

**O**n February 22, 1801, Thomas Jefferson sat down to compose a short letter to a friend in Baltimore. The friend, William Evans, ran the inn at the Sign of the Indian Queen, which served as a primary relay point for mail routes up and down the East Coast. Hoping that Evans's central position in that network of print would also allow him to convey a message in person, Jefferson, in the letter, poses a seemingly innocuous request:

You mentioned to me in conversation here that you sometimes saw my former servant James, & that he made his engagements such as to keep himself always free to come to me. Could I get the favor of you to send for him & tell him I shall be glad to receive him as soon as he can come to me? (2009, 33:38).

Less than two weeks away from assuming the presidency—his inauguration would take place on March 4 of that year—Jefferson apologized for troubling Evans with his inquiry. As he writes: “The truth is that I am so much embarrassed in composing a good houshold [sic] for myself, as in providing a good administration for our country” (33:39). Jefferson then signed the letter, put down his pen, and moistened a sheet of copying paper, expressly imported from London. After placing the copying paper over the original document, the iron-gall ink still wet, he encased the two sheets in *abhesive* paper—waxed or oiled paper that prevented the ink from evaporating—and placed the entire stack in his customized copying press. He then rotated the brass crank affixed to the side of the device, which in turn advanced a roller; the pressure of the roller forced the ink through the porous copying paper,

resulting in a facsimile of the original document that, once dry, could be turned over and read from the back. Satisfied with the reproduction, Jefferson summoned his secretary to file the press copy, and then sent the original off to Evans in the mail. For reasons far more complex—and more tragic—than he could know at the time, Jefferson’s difficulties in enlisting his “former servant” as a member of his White House staff would soon be more acutely felt. But his work, for the moment, was done.<sup>1</sup>

I relate this detailed account of Jefferson’s process of composition for several reasons. The most obvious, of course, is to demonstrate his intimacy with the materiality of the letters he composed, as well as his commitment to the most advanced print technologies of his time.<sup>2</sup> Perhaps equally evident is the extent of Jefferson’s efforts to preserve the records of his life. Indeed, a host of scholars have commented on Jefferson’s awareness of his own historical legacy, as well as his desire to influence that legacy through the documents he recorded, edited, and preserved.<sup>3</sup> The letter from Jefferson to Evans also illuminates the scholarly impact of the transition from print to digital archival form. For I first encountered the letter neither in pen-and-ink nor in press copy, but instead, in the *Papers of Thomas Jefferson Digital Edition* (Jefferson 2009), which makes accessible online (with paid subscription) nearly two-thirds of the eighteen thousand documents that Jefferson himself composed and copied, as well as a significant portion of the twenty-five thousand additional letters that he received—and subsequently archived—over the course of his long life.<sup>4</sup>

But in spite of what Ed Folsom (2007, 1571) has extolled as the “epic transformation” of the archive, characterized not only by increased access to content, but also by the proliferation of paths through that content that are facilitated by the digital archive’s underlying database structure, the issue of archival silence—or gaps in the archival record—remains difficult to address. Michel-Rolph Trouillot (1997, 26) describes how such silences enter the archive at four crucial moments: “The moment of fact creation (the making of *sources*); the moment of fact assembly (the making of *archives*); the moment of fact retrieval (the making of *narratives*); and the moment of retrospective significance (the making of *history*) in the final instance.” Trouillot takes as his focus the historical narrative of the Haitian Revolution, but his observations about the forms of silence that enter into and

shape that story also apply to the stories told through the Jefferson archive—indeed, the stories told through the American archive as a whole. In this regard, the letter to Evans is again instructive. For the “former servant James” mentioned therein is none other than James Hemings, Sally Hemings’s older brother, who traveled with Jefferson and Sally to France, where he was apprenticed to the chef of a prince. Hemings learned to cook in the high French style, and later became the chef at Jefferson’s Parisian residence. As noted by Annette Gordon-Reed (2008, 227) in her monumental biography of the Hemings family, James Hemings’s role as chef “made him responsible for every success and failure regarding a critical component in that diplomatic household.” In fact, when Hemings later negotiated with Jefferson for his freedom—which he obtained in 1796—Jefferson insisted that Hemings train another man in the “art of cookery” before he could be freed (2009, 27:127).

And yet, in the letter of inquiry to Evans that begins this essay, Jefferson does not identify Hemings with any more specificity than as a man formerly in his employ. The only reason this letter appears in the list of results for a keyword search on “James Hemings” is that the editors of the *Papers of Thomas Jefferson* have noted that the “former servant” refers to Hemings, and this information has been added to the digital version of the document as metadata. Because the default scope of a keyword search in the *Digital Edition* includes this extratextual information, as well as the text of the document itself, a researcher need not distinguish between textual content and editorial note. But should the researcher begin, instead, with a “Name” search for James Hemings as either an author or a recipient of a letter, even across the estimated 25,000 documents that the *Digital Edition* presently contains, he or she would be returned no results (see fig. 1).

This striking instantiation of archival silence illuminates the concerns that course through the archive of the antebellum United States. How does one account for the power relations at work in the relationships between the enslaved men and women who committed their thoughts to paper, and the group of (mostly white) reformers who edited and published their works? How does one identify and extract meaning from the documents in slavery’s archive—letters such as those compiled in the *Papers of Thomas Jefferson*, as well as inventories, ledger books, and sales receipts—documents that, in

The screenshot shows the search interface for the 'The Papers of Thomas Jefferson' digital edition. At the top, there is a header with the title 'THE PAPERS OF THOMAS JEFFERSON' and 'DIGITAL EDITION' in large letters, with 'BARBARA B. OBERG AND J. JEFFERSON LOONEY, EDITORS IN CHIEF' below it. To the right is the 'ROTUNDA' logo. Below the header is a navigation bar with links for 'ENTRY', 'ABOUT', 'SEARCH', 'LOG IN', and 'HELP (SEARCHING)'. The main search area has several input fields and dropdown menus:

- Text**: A text input field.
- Scope**: A dropdown menu set to 'All'.
- Languages**: A dropdown menu set to 'All'.
- Exact form [?]**: An unchecked checkbox.

**Names**

Name 1:  (highlighted in red)

as author  No match

Name 2:

as author  as recipient  either

**Date Range**

From date:  (with a calendar icon)

To date:  (with a calendar icon)

creation date  receipt date [?]

**Papers of Thomas Jefferson**

Only in series:  Main  Retire

**Order by**

Sort:  (with a dropdown arrow)

[Search \(Jefferson Papers\)](#) | [Reset](#)

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**Figure 1** Screen capture of a “Name” search for James Hemings. Available from Jefferson 2008. Accessed May 1, 2013. [rotunda.upress.virginia.edu-founders/default.xqy?keys=TSJN-info-search](http://rotunda.upress.virginia.edu-founders/default.xqy?keys=TSJN-info-search).

the words of Susan Scott Parrish (2010, 265), we must struggle to make “mean something more”? Finally, how does one do so without reinforcing the damaging notion that African American voices from before emancipation—not just in the archival record, but the voices themselves—are silent, and irretrievably lost?

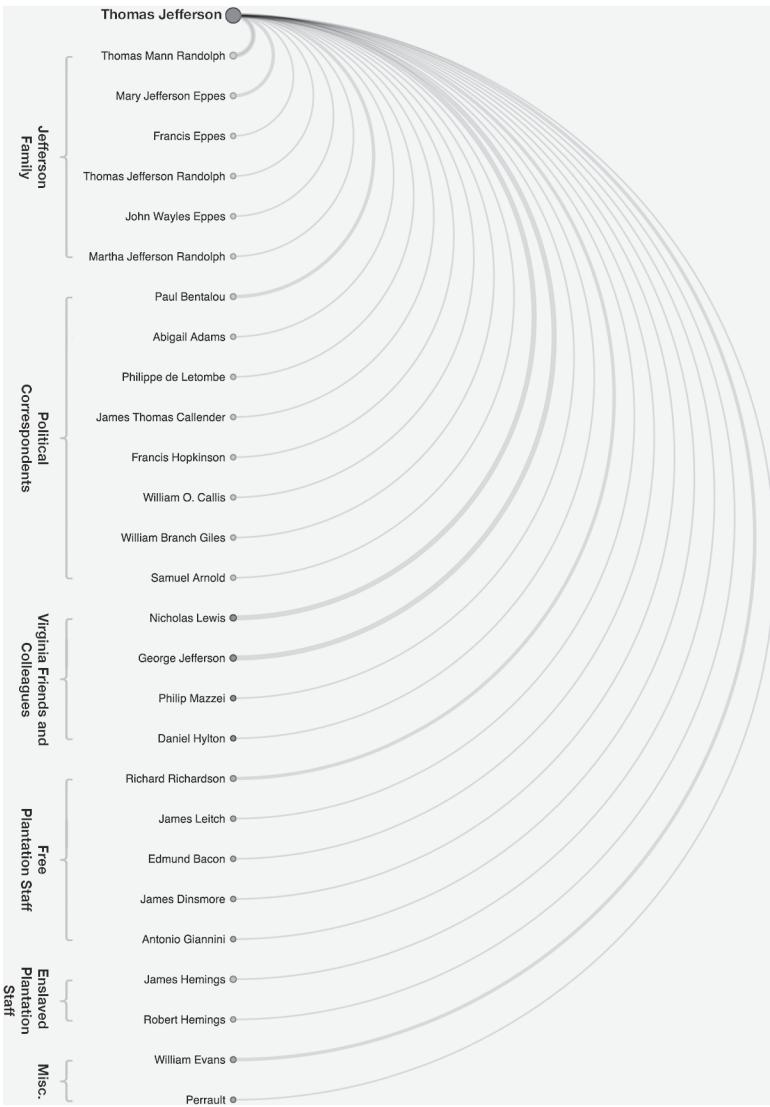
This critical challenge has prompted scholars from across the humanities, including literary critics Saidiya Hartman (2008), Stephen Best (2011), Best and Sharon Marcus (2009), sociologist Avery Gordon ([1996] 2008), archivist Jeannette Bastian (2005), and historian Jill Lepore (1998), to call for a shift away from identifying and recovering silences in the archive to a new focus, instead, on animating the mysteries of the past. In conjuring a sense of these mysteries, however, each of these critics relies on traditional methods of analysis and critique. Drawing instead on digital methods, this essay demonstrates how a set of techniques that derive from the fields of computational linguistics and data visualization help render visible the archival silences implicit in our understanding of chattel slavery today. In so doing, I also thus take up the call, as voiced by Alan Liu (2012), to reinscribe cultural criticism at the center of digital humanities work.

By visualizing the absence of James Hemings, the once-enslaved chef, in the *Papers of Thomas Jefferson*, I also aim to refocus our critical eye with respect to the content of slavery’s archive. Whereas individual voices, even those illuminated in their absence, remain compelling markers of personhood suppressed, they cannot counter what Hartman (2008, 12) has characterized as the “irreparable violence of the Atlantic slave trade,” nor can they redress what Best (2011, 151) has identified as a consequence of chattel slavery: the fundamental “deformation” of its archive.<sup>5</sup> Instead, we must look to the pathways of connection between persons and among groups, the networks of communication in which these men and women engaged, and the distributed impact of the labor they performed. Illuminating this movement, through digital means, reframes the archive itself as a site of action rather than as a record of fixity or loss. At the same time, this reframing of the archive reveals the limits of digital methods—indeed, the limits of the field of digital humanities as it is currently conceived. As a critical stance so often framed in terms of epistemological possibilities, the digital humanities, when confronted with the unique demands of the archive of slavery, instead requires a rethinking of what it truly means to know.

### Visualizing Absence: The Ghostly Story of James Hemings

As indicated by Jefferson's request, in the letter to Evans, to "send for" Hemings and "tell him" he would be glad to receive him, Hemings was rarely—if ever—someone to whom Jefferson and his white correspondents directly wrote. There are other letters in the Jefferson archive that refer to Hemings, however, and these can be identified by searching the archive's editorial notes as previously described. But in a listing of search results, these letters do little more than reinscribe the absence of James Hemings in the Jefferson archive. The author of each letter appears in bold red type: "To Paul Bentalou, 25 August 1786," "From Philip Mazzei, 17 April 1787," while James Hemings, the subject of the search, is relegated to smaller type, often encased in brackets, for Hemings was most often referred to by first name alone—most likely, as Lucia Stanton (2009, 84) points out, to "preserve conscience and principle by increasing the social distance between master and slave." Rather than reveal his presence in the Jefferson archive, this listing of search results reinforces the transactional nature of the system that consigned him to social death.

A visualization of these letters dramatically shifts the archival frame (fig. 2). Specifically, it allows us as scholars to focus more closely on what can be learned from examining the "surface of things" (Foucault [1989] 1996, 58). This phrase, borrowed from Michel Foucault, is central to Stephen Best and Sharon Marcus's (2009, 13) formulation of "surface reading," a set of critical practices that emphasizes attending to the materiality of the text and the structure of its language, as well as to the critic's affective or ethical stance toward the work. This perspective, Best and Marcus believe, can counter the symptomatic reading practices that insist on excavating deeper meaning and exhuming hidden truths. Surface reading, they explain, enables scholars to see shadows in the archive, shadows such as Hemings, as "presences, not absences, and let ghosts be ghosts, instead of saying what they are ghosts of." For Best and Marcus, as for many scholars of slavery, the ghost functions as a figure of absence. In its liminal status, the ghost represents the condition of social death experienced by the enslaved. In its shadowy form, the ghost captures a sense of what is palpable, yet cannot be fully grasped. In its lingering presence, the ghost conjures a sense of the haunting of the present by the past. In terms of criticism, the ghost gestures toward a textual plane that



**Figure 2** Visualization of Jefferson's correspondence concerning James Hemings. Width of arc indicates relative frequency of correspondence. Image by author.

“insists on being looked *at* rather than [one that] we must train ourselves to see *through*” (9).

The figure of the ghost, like the notion of the surface, suggests something perceptible but not easily understood. From Best and Marcus, I borrow this conceptual model along with its accompanying critical stance: one that works by illumination rather than demystification, one that works through explication rather than appropriation or empowerment. At the same time, I reject the characterization of digital methods as opposed to surface reading, willfully conscribed to a “space of minimal critical agency” (2009, 17). While it remains true that certain key practitioners of digital humanities continue to frame their work as exploratory rather than discursive—Tom Scheinfeldt (2012), perhaps most famously, when asked if digital humanists should be required to answer humanities questions, responded emphatically “not yet”—the time has now come for digital humanities practitioners to more forcefully theorize the knowledge claims they make.<sup>6</sup> Like the literary-critical practices associated with surface reading, the set of tools and methods associated with the digital humanities also calls attention to the contours of the texts under analysis, in fact employing a similarly enunciative mode. Furthermore, by virtue of their technical nature, they similarly highlight the position of the reader and his or her relation to the text. The critic’s involvement in the design and implementation—or at the least, the selection and application—of digital tools demands an acknowledgment of his or her critical agency. But rather than put forth a rhetoric of Fordian potentiality—more efficient “distant reading” or more effective “macroanalysis,” to name two of the digital humanities’ most well-known pursuits—the field must employ its tools and methods so as to produce humanities critique.<sup>7</sup> Indeed, in its strongest instantiation, the digital humanities demonstrates, through a combination of technical, analytical, and theoretical means, not only *what* but also *how* we as critics come to know.

The visualization in figure 2 represents one way in which such methods might be enlisted in order to call attention to the ghostly presence of James Hemings in the Jefferson archive. I created this image using Protovis, a JavaScript-based toolkit for data visualization developed by the Stanford Visualization Group.<sup>8</sup> Protovis enables a range of formats for visualizing social network data, including the format I have chosen: the arc diagram. Unlike the force-directed layouts more commonly employed to visualize network data, the arc diagram clearly identifies

each individual—or “node”—in the network, but foregrounds the connections between nodes—or “edges,” in network terminology—through the arcs that dominate the image.<sup>9</sup> I generated the underlying data by searching the archive’s content and editorial notes for letters that concerned Hemings, using the expanded search features described above. After compiling the information generated by the search in a spreadsheet, I then wrote a script in the Python programming language to convert the search data to the JSON format required by Protovis. This process involved identifying each correspondent that mentioned Hemings as a unique node; identifying each additional person with whom that individual had corresponded about Hemings; and then calculating the number of letters each pair of correspondents had exchanged. Even at this level—the level of the archive’s surface—the process of enumerating the letters that mention Hemings illuminates his presence in the archive. Although a more robust implementation of this diagram might link back to the letters referenced, visualization tools such as Protovis that set content aside provide an alternate means to acknowledge the archive’s ghosts.

Arc diagrams also allow clusters of nodes to be arranged into groups. In this case, I grouped the people who corresponded about Hemings according to their relationship to Jefferson. Reading from left to right, the diagram lists Jefferson and his family, his political correspondents, his correspondents in France and abroad, his Virginia friends, his plantation overseers and free plantation staff, his enslaved staff, and finally, people about whom little or no biographical information is known. An arc connecting two names indicates correspondence between them, and the width of the arc indicates the frequency with which they corresponded. Because this data is derived from Jefferson’s personal archive, all of the arcs, as expected, connect to him. The widest arcs link Jefferson with Nicholas Lewis, Jefferson’s neighbor in Virginia; George Jefferson, Thomas Jefferson’s Virginia agent (although apparently not a close family relation); and Richard Richardson, who worked as a plantation overseer at Monticello. Presumably, Jefferson corresponded with each of these men about the materials and services required for Hemings to create his artful cookery for the plantation’s residents and guests. And in this way, the surface view of Jefferson’s correspondence also acknowledges the reach of Hemings’s cooking—centered in the kitchen, but extending across Monticello in the ingredients he purchased, the dinners he prepared,

and the politics he subsequently influenced through the flavors of his food.<sup>10</sup>

However, the fourth wide arc in this diagram, the arc that connects Jefferson to Evans, cannot be linked to Hemings's culinary labor. Indeed, this is an insight that the archive's surface view makes visible in a way that traditional research methods—even traditional digital research methods—cannot. As previously noted, William Evans, by his location at the Indian Queen, served as a nodal point in the more material, and hence more easily preserved, network of print. For this reason, Evans's presence in the Jefferson archive is more readily discerned. In contrast to the return of a name search for James Hemings, chillingly void, a name search for William Evans yields a chain of correspondence through which Hemings's eventual fate can be discerned. An examination of this correspondence makes evident that Hemings had already been involved in negotiations for employment with Jefferson, well before Jefferson sought Evans's help. Having spent the first twenty-five years of his life in slavery, Hemings understood the importance of defining the terms of his employment in advance, and so he had requested—through another acquaintance, Francis Say—that Jefferson "send him a few lines of engagement and on what conditions and what wages [Jefferson] would please to give him" (2009, 33:53). Further specifying that the offer should be in Jefferson's "own hand wreiting [*sic*]," Hemings demonstrates his own awareness of the power of print—and in particular, the power of Jefferson's personal hand, as president-elect—to stand in for the *de jure* agreement that his status as a person of color, even free, precluded him from ever wielding to its full effect (33:53).

For reasons unknown, Jefferson failed to comply with this request. The next letter in the archive is from Evans to Jefferson and suggests Hemings's confident tone. Although we do not know the exact words Hemings spoke, Evans reports to Jefferson, "The answer [Hemings] returned me, was, that he would not go [to Washington] untill [*sic*] you should write to himself" (2009, 33:91). Here, we receive a powerful confirmation of Hemings's literacy, his business acumen, and his determined stance. Despite its importance, however, this letter does not appear in the results of a keyword search for James Hemings, as the editors have not marked it under his name. Whether or not Evans influenced the outcome of this situation, the Jefferson archive also does not say. Hemings never became the chef at the White House. An

eight-month gap in the correspondence between Jefferson and Evans ensues. The subsequent—and final—exchange in the archive, from November 1801, confirms the “melancholy circumstance” of Hemings’s suicide (35:542).

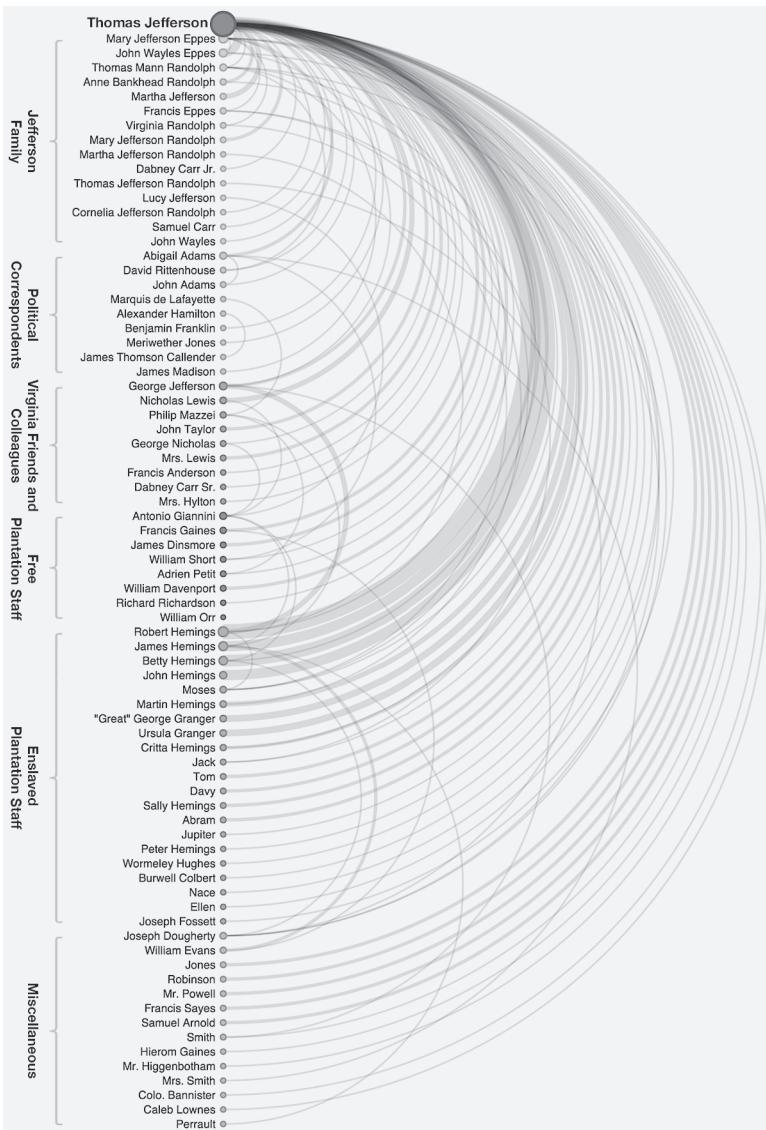
The ghost of James Hemings need not stand for something, as Best and Marcus caution. To be quite certain, the ghost of Hemings means enough. And while we, as scholars, might seek to know more about Hemings’s life, his story is one that is impossible to retrieve (2009, 36:20). As Hartman (2008, 2–3) explains, every story that takes shape in the archive of slavery is “predicated upon impossibility—listening for the unsaid, translating misconstrued words, and refashioning disfigured lives—and intent on achieving an impossible goal: redressing the violence that produced numbers, ciphers, and fragments.” Thus, even as we consider the information we might gain from the “numbers, ciphers, and fragments” in Jefferson’s correspondence, visualized here through digital means, we are reminded, with the foreknowledge of Hemings’s suicide, of how little of his life we will ever truly know.

### **Visualizing Impossibility: From Story to Action**

Is it possible to visualize the impossibility of Hemings’s story? Is this a task that should be undertaken at all? The unlikely confluence of an archive always already deformed, and a method of digital humanities criticism that shares this name, “deformative criticism,” suggests one method by which this dilemma—ethical as much as epistemological—might be productively engaged. In *Reading Machines*, Stephen Ramsay (2011, 33, 34) describes how the process of “deliberately and literally” altering the “graphic and semantic codes” of a text through computational means—what he calls the digital “deformance” of the text<sup>11</sup>—results in a “critical self-consciousness that is difficult to achieve otherwise.” According to Ramsay (57), this “critical self-consciousness,” or subjective engagement with the text, allows the “liberation of the potentialities of meaning.” In the case of Hemings, however, the subjective engagement facilitated by the digital deformation of the texts instead exposes the impossibilities of meaning. This result is not only essential to our understanding of the archive of slavery; it is essential to our understanding of digital humanities scholarship as a whole. For as much as Ramsay would like to insist that the field “revolutionizes, not because it proposes an alternative to the basic hermeneutical

procedure, but because it reimagines that procedure at new scales, with new speeds, and among new sets of conditions” (31), the digital humanities in fact presents new processes—critical as well as technical—that allow alternative understandings of the archival record to unfold. Indeed, among the greatest contributions of the digital humanities is its ability to illuminate the position of the critic with respect to his or her archive of study, and to call attention to the ethical and affective as well as epistemological implications of his or her methodological choices. The particular context of the archive of slavery can also help digital humanities practitioners see how their methods might extend into—in fact, might already be engaged in—cultural and theoretical work. And here I do not reference the theoretical work of tool building, although that certainly plays a part, but rather, the work of illuminating the limits of technology, of archives, and of knowledge production generally conceived.

The visualization on the following page presents one such critically informed deformation of the Jefferson archive (fig. 3).<sup>12</sup> Rather than privilege the relationships between letter writers, I sought to dismantle the letter as the unit of the archive, examining each word of content on equal plane. Using what is called a *named entity recognizer*, software that derives from the field of computational linguistics that is able to identify, or recognize, sequences of words in a larger text that represent the names of things, such as people or places, it is possible to automatically identify each reference to a person mentioned by name in the Jefferson archive. I limited my scope to the fifty-one letters that the editors of the *Papers of Thomas Jefferson* identified as including references to Hemings or to a member of his family. To this corpus, I added the seven letters I discovered through my own research that refer to what Jefferson came to call the “tragical end of James Hemmings [sic]” (2009, 36:20). After obtaining the digitized version of the *Jefferson Papers* in XML form, and extracting the content of the letters from those files, I employed a named entity recognizer developed by the Stanford Natural Language Processing Group in order to identify each person mentioned by name in the Hemings letters.<sup>13</sup> After writing a script in Python to parse the output of the named entity recognizer into human-readable form, I produced a list of these names, which I then reviewed by hand, in order to eliminate the discernible errors and duplicates. The Hemings surname, for instance, as indicated by the quotation above, was sometimes spelled with one *m* and sometimes



**Figure 3** Visualization of the network of relations within the “Hemings Papers.” Width of arc indicates relative frequency of correspondence. Image by author.

with a double *m* (*mm*). The fact that Jefferson almost always used diminutives when referring to the men and women he enslaved also contributed to the complexity of the data analysis. James Hemings, for example, was referred to as Jamey, Jim, and, while in France, Gimmé (Gordon-Reed 2008, 553). After resolving these discrepancies to the extent possible, I then wrote a second so-called “co-appearance analysis” script, also in Python, in order to determine which names appeared together in each letter. Finally, I formatted these relationships to be displayed in the arc diagram as shown.

What emerges is evidence of the complexity of the relations among individuals and across social groups. Significantly, the arcs that link Jefferson to the men and women he enslaved are much more prominent than those that link him to his family members and friends, indicating the degree to which Jefferson relied on his enslaved plantation staff to implement his various directives about such matters such as the purchase of supplies or the sale of goods. This visualization thus conjures a sense of the dependence, on the part of Jefferson, on the men and women he enslaved, even as it cannot recreate what these people said in their conversations, where they went in order to conduct their transactions, and how they truly lived their everyday lives.

As a single image, the overlapping arcs that compose this visualization also point to the multiple networks of power embedded in the Jefferson archive. There is evidence, of course, of the chokehold of slavery, that “encapsulation” of capitalism that, as Paul Gilroy (1993, 55) has demonstrated, “provided the foundations for a distinctive network of economic, social, and political relations” that persist to this day. But the arcs that link Hemings and his family to the other enslaved men and women on the plantation also provide a visual indication of the economic, social, and political networks sustained through systems of communication that “passed below the radar,” as Ivy Wilson (2011, 29) has observed, and therefore are far more difficult to perceive in the archive today. While goods bartered or exchanged leave no financial record, news communicated orally leaves no written trace, and political rhetoric articulated in the vernacular leaves no tangible ideology, this visualization helps conjure a sense of the other powerful networks that are contained—if not explicitly documented—within the *Papers of Thomas Jefferson*.

To return to the documents in the archive with this image in view fundamentally shifts the focus of the scholar. Consider the letter from Jefferson to Evans, the first in his correspondence to reveal his awareness of Hemings's death:

A report has come here through some connection of one of my servants that James Hemings my former cook has committed an act of suicide. As this whether true or founded will give uneasiness to his friends, will you be so good as to ascertain the truth & communicate it to me. (2009, 35:542)

This letter endures as an emblem of the “precarious lives which are visible only in the moment of their disappearance,” as Hartman (2008, 12) eloquently asserts. Notably, this letter, which is the first entry to appear in the results of a search for “James Hemings” in the *Digital Edition*, is one of only two documents in the archive that refer to him by both first and last name. The letter is also significant for the oral “report” that it documents, the reference to the “connection” of one of Jefferson’s “servants,” and the mention of the “friends” who uneasily await confirmation of this news. Jefferson’s language thus points to Wilson’s below-the-radar networks of communication, as well as to the social networks that supported Hemings, and the circulation of subjects—Hemings once among them—who moved apart from the plantation world that Jefferson sought to control. To visualize this movement, rather than a record that is static or fixed, resists what Best (2011, 157) has described as the “logic and ethic of recovery” that reinscribes bodies and voices as lost. This image of absence challenges us as critics to make the unrecorded stories that we detect—those we might otherwise consign to the past—instead expand with motion and meaning.

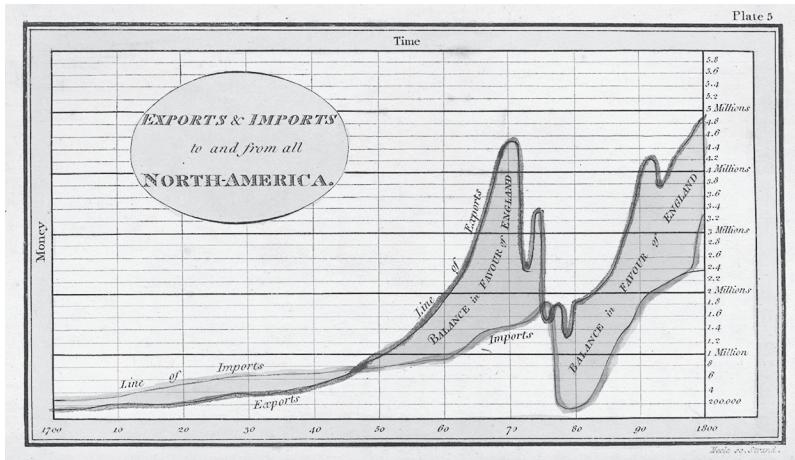
### The Long Arc of Visual Display

At a time when the use of data visualization is becoming increasingly prevalent—not only in popular culture, but also in scholarly work—we must also, necessarily, recall the long, fraught history of visual display. It is not without irony to observe that this history passes directly through Jefferson’s writing, and the way in which he utilized his own graphical displays of information—in the form of charts, lists, diagrams,

and tables—to advance his empirical worldview. As I. Bernard Cohen (1997, 58) explains, this “inductive” approach to knowledge “implied an experiential test of knowledge or of system, the same kind of criterion of truth that in the sciences had become Newton’s ‘Proof by Experiments,’ or a reliance on critical observations.” This reliance on “critical observations,” in turn, occasioned the emergence of a new form of scientific expression, a form that could more effectively convey the “factual” nature of the phenomena observed.

Jefferson forged his approach to observation—and subsequent visual display—at the College of William and Mary, where he studied with the Scottish mathematician and natural philosopher William Small. In his autobiography, Jefferson cites Small as his most significant mentor. “From his conversation,” Jefferson (1830, 2) recalls, “I got my first views of the expansion of science and of the system of things in which we are placed.” Jefferson also notes that Small returned to Europe, although he does not comment on Small’s subsequent career. In point of fact, Small would go on to train the young William Playfair, the Scottish political economist now viewed as the leading progenitor of modern data visualization.<sup>14</sup> Playfair employed painstakingly composed charts and graphs—the first of their kind—in order to advance his economic and political arguments about the British Empire. In “Exports & Imports to and from all North-America,” he effectively demonstrates the impact of the American Revolution on Great Britain’s balance of trade (fig. 4). Unlike Jefferson, he was not certain that revolution—at home or abroad—would result in any positive effect. As he explains in the preface to the third edition of *The Commercial and Political Atlas* (1801), “A great change is now operating in Europe, and . . . it is impossible to guess in what it will most likely terminate” (Wainer and Spence 2005, iii–iv). Although he feared that the new century might be defined by “war and contention,” he agreed with Jefferson about one thing: that the visual format of his charts and tables would ensure that the underlying data would be understood and remembered for generations to come (iv). “On inspecting any one of these charts attentively,” he pronounces in the introduction, “a sufficiently distinct impression will be made, to remain unimpaired for a time, and the idea which does remain will be simple and complete” (xiv).

Jefferson demonstrates a similar desire—to present an idea that remains “simple and complete”—in *Notes on the State of Virginia*, his extended response to the Comte du Buffon’s theory of New World infe-



**Figure 4** “Exports & Imports to and from all North-America.” In Playfair 1801. Courtesy of the Library Company of Philadelphia.

riority, or “degeneration,” as he termed it. Widely considered the most famous example of this form of scientific expression in the United States, the *Notes* includes, for example, tables comparing the size of animals in Europe and America, listings of indigenous American vegetables, and an extensive catalog of Virginian birds (fig. 5). As Bruce Dain (2002, 28) observes, Jefferson’s visual presentation of these “supposedly unvarnished facts,” without recourse to analysis or explanation, was intended to “testif[y] that Buffon’s idea of the inferiority of New World nature was absurd, an instance of prejudice and over-theoretical imagination running away with the facts.” In Jefferson’s view, as in Playfair’s, the visual presentation of his evidence aligned it more closely with his inductive methodology, and bolstered (his belief in) the factual basis of what he had observed firsthand.

The implications of the visual rhetoric of the *Notes* extend from Jefferson’s desire to assert the unequivocal nature of the evidence presented, to his attempt to enforce a unanimity of response among the book’s citizen readers. Christopher Looby (1987, 265), in his pioneering work on the political dimensions of taxonomic natural history, has argued that the preponderance of “graphical, two-dimensional” modes of presentation in the *Notes*—which he characterizes as an “overwhelmingly static, synchronic presentation of knowledge”—was

deliberately “intended to foster” a “uniformity of sentiments and conceptions” among those who read the book. Because the nation’s democratic governance relied upon the citizens themselves to make appropriate political decisions, it was of crucial importance—or so Jefferson believed—that these citizens learn to cultivate a uniform set of behaviors and beliefs. Thus in his graphical mode of presentation, as in the table comparing the quadrupeds of Europe and America (fig. 5), Jefferson also promotes a new form of political control enforced through his visual display.

Jefferson had no public audience in mind when he traced the columns, rows, and rule-lines in the small, leather-bound volume that he called his “Farm-book” (Jefferson Manuscripts). Here, he recorded the names, birth dates (when known), familial relationships, present locations, and countries of origin of the men, women, and children he enslaved (fig. 6). In the representation of this information about the people of Monticello in diagrams that resemble the charts and tables of the *Notes*, Jefferson enacts a different form of subjugation and control—that is, the reduction of persons to objects, and stories to names. In contrast to the story of James Hemings, told through the absences in the Jefferson archive, the single line in the farm book that fixes Hemings—“Jemmy. 1765.”—serves as a reminder of the violence that can be enacted through visual display. Indeed, the reference to Hemings in the farm book conjures a cautionary tale of its own: a reminder to examine the underlying assumptions and biases embedded in the research methods, database structures, and modes of display that we, as scholars of America’s archive, employ.

In a recent essay, “Humanities Approaches to Graphical Display,” Johanna Drucker (2011) cautions that humanities scholars must resist the “intellectual Trojan horse” of graphical visualization, in which “assumptions about what constitutes information . . . are cloaked in a rhetoric taken wholesale from the techniques of the empirical sciences that conceals their epistemological biases under a guise of familiarity.” In the case of Hemings, as he is visualized in Jefferson’s farm book, we are not only reminded of the “epistemological biases” of empiricism, a theory that elevates what is observable to the status of fact, but we are also made aware of Jefferson’s lack of understanding of his own scientific and personal biases. By recording Hemings as “information” in his farm book, Jefferson supposed that he might become merely an object of empirical knowledge, one not only controlled—but also understood—through visible, visualizable facts.

22 M.V.  
place these  
place tables  
successively  
on either side  
of the table by side.

I. Aborigines of both.		II. Aborigines of one only.		Domestic animals.	
Europe	America	Europe	America	Europe	America
Marmotsh.	8.	Sanglier. Wild boar.	200.	Tapiro.	1.
Buffalo. Bison.	* 600.	Monfon. Wild sheep.	56.	Elephant.	534. Cow.
White bear. Ursus hor.	*	Bouquetin. Wild goat.	*	Horse.	150.
Cantour. Rovine.	3.	Lewe. Hare.	7.6.	Rome.	155.
Bear. Ours.	153.7.	Lepor. Rabbit.	3.4.	Lapgar.	218.
Eth. Blan. Animal pol. (mammal)	*	Poton. Polecat.	3.3.	Gibier.	109.
Red deer. Cerf.	2.89. 8.	Gentelle.	3.1.	Tamaron.	109.
Fallow deer. Daim.	157.0.	Derman. Muskrat.	7.	Tamandu.	68.4.
Wolf. Loup.	69.8.	Lemur. Squirrele.	2.	Dog.	67.6.
Poe. Chouette.	58.7.	Hermione. Batrac.	0.2.	Cat.	70.
Glauc. Glauco. Oraja.	*	Pot. Rat.	7.8.	Bees.	15.
Wild cat. Chat sauvage.	1.30.	Loris.	1.	Bees.	15.
Lynx. Loup conier.	2.5.	Lenda. Domane.	1.8.	Acorn.	1.
Beaver. Castor.	10.5. *	Taup. Mole.	1.2.	Lama.	1.
Badger. Blaireau.	12.6.	Hemster.	0.9.	Paco.	1.
Red fox. Renard.	13.5.	Licel.	*	Paca.	32.7.
Grey fox. Isatis.	*	Leming.	*	Serval.	1.
Oter. Loustre.	8.9. *	Souris. Mouse.	6.	Sloth. Ursule.	27.5.
Porcupine. Marmotte.	6.8.			Sarciorienne.	1.
Porcupine. Tisonnes.	2.0.			Kinkojou.	1.
Hedgehog. Herisson.	2.2.			Tatou. Malabar.	24.8.
Marten. Martre.	1.9. * 6.			Ursos. Ursin.	32.2.
Water rat. Rataille.	2.5.			Raccoon. Raton.	16.5.
Wool. Poulette.	2.2.			Coote.	1.
Hip. Squir. Potolotche.	2.2.			Cocodrile.	16.3.
Shrewmouse. Musomique.	1.			Sloth. Au.	13.
				Sapajou. Ocreine.	1.
				Sapajou. Coate.	9.8.
				Tatou. Encapout.	1.
				Tatou. Apar.	1.
				Tatou. Cachicame.	7.

**Figure 5** “A Comparative View of the Quadrupeds of Europe and of America.” In *Notes on the State of Virginia* (manuscript copy, 1781–85), 28. Jefferson Manuscripts. Courtesy of the Massachusetts Historical Society.

In this way, the farm book calls into question the positivist rhetoric so often associated with contemporary data visualization, rhetoric that derives from Jefferson and his age. It is no coincidence that critics most often point to Jefferson’s racial taxonomies, as articulated in the *Notes*, as evidence of the limits of his empirical science. Certainly, as Timothy Sweet (2009, 110) has suggested, Jefferson’s assessment that

	Indian camp contin <sup>d</sup> .		Guinea contin <sup>d</sup> . 13.
* { Will.		Peter. Aug. 1770.	
* { Judy.		Sally. 1773.	
Jemmy.		Danie (grandson) 1772.	
{ York. 1764.		+ Aggy.	
* { Abby. she is said to have been older than her mother & probably born abt. 1758.		Jenny. 1764.	
Jesse. Nov. 1772. Abby's son.		Dick. 1767.	
* { Ambrare.		* Sall.	
* { Hannah.		{ Aggy. 1769.	
Harry. 1770.		Jemmy. 1771.	
Nanny. 1772.		Bridge quarter.	
	Angola.		
* { Cate.		* { Will.	
* { Cuffey.		* { Betty.	
* { Stephen.		* { Tom.	
Sall. 1764.		* { Isabel.	
Phill. 1766.			Liggon's.
Daniel. 1772.		* { Peter.	
* { Sam.		* { Hannah.	
* { Nancy.		Betty. 1772.	
	Guinea.		Forest.
+ { Betty Hemings.		+ { Martin. 1756.	
Nancy. 1761.		{ Bob. 1762.	
Jemmy. 1765.		{ Dinah. 1761.	
Thenia. 1767.		{ Billy Warney. 1763.	
Eritta. 1769.		* { Lucy.	
		+ { Suck.	
		+ Old Jenny.	
		* Mingo.	
		* Tom Shackleford.	

Figure 6 “Jemmy. 1765.” In “Farm-book” (manuscript copy, 1774–1824), 13. Jefferson Manuscripts. Courtesy of the Massachusetts Historical Society.

“the races of black and red men . . . have never yet been viewed by us as subjects of natural history” indicates how Jefferson fails to “reflect critically on his own process of data-gathering and inference, [and] on the larger implications of the paradigm in which he work[ed]” (Jefferson [1781–82] 1984, 270). Following Foucault, Sweet cites these lines as an instance of the epistemological “gap in the Enlightenment scientific

paradigm” that prompted the emergence of the modern human sciences (110). Thus when Drucker (2011) contends, in her essay on visualization, that the “humanistic concept of knowledge depends upon the interplay between a situated and circumstantial viewer and the objects or experiences under examination and interpretation,” we might more precisely identify the gap made manifest by Jefferson’s unreflective racial science as the one that, heeding Drucker, we must seek to close.

Jefferson’s epistemology of the visible—that is, the tripartite relation that he posits between the observable, the visualizable, and the true—also subtends the conception of race that emerges as he attempts to identify the visible features that might allow him to classify Africans and African Americans as a “distinct” racial group (1984, 270). Working from this conception of race—as a technological “mapping tool” that associates visible “traces of the body” with “allegedly innate invisible characteristics”—Wendy H. K. Chun (2012, 40) asserts that race “thus problematizes the usual modes of visualization and revelation, while at the same time making possible new modes of agency and causality.” While her analysis rests on examples from contemporary cinema, her argument about the “new modes of agency and causality” (56) that a consideration of race-as-technology can bring about applies to visualization as it is broadly conceived. Chun concludes:

Race as technology is both the imposition of a grid of control and a lived social reality in which kinship with technology can be embraced. Importantly, it displaces ontological questions of race—debates of what race really is and is not, focused on separating ideology from truth—with ethical questions: what relations does race set up? As Jennifer Gonzalez has argued, race is fundamentally a question of relation, of an encounter, a recognition, that enables certain actions and bars others. The formulation of race as technology also opens up the possibility that, although the idea and the experience of race have been used for racist ends, the best way to fight racism might not be to deny the existence of race, but to make race do different things. (56–57)

The visualizations of James Hemings that I have presented in this essay reveal the “grid of control” of slavery that consigned him first to social, and then corporeal death. At the same time, these images illuminate the “lived social reality” of plantation life, one that was rich with community, kinship, and support. In the context of an archive—and an

ideology—that effaces these relations, I have attempted to use the technology of race, described by Bruce Dain (2002, 9) as “naming the visible,” against itself. By deforming the archive through visual means, I have revealed some of the possibilities of recognition that the *Papers of Thomas Jefferson* itself resists. I have also endeavored to expose the impossibilities of recognition—and of cognition—that remain essential to our understanding of the archive of slavery today.

### Beyond the Visible: The Culinary and Cultural Work of James Hemings

Although much remains invisible about Hemings in the Jefferson archive, there are certain aspects of his life that can be perceived through traditional literary-critical means. An examination of the emancipation agreement with Hemings—that Jefferson penned in his special ink, encased in his imported paper, copied in his copying press, and then placed in his personal archive to preserve—reveals that Jefferson himself was at times required to recognize, if not to redress, the flawed logic that reduced Hemings’s life to a line of data. This formal but not legally binding document, the second of the two documents in the Jefferson archive to refer to Hemings by his full name, records the preconditions for Hemings’s eventual emancipation. It reads:

Having been at great expence [sic] in having James Hemings taught the art of cookery, desiring to befriend him, and to require from him as little in return as possible, I do hereby promise and declare, that if the said James shall go with me to Monticello in the course of the ensuing winter, when I go to reside there myself, and shall there continue until he shall have taught such person as I shall place under him for that purpose to be a good cook, this previous condition being performed, he shall be thereupon made free, and I will thereupon execute all proper instruments to make him free. (2009, 27:199)

Certainly Jefferson’s proposal, to which Hemings had no choice but to consent, illustrates the incontrovertible authority of Jefferson as master, and the resultant subjection of Hemings as slave. With his measured tone and offer of friendship, Jefferson characterizes himself as a benevolent force for liberty. But his concern with the practical implications of Hemings’s release reveals how his own heightened valuation of

the “art of cookery” supersedes his interest in granting Hemings the freedom he deserved. At the same time, Jefferson’s insistence that Hemings train another person “to be a good cook” before he can be freed offers textual evidence of his awareness of Hemings’s skill. The prospect of losing Hemings as his chef requires Jefferson to articulate, for the first time, the larger impact—as well as the value—of the culinary labor in which he forced Hemings to engage.

In contrast to the undervalued labor that Jefferson records in his farm book, Hemings’s labor is here described as an “art”—indeed, as *techne*—the precise form of applied, experiential knowledge that Jefferson himself most esteemed. As exemplified by the copying press that he did not merely utilize, but also designed, Jefferson particularly admired the “mechanic arts,” as technical knowledge was then described, as intimately related to his empirical worldview (Marx 1997, 3). And yet, in his supposition that if Hemings were to simply train a replacement chef, Hemings’s absence would not be felt at Monticello, Jefferson reveals an additional limitation of his observing eye: his lack of awareness of the aspects of Hemings’s labor that are not easily perceived. In the agreement, Jefferson does not acknowledge Hemings’s cognitive work—for example, the selection of the particular foodstuffs that would represent the unique American locale. Neither does Jefferson register the impact of Hemings’s affective work—the work of influencing, through Hemings’s specific methods of preparation and display, the development of his own republican values and ideals. The condition of chattel slavery, of course, fundamentally precludes any equivalence between Hemings’s culinary labor and labor today, but it remains instructive to consider how the dimensions of Hemings’s *techne* that transcend the visible might, in turn, help to illuminate the invisible aspects of digital work in the present day.

We might then return to the Jefferson archive as we encounter it today in digital form. As scholars, we do not see the labor involved in transcribing manuscripts into machine-readable text, nor do we think of the discussions—equal parts technical and theoretical—that contribute to the development of the encoding standards and database design that allow us to perform our search queries. We are not trained to ask questions about metadata or controlled vocabularies—questions that archivists and their technical teams ask every day. And yet, this digital labor remains not only invisible, but also unacknowledged by most humanities scholars.<sup>15</sup>

It has been suggested that Thomas Jefferson, because of his status as a founding father, his role in the establishment of the Library of Congress, and his own acute case of Derridian archive fever, functions as a “synecdoche for the American archive” (Elmer 1998, 23n). To this list one must also add Jefferson’s personal responsibility for inscribing the silences of slavery into American culture. But it is through the silences of James Hemings that the true American archive today emerges into view. This is an archive that encompasses impossibility, and depends on an interplay of scholar, archivist, technologist, and text. Only with this conception of the archive in mind can we move toward an understanding of the greater American cultural archive, not as a neutral repository of knowledge, but instead as a tool for exposing the limits of our knowledge. Indeed, these very limits will allow us to begin to see.

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### Notes

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- 1 My account of the operation of the copying press derives primarily from the process described in Titus 2006.
- 2 Jefferson was not only a dedicated user of technology, but also an early adopter—he sought to acquire “one of those copying Machines” in 1783, almost as soon he learned of its existence, and in 1804, he would purchase one of the first polygraph devices, which represented the next generation of copying technology (2009, 15:585). For a detailed treatment of Jefferson’s relationship to this particular technology, see Bedini (1984).
- 3 Bedini (1984, 3) remarks on the “preoccupation with recordkeeping” that Jefferson manifested since his college days. Francis Cogliano (2008, 10–11) argues, more specifically, that Jefferson “carefully edited and preserved his massive collection of personal papers” out of an awareness of the “importance of primary sources as the basis of historical writing,” and for this reason, he can be said to have demonstrated a calculated attempt to “shape the history of his life and times.”
- 4 For a more specific description of the scope of the archive, as well as the timeline for its completion, see Pellien (2009).

- 5 It is worth noting that the field of postcolonial studies has also taken up the challenge of the fundamental incompleteness of its archive. Amin (1995, 118), for example, attempts to “chart the distance that separates” subaltern voices from the judicial discourse that inscribes them into the archival record. As another example, Ghosh (2002) anticipates Hartman in his use of narrative so as to dilate upon the numbers, names, and ancillary records that constitute the archive of the enslaved.
- 6 Other major proponents of exploration and play include Stephen Ramsay (2010, 2011), discussed later in the essay, as well as Geoffrey Rockwell and Stéfan Sinclair (2013).
- 7 For the canonical articulation of distant reading, see Moretti (2007). For the newer formulation of macroanalysis, see Jockers (2013).
- 8 For more information about Protovis, see [mbostock.github.io/protovis/](http://mbostock.github.io/protovis/). For information about its successor, D3.js, see [d3js.org/](http://d3js.org/).
- 9 The too-often inscrutable structure of network diagrams has increasingly become a subject of critique, from the fields of both data visualization and media studies. For an edifying critique of current network visualization techniques from the former perspective, see Krzywinski et al. (2012). For a more media-critical perspective on the problem of the so-called “hairball,” see Galloway (2012).
- 10 In her work on antebellum food culture, Jessica Harris (2011, 102) has described the Big House kitchen as “one of the centers of power” during that period. From the kitchen, she explains, “the cook, solo or in conjunction with the mistress of the house, fed the master’s family and often oversaw the feeding on all the plantation. At some of the loftier plantations there could be twenty or more guests to dinner every evening.”
- 11 The term *deformance* was first employed in McGann and Samuels 2001.
- 12 At present, there exists a tension at the heart of digital humanities scholarship: an insistence on what Natalia Cecire (2011) has characterized as a “fundamentally *nondiscursive* theoretical mode” that is amplified when placed in the context of the archive of slavery. In addition to Cecire’s trenchant critique of this tension, see the set of essays she introduces.
- 13 XML is a “markup language,” a set of agreed-upon standards that allows individuals to annotate a document in a way that can be later read—or “parsed”—by a computer. Many archival documents are encoded in XML so that key information such as author, recipient, or date of composition, can be easily extracted and then manipulated and/or displayed. In this case, I received the *Papers of Thomas Jefferson* in XML form, but was required to extract the content of the letters for use with the Stanford named entity recognizer (NER). (I kept track of the additional information associated with each letter in a separate file.) Since the NER returns its output in XML form, I was required to write a second script to extract

- that information, which I then merged back into the file that contained the letters' original metadata. For more information on the Stanford NER, and the related set of CoreNLP tools, see [nlp.stanford.edu/software/](http://nlp.stanford.edu/software/).
- 14 For more on the life of William Playfair, see Wainer and Spence (2005).  
For more on the history of data visualization, see Tufte (2001).
- 15 For an extended consideration of digital labor, and the implications for human rights, ethics, and history, among other themes, see Scholz (2012).

## References

- Amin, Shahid. 1995. *Event, Metaphor, Memory: Chauri Chaura, 1922–1992*. Berkeley and Los Angeles: Univ. of California Press.
- Bastian, Jeannette. 2005. "Whispers in the Archives: Finding the Voices of the Colonized in Records of the Colonizer." In *Political Pressure and the Archival Record*, edited by Margaret Proctor, Michael Cook, and Caroline M. Williams, 25–43. Chicago: Society of American Archivists.
- Bedini, Silvio A. 1984. *Thomas Jefferson and His Copying Machines*. Charlottesville: Univ. of Virginia Press.
- Best, Stephen. 2011. "Neither Lost nor Found: Slavery and the Visual Archive." *Representations* 113, no. 1: 150–63.
- Best, Stephen, and Sharon Marcus. 2009. "Surface Reading: An Introduction." *Representations* 108, no. 1: 1–21.
- Cecire, Natalia. 2011. "Theory and the Virtues of Digital Humanities." *Journal of Digital Humanities* 1, no. 1. [journalofdigitalhumanities.org/1-1/introduction-theory-and-the-virtues-of-digital-humanities-by-natalia-cecire/](http://journalofdigitalhumanities.org/1-1/introduction-theory-and-the-virtues-of-digital-humanities-by-natalia-cecire/).
- Chun, Wendy H. K. 2012. "Race and/as Technology." In *Race after the Internet*, edited by Lisa Nakamura and Peter Chow-White, 38–60. New York: Routledge.
- Cogliano, Francis. 2008. *Thomas Jefferson: Reputation and Legacy*. Charlottesville: Univ. of Virginia Press.
- Cohen, I. Bernard. 1997. *Science and the Founding Fathers: Science in the Political Thought of Jefferson, Franklin, Adams, and Madison*. New York: Norton.
- Dain, Bruce. 2002. *Hideous Monster of the Mind: American Race Theory in the Early Republic*. Cambridge: Harvard Univ. Press.
- Drucker, Johanna. 2011. "Humanities Approaches to Graphical Display." *Digital Humanities Quarterly* 5, no. 1. [www.digitalhumanities.org/dhq/vol/5/1/000091/000091.html](http://www.digitalhumanities.org/dhq/vol/5/1/000091/000091.html).
- Elmer, Jonathan. 1998. "The Archive, the Native American, and Jefferson's Convulsions." *Diacritics* 28, no. 4: 5–24.
- Folsom, Ed. 2007. "Database as Genre: The Epic Transformation of Archives." *PMLA* 122, no. 5: 1571–79.

- Foucault, Michel. (1989) 1996. *Foucault Live: Interviews, 1961–84*. Edited by Sylvère Lotringer. Translated by John Johnston. New York: Semiotext(e).
- Galloway, Alexander R. 2012. "Are Some Things Unrepresentable?" In *The Interface Effect*, 78–100. Malden, MA: Polity Press.
- Ghosh, Amitav. 2002. "The Slave of MS. H.6." In *The Imam and the Indian: Prose Pieces*, 169–242. Delhi: Ravi Dayal.
- Gilroy, Paul. 1993. *The Black Atlantic: Modernity and Double Consciousness*. Cambridge: Harvard Univ. Press.
- Gordon, Avery. (1996) 2008. *Ghostly Matters: Haunting and the Sociological Imagination*. Minneapolis: Univ. of Minnesota Press.
- Gordon-Reed, Annette. 2008. *The Hemingses of Monticello: An American Family*. New York: Norton.
- Harris, Jessica. 2011. *High on the Hog: A Culinary Journey from Africa to America*. New York: Bloomsbury.
- Hartman, Saidiya. 2008. "Venus in Two Acts." *Small Axe* 12, no. 2: 1–14.
- Jefferson Manuscripts. Coolidge Collection. Massachusetts Historical Society.
- Jefferson, Thomas. (1781–82) 1984. *Notes on the State of Virginia*. Edited by Merrill D. Peterson. New York: Library of America.
- . 1830. *The Writings of Thomas Jefferson*, vol. 1. *Memoir, Correspondence, and Miscellanies from the Papers of Thomas Jefferson*. Edited by Thomas Jefferson Randolph. Boston: Gray and Bowen.
- . 2009. *The Papers of Thomas Jefferson Digital Edition*, edited by Barbara B. Oberg and J. Jefferson Looney. (All 33 vols. published in print through 2006). Charlottesville: Univ. of Virginia Press. [rotunda.upress.virginia.edu/founders/TSJN.html](http://rotunda.upress.virginia.edu/founders/TSJN.html).
- Jockers, Matthew. 2013. *Macroanalysis: Digital Methods and Literary History*. Urbana: Univ. of Illinois Press.
- Krzywinski, Martin et al. 2012. "Hive Plots—Rational Approach to Visualizing Networks." *Briefings in Bioinformatics* 13, no. 5: 627–44.
- Lepore, Jill. 1998. *The Name of War: King Philip's War and the Origins of American Identity*. New York: Knopf.
- Liu, Alan. 2012. "Where Is Cultural Criticism in the Digital Humanities?" In *Debates in the Digital Humanities*, edited by Matthew K. Gold, 490–506. Minneapolis: Univ. of Minnesota Press).
- Looby, Christopher. 1987. "The Constitution of Nature: Taxonomy as Politics in Jefferson, Peale, and Bartram." *Early American Literature* 22, no. 3: 252–73.
- Marx, Leo. 1997. "What Is Technology?" In *Major Problems in the History of American Technology*, edited by Merritt Roe Smith and Gregory K. Clancey, 2–7. New York: Houghton Mifflin.
- McGann, Jerome, and Lisa Samuels. 2001. "Deformance and Interpretation," in *Radiant Textuality: Literature after the World Wide Web*, 105–35. New York: Palgrave.

- Moretti, Franco. 2007. *Graphs, Maps, Trees: Abstract Models for Literary History*. New York: Verso.
- Parrish, Susan Scott. 2010. "Rummaging / In and Out of Holds." *Early American Literature* 45, no. 2: 261–74.
- Pellien, Jessica. 2009. "Rotunda Launches a Digital Edition of *The Papers of Thomas Jefferson*." Princeton University Press blog. April 9. [press.princeton.edu/blog/2009/04/06/rotunda-launches-a-digital-edition-of-the-papers-of-thomas-jefferson/](http://press.princeton.edu/blog/2009/04/06/rotunda-launches-a-digital-edition-of-the-papers-of-thomas-jefferson/).
- Playfair, William. 1801. *The Commercial and Political Atlas*, 3rd ed. London: J. Wallis.
- Ramsay, Stephen. 2010. "The Hermeneutics of Screwing Around." Paper presented at the Playing with Technology in History Conference. Niagara-on-the-Lake, Canada, April 29–30. [www.playingwithhistory.com/wp-content/uploads/2010/04/hermeneutics.pdf](http://www.playingwithhistory.com/wp-content/uploads/2010/04/hermeneutics.pdf).
- . 2011. *Reading Machines: Toward an Algorithmic Criticism*. Urbana: Univ. of Illinois Press.
- Rockwell, Geoffrey. 2013. "There's a Toy in My Essay: Problems with the Rhetoric of Text Analysis." *Philosophi.ca* (wiki). [www.philosophi.ca/pmwiki.php/Main/TheRhetoricOfTextAnalysis](http://www.philosophi.ca/pmwiki.php/Main/TheRhetoricOfTextAnalysis).
- Rockwell, Geoffrey, and Stefán Sinclair. 2013. *Hermeneuti.ca—The Rhetoric of Text Analysis* (website). [hermeneuti.ca/](http://hermeneuti.ca/).
- Scheinfeldt, Tom. 2012. "Where's the Beef? Does Digital Humanities Have to Answer Questions?" In *Debates in the Digital Humanities*, edited by Matthew K. Gold, 56–60. Minneapolis: Univ. of Minnesota Press.
- Scholz, Trebor, ed. 2012. *Digital Labor: The Internet as Playground and Factory*. New York: Routledge.
- Stanton, Lucia. 2009. "Jefferson's People: Slavery at Monticello." In *The Cambridge Companion to Thomas Jefferson*, edited by Frank Shuffelton, 83–100. New York: Cambridge Univ. Press.
- Sweet, Timothy. 2009. "Jefferson, Science, and the Enlightenment." In *The Cambridge Companion to Thomas Jefferson*, edited by Frank Shuffelton, 101–13. New York: Cambridge Univ. Press.
- Titus, Sonja et al. 2006. "The Copying Press Process: History and Technology, Part 1." *Restaurator* 27, no. 2: 90–102.
- Trouillot, Michel-Rolph. 1997. *Silencing the Past: Power and the Production of History*. Boston: Beacon.
- Tufte, Edward. 2001. "Graphical Excellence." In *The Visual Display of Quantitative Information*, 2nd ed., 13–52. Cheshire, CT: Graphics Press.
- Wainer, Howard, and Ian Spence. 2005. Introduction to the modern edition of William Playfair's *Commercial and Political Atlas and Statistical Breviary*, 1–35. New York: Cambridge Univ. Press.
- Wilson, Ivy. 2011. *Specters of Democracy: Blackness and the Aesthetics of Politics in the Antebellum United States*. New York: Oxford Univ. Press.