

Unnecessary Complications?

The Interplay of Symbolic Forms in John Carroll Power's "Diagram and Statistical Record of the Signers of the Declaration of Independence"

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Abstract:

This paper investigates the mixing of different symbolic forms in John Carroll Power's 1858 "Diagram and Statistical Record of the Signers of the Declaration of Independence." It argues that the diagram's odd design constitutes an attempt to bring together the symbolic forms of narrative, data, and play to thus highlight and foreground their liminal boundaries and to invite readers to practice exchanging one form for another. In this, the diagram speaks of two important facets of nineteenth-century US culture: a fascination with different symbolic forms and their relationship on the one hand and a desire to use these different forms and their liminality for more democratic forms of representation on the other.

This paper looks at one individual historic artifact, the 1858 "Diagram and Statistical Record of the Signers of the Declaration of Independence," a broadsheet that uses a line-graph visualization to show a subset of biographical data for the fifty-six delegates who signed the Declaration (Fig. 1). Very little is known about the document and its intended uses. While the following pages thus enter into a dialog with this object that is ultimately best described as hermeneutic, the overall thrust of this reading is one of historicization and theorization. After all, I am primarily interested in how this large, lithographed diagram intertwines different symbolic forms, such as data, narrative, and play. As I will show, this intertwining situates the "Diagram" within US culture's fascination with the diversity of symbolic forms around the middle of the nineteenth century—a time when print culture consolidated and a time when the young republic was vigorously experimenting with the affordances and the potential cultural functions of different symbolic forms as they could be realized in the medium of print. Focusing on this historical dimension allows me to explore the relationship between symbolic form, affordance, and cultural work. As I will argue, the diagram's cultural work of animating the past

and democratizing its representation relies on how it mobilizes this plurality of forms and how it activates these forms' interfaces with one another, inviting its readers to playfully turn data into narrative.

The Diagram

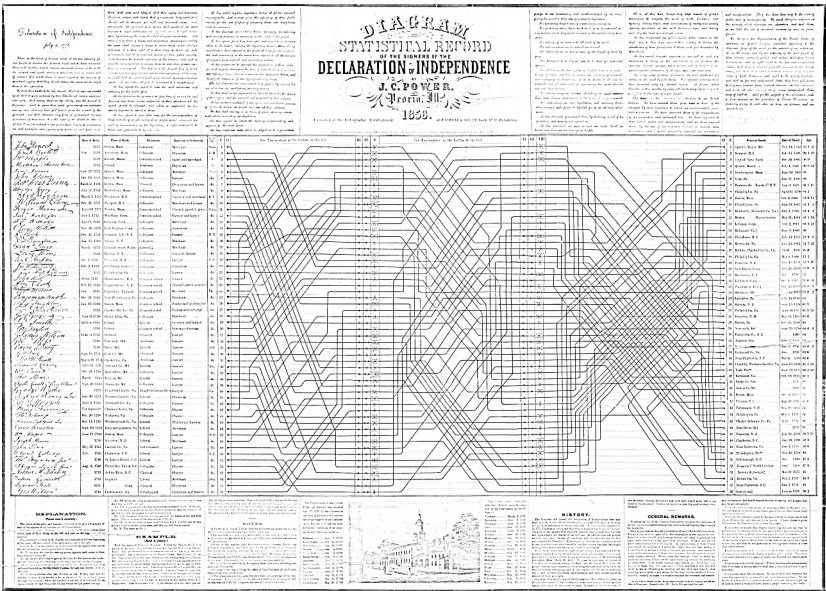
Approximately 120 by 90 cm in size, the lithograph consists of seven individual sections that all serve distinct functions.¹ The top region features a reproduction of the text of the Declaration of Independence, interrupted only by the embroidered title of the chart. The bottom region contains an explanation of how to use the chart along with a sample reading, a section with six footnotes, a section with additional information on the ratification of the Declaration, along with an image of Independence Hall, a section with general historical information on the Declaration, and a paratextual section with "General Remarks" that detail some of the considerations that went into producing the chart.

By far the largest section, however, is the eye-catching line graph in the middle region. It contains the names of the signers of the Declaration, their places and dates of birth, their education, their profession, the states they came to represent, whether they were married (and how often), how many children they had, whether they were survived by their wife, and how many living children they left behind. These columns are reordered three times: The left column has the names ordered in the sequence "as they are usually published," this sequence then gets shuffled to represent the individual delegates' age at the signing of the Declaration, it gets shuffled again to represent the order in which they died, and again to give their age at the date of death. These reshufflings lead to the three areas of crisscrossing lines.

Very little is known about the purpose of the diagram. Similar broadsheets were produced to be used in schools and other educational contexts, and historical education is certainly one possible use of this document as well. After all, its author, John Carroll Power, was a historian who wrote books such as the *History of the Early Settlers of Sangamon County, Illinois* (1876), co-written with Sarah A. Power, or the *History of an Attempt to Steal the Body of Abraham Lincoln* (1890). Indeed, as Thomas Craughwell explains, Power's *Early Settlers* "is still regarded by historians as a meticulously researched guide to the region's founding families" (101). Today, Power is also known for being the first custodian of Lincoln's tomb and for playing

1 Obviously, much of the evocative appeal and aesthetic power of the diagram stems from its visibility. It is an object that should ideally be experienced in full size and detail. In lieu of that, a high resolution, full-color reproduction is available online at: www.data-imaginary.de/signers.

Fig. 1: The “Diagram and Statistical Record”



an instrumental role in preventing the theft of Lincoln's body in 1876 (cf. 102; "John Carroll Power"). His interest in preserving the past as a historian and as a custodian of the tomb suggests that the diagram, too, was meant to serve a historical interest of preserving the past for future readers. Indeed, the bottom-right "General Remarks" explain that the goal in making the chart was to produce, over time and in several iterations, "a reliable standard for reference." It details the process of composition as a mix of reading secondary material and of historical fieldwork, interviews with descendants of the signers, and it marvels at the "era in the world's history" it is thus meant to capture. Clearly, history was on Power's mind.

As a reference work, however, the diagram is deeply flawed in more ways than one: Most of the information it contains is meaningless regarding the historical moment it was meant to capture. Knowing, e.g., how many children Benjamin Franklin had, or how old he was, does not get anybody any closer to understanding his role in the signing of the Declaration. Why would this be of any interest? If, as the "General Remarks" section explains, the goal of the document is to "concentrate information that would require months of reading into a space that may be seen at a glance," it seems not only that Power had chosen to relay the most trivial bits of information from these "months of reading" but that the organization in the chart of crisscrossing lines is also the least efficient way to "concentrate" this in-

formation: Had he sorted all columns in the same order in a simple table, he could have left out the lines and saved half of the space. The chart, while acknowledging an information overload of sorts, fails at organizing information in a particularly convincing and effective way.

More problematically, the chart is not only an incredibly inefficient way of storing information but a flawed one of relaying it: It is difficult to read and, with the lines' multiple crossings, any reading is prone to contain errors. The line graph also fails as a form of data visualization. While the middle of the nineteenth century generally saw the development of novel, successful formulas for visualizing data many of which are still in use today, Power's is certainly not among them.² If the goal of a visualization is to "reveal the data" (Tufte 13) or to allow for "[p]erceptual [i]nference," "[e]nhanced [r]ecognition of [p]atterns," or a shift from cognitive to perceptual work (Card et al. 16), the diagram succeeds at neither of these. If anything, it increases the cognitive load of reading, it obfuscates the data at stake, and it complicates the reading without any noticeable gain.

In light of these shortcomings, it seems almost unsurprising that the copy held by the American Antiquarian Society in Worcester, MA, is the only known to still exist, and there seem to be no other, similar lithographs using such a line graph visualization for biographical information.³ And yet, precisely because it is so oddly inefficient, Power's diagram radiates a strange fascination. It remains an object of 'archival wonder'—one of a kind and, despite its own overly prolific paratextual self-description, deeply enigmatic. The diagram must be more than simply a failure.

Context

Produced in 1858, the diagram must be seen within the context of the evolution of print culture in the US and within American culture's efforts at the time to figure out how the technology of print would contribute to the social and political fabric of the young republic. After all, as a growing and vibrant body of interdisciplinary scholarship over the last decades keeps showing, print culture played a vital role for the young republic not only because it provided the material basis, the infrastructure, for the circulation of those narratives that helped form an 'imagined

2 This paper is part of a larger project on the nineteenth-century's 'data imaginary' and on the role that increasingly widespread appeals to data played in shaping notions of literariness and literature. For more on the project, cf. the webpage www.data-imaginary.de.

3 I encountered the chart in the course of an archival research stay at the AAS in September 2015. The stay was made possible by the German Association for American Studies's Christoph-Daniel-Ebeling Fellowship.

community.' Rather, it was print culture's material practices—the formal and informal networks of information flows it inaugurated, the modes of production and of circulation it instituted, and the patterns of thinking it practiced—that helped bring into existence democratic logics of representation, a veritable 'grammar' of republicanism in the antebellum years. As Trish Loughran's felicitous phrasing has it, it was an evolving print culture in those decades that introduced "the expanding republic [...] to itself for the very first time" (361), and this introduction was a matter of finding forms at least as much as of circulating content.

In light of this, recent work on the emergence of print culture in the late eighteenth and nineteenth century has not only focused on the print public sphere's highly dynamic, discontinuous makeup, a plurality of smaller, overlapping, and competing publics rather than one coherent national public sphere. It has also focused on the role that the printers' "little jobs"—broadsheets, blank forms, and other 'non-book' printing—played for this (Stallybrass; cf. Brown). It is here, in the margins of the more canonical book and newspaper printing, that a wide range of formal experimentation took place. Seen thus, the "Diagram" is an example exactly of that: It is expressive of the will to formal experimentation and innovation that marked the emergence of print culture in those decades.

Two areas of such experimentation deserve to be discussed more fully here because they relate to the diagram in particularly direct a fashion. One has to do with American culture's profound fascination with 'facts' and their 'statistical' aggregation at the time. As David Shi explains, US culture in the middle of the nineteenth century was marked by a "rapturous devotion to 'literal facts'" and by a strong pre-occupation "with the pursuit of verifiable knowledge and tangible concerns" (3). The resulting proto-realism was mostly a "rhetorical" (rather than a philosophical) movement, deriving much of its energy and unity from embracing democratic pluralism and from opposing a "genteel elite" (6). Indeed, this newfound, "growing predilection and respect for 'statisticks' and 'authentic facts'" was inextricably tied to the young republic's democratic aspirations (Cohen 35). Patricia Cline Cohen thus observes:

statistical thought offered a way to mediate between political ideas based on a homogeneous social order and economic realities that were fast undermining homogeneity. Inventories of descriptive facts about society were touted as providing an authentic, objective basis for ascertaining the common good. (55)⁴

4 Cf. also Daniel Boorstin's related observation: "Numbers," he writes, "seemed somehow to offer self-evident answers to complicated social questions," and a "by-product of democracy" thus was "an unprecedented popular diffusion of statistics" and "a new kind of number consciousness" (188).

The result was a logic that still resonates today: In a democracy, citizens need to be able to agree on the facts and to disagree only regarding their interpretation (40–42).

Notably, facts in this view were understood at least as much as a formal as an ontological category. As Ellen Gruber Garvey explains, it was in the decades between the end of the eighteenth and the middle of the nineteenth century that the meaning of “information” fundamentally changed, taking on its “abstract sense” (111). Summarizing an argument by Geoffrey Nunberg, she asserts that this shift transformed information from being seen as “the productive result of the *process* of being informed to a *substance*” of its own (91; emphasis in the original). In consequence, facts referred then not simply to statements that were empirically true but to information that had been “morselized and extracted in isolated bits.” It is this understanding of facticity as a formal quality, ‘data-esqueness,’ that turned facts into an object of deep cultural fascination.

A second area in which nineteenth-century print culture engaged in a wide range of formal experiments has to do with the relationship between history, information overload, and linearity. Countless charts, lithographs, and broadsheets show nineteenth-century authors and printers attempting to find novel ways of visualizing history, and many of these attempts struggle with linearity as a core problem they face: In many of these visualizations, the distant past, low in information density and already relayed in the inherently linear, narrative form of myth, can easily and orderly be portrayed in simple, linear sequences. Of more recent events, however, simply too much is known to be contained in linear form. Emma Willard’s famous *Temple of Time* is a particularly prominent example of this, with the floor of the ‘temple’ becoming ever more complex the closer it moves to the present, but the effect can be observed in other documents, such as Sebastian C. Adams’s *A Chronological Chart of Ancient, Modern and Biblical History* or Elizabeth Palmer Peabody’s *Chronological History of the United States* as well. Faced with an overabundance of information, these visualizations of historical data choose a two-dimensional graphic mapping rather than the one-dimensional linear sequence to capture the (recent) past. Their unusual, often unwieldy and experimental form typically requires these projects to come with an additional booklet explaining how they are supposed to be read.

In the middle of the nineteenth century, these early information workers’ interrelated attempts to satisfy the time’s hunger for ‘facts’ and ‘data’ and their grappling with linearity indeed encouraged experimentation. In a different context, Ian Hacking speaks of a “silly season,” a “whole series of conceptual confusions, false starts, and crazy responses” (455), but his characterization of early work on statistics and determinism applies equally well here. The time’s fascination with facts and its frustration with linearity led to a number of beautiful failures of sorts. Indeed, it is such a failure of sorts that today’s readers recognize in the “Diagram”:

The chart seems troubled because of the open incongruity between its subject matter, the signing of the Declaration, and its 'generic' desire to speak in the form of the "Diagram" and the "Statistical Record." After all, there is very little statistical information here, and hardly any use for statistical inquiry. And yet the chart seems bent on using this form. If the chart seems to fail, it is because of this seeming mismatch between content and form.

Symbolic Forms

However, the chart seems much more successful once it is seen not as an attempt to implement a single, static form but as an experiment trying to facilitate a dialog between different forms. It brings together, after all, at least three different symbolic forms—data, narrative, and play—and it accentuates the dynamic interaction between the three. In this sense, the "Diagram" gains much of its value, meaning, and semiotic productivity from the liminal boundaries these symbolic forms have with another.

The large, tabular center section of the diagram quite obviously foregrounds the symbolic form of data, as I conceptualize it. It contains discrete pieces of information, much of it quantitative and all of it narratively depleted: the chart gives individual states that are emphatically not connected by causality, as they would be in a narrative sequence, but that are tied together by lines that indicate mere correlation. In their formal uniformity the individual items are thus indeed "morselized and extracted in isolated bits." In fact, all of the information contained in the diagram could easily and much more efficiently be represented as a simple table of information—the prototypical form for representing data at the time. Seen thus, the ordered columns (the delegates' age at the signing of the Declaration, the order in which they died, their age at the date of death) constitute indexes: They facilitate effective arbitrary access along any of these axes, making it easy to, for example, identify the youngest signer. But this improved access comes at the cost of reduced information density and a reduced storage efficiency—a problem that continues to haunt contemporary database design where indexes typically entail a trade-off between speed of access and storage cost.

At the same time, the entire chart constitutes a data-esque information container simply by how it stores individual informational items that never get pulled together into a syntagmatic form. The individual sections bring together, in discontinuous ways, very different materials that are simply stored side by side: the facsimile reproductions of the signatures and of the picture of Liberty Hall, the quantitative information, the more anecdotal items, and the various forms of instruction. All of these are merely collected and presented as an ordered resource for the readers to mine by themselves. The chart is the result of Power's gather-

ing of historical information and of his wrestling with the problem of information overload, his having parsed “information that would require months of reading.” It does not present an effective condensation of this work, but it invites readers to redo the work, to explore the data on their own.

At the same time, of course, the chart brims with narrativity—beginning already with the individual, minimalist data entries. The entry, under “education,” that George Wythe (who came to be Thomas Jefferson’s legal mentor) was “taught by his mother,” the sheer number of occupations listed for Abraham Clark and Roger Sherman, or the laconic death-place entry “Lost at sea” for Thomas Lynch Jr. are all examples of how a minimalist data point can “evoke a story to the mind of the audience,” as Marie Laure-Ryan defines narrativity (11).⁵ Narrativity, thus understood as a potential to trigger narrative scripts, can be found even in individual, purely numerical entries—Carter Braxton’s nineteen dots indicating nineteen children, or William Whipple’s single one—or in such entries’ relationship to one another: Columns VII and VIII indicate that only eight of Braxton’s nineteen children survived their father, or that Whipple lived to lose his wife and his only child. This effect turns on and dramatizes our tendency to think of life in narrative terms, a staple observation in the context of life writing and an observation at the heart of the oft-cited contention that “man [sic] is in his actions and practice, as well as in his fictions, essentially a story-telling animal” (MacIntyre 216; cf. Fisher 7). As it turns out, the seemingly ‘private’ data collected on the chart, as much as it is at odds with the historical, ‘political’ topic of the Declaration, is deeply suggestive and particularly potent at triggering narrative scripts.

The diagram explicitly encourages this kind of reading, not least in its instructional sample reading of the life of Benjamin Franklin:

Follow the line on which [his name] is placed, to the right. You find that he was born January 17, 1706, at Boston, Mass.; that he received a commonplace education; [...] Pass to the dot on the right; follow the line leading from it [...]; the dot on the line shows that he was married. Pass to Column V.; you find by the stars that he had three children. Continue on.

In effect, the chart, the main section of which denarrativizes and datafies the life stories of the signers, here instructs its readers to turn the resulting data back into narrative, to renarrativize the data it presents. The diagram’s prolific instructions are more than a simple user’s manual. By explaining how to use the chart, they instruct readers more generally on the practice of turning data into narrative, and they are deeply invested in this operation of conversion between symbolic forms: The extensive explanations are one indication of this. The repeated exhortation to

5 The same holds for many of the entries in the Notes section, short ‘narratoids’ amending the denarrativized data in the chart, mostly on the circumstances of a signer’s death.

“Please read it carefully” or to “Read it closely,” ambiguously referring to either the instructions or the chart itself, are another.

Notably, this conversion of data into narrative here is facilitated by a third symbolic form: play. Already visually the lines suggest a game of sorts, not least by alluding to a board game or a maze.⁶ They are drawn so closely to one another and the crossing of lines often is so intense and puzzling that readers have to trace the connection from one column to the next using their finger—and even then at least some of the biographical paths require a steady hand not to get lost. In this sense, the connecting lines invite rule-bound readerly activity, and they facilitate interactions marked by “interactivity, agency, nonlinearity, and iteration,” all hallmarks of play (Schubert 116). In fact, much of the gamelike quality is due to one particular aspect in the organization of the data: The lines only crisscross as much because column III and IX are ordered by relative age and column VI by order of death. Ordering column VI from last to first would have improved readability but would have made the game less challenging.

In a relatively early attempt to bring together insights from video games and literary studies, Espen Aarseth characterizes ‘ludic’ texts, such as “hypertexts, adventure games, or multi-user dungeons” (2), as marked by a “nontrivial effort” that is “required to allow the reader to traverse” them. Adopting his view, the chart indeed qualifies as an “ergodic” text in Aarseth’s sense: it certainly requires a “nontrivial effort” to be read, and it “includes the rules for its own use,” making it “a work that has certain requirements built in that automatically [distinguish] between successful and unsuccessful users” (179). While Aarseth is primarily interested in interactivity, and in defining interactive texts as a class of texts that is categorically distinct from traditional ones, his notion of the “ergodic,” in terms of both the dynamics he describes and the examples he uses, closely tracks what I call ‘ludic’ here: the potential of a text to not simply be read but played.

Affordances

The diagram’s characteristic visual property, the crisscrossing lines in its main section, simultaneously constitute a particularly intuitive example of an affordance.⁷

6 The golden age of board games was around the turn of the century, but they became *en vogue* earlier: The American Antiquarian Society catalog alone holds over 30 board games published between ca. 1830 and 1900.

7 My understanding of ‘affordance’ here draws on Don Norman’s definition as “the relationship between a physical object and a person (or for that matter, any interacting agent [...]). An affordance is a relationship between the properties of an object and the capabilities of the agent that determine just how the object could possibly be used” (11). Caroline Levine has shown how the concept can be adopted to talk about form in (literary) texts (6). With its focus

So strongly do these lines, the flat surface, the connected dots, the tangled intersections, signal traceability, so powerfully do they invite a playful, exploratory, curious engagement, readers (players?) of the chart seemingly feel irresistibly compelled to try their luck following a line from one column to the other to see where it leads.⁸ The line graph, and the confusing complexity of the lines' intersections—this presumably unnecessary complication—is crucial to this effect. As much as the diagram's 'data visualization' may fail at effectively relaying information and as much as its quality is diminished by its obfuscations, 'play' and 'exploration' turn out to be its strong suit, and 'affordance' thus is a core concept for understanding the value of the diagram's unnecessary complications.

Playful tracing, following a line without getting lost, is merely the most obvious one of these affordances. Closely related is interactive exploration, an activity that is afforded by both symbolic forms, play and data: Picking a name, or a date of death, or a particularly remarkable number of children, a reader may start anywhere on the chart to then follow the line and see where it leads. This moment of exploration is heightened by how the meaning of the individual columns is only given in the "Explanation" section in the bottom left corner: Exploring an individual biography, a reader has to physically keep her finger on the line while she looks up a given column's meaning. Tangledness, along with the dispersion of data and metadata, here affords curiosity. If we think of the "Diagram" as a form of game-text, the reader's reward is satiating her curiosity by finding out where the line leads and what its individual stations mean, and the lines' tangledness is crucial to making this challenging.

Exploration is directly related to the kind of 'distant reading' that the symbolic form of data affords particularly well. Precisely because the chart does not offer the overall coherence of narrative and because data is so uniform, the diagram invites cursory reading: Knowing that the (same kind of) information is there for all the signers, readers will often stop after tracing one or two biographies. Since one can simply repeat the process for others, there is no reason to actually do so. Instead, seeing the abstract, visualized data from a distance then draws the eye to outliers (e.g., the one with the many children) and to patterns (e.g., the correlation between age and death). The diagram's foregrounding of the symbolic form of data thus encourages readers to zoom out of the individual biography and to, quite literally, look at the larger picture—a distant reading of sorts.

on potentiality, on *afforded* uses, the concept also helps avoid many of the argumentative pitfalls that come with classifying artifacts as being, for example, either narrative or play.

- 8 I can obviously only speculate on the diagram's effect on readers in the nineteenth century. Having presented a full-sized reproduction of the chart at various conferences, and having observed patrons at the American Antiquarian Society in Worcester engage it for the first time, I am confident that this compulsion to trace the lines manifests in almost all (contemporary) readers: Whenever the chart gets unrolled, people start tracing the lines right away.

One pattern that emerges from such a distant view is that of the network, another symbolic logic, which affords connectivity. The large areas of overlapping lines, as much as they complicate reading the diagram, suggest a fabric of connectedness between the signers. While the chart only alludes to this form on a visual level, the sense of connectedness that ‘network’ affords is already present in the data form. After all, the normalizing uniformity of the data already affords comparing the individual signers’ data points vertically, thus relating the events of their lives to one another rather than seeing them in the context of their individual biographies.

Cultural Work

Finally, this plurality of overlapping symbolic forms and affordances suggests that the chart was conceived to perform fairly complex cultural work: Rather than simply displaying the fifty-six biographies of the signers of the Declaration, it affords a wide range of readerly activities: playing, tracing, exploring, skimming and browsing, interpreting, and contemplating, to name just some. The presumably more superficial engagements—merely tracing a line without caring much for the respective signer’s life and circumstances, or merely figuring out the name that belongs to one random outlier—are particularly crucial here. They activate the readers and facilitate engagement with these biographies. If the chart was meant for education, it is most adequately thought of as an early edu-game of sorts.⁹

Seen thus, the chart’s multiple and at times contradictory affordances more-over constitute a response to two difficulties US culture encountered as it developed a cultural memory around the signing of the Declaration. One is the difficulty of balancing the reverence for the signers with the anti-aristocratic, egalitarian thrust of the young republic’s political orientation and its reluctance to overly elevate individual political figures. The chart manages to balance these two impulses: It presents the information on all of the signers at once, presenting them as a group and stressing this group’s egalitarian quality by presenting the exact same set of information for each of its members: No one stands out. At the same time, it forces readers to explore each biography individually, simply because the lines are so tangled that each life’s path needs the readers’ full attention. In other words, it mythologizes each biography by affording a narrative reading, but it also emphasizes the egalitarianism of the uniform data and the interconnected network of ‘comparable’ individuals.

9 For a later example of such an early edu-game, cf. Mark Twain’s description of his invention of a game that “[makes] [h]istory [d]ates [s]tick.”

Secondly, the chart's investedness in readerly activity seems to speak to an anxiety over a beginning 'staling' of the past.¹⁰ Produced roughly twenty-five years after the death of the last of the signers, Power created the chart at a time when the signing was passing over into the realm of historical, documented memory. His effort to contact and interview the descendants of the signers speaks to exactly this: What had been a nearly contemporary affair a generation ago was now becoming part of the nation's past. The chart's desire for readerly activity accordingly constitutes an attempt to keep the memory alive, to have it retain its disorderly, vibrant quality, and to prevent it from passing over into the more coherent but also potentially stale form of linear historical narrative. Its investedness in interactivity thus marks the diagram as doubly a child of its time. Its unusual formal properties clearly are the result of mid-nineteenth-century US print culture's experimentation with symbolic forms, but they also speak to a coming of age and a concern for keeping recent history alive as this history further recedes into the past.

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As strange and as opaque as Power's "Diagram" seems, and as much as it fails to effectively 'concentrate' relevant information, the lithograph exudes a lasting appeal. It eloquently speaks of how nineteenth-century US culture relished experimenting with different symbolic forms and finding novel ways of conserving, displaying, and circulating 'information'—a then-new cultural object. But while the diagram's form partly stems from this generic desire for experimenting with statistical information, it also comes with a project of its own. As I have shown, the diagram attempts to fulfill contradictory demands: to honor the memory of each founder individually without elevating one as exceptional and to hold on to the past without consigning it to the canonizing, rigid, linear form of narrative. For these conflicting projects, no single symbolic form suffices. Rather, the chart turns to and activates a range of different symbolic forms, and it utilizes the distinct engagements these symbolic forms afford. It is in the synergies between these affordances that the chart performs its cultural work.

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¹⁰ I am grateful to Mark Goble and John Durham Peters for pointing out this aspect when I presented the "Diagram" at the *American Media/Knowledge at the Turn of the 20th Century* workshop organized by Martin Lütke and Alexander Starre in Berlin in the summer of 2017.

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