at the same time, as Lev Manovich does in his examination of shot length and frame composition in the films of Dziga Vertov.<sup>3</sup> Third, deep engagement with digital technology can help media scholars lay bare, and thus more intimately understand, the mechanisms of the media they study. For example, Laila Shereen Sakr both studies media archives and maintains one, in the form of the R-Shief system for storing social media content.<sup>4</sup> Finally, digital technology presents many possibilities for **deformance**, a term devised by Jerome McGann and Lisa Samuels to describe a digital humanities practice of purposely distorting a work in order to illuminate aspects of it the reader might not otherwise have noticed.<sup>5</sup> Nicholas Rombes engages in deformance when he

bases his critical arguments solely on frames pulled from a film's 10-, 40-, and 70-minute marks, rather than the entire film.

Tara McPherson, in a 2009 essay, offers the “multimodal scholar” as an archetype for the digital humanist. This new breed of scholar “brings together databases, scholarly tools, networked writing, and peer-to-peer commentary while also leveraging the potential of visual and aural media that so dominate contemporary life.”<sup>6</sup> McPherson's multimodal scholar does not assume that the result of her work will be the monograph or the journal article; instead, she considers a palette of strategies and chooses those that best suit her argument and audience. The result might be an interactive web-based database, as it is in Katherine Hayles's experimental article “Narrating Bits” (which is itself about databases).<sup>7</sup> Or it might be a video essay like Catherine Grant's “All That Pastiche Allows,” which juxtaposes clips from Todd Haynes's *All That Heaven Allows* with Douglas Sirk's *Far from Heaven*.<sup>8</sup> The multimodal scholar is at ease with a panoply of media, and composes, using digital technology, in the mode that fits her scholarly goals.

As one might expect of a relatively new field, digital humanities scholars have no shortage of debates, both within the field and with scholars in other disciplines. In fact, to the extent that there is a textbook for digital humanities classes, it is probably 2012's *Debates in the Digital Humanities* (and its subsequent annual volumes).<sup>9</sup> Some of these debates can be summarized by the title of a 2011 paper by the digital humanities scholar Stephen Ramsay: “Who's In and Who's Out.”<sup>10</sup> As I explain below, digital humanities has attracted a great deal of institutional attention recently. This has sharpened what might once have been fairly abstract debates about the nature of the field into animated struggles over grants, jobs, space, resources, and institutional investment.

One of the most pressing of these battles is over where digital humanities ends and new media studies begins, which I have already discussed. A similar battle rages over whether digital humanities scholars have been insufficiently attentive to the great volume of digital work taking place within the field of composition and rhetoric.<sup>11</sup> Meanwhile, scholars increasingly ask why digital humanities prizes those technical skills valorized by Silicon Valley (programming, data analysis, machine learning) while tending to dismiss those methods by which women, people of color, and activist

communities often forge meaning (social media activism, video production, multimedia composition).

This last debate points to one of the most cutting criticisms of digital humanities: that it constitutes a naively positivist refuge from cultural studies, critical race theory, postcolonial theory, and other scholarly methods designed to surface the concerns of marginalized communities.<sup>12</sup> Indeed, Scott Weingart's annual examination of the papers and posters accepted to the field's major annual conference (called simply "Digital Humanities") has shown that works on text analysis, data mining, and history far outnumber papers on cultural studies or media studies.<sup>13</sup> Noting that digital humanities' rise to prominence corresponds roughly with Gayatri Spivak's 2003 *Death of a Discipline*,<sup>14</sup> David Golumbia writes, "Digital humanities as a *politics* has overtaken (though by no means displaced) another, to my mind, much more radical politics, one that promised a remarkable, thoroughgoing, and productive reconsideration of the foundations of scholarly research."<sup>15</sup>

Equally troubling, digital humanities has very real problems with racial diversity and gender representation in its scholarly community. While no comprehensive data has been assembled about the race, gender, and international backgrounds of digital humanities practitioners, almost everyone agrees that this lack of diversity is a pressing problem. "I had never experienced a stronger sense of being racially/ethnically other," writes the Chicana scholar Annemarie Perez of attending digital humanities panels at the 2012 Modern Language Association. "The rooms, crowded to bursting, were visibly, notably white spaces."<sup>16</sup> Thanks to the willingness of scholars like Perez to share their stories, and to initiatives like the African American History, Culture, and Digital Humanities program at the University of Maryland, race is now more frequently a topic of conversation within the field—but certainly not frequent enough.<sup>17</sup> Also like many fields, digital humanities has a decently balanced mix of genders among its practitioners, but its leadership tends to skew white and male. In a speech at the Digital Humanities 2015 conference in Sydney, Australia, the film scholar Deb Verhoeven excoriated the conference committee for an opening night consisting entirely of speeches by men: "When was the last time you saw seven consecutive women get up at a DH conference and speak about anything other than gender?"<sup>18</sup>

These problems are coming to light now partly because digital humanities is expanding beyond a relatively insular group of scholars and into domains like media studies, ethnic studies, women's studies, and cultural studies. And since these fields have powerful methods and critiques of their own, there is some evidence that as digital humanities makes its way into these spaces, the field itself is being meaningfully transformed. Groups like #transformDH, FemTechNet, HASTAC, and #dhpoco have pushed digital humanities scholars to scrutinize their methods and the field's composition, and scholars trained in critical and ethnic studies have been vocal in advocating for more radical forms of scholarship and criticism. It seems likely that the field that emerges from the debates of the current moment will be profoundly different from the field of a few decades ago.

## History

Many histories of digital humanities trace the field's emergence to Roberto Busa, an Italian Jesuit scholar who, beginning in 1949, built a concordance (an index of the appearance of every word) of the writings of St. Thomas of Aquinas with the assistance of computers supplied by IBM.<sup>19</sup> In the following decades, a number of scholars followed Busa's lead, producing concordances, authorship analyses, and linguistic studies with the aid of punch-card and paper-tape mainframe computers. *Computers and the Humanities*, the first journal in what was then called "humanities computing," launched in 1966, and the first major international humanities computing conference was held in 1970.<sup>20</sup> (The name "digital humanities" is of relatively recent vintage. It came into wide use only with the 2004 publication of *A Companion to Digital Humanities*—chosen, according to John Unsworth, one of the book's editors, only as a compromise with the book's publisher, who wanted to call the book *A Companion to Digitized Humanities*.<sup>21</sup>)

As academic computing centers increased in number and resources in the 1970s and 1980s, the popularity of humanities computing—then focused almost exclusively on texts—grew, too. The widespread availability of the personal computer during the 1980s and 1990s brought computer-assisted research into the purview of the individual scholar, and 1987 saw the launch of the Text Encoding Initiative (TEI), a major international effort to standardize the way that **scholarly editions** (authoritative, deeply

researched collections of documents) are encoded. The TEI, scholarly editing, and linguistic projects would dominate humanities computing for some time to come.

The early 1990s saw the development of large archival and digitization projects, many of which incorporated both text and images. The Institute for Advanced Technology in the Humanities (IATH) at the University of Virginia, helped to galvanize the next wave of activity. Founded in 1992 (and subsidized, like Busa's work, by IBM), IATH helped give rise to a number of landmark projects, including Valley of the Shadow, a hypertext archive documenting two communities during the American Civil War; the Rossetti Archive, which juxtaposed the writings and paintings of Dante Gabriel Rossetti; and the Walt Whitman Archive, an online scholarly edition of Whitman's work.<sup>22</sup>

Meanwhile, film and media scholars experimented with laserdiscs, computers, and video-capture hardware. Stephen Mamber, at Georgia Tech and UCLA, experimented with computational analysis of film as early as 1989, producing *Digital Hitchcock* (which synchronized storyboards of *The Birds* (1963) with footage from the film) and 3D mockups of filmic space.<sup>23</sup> Other important early- to mid-1990s media studies digital projects include Marsha Kinder's 1994 CD-ROM companion to *Blood Cinema*, her book on Spanish film; and Lauren Rabinowitz's *The Rebecca Project* CD-ROM (1995), on Hitchcock's *Rebecca* (1940).<sup>24</sup> A 1998 special issue of the journal *Postmodern Culture* was dedicated the computational analysis of film, with essays on Evans Chan, Stanley Kubrick, Dziga Vertov, and *Singin' in the Rain*. (1952)<sup>25</sup>

As the 1990s and early 2000s progressed, Internet speeds increased, making it easier to share large files online. This helped spur the creation of ambitious multimedia projects like *Labyrinth*, an interactive narrative experiment led by Marsha Kinder, in 1997; and *Vectors*, an important, experimental multimedia cultural studies journal, in 2005. This period also gave rise to a burst of activity in geospatial analysis, 3D modeling, and digital tools purpose-built for humanities scholars. In media studies, theorist-practitioners like Lev Manovich and N. Katherine Hayles brought large-scale database, interface, and image analysis to a wider audience of scholars.<sup>26</sup>

By the late 2000s, digital humanities had hit the big time, institutionally speaking. The Alliance of Digital Humanities Organizations, formed in 2005, held its first

international conference in 2006.<sup>27</sup> CenterNet, an international network of digital humanities centers, launched in 2007, and now counts more than 100 digital humanities centers among its members.<sup>28</sup> In 2008, the National Endowment for the Humanities launched the Office of Digital Humanities, which awards grants for digital humanities projects. “No DH, no interview,” wrote the *Chronicle* columnist William Pannapaker, reflecting not so much the reality of the academic job market in the humanities as the general sense that digital humanities is now ubiquitous, volatile, and impossible to ignore.<sup>29</sup>

Most histories of digital humanities emphasize its origins in textual analysis, but in fact film scholars have conducted research with computers virtually from the moment it became possible to do so. Moreover, surely the field’s lineage has changed as the field itself has changed. We now classify video essays under the digital humanities heading, for example. But aren’t they more properly an outgrowth of the ciné-essay than of Roberto Busa’s concordance? This isn’t to say that video essays are not digital humanities; but it is to say that the existence of video essays should force us to recognize influences on digital humanities other than Busa and his punch cards. Do wildly experimental projects like *Vectors* have more in common with the TEI, or with multimedia art of the late 1990s? Surely expressive programming languages like Processing have more to do with software art than they do with corpus linguistics. “What Is Digital Humanities and What’s It Doing In English Departments?” asks Matthew Kirschenbaum’s widely cited essay on the origins of the field.<sup>30</sup> But what happens to digital humanities when it is not in English departments? A broader history of the field, one that looks not to Busa for its origins but to media art or to documentary production, might suggest some possibilities for lively, engaging scholarship that takes image, audience, and immersion seriously.

## Major Modes and Terminology

To the newcomer (and even the not-so-newcomer) the range of projects classed as digital humanities can be baffling to the point of exasperation. DHCommons, the closest thing to a comprehensive repository of digital humanities projects, lists 759 projects, divided into 36 categories of “research objects” (everything from “text-bearing objects” to “virtual research environments”).<sup>31</sup>



With experience, one can tease out meaningful patterns from this apparent chaos. I do this in two ways: by sorting a given project into one or a few categories, and then by applying a three-part heuristic device to reverse-engineer it. I start here with an account of the most commonly encountered types of digital humanities projects. This is not an exhaustive list, nor is it meant to be prescriptive. But understanding that maps and data visualizations are two possible end-states for a digital humanities project can get one surprisingly far in understanding (and even replicating for oneself) the mechanisms of a digital project.

First, a digital project might include a **digital exhibit or archive**: a collection of objects (like documents, recordings, or other artifacts) that have been described, catalogued, and made retrievable in digital form. Documenting Ferguson, for example, based at Washington University in St. Louis, gathers media produced by St. Louis community members following the shooting death of Michael Brown in 2014.<sup>32</sup> Media scholars have also created **databases** as a form of digital scholarship: These are collections of data, made retrievable through some kind of interface. Yuri Tsivian's Cinemetrics Database, for example, collects the shot lengths of thousands of films and television shows.<sup>33</sup> Scholarly editions are collections of important documents, edited and annotated to show important features such as variations among editions. Specialists in scholarly editing have devised a language (the Textual Encoding Initiative, discussed above) specifically for this purpose. The Agrippa Files, based at the University of California, Santa Barbara, provides a carefully edited presentation of pages from William Gibson's *Agrippa (a book of the dead)* along with an emulation of the digital poem that accompanied it.<sup>34</sup>

Many digital projects incorporate **maps**: representations of geographic space that display information tied to place. Going to the Show, for example, based at the University of North Carolina, documents 1,300 movie venues across North Carolina.<sup>35</sup> For many media scholars, **multimedia narratives** have natural appeal: These are article- or book-length works enhanced with images, sound, and video. Erin B. Mee's "Hearing the Music of the Hemispheres," for example, incorporates audio and video in its discussion of Maria Chavez's performance art piece *Music of the Hemispheres*.<sup>36</sup> The genre of **data visualization** is familiar to anyone who has looked at election results or basketball scores: These are images produced by assigning visual attributes to data.

Frederic Brodbeck's Cinemetrics project (not to be confused with Tsivian's Cinemetrics Database) uses information drawn from films to create visual "fingerprints" to represent important information about them.<sup>37</sup>

For many people, digital humanities is closely associated with textual analysis (sometimes called distant reading). Both of these terms really refer to an assortment of different methods, all of which use algorithms to uncover patterns within large bodies of texts. For example, Eric Hoyt, Kevin Ponto, and Carrie Roy's "Visualizing and Analyzing the Hollywood Screenplay with ScripThreads" uses a custom-built tool called ScripThreads to analyze narrative features of screenplays.<sup>38</sup> In recent years, media scholars have increasingly embraced the digital **video essay** (sometimes called the **visual essay**, **videographic essay**, or **audiovisual essay**). This mode allows the scholar of the moving image to perform her critique on video. "Bergman Senses," published by the journal of videographic criticism [*in*]*Transition* exemplifies this mode of digital scholarship.<sup>39</sup> Media scholars have also engaged in the construction of **three-dimensional objects** and **virtual-reality environments**. Jentery Sayers, for example, has produced three-dimensional reconstructions of obsolete media technologies as part of an effort to understand their material features.<sup>40</sup> Finally, media scholars have created **digital games**—interactive, rules-based works that incorporate a goal—in order to explore and convey ideas. For example, *Speculation*, created by Patrick Jagoda, is an alternate reality game that deals with digital media and finance capital.<sup>41</sup>

For all the field's variety, one can pull apart and analyze most digital humanities projects by separating them into three layers: **sources**, **processing**, and **presentation**.<sup>42</sup> "Sources" are those materials that form the basis of the study at hand. "Processing" refers to the work of translating those sources into machine-readable data. The "presentation" is the face the project presents to the viewer. Each of these layers is formed as the result of many human decisions, and each of these decisions affects the argument and epistemological orientation of the project as a whole.

It is helpful here to examine a few examples. Elif Akcali's "Ceylan's Women" is a five-minute video essay that presents a series of shots of female characters from the films of Nuri Bilge Ceylan.<sup>43</sup> The sources, then, are Ceylan's films. Here, we might pause to ask some of the same questions we might have asked if Akcali had presented us with a conventional journal article: Why investigate Ceylan's films? Does Akcali

include all of her films in her investigation, and if not, what are her criteria for the films' selection? Next, we can observe that Akcali's has processed these films by cutting them into shots of a few seconds' duration, isolating only those moments in which women look at, or are looked at by, another character. Why has Akcali done this? In cutting the shots to this length, have we lost other important information? Is the trade-off worthwhile? Finally, Akcali has presented her sources: She has edited these shots into a five-minute video, grouping them thematically according to mood and supplying a soundtrack. Why a video? How would this project have been different if she had prepared a database, or a collage of still images? What effect do the sequence and the soundtrack have on the final project? Taken as a whole, does the project succeed in making a coherent and defensible argument?

This method also works for radically different projects. Jennifer Terry's "Killer Entertainments" (designed by Raegan Kelly) introduces viewers to combat videos shot by soldiers in Iraq and Afghanistan.<sup>44</sup> Its interface confronts the viewer with three videos that play simultaneously. Keywords and snippets of context periodically drift upwards as the videos play. To understand "Killer Entertainments" as a work of scholarship, one can start with the sources: How did Terry choose these videos? Why these videos? At the layer of processing, one might ask how she's edited them, sorted them into categories, and altered them from the form in which she found them. Finally, it becomes clear that Terry's most significant intervention is at the level of presentation. Why the three-screen arrangement? How would this project have been different if Terry had sorted the videos into a searchable database, or edited them into a single long video? Why has Terry chosen to provide so little context for these videos? Taken as a whole, does the project tell us something we didn't know? Is it coherent, and does it do justice to its source material?

No layer of a digital project will ever be discrete; in fact the longer one scrutinizes any given layer, the harder it becomes to draw boundaries around it. The aim of this exercise, however, is not to produce hard-and-fast schematics for digital projects, but to think systematically about each part of what might otherwise appear to be a black box.

## Case Study: Oscar Micheaux's Network

An example from my own work will show not only how blurry each layer of digital humanities is in practice, but also how many critical decisions a human being must make in the course of composing any digital project. The case study describes not a final product, but the beginning stages of a project that eventually resulted in a collaboration with students, a website, an article, and two exhibitions (discussed below). Here, I discuss a pilot exploration I conducted with some data about Oscar Micheaux's cast lists, including how it suggested some questions that I eventually explored alongside my students.

Oscar Micheaux (1884–1951), the pioneering Black American filmmaker, wrote, produced, and directed films primarily for Black audiences on the segregated film circuit. In total, he made about 37 films between 1918 and 1948, articulating a distinct aesthetic characterized by elliptical storylines and temporal discontinuity.

Reading an essay by Sister Francesca Thompson on the Lafayette Players (the Black theater troupe from which Micheaux and other directors drew many of their actors), I was struck by the richly interconnected, mutually constitutive community Thompson evoked.<sup>45</sup> I wondered to what extent this described the cast of Micheaux's films. Is it possible that these closely connected groups of actors had an unacknowledged influence on Micheaux himself? Since only three of Micheaux's 22 silent films survive, the historian has to make the most of every piece of evidence that does remain from the period, as discussed in Chapter 21 in this collection. What might Micheaux's cast lists yield if subjected to digital methods of analysis?

Of course, digital methods aren't the only way I could have undertaken this study. I could, for example, have relied on close readings of cast lists and primary and secondary literature. But since I have some experience with digital methods of analysis, I knew that computational methods might allow the researcher to perform operations on networks—such as calculations of centrality or edge-density—that could suggest avenues of inquiry that might not be apparent from conventional forms of inquiry.

The case study that follows, then, is a very particular kind of digital humanities project: network analysis drawn from structured data. There are, as I have outlined, many other kinds of digital projects. Some of them, like digital maps and databases, draw heavily on the spreadsheet-intensive data-management techniques I describe

below. Others, like text analysis, video essays, and multimedia narratives, require fewer considerations of metadata and more skill with sound and images. But no matter the specific method she uses, the digital scholar must ask herself the same set of questions: What sources am I using? How will I get them into a format a computer can read? And how will I present them to an audience?

The narrative I present builds toward a set of questions rather than a fully developed argument, but this, I've found, is typical of digital humanities projects. A digital humanities project only rarely proceeds from data to conclusion, the way a lab experiment might; instead, it often moves from supposition to provocation and then back to the sources themselves. The process, of course, is messy, inefficient, and often frustrating. But then so are most modes of criticism.

### *Sources*

I began this inquiry just as a “traditional” media scholar might: with a set of questions, and by determining which works I would consider in this investigation. I decided to focus on Micheaux's silent films, on the logic that Micheaux's shift to sound in 1931 might have disrupted the circles of interrelated actors I hope to uncover. If this line of inquiry proved fruitful, I decided, I would extend the investigation into Micheaux's sound period. This left me with 22 films — at least it seemed to. Various sources give different versions of Micheaux's work. I decided to hew to the most widely cited filmography of Micheaux, that contained in Pearl Bowser, Jane Gaines, and Charles Musser's *Oscar Micheaux and His Circle*.<sup>46</sup>

Any decision about where to circumscribe the object of one's study will be unsatisfactory on some level. For example, why limit myself to Micheaux, if my object is to understand how Black screen actors circulated in networks? Perhaps expanding my scrutiny to include Micheaux's contemporaries would have given me a more accurate picture of where these people traveled. But the more I considered other possible networks, the more this project seemed doomed never to get off the ground. Better, I decided, to start with a more manageable network, and move from there to an expanded view, if the method of analysis seemed promising.

### *Processing*

It is not hard to find cast lists of Micheaux's films, but finding lists in formats that a computer can process—that is to say, as data—is harder than almost anyone ever thinks

it is. In fact, obtaining and cleaning data is often the most time-consuming (and frustrating) part of any digital humanities project.

As a starting point, I used the programming language Python to automatically gather data about Micheaux's films from the Progressive Silent Film List (PSFL), the web-based list of silent-era filmographies. The result was a spreadsheet that stored the cast list in rows and columns, with one row per film. The neat rows of the spreadsheet, however, mask some unresolved ambiguity within this data. Some of this inconsistency is clearly the result of mistakes. The cell that contains "and Sylvester Jenkins," for example, shouldn't contain the word "and." These problems are easy enough to clean up.

But some of kinds of ambiguity in the data are harder to resolve. What about "[?] Lorenzo McClane or Lorenzo McLane?" for example? Which is it? On the PSFL, both variants can coexist without a problem. For this name to become useful *data*, however, I need to pick one. If my spreadsheet contained both Lorenzo McLane and Lorenzo McClane, how could I show how many films this actor—assuming he is one actor—appeared in?

Conveniently, one can query other databases to find the "official" versions of particular kinds of data. These lists of accepted terms are called authorities, and they exist for many different domains. Art historians, for example, might use the Getty's Art & Architecture Thesaurus, while astronomers might reference the Astronomy Thesaurus. But these authority files, like human beings, are fallible, and mistakes and biases within the authority files can easily propagate through the datasets that reference them. For example, the Library of Congress's name authority files offer only three options for gender: male, female, or not known. But as others have observed, this method of describing gender violates many of the tenets of queer and feminist theory, which see gender as neither binary nor stable.<sup>47</sup>

I know all of this, but, as is becoming obvious, computers demand not abstract knowledge but concrete decisions. Indeed, the entire process of turning information *as I find it* into data *as a computer can read it* is a series of decisions that change the nature of that information in fundamental ways. When people talk about "data-cleaning," this

is really what they mean: imposing human-authored rules on information that, in its present state, doesn't conform to them.

### *Presentation*

This stage of digital humanities research often performs a dual function: It allows the scholar to bring hidden patterns to the surface of the data and, ideally, to present those patterns as part of an argument. This method of presentation needn't be a chart or graph, per se. I could, for example, produce a table that simply offers values in tabular form. It's easy enough, though, to move from a table to a simple bar chart— thus shifting one's scholarship into the realm of data visualization. This mode of presentation, in which numeric values computationally generate graphical forms, relies on humans' abilities to perceive color, shape, and position in order to demonstrate meaningful patterns within data.

Here, a few words of caution will have to stand in for the reams of advice on creating truthful and accurate data visualizations.<sup>48</sup> It is exceedingly easy to create misleading data visualizations. It often surprises my students to learn that there are no *laws* that dictate how numerical values should be bound to graphical renderings; we rely only, astoundingly, on convention to understand how one data point relates to another. Visualizations, then, can with impunity be blatantly misleading, such as those that truncate the scale of a Y-axis or pack more than 100% into a pie chart.

But they can also mislead in more subtle ways. Every form of data visualization carries with it a certain set of ideological assumptions, such as that dates can be divided discretely into years (as opposed to, say, seasons, generations, or memories), or that an actor's appearance or nonappearance in a film is the only meaningful index of her involvement. It takes a great deal of practice and skill to decode these assumptions, and our ability to deconstruct graphs and charts falls far short of their ubiquity and persuasiveness in our moment of "big data." It often strikes me as odd that humanists have largely ceded responsibility for conceptualizing visualizations to statisticians and visualization designers, who have a very different understanding of information than people in other disciplines. This, in fact, might itself be an argument for creating data visualizations, or helping students to do so: It is one way to make it abundantly clear that "objective" data visualizations simply don't exist.

Nevertheless, I hope to demonstrate that visualizations can in fact help us to understand information in meaningful ways, if only by pointing the researcher back to further avenues of exploration. When I started this investigation, I was interested in relationships, so I turned to network analysis, an area of scholarship that scrutinizes the way that entities connect with each other. Network diagrams demand a certain configuration of data: each entity must be one of only two (at most) categories; in this case “actors” and “films.” The cast lists, then, must be reorganized into two columns, one containing the film titles and the other the name of each actor who appeared in the film.

*Table 27.1*

*Actors and films, prepared for a network diagram*

The Homesteader	Charles D. Lucas
The Homesteader	Evelyn Preer
The Homesteader	Iris Hall
The Homesteader	Inez Smith
The Homesteader	Vernon S. Duncan
The Homesteader	Charles S. Moore
The Homesteader	Trevy Wood
The Homesteader	William George

Each row of this table represents a relationship of actor to film. Importing a table like this one into network-visualization software—in this case Gephi—creates a diagram that looks impressive but is, unfortunately, illegible (see Figure 27.1).

**[INSERT FIGURE 27.1 HERE]**

[CAPTION Figure 27.1:

The entire network of actors appearing in Micheaux films. Actors appear as red nodes, while films appear as blue nodes. The grey lines, or edges, indicate a relationship.]



The entire network presented in this way *does* show who appeared in which film, but the network is too large for anyone to make sense of it without additional filtering. Part of the problem is that we have two kinds of things, actors and films, in our diagram, meaning it's a bimodal graph. In general, it's easier for people to make sense of a one-mode, or unimodal, graph, which contains only one kind of thing. What would happen, I wonder, if my graph showed only actors, or only films?

To get to this next stage, as is so often the case, I have to do some additional data manipulation. A truncated version of my list of actors and films currently looks something like Table 27.2.

*Table 27.2*

*A two-mode network table*

The Homesteader	Charles D. Lucas
The Homesteader	Evelyn Preer
The Homesteader	Iris Hall
The Homesteader	Inez Smith

By representing only the relationships among actors, on the one hand, and only the relationships among films, on the other, I can transform my two-mode table into two separate one-mode graphs (see Tables 27.3 and 27.4).

*Table 27.3*

*A truncated one-mode network table for actors*

Charles D. Lucas	Evelyn Preer
Charles D. Lucas	Iris Hall
Charles D. Lucas	Inez Smith
Evelyn Preer	Iris Hall
Evelyn Preer	Inez Smith
Inez Smith	Iris Hall

Table 27.4

*A truncated one-mode network table for films*

Film 1	Film 2	Number of overlapping actors
Within Our Gates	The Brute	4
Within Our Gates	The Symbol of the Unconquered	1
Within Our Gates	The Gunsaulus Mystery	2
Within Our Gates	Deceit	1
Within Our Gates	Son of Satan	1
Within Our Gates	Birthright	2
Within Our Gates	The Conjure Woman	1
Within Our Gates	The Spider's Web	1
The Brute	The Symbol of the Unconquered	2
The Brute	The Gunsaulus Mystery	3
The Brute	Deceit	3
The Brute	Son of Satan	2
The Brute	Birthright	3

By organizing the data this way, I've lost some crucial information: namely the films that form the context for actors' relationships in the first table, and the actors that bind the films together in the second. But I've gained some useful insight, such as that *Within Our Gates* (1920) and *The Brute* (1920) share four actors in common, while *Within Our Gates* and *The Conjure Woman* (1926) share only one. My network graphs take on additional clarity, too. Figure 27.2 helps to show that *When Men Betray* and *The Wages of Sin* share the most actors in common, with *The Wages of Sin* and *The Broken Violin* a close second. In fact, most of Micheaux's films share only one or two actors—but they all, interestingly, share at least one. The network diagram also suggests (though it

doesn't prove) possible relationships. It's much more likely, for example, that an actor who appeared in *When Men Betray* would be familiar with the company of *The Wages of Sin* than with that of *The House Behind the Cedars*.

**[INSERT FIGURE 27.2 HERE]**

[CAPTION Figure 27.2:

A one-mode diagram of films' relationships to each other, as measured by the number of actors who appear together. Warmer colors and thicker lines indicate a larger number of shared actors.]

A network diagram of the actors' relationships proves less immediately legible. Again, we have too many nodes to visually untangle. By leaning on methods drawn from network analysis, however, I can begin to break this mass of nodes into smaller clusters of information. Gephi, the software I'm using, allows me to apply a **community detection algorithm** to the graph. This particular algorithm, called the Louvain method, measures the density of edges (the lines that indicate relationships between entities) and clusters together those entities that are densely connected (Figure 27.3).<sup>49</sup> Applying this algorithm to the network reveals seven distinct clusters. A closer look reveals that two actors seem to serve a bridging function, connecting at least four separate communities: A.B. De Comathiere and Evelyn Preer (Figure 27.4).

**[INSERT FIGURE 27.3 AND 27.4 HERE]**

[CAPTION 27.3 –

A one-mode diagram of all actors who appeared together in Micheaux films.]

[CAPTION 27.4 –

Evelyn Preer and A.B. De Comathiere (in yellow) appear to bridge multiple communities.]

As I continue to inspect this network diagram, I notice something else that intrigues me. If I **weigh** each edge—that is, assign it a numerical value—according to how many times each pair of actors has appeared together, I can see which sets of actors are bound by “heavy” edges. Highlighting these highly weighted edges (Figure 27.5) appears to show two discrete clusters of actors, each of which is composed of actors who tended to appear with each other in films. If I create a new network diagram (Figure 27.6), this

one containing only actors who co-appear in more than three films, I can see that there are indeed two disconnected clusters of actors within Micheaux's body of work. The first, composed of Evelyn Preer, E.G. Tatum, Lawrence Chenault, and Mattie Wilkes, appeared in Micheaux films between 1918 and 1927, with the bulk of appearances around 1922. The second, consisting of Ardella Dabney, Ethel Smith, Gertrude Snelson, Katherine Noisette, Lorenzo Tucker, and William A. Clayton, Jr., appeared in Micheaux films only after 1928, beginning with *The Broken Violin*.

**[INSERT FIGURE 27.5 AND 27.6 HERE]**

[CAPTION 27.5 –

The red edges indicate sets of actors who appear together at least four times.]

[CAPTION 27.6 –

Filtering the network diagram so that it shows only actors who co-appeared three or more times reveals two separate sets of actors.]

I would hesitate to say anything definitive about any of these findings without further research, but it strikes me as noteworthy that the center of gravity for Micheaux's casts seems to have shifted around 1927. What accounts for this shift in personnel? The diagrams I've created here don't offer any definitive answers, but they do point toward interesting questions that I might not have arrived at on my own: Did something happen around 1927 to change which actors tended to appear in Micheaux's films? What relationships did the actors have with each other? Turning these questions into presentable work would take additional research, both conventional and digital, and in the final product, the network diagrams themselves may play a small role. But by directing my analysis through a series of systematic steps, this project has nudged me toward findings that might otherwise have eluded me.

As this example demonstrates, "digital" humanities is actually human in the extreme. My graphs might resemble scientific diagrams, but contingency enters this process countless times: in the gathering, cleaning, and ordering of data; in the algorithms with which that data sorted and arranged; and in the visual forms it ultimately takes. It is critically important that the digital humanist recognize and acknowledge that contingency. In my view, this divided knowledge—that the algorithm can offer useful

surprises, but that humans, not machines must ultimately generate insight—is the hallmark of a digital humanist.

In the end, this relatively small experiment evolved into a much larger and more ambitious set of projects. UCLA Library Special Collections holds the George P. Johnson Negro Film Collection, a large archive of clippings, photographs, and publicity material related to the Black film industry from 1916 until Johnson's death in 1977. Working with the Johnson collection and with other primary and secondary sources, my students and I assembled a comprehensive database of every silent-era race film and company we could find, along with every person who worked in the industry. Our work is presented on a website, along with network analysis, maps, and narratives discussing our findings. We also published an article discussing our findings in *Moving Image*. That work, in turn, led to two separate exhibitions, which my students and I curated: *The Industry of Uplift*, presented at the UCLA Young Research Library from May to September 2017, and *Center Stage: African American Women in Silent Race Films*, at the California African American Museum, from June 28 to October 15, 2017.<sup>50</sup>

## Conclusion

The field of digital humanities moves quickly and unpredictably—so much so that simply keeping up with developments in the field is a major challenge for many initiates. Moreover, the variety of technologies and methods in use is daunting enough to drive one, in bleaker moments, to despair. It is important to remember, however, that no single person can be an expert on everything; it is much more common for digital humanists to find a corner of the field that suits their scholarly goals (videographic criticism, for example, or network analysis) and develop expertise there.

But is it still possible, then, to refer to digital humanities as any kind of unified “method”? How can digital humanists speak to each other if their tools are so disparate? Answers here will certainly vary, but I believe that digital humanities remains a field with some structural integrity. As I have discussed above, digital humanities projects, no matter how different they appear, are composed of the same fundamental layers. And digital humanities scholars must help each other learn to interrogate each layer with increasing levels of rigor and sophistication. The fundamental questions that animate digital humanities, beyond all of the fiddling with algorithms and databases,

are simply: What should the humanities scholar's relationship with technology be? Where do humanism and digital technology collide? And where might the intersection of the two produce ideas that—like any good scholarship—show us some kind of beauty, meaning, and order to the world?

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