theories and methodologies

# The Experimental Turn

KATHARINE COLES

FROM 2012 TO 2017, I COLLABORATED WITH THE VISUALIZATION SCIENTISTS MIRIAH MEYER AND NINA MCCURDY AND THE POET JULIE GONnering Lein to develop Poemage,[1] a computational tool that identifies and visualizes complex sonic relationships in poems. The scientists sought problems that would allow them to develop breakthrough computational strategies, frameworks, or paradigms. Lein and I, the poets, realizing that much digital humanities research at the time was driven by technology and the desire to extract data from texts, remained committed to engaging the qualitative, aesthetic, close-reading experience that is central to our work.

As a team, we focused on sound as a poetic device that could be looked at in its own terms and might be subject to quantification and therefore computer analysis. More difficult than identifying which sonic features to include in the tool (assonance, consonance, exact rhyme, etc.) was determining which were *interesting*. The poets wanted to capture the progression of sonic clusters as they repeat in evolving combinations across syllables, enacting a poem's movement and change, as they do in the first stanza of Louise Bogan's poem "Night": "And the blue *est*uaries / Where what breathes, breathes / The r*estless* wind of the in*lets*" (my emphasis). These relationships, undetectable using off-the-shelf linguistic dictionaries and existing algorithms, presented a computational problem that required our technical team to develop a new system, RhymeDesign, which allows users to query a broad range of sonic patterns in a given poem (McCurdy et al.). RhymeDesign enables Poemage, which is built on top of it, to allow users to explore the interactions of sonic patterns within the poem space.

The question that remained was, Could the tool be of actual use to poetry scholars doing close readings of poems? Indeed, late in our work, Meyer asked me, "You don't use Poemage to read poetry, do you?"

The answer depends on your definition of *use* and *read*. During design, I needed to tell computer scientists what sonic relationships I might want a machine to identify. Given that an experienced reader

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will note, say, hard rhyme or intensive alliteration automatically, and since I wanted the tool to reveal sonic relationships that I might not otherwise see and that the computer scientists would have to solve an open problem to show, I had to learn how to read poems in new ways.

Emily Dickinson, for example, deploys apparent sonic predictability to mask idiosyncratic and experimental devices. She may abandon one metrical scheme for another mid-poem, or employ a rhyme scheme, abandon it, then return. Before I had a tool to use, I answered McCurdy's questions about sound with a series of observations about rhyme in the poem "He fumbles at your Soul," in which Dickinson uses common meter and sonic density to create the illusion that she is rhyming regularly, though she is not.

I noted that aside from the exact rhyme of "Soul" with "Soul," only two rhymes in the poem qualify as full end rhymes: "blow" with "slow" (which reorders the phonemes in the repeated word "Soul") and, more provisionally, "degrees," which rhymes not only with "keys" but also with "the keys." Across lines, Dickinson gets "He fumbles" at the beginning of line 1 to sound as if it rhymes with "He stuns you" at the beginning of line 4, a chime no tool before Poemage could have identified. "Fainter/further" uses consonance and assonance to achieve near rhyme, while ear and eye track "Nature"/"fainter"/"straighten" and "further"/"thunder"; "heard" strengthens the link between the two tracks.

Finally, I noted that the last couplet, "When Winds take Forests in their Paws / the Universe—is still," should, since this is a sonnet, rhyme and that, eccentrically, it does: first through the homophone in "Paws," also heard as "pause," which creates a sense rhyme with "still"; then in how "still" speaks to "Paws" through sonic changes that travel back up the poem through "Soul," "thunderbolt," "cool," and "straighten" to "players," and back from "players" through "keys," "blow," and so on back to "Paws," constructing through sound a relationship between "Paws" at the end of the poem and the hands suggested at the beginning.

Once we had a tool, I hoped it might show me something I didn't know yet. Undertaking a reading that places "Soul" at the rhyming (though not the spatial) heart of the poem (fig. 1), I made selections on the left-hand menu to direct the program to show nearly all possible sonic elements.[2] Hovering the cursor over "Soul" in the poem, I saw immediately how the word is enmeshed in a web of sonic relationships in which nearly every word is connected by sound, through "Soul," to nearly every other word. Yes, "still" visibly chimes not only with "Soul" but also, at a remove, with "Paws," so dense is the combined sonic and semantic patterning joining them. The tool can't yet perceive that "Paws" has a homophone outside the poem; if "pause" were present, the tool would alert us to the exact rhyme, though not yet to its semantic relationship to "still."

The scientists with whom Meyer typically works use her tools to visualize datasets too large and complex to process directly. Since the tools give them access to understanding that the actual object under examination (say, a fish genome) can't, once they load their data into the tool they can replace looking at data by looking at the tool. As I've written elsewhere, what I care about isn't data per se, or solutions, or for that matter machines, but rather close reading and the disciplined dreaming I bring to it ("Show Ambiguity"; "Slippage"; "Think like a Machine"). With "He fumbles at your Soul," as you may observe, I used the tool not instead of reading but rather alongside it. Though to Meyer my "reading" didn't look like "using" the tool, moving between the machine's visualizations and the poem itself was already helping me think in new ways not only about sound but also about the relationship between sound and metaphor.

Like Dickinson, Theodore Roethke in "I Knew a Woman" seems to use exact end

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rhyme when he doesn't, in his case by rhyming at the end of almost every line, using assonance and consonance in syllables preceding the final rhymes, deploying near rhymes across the poem, and allowing strict meter to absorb and obscure deviations. His first rhyme illusion occurs in line 2, where the ear hears "them" as rhyming with "contain" because it expects to. Actually, "contain" chimes through both assonance and consonance with the other primary rhyme pair, "bones" and "one." This anomaly draws attention to the metaphoric relationship in which the "bright container" substitutes for the body of the woman across the bodies of birds, ultimately replacing the "bones" the poem tells us she is "in," making of her skeleton its own urn and ossuary. As the visualization (fig. 2) suggests, "them" rhymes only with "them," though it connects through assonance and consonance to two of the poem's most implicated and important words, "woman" (fig. 3) and "time" (fig. 4), the rhyme nearest to "them."

We don't know this until the poem's end sends us back to its beginning, because we don't yet know how time figures (across "eternity") or how serious themes work with and against the poem's cheeky moments. The poem first invokes poetry through parenthetical (and comic) "English poets," but by the time the woman becomes muse, teaching "Turn, and Counter-turn, and Stand," she represents mortality, the "sickle" razing grass for which the speaker serves as "the rake, / Coming behind her for her pretty sake." Here, the poem offers in close succession two tongue-in-cheek figures, which merge into a metaphor based on puns: both "rake" and "coming" express two meanings simultaneously, marrying the poem's high seriousness with ribaldry, as does the emphatic masculine rhyme, which gestures back to the comic rhyming triplet at the end of stanza 1. This moment suggests the power of the homophone and the desirability of getting the tool to mark puns as well.

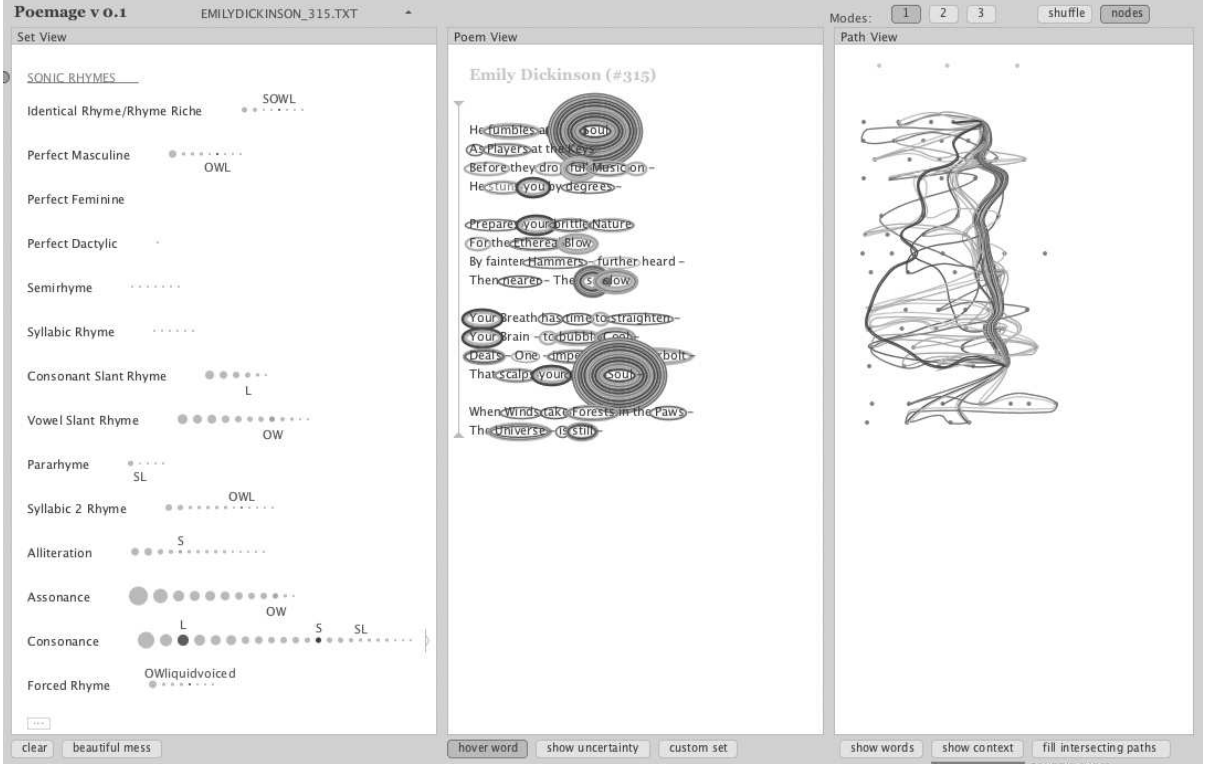



FIG. 1 Poemage visualization of Emily Dickinson's poem "He fumbles at your Soul."

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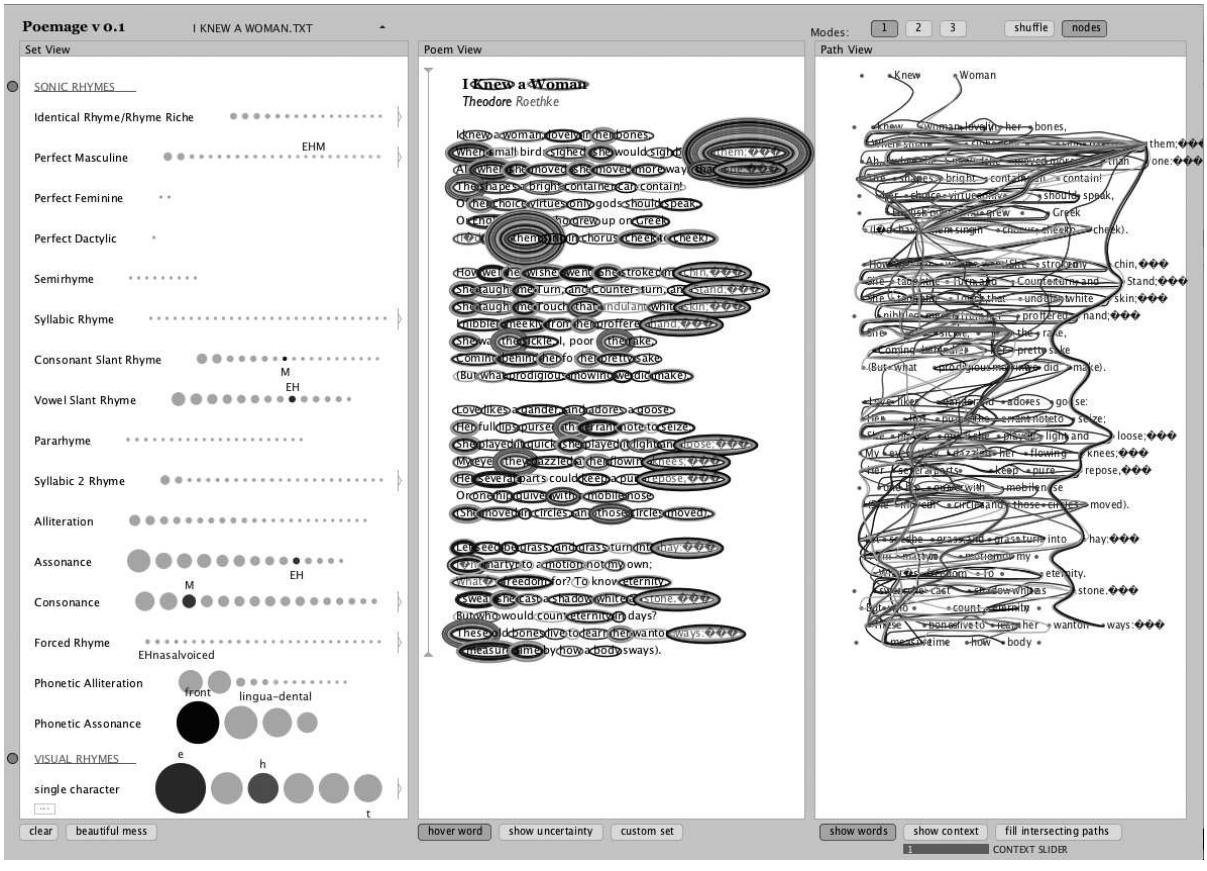



FIG. 2

Poemage visualization of Theodore Roethke's poem "I Knew a Woman."

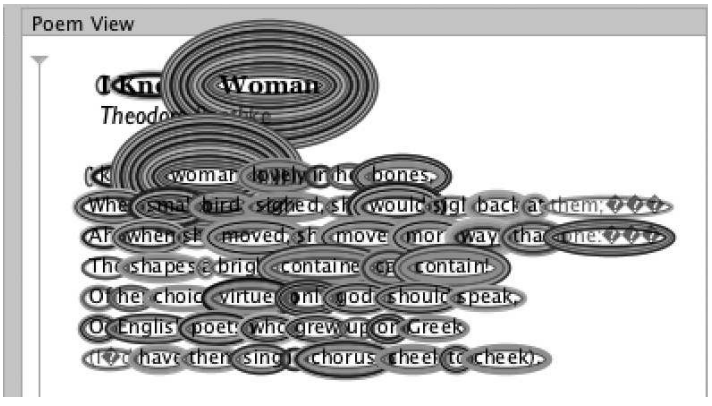



FIG. 3

Poemage visualization of "I Knew a Woman," stanza 1.

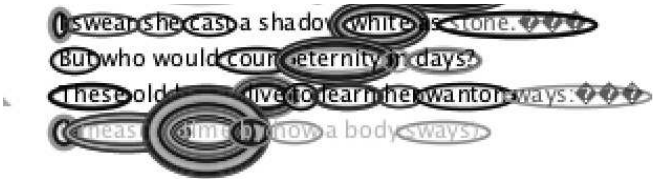


FIG. 4

Poemage visualization of "I Knew a Woman," stanza 4.

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Approaching the final stanza's "eternity," the poem's temporal movement elongates, at once linear unto death and cyclically returning the poem to life as "seed be[comes] grass and grass turn[s] into hay"—a movement marked by the tool (fig. 5), which shows that, while "seed" and "hay" are not mutually implicated, they meet in "grass." *His* bones, now "old," substitute for her "lovely" ones from line 1, as the poem winds down. She remains ageless, her body "wanton," where "learn her wanton ways" echoes "count eternity in days" across a complex of sounds (fig. 6). Sonic, and therefore metaphoric, changes become embodied in nature as the seed ripens for harvest and then, through a not-quite-rhyme that should be exact for "eternity," sonically echoes both "hay" *and* "eternity" (noting the additional resonance both assume when we include the preceding words: "turn into hay" and "to know eternity") before linking them sonically and metaphorically with the temporally enumerable "days."

"Ways" means both "habits" and "directions" or "paths," and the final "sways" enfolds it, reaching back to bring it forward in rhyme and metaphor (fig. 7). If metaphor gains its power not from where it succeeds in showing us similitude but rather at the point where it fails in difference, flagrantly pressing at its own regulations to move us back and forth across the poem while accommodating an evolving complex of meaning, sound similarly creates a temporal space that expands from within. Through such substitutions, "I Knew a Woman" mocks and lionizes the subgenre of love poems about poetry and mortality, with a serious beauty that Roethke's comic measure makes emphatic. The visualization, read not only as illustrative but also as indicative, suggests how metaphor, embedded in language, works technically across the poem's entire field.

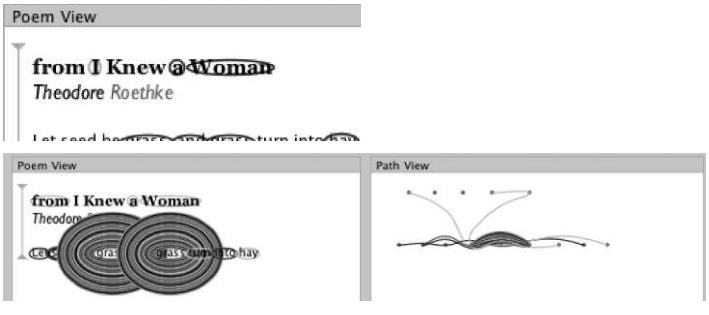



FIG. 5
Poemage visualization of "I Knew a Woman," stanza 4.

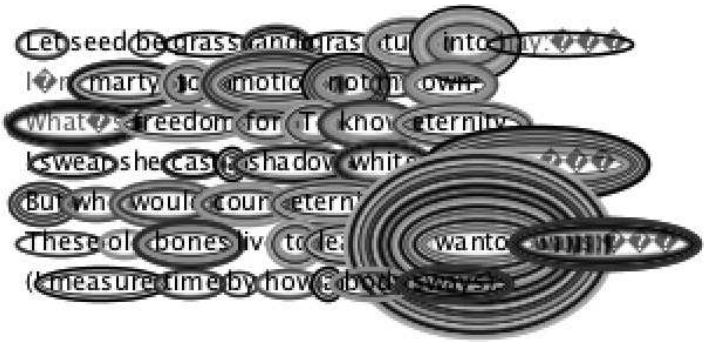


FIG. 6
Poemage visualization of "I Knew a Woman," stanza 4.

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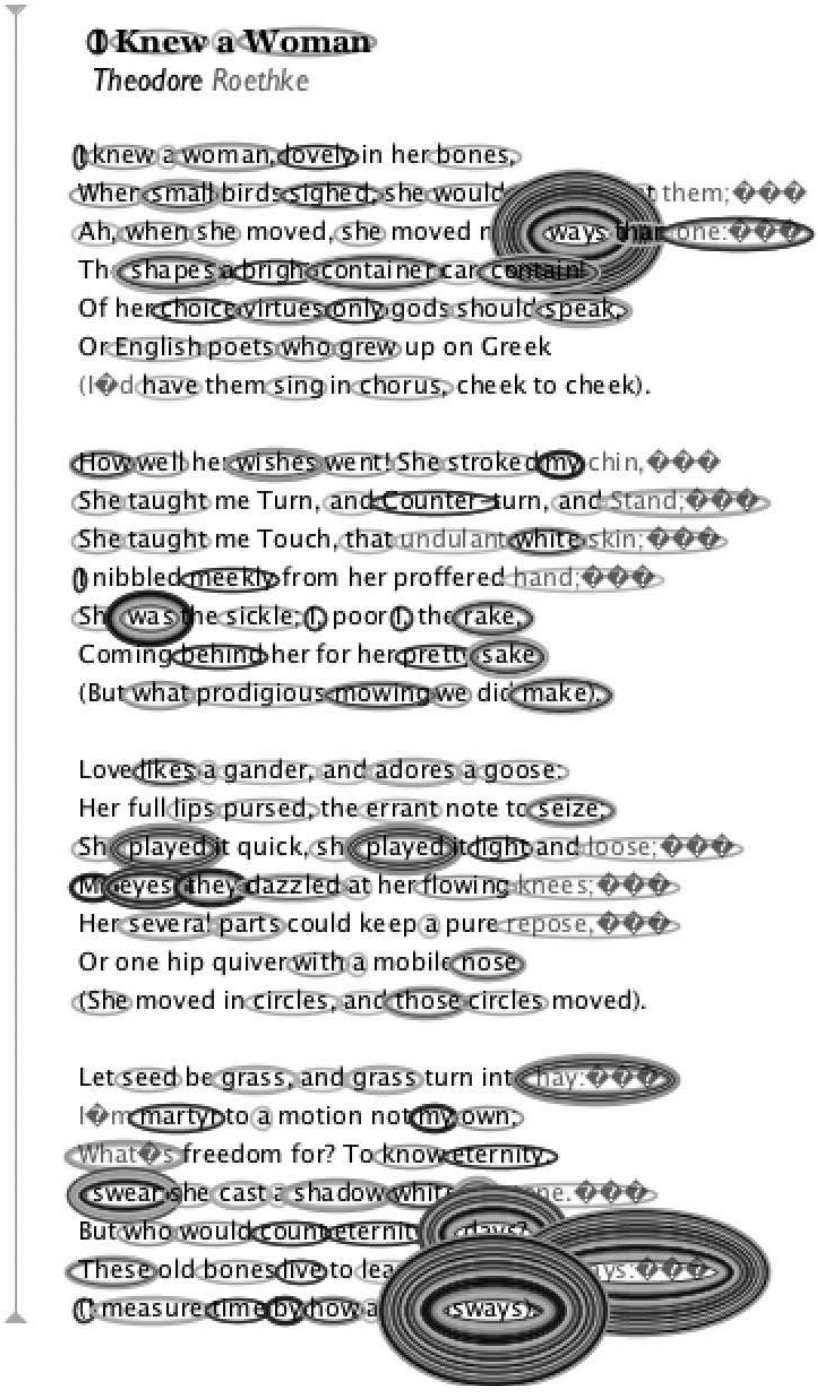



Fig. 7
Poemage visualization of "I Knew a Woman."

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I had another moment of insight while Meyer's PhD student Nina McCurdy was watching me use the tool. As at the beginning of any of my own computer-mediated encounters, I noodled around, bored and anxious, before coming to the screen that shows Bogan's poem "Night" (fig. 8). My idle eye fell on the right-hand panel, where dots representing individual words and their lengths mark the space across which the tool traces ribbons of relationship. Almost every line has at least three and up to six words, but one line contains only two. Returning to the poem, I was recalled to its moment of crisis: "O remember," it exhorts in its single direct address, "In your narrowing, dark hours." Yes, ejaculation marks the place—but if one simply counts syllables, as English poetry readers do all but automatically, this line contains the same number as "Where what breathes, breathes" and "And what drinks, drinks." In that line, "O remember," the poem's strongest turn occurs, and the tool suggests how it marks time structurally, in the difference between syllable count and meter on the one hand and word count on the other, placing the "*re*-membering" of the line against the *dis*-memberment of the landscape and the body it represents. In such a small way, a tool might change my ongoing relationship with a poem I know well, surprising me into pleasure.

I've provided three instances, then, where the tool caused me to take a different approach to a poem I already knew, then relocated me in relation to the poem, then

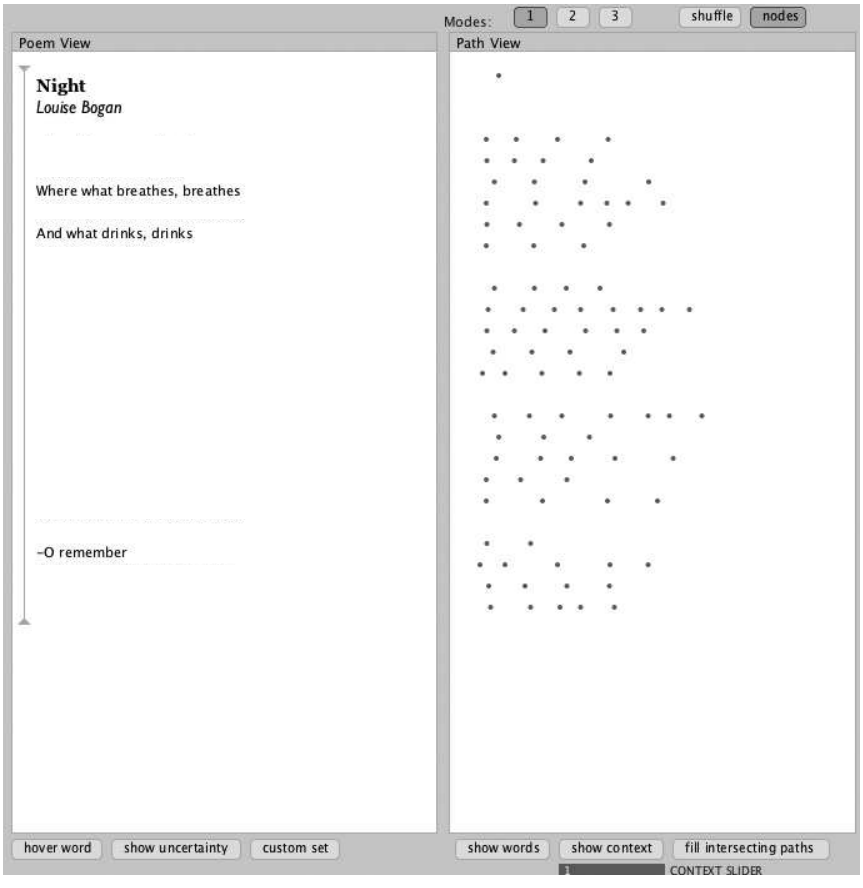



FIG. 8
Poemage visualization of lines from Louise Bogan's poem "Night."

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sent me somewhere I didn't expect to go, all while preserving my relationship with the text itself. A successful interaction with the tool engages both what I am thinking as I approach it and what it enables me to see in the poem after I quit it, beginning with and sending me back to the poem, which means the interaction with the tool itself may be most powerful when it is brief. I don't pore over the screen as I do a poem, or come to it with a specific hypothesis. I come to it open, hoping it will lead me not to what I expect but to—something else.

If the space provided by poetry feels inimical to technology, and vice versa, what is the place of technology in practices like close reading that lie at the heart of humanities scholarship? Elizabeth Swanstrom attributes the humanist's discomfort with computation to "an epistemological misstep that we inherited from the scientific revolution" in which "[a]rt and technology are separated, no longer combined with the poetic potential of techne" (7). She notes, "The distrust of simulation speaks to a naive idea about our access to reality, which is always already mediated by our sensory apparatus, our bodies, and our brains" (148).

And, for centuries, by technology: a map drawn with a stick in the dirt; figures on a cave wall then on paper; printing presses, typewriters, laptops. I once thought I could draft a poem only in longhand, but a black rollerball pen is a technology, as is my yellow legal pad. The problem lies not with mediation as such but rather in our assuming that computer mediation uniquely betrays our discipline by forcing us to work in a way that is data-driven and analytic rather than consistent with the practices we bring to reading poetry and our reasons for doing so, the foremost among them being pleasure.

## Notes

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1. Poemage can be downloaded and many of the papers listed in the bibliography found at www.poemage.org.

2. While these images appear here in black and white, Poemage uses color to indicate sonic relationships. To view color images and download the tool, please visit the Poemage Web site (www.sci.utah.edu/~nmccurdy/Poemage/). This version of the Dickinson poem is a transcription I made from a manuscript in the *Emily Dickinson Archive*, which provides detailed notes on the text (www.dickinson.org/editions/1/image_sets/235749).

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