

READING'S REFRAIN: FROM BIBLIOGRAPHY TO TOPOLOGY

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. . . this dispersion that we are . . .
—Michel Foucault, *The Archaeology of Knowledge*¹

What does it mean to read electronically? One of the most compelling answers to this question comes from the writer Judd Morrissey in his digital fiction *The Jew's Daughter* (2000), a title derived from a ballad sung in James Joyce's *Ulysses* and one of the finest works of born-digital literature to date. In this work we are presented with an image that appears to be a single, static page, but one in which portions of the text change as the cursor moves over a highlighted word (Figure 1). Unlike the turning of the page in a book, where a visual space is entirely overwritten, here only parts of the page change, even as it maintains its overall formal stability. The pages of *The Jew's Daughter*—if we can call them that—not only follow one another in a linear sequence, they are also woven into one another. We might say, drawing on a bibliographic metaphor, that they are interleaved.

As a work, *The Jew's Daughter* confronts us with the problem of the persistence of words in a textual environment, the tension between the fleetingness of words—the way they can disappear—and their recurrence—the way no matter what we do as readers, they just keep coming back. What does it mean, Morrissey is asking, to read the same thing twice? What is the difference of repetition?

The work begins with the words “Will she disappear?” and we can see from its opening sentence how rhetoric recapitulates medium.² The narrative begins in a state of questionableness, the questionable persistence not only of some object, in this case a woman, but also of some word, the pronoun “she.” In its attention to the pronominal, we can see how *The Jew's Daughter* reveals a concern not just with the relationship between words and things (will this person disappear?), but also between words themselves. As a form of standing for, but also of precedence (“pre-naming,” that which precedes any nomination), the pronominal moves us from the problem of substitution to

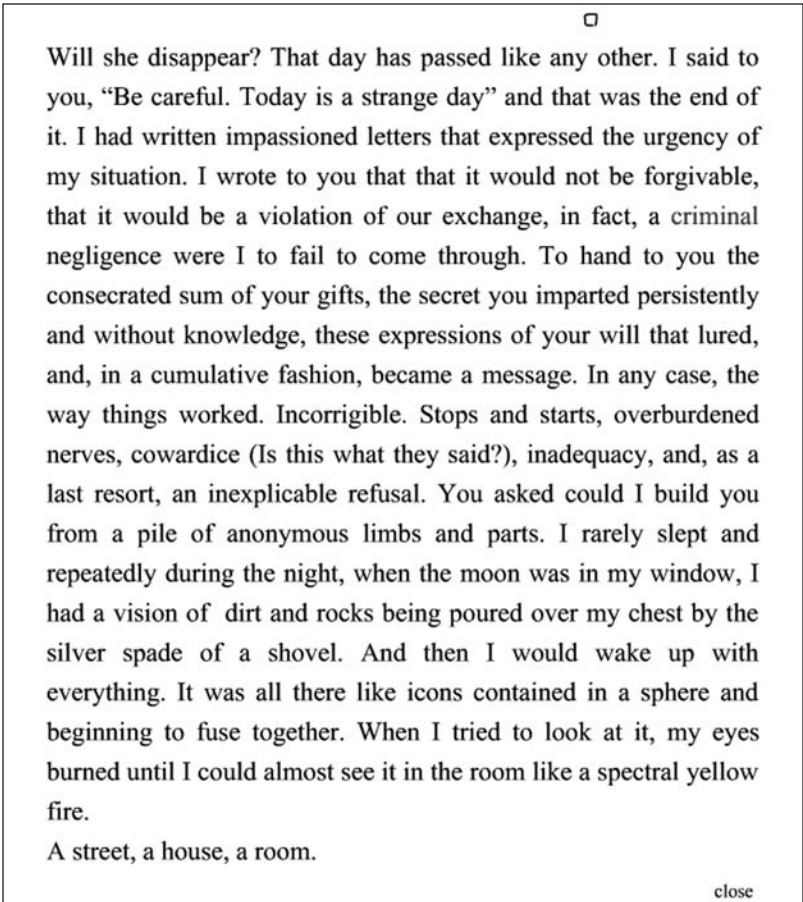


Figure 1. The opening “page” from *The Jew’s Daughter* (2000) by Judd Morrissey. When the highlighted word is “touched” by the cursor parts of the page change, but the overall image stays the same.

that of succession. To ask if “she” will disappear is to ask after the fate of pronominality itself, the possibility of the persistence of meaning through lexical repetition. Pronouns are some of the most repeated words in any text, but they are always reliant upon that which precedes them. Their sameness, whether “she” does or does not mean the same thing each time it is written, is contingent upon something anterior to it. The end of the pronominal, were “she” to disappear, would mark an initiatory movement toward the state of pure nomination, toward

the uniqueness of a word for every thing. It would mark the end of redundancy.

Morrissey will take this problem one step further through the act of focalization. It will gradually become apparent that at stake in the narrative is a larger tension between a “she” and an “I.” Three variations into the narrative, the words “Will she disappear?” will disappear, to be replaced by the words, “I halted.”³ The pronoun “she,” we learn, is not only contingent upon a lexical anteriority, a so-called proper noun which it succeeds; it is also contingent upon a narrative exteriority, an “I” by whom “she” is spoken. The problem of the pronoun is thus not only the signifiatory one of how the same word can refer to different objects. It is also one of diegetic instability, the way lexical sameness brings with it a focal multiplicity that exceeds it.

The challenge of the pronominal—and the possibility of thinking the difference of repetition that the pronoun anticipates—will achieve something of an apotheosis toward the middle of Morrissey’s narrative. It will do so in a bar, which like the inn or tavern serves as a classical space of narrativity. And it does so at the very moment when the material object of the book is invoked for the first time, not as something that one reads, but instead as a “prop,” as that which holds something up, but also as that which serves as a theatrical illusion: “A man drains a drying stout. . . . Glasses removed and propped on his book. His book is a prop.”⁴ The moment that the book appears as prop, as both illusion and support, is coincident with the unique knowledge of electronic text. It is at this moment that the barmaid begins her story, a pronominal tour de force:

You better leave, I says. He came in here, his hands was shakin’ like a tremor. I told him where he could go right away. And he says to me, Annie, give me one on the house. My throat’s dry like sandpaper. Can you believe it? I told him all I gots just gonna make you thirstier. I can’t help your thirst, I says.⁵

Among the numerous turns of perspective that this story performs (the shifting signification of the you, me, he, and I), the passage’s most prominent feature are those double “I says” that stand as bookends or parentheses to the oral tale. “I says.” Not just a classic malapropism, but a commingling of narrative voice, between the “I say” and the “she says.” “I says” makes legible the difference that inheres in the repetitions of the pronominal. “I says,” we might say, is a figure of the multiple. Within the space and language of class—class being the configuration where language takes on space, where it becomes

incommensurably multiple—Morrissey gives us an intimation of the possibility of the co-presence of difference. Contrary to a host of new media theory that has emphasized the contingency and the instability of electronic textuality, for Morrissey the electronic text is the condition of possibility of thinking the difference of repetition that constitutes reading.⁶

In its attention to the structural redundancies of reading, whether at the level of medium or language, *The Jew's Daughter* returns us to one of the primal scenes of book reading in the western tradition, Augustine's famed conversion from book 8 of the *Confessions*. It is here where Augustine will tell us of hearing the refrain sung by a nearby child, one that consists of the words, "Take it and read, take it and read" [tolle lege, tolle lege]. Sitting beneath a fig tree in the interior of his garden, Augustine will take up the Bible that is lying near him and open a passage at random and begin reading. At this moment, he tells us, "I had no wish to read more and no need to do so. For in an instant, as I came to the end of the sentence, it was as though the light of confidence flooded into my heart and all the darkness of doubt was dispelled."⁷

In aligning the practice of book reading with that of personal conversion, Augustine was establishing a paradigm of reading that would far exceed its theological framework, one that would go on to become a foundation of Western humanistic learning for the next fifteen hundred years. The conversion at the heart of the *Confessions* was an affirmation of the new technology of the codex within the lives of individuals, indeed, as the technology that helped turn readers into individuals. And it was above all else the graspability of the book, in a material as well as a spiritual sense, that endowed it with such an immense power to radically alter our lives.⁸ In taking hold of the book, Augustine suggests, we are taken hold of by books. Turning the page, rather than turning the handle of the scroll, was to be the new technical prelude to undergoing a major turn in one's life.

In its invocation of the refrain as the structural and rhetorical condition of the electronic page—in taking seriously the long history of reading's technics—I want to suggest that Morrissey's text opens up for us a profoundly different way of thinking about reading, one that becomes possible in an electronic environment but that takes its inspiration from a deep bibliographic past. In Augustine's divine command to *take*, in that double injunction toward tactility, there resides an intimation of the significance of the refrain for the knowledge of reading, indeed as one of the oldest forms of reading as both a

form of repetition and restraint. In its resuscitation of the refrain, *The Jew's Daughter* invites us to imagine a kind of reading, however, that is premised neither on a principle of graspability nor its negation in the form of what Hans Blumenberg once called, using another tactile metaphor, *Unbegrifflichkeit* (incomprehensibility), which has governed book reading for centuries.⁹ Instead, it moves us toward a mode of reading based on principles of relationality and dimensionality, as the study of recurrence over time. It asks after the meaning of rereading, not in an Augustinian sense as that which comes after reading, as a cultural practice of stabilization, so marvelously illustrated in the work of Christopher Cannon and Deidre Lynch.¹⁰ Instead it asks us to think about the meaning of rereading *within* reading, to think the redundancy that is reading.

Through its use of the bibliographic as metaphor, Morrissey's work invites us to think past the bibliographical as the guiding framework for understanding the materiality of reading. It challenges us to move beyond a readerly world premised on the gestural notions of possession or its negation, letting go, and to move instead toward one based on the idea of the topological, a domain, in Steven Connor's words, "of spatial relations, such as continuity, neighbourhood, disjunction and connection."¹¹ Morrissey's text invites us to consider what it would mean to read for experiences of linguistic dispersion, volatility, and dimensionality, to think about language as a form of action rather than expression, as a field of regularities in Foucault's terms, rather than as a set of individuations, as that which can be mapped and seen. Topology encourages us to reencounter, anew, the visuality of reading.

If reading topologically alters our visual and cognitive relationship to the text, it also enables us to reconsider the place of conversion within reading as one of reading's most historically prominent emotional and affective ideals (as well conversion's secular correlate, the history of transgressive reading). In privileging a sense of restraint, a refraining *from*, topology moves us beyond our long held convictions of the palpable, the transformational, and the excessive when it comes to reading—the way reading moves us deeply, profoundly, and immeasurably—and toward the likely, the proximate, and the scalar. It moves us from a state of revolution to one of resolution, where reading's affections and attachments are reinscribed within a perspectival, iterative system. Conversion (or transgression) no longer serves in an electronic milieu as reading's primary spiritual outcome, but instead as a theoretical initiation. Translation, a change of state, becomes the condition of topological reading rather than its end.

Taken together, topology overturns three of the more enduring axioms in the history of reading inherited from a biblio-Augustinian tradition: the prioritization of the word over either image or number; an emphasis on signification instead of action, what words *mean* rather than what words *do*; and finally, the orientation toward reading as a technique of individuation, a means of understanding and thereby producing singularities instead of collectivities.

I. THE NUMEROUS¹²

The term “topology” can refer to a variety of fields that include graph theory, the mathematics of continuous spaces, the philosophy of space, or the study of rhetorical common-places or *topoi*. A *literary* topology is one concerned above all else with textual relationality. Like the book, it is a technology of reading (Figure 2). But as a graph, the topology eschews an immediate reference to real space, whether that of the textual artifact or the world beyond. Unlike an ebook or the scan, it does not simulate a stable textual referent. Instead, it marks out the difference between what Gilles Deleuze and Félix Guattari call “the map” and “the tracing”: “What distinguishes the map from the tracing is that [the map] is entirely oriented toward an experimentation in contact with the real.”¹³ In its experimental nature, its fundamental contingency, the topology lacks a basic ontology.

The basic units of the literary topology can extend from the lexical molecules of the word (lexeme, morpheme, phoneme, and letter) on up to the metanalytical categories of publication, format, or genre. But the aim of a topology is not “lexicographic” in the traditional bibliographical sense—that is, as a science of the meaning of particular words, embodied in the great age of dictionaries from Pierre Bayle to Samuel Johnson to the Brothers Grimm. Topologies do not operate according to a logic of many-to-one. Rather, they use fields of language to understand fields of texts. They are grounded in the reticulation of numerousness. In this, they mark a reimagining of D. F. McKenzie’s notion of the social text, where the unit in circulation is no longer the discrete bibliographic item but a dispersed field of language in which the book is but one possible way of imagining unity.¹⁴ Topologies attempt to observe the relationality between books beyond their discrete material boundaries. Topologies are far more ecological in nature. The entangled sociality, what Deleuze would call the “ethology,” of topological reading is one that stands in stark contrast to the book’s poetics of discretion.¹⁵ When we read topologically we are reading our way through language’s historical entanglements.

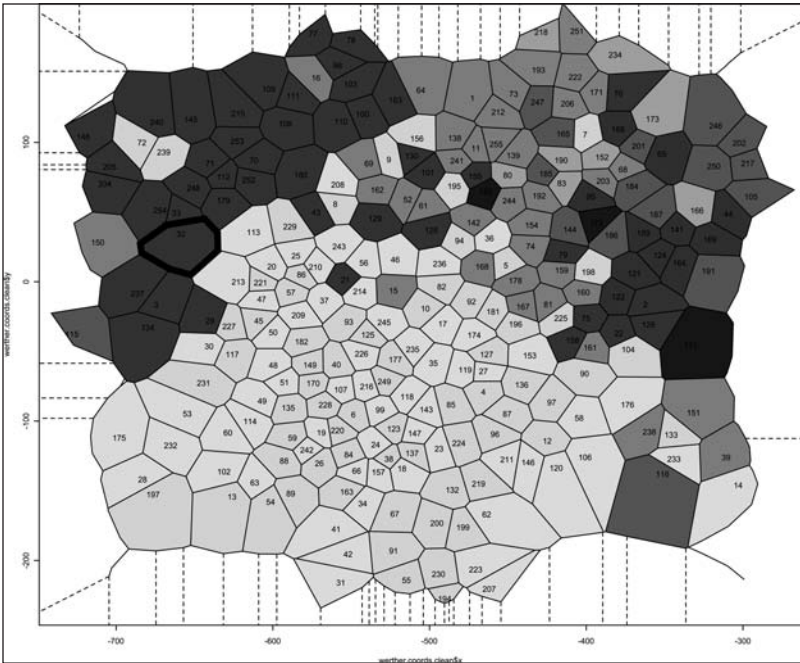


Figure 2. This is a topology of Goethe’s collected works arranged according to the presence/absence of “Werther words”—a set of words drawn from *The Sorrows of Young Werther* that represent something like a lexical chromosome of the work, a finite web of language unique to it that functions like a hereditary vector. Each tile stands for a particular work or group of works in Goethe’s corpus, color-coded in the online version of this article by genre (red = prose, green = drama, yellow = poetry, pink = critical essays, blues = scientific writings). *Werther* is highlighted in the upper-left. The layout is generated using a Voronoi diagram, named after the Russian mathematician, Georgy Voronoi (1868-1908). This and all related maps have been created by Mark Algee-Hewitt. For a fuller explanation and interpretation of their meaning, see Andrew Piper and Mark Algee-Hewitt, “The Werther Effect I: Goethe, Objecthood, and the Handling of Knowledge,” in *Distant Readings/Descriptive Turns: Topologies of German Culture in the Long Nineteenth Century*, ed. Matt Erlin and Lynne Tatlock (Rochester: Camden House, 2013).

According to a topology, a relation is not understood as an equivalence or an inheritance, two of the more dominant ways of thinking about relationality within the domain of bibliography, but instead as a conjunction of likeness and difference. Topology, in its most general form, is the study of *ratio*, neither the attempt to subsume difference nor to assert it absolutely. Instead, topology is a form of reticulation, a

study of the differences that reside within likeness and the likenesses that span difference. As a science, topology is what Deleuze would call a “pragmatics of the multiple.”¹⁶

In its manifestation of the knowledge of the numerous and the multiple, which in the nineteenth century came to be known as *Mengenlehre* (the science of the manifold), topology is founded on a primordial act of translation. It does not move primarily from one language to another—bibliographic humanism’s essential premise—but from language to number (Figure 3). Topology starts with the assumption not of the equivalence, but the non-incommensurability between these two systems of signs. It is an attempt to reverse the false notion, in Friedrich Kittler’s argument, of the two-thousand-year-old antipathy between the alphabetic and the numerical.¹⁷ Topology marks an attempt to locate the contiguities that run between literal and numerical reasoning rather than argue for their unique properties. As much recent research suggests, number sense precedes language; indeed, number may be the condition of possibility of language.¹⁸ Topology rewrites conversion under the sign of a conceptual and semiotic translation.

Number in this context, and this cannot be emphasized enough, is not an entry into a domain of determinacy. Rather, it is an attempt to undo the very determinacy of hermeneutic discourse, the capacity of a critical language to substitute itself for another language, to say x actually means y (even if y is the negation of meaning). Consider for example the attempt by the francophone Lithuanian symbolist poet Oscar Milosz to define the word “love,” a word in which, he writes, “the eternal divine-feminine of Alighieri and Goethe, an angelic sentimentality and sexuality, and a virginal maternity in which Swedenborg’s adramandonic, Hölderlin’s hesperic, and Schiller’s elysian are melted together as in a burning crucible.”¹⁹ To determine, once and for all, what love is leads Milosz into the entire history of literature. It leads him into the syntax of the list and the vocabulary of the infinite.

To say, by contrast, that the word “love” in *The Sorrows of Young Werther* is equivalent to 0.00109 (the percentage of times it appears relative to all of the words in the novel) is not an attempt to say something definitive about its meaning, what love finally *is*. Instead, numeracy and tabularity are the conditions of putting words into an endless set of relations—that “love” is 0.00065 in *Faust* (or about half as likely, half as loveless we might say) or that “mother” is 0.00064 in *Werther* (that there is a correlation between the lexical presence of mothers in *Werther* and love in *Faust*). To place language within this

	Early_ Antheili	Early_ Redebe	Early_ Anekdot	Early_ AnPerso	Early_ AntikerF	Early_ Ausdem	Early_ Ausdem
Early_ AntheilanLavatersPhysi	0	0.008495701	0.013298911	0.007830151	0.009444835	0.007236825	0.025998187
Early_ RedebeiEröffnungdesne	0.008495701	0	0.01433255	0.009343529	0.010072764	0.008627721	0.027956143
Early_ AnekdotezudenFreuden	0.013298911	0.01433255	0	0.01535315	0.014950993	0.012605484	0.03046743
Early_ AnPersonen_Poetry.txt	0.007830151	0.009343529	0.01535315	0	0.010121556	0.005457728	0.027490025
Early_ AntikerFormlichähndre	0.009444835	0.010072764	0.014950993	0.010121556	0	0.009240733	0.026622354
Early_ AusdemNachlassAnPers	0.007236825	0.008627721	0.012605484	0.005457728	0.009240733	0	0.027809402
Early_ AusdemNachlassAntiker	0.025998187	0.027956143	0.03046743	0.027490025	0.026622354	0.027809402	0
Early_ AusdemNachlassInvest	0.016217917	0.017860497	0.018389835	0.016883058	0.017278423	0.015871503	0.031946243
Early_ AusdemNachlassÜberse	0.015555276	0.015642489	0.018387311	0.01505147	0.016805571	0.014589244	0.030044367
Early_ AusdemNachlassWestOs	0.007225141	0.008286917	0.012796454	0.007347826	0.010027889	0.005712122	0.026904323
Early_ AusGoethesBrieftasche	0.00566172	0.008130491	0.013510989	0.007722575	0.009450142	0.006716338	0.027128545
Early_ AusWilhelmMeister_Poe	0.030220319	0.030754027	0.033216205	0.028492899	0.030924207	0.028882883	0.040638498
Early_ Balladen_Poetry.txt	0.011156864	0.011815588	0.014815646	0.009994724	0.012879132	0.008822933	0.029086537
Early_ Belsazar_Drama.txt	0.016250386	0.015325757	0.020682142	0.01506778	0.016389138	0.015511525	0.031088391
Early_ BriefdesPastors_Critical	0.007472651	0.009103344	0.013510509	0.007954989	0.010848601	0.006522451	0.026923881
Early_ BürgersHomers_Critical.f	0.012112388	0.012483292	0.017276035	0.012540054	0.014630364	0.012077526	0.030010243
Early_ CäsarFragment_Drama	0.017401764	0.017260722	0.01989671	0.016736661	0.016821432	0.016874934	0.032296607
Early_ Claudine_Drama.txt	0.007086792	0.007955644	0.013135728	0.006430996	0.009725915	0.004689965	0.027497998
Early_ ClaudinevonVillaBellav1	0.006541111	0.007610443	0.012736221	0.005842498	0.009543399	0.004058014	0.027613623
Early_ Clavigo_Drama.txt	0.005760039	0.007288394	0.012027517	0.006758707	0.009029229	0.005324591	0.02638386
Early_DasHoheliedSalomons.f	0.011759176	0.012786943	0.015241167	0.012397255	0.013194164	0.010508218	0.02918146
Early_DerHausball_Prose.txt	0.006662914	0.008052415	0.014928741	0.007026491	0.009690788	0.006613513	0.027484078
Early_DerLügner_Drama.txt	0.01024012	0.011733783	0.01431122	0.009381171	0.011203078	0.008347551	0.029357864
Early_DerTriumphderEinfnfmds	0.006677927	0.007537045	0.012476456	0.006566467	0.00947051	0.004556002	0.02745723
Early_DerTugendspiel_Drama	0.010866655	0.01266657	0.01635091	0.01111546	0.013455651	0.010040841	0.029373261
Early_DesEwigensJuden_Poetry	0.007873405	0.010004462	0.01330757	0.007900786	0.010153155	0.006863343	0.027516935
Early_DesKünstlersVergötteru	0.014755018	0.015304686	0.018600491	0.015493598	0.017400239	0.014774685	0.031351887
Early_DieFischerin_Drama.txt	0.009506893	0.009077517	0.013148758	0.009130989	0.012301533	0.007366133	0.028700066
Early_DieGesangevonSelma.f	0.008571735	0.009967114	0.015131461	0.008497063	0.011237627	0.007901661	0.027725566
Early_DieGeschwister_Drama	0.008509479	0.010269263	0.011131743	0.009103037	0.011126912	0.006576081	0.028785208
Early_DieLaunedesVerliebten	0.01040495	0.011333784	0.014461775	0.00892169	0.011745148	0.007520512	0.028406509
Early_DieLeidendesjungenWer	0.005603231	0.007977936	0.012330159	0.006109354	0.008975904	0.005018728	0.027145296
Early_DieLeidendesjungenWer	0.005286098	0.007476473	0.012436579	0.005865229	0.008725754	0.004546973	0.026849953
Early_DieMitschuldigen_Dram	0.008686621	0.009880289	0.012735984	0.007564094	0.010938222	0.005798324	0.028343468

Figure 3. The table is the most basic element of topological representation. Here you see a portion of a distance table of the values between any two works in Goethe's corpus. The distance between works is calculated by plotting the frequencies of words found in those works as coordinates on a graph and taking the distances between them (called a "vector space model"). Thus, each word and its frequency is considered as a dimension in space, and the work's location, or identity, is understood as the aggregation of all of those coordinates. "Distance" is a measure of the similarity of lexical recurrence between works.

logic of number is to move from a system of substitution (x means y) to one of succession (x is so much more or less than y), a logic already on display in Milosz's failed attempt to define the word "love." The recourse to number—however inelegant for many—is an attempt to move past the ontology of discourse. It aims to escape what Alain Badiou calls "the aura of the limit" (the infinite, the open, the absolute, the negative, the meaning) and toward one of succession, where for every unity there can always be something between it and that which it succeeds.

For Badiou, the idea of succession marks the entry into a fundamentally new order of thought. It is not the condition of linearity or *telos*, but the condition of thinking what he terms, "the pure multiple."²⁰ The scalability of succession, that there are an infinite number of sets between any two elements of a set, is what makes possible the end of absolutes for Badiou. Succession reconfigures reading not within

the finite binaries of “close” or “distant” under which so much of the recent debates about reading have transpired, but instead as a continuous spectrum of focalization. It considers reading as a form of *ratio*, as knowledge of the relational and the scalar, the co-presence of difference. Entering into the order of succession rather than that of substitution renders visible, makes commensurate, incommensurable planes of knowledge. Reading topologically is an entry into the knowledge of scale and knowledge as scale. Instead of the absolutes of distant or close, we should be thinking in terms of scalar reading, to enter into the world of the “I says.”

In *The Pleasure of the Text*, one of the great treatises on reading, Roland Barthes would recount his discovery of the importance of the “non-sentence,” an insight he says he has one night while sitting in a bar (a nice refrain of Morrissey’s barmaid). Listening to “all the languages within earshot,” Barthes writes, “I myself was a public square, a souk; through me passed words, tiny syntagms, bits of formulae, and no sentence formed, as though that were the law of such language. This speech, at once very cultural and very savage, was above all lexical, sporadic; . . . it was: what is eternally, splendidly, *outside the sentence*. Then, potentially, all linguistics fell.”²¹

Once more the space of class serves as the condition of the knowledge of the multiple—in this case, knowledge of the dimensionality of language over and against its syntacticality and the law of linearity and completion (that sentences must end). For Barthes, the sentence was fundamentally hierarchical, whereas the lexeme (or the phoneme or morpheme) was heterarchical. “The professor,” Barthes reminds us, “is someone who finishes his sentences.” The sentence has traditionally served as the primary unit of literary analysis—professors don’t just speak in sentences, but like to look at them—because the sentence is a mark of distinction. There is an authority encoded in the syntactical primacy of the text.

In its recourse to tabularity, topology returns us to a more elementary notion of textuality, one premised on its etymological origins of texture, weave, and lattice. Following on the insights of poststructuralist theory, it undoes the hegemony of the sentence as the organizing principle of text, one that has been operative from Augustine’s bibliographic conversion (“as I came to the end of the sentence . . .”) to Gertrude Stein’s modernist reformulation, “Sentences not only words but sentences and always sentences have been Gertrude Stein’s life long passion.”²² Instead, topologies replace the syntactical bias of the sentence with a fundamental dimensionality of texts (something

already at work in Stein's thinking).²³ From the two-dimensionality of the page or the three-dimensionality of the book, topologies ask us to read in n -dimensional ways (in the case of *Werther*, 6,458 dimensions, corresponding to the number of unique words within it). The conversion that was to be the outcome of the sentence—its *telos* or end—serves instead as the beginning of topological reading as an engagement with space.

II. REDUNDANCY

Words repeat. This is one of the fundamental axioms of topological analysis. To enter into language is to enter into a field of repetition and redundancy.²⁴ Stein might be said to be its most important pre-digital theorist. Rather than rely on the bibliographic principle of the anomalous (the rare book or the great book), topology asks us to attend to the meaning of recurrence, what Foucault called in reference to his archaeological analysis, “fields of regularity.”²⁵ Topology is premised on the idea that all theoretical objects, whether the novel, character, poverty, the sublime, life, labor, or *Werther*, are constituted by some form (or multiple forms) of lexical regularity. Topology, in its most succinctly stated form, is the study of the lexical identities of theoretical objects.

In its attention to recurrence, topology eschews the idea of the keyword—and words as keys—in favor of the relational set.²⁶ Two of its most important historical precursors can be found in the rise of set theory in the field of mathematics at the close of the nineteenth century and the emergence of a theory of class in the field of political economy earlier in the century.²⁷ Where the keyword starts with the assumption of the unity of a word and an idea (for example, that the idea of life in the eighteenth century is equivalent to the times that the word “life,” “Leben,” or “la vie” appears), topology argues that ideas are constituted by contingent sets of words, sets which mutate over time and space and which are by no means dependent on a single, controlling term. The idea of life, as Mark Algee-Hewitt has written in another context, is by no means coincident with the word “life.”²⁸

In place of a singularity that produces and contains a multiplicity (one word, many ideas), topology posits a field of contingent multiplicities—multiple sets of words that produce multiple sets of ideas. Rather than the binary model of the keyword—that something either is or is not present—topology allows for a far more nuanced sense of discursive being, that something is *more or less* present, where order

of magnitude corresponds to conceptual difference. In its reliance on the set, topology allows for the representation of the co-presence of difference, what Deleuze called in his Foucault book a study of the “relation of the non-relation.”²⁹ Or as Foucault himself writes, “One might say, then, that a discursive formation is defined . . . if one can show that it may give birth simultaneously or successively to mutually exclusive objects, without having to modify itself.”³⁰

In place of Foucault’s notion of the discursive “object,” and its sense of closure, topology uses the idea of the cluster or *concentration*—*Verdichtung* in German, a thickening of language. Where there is a concentration, so a topology suggests, there is meaning. As the root of this notion of thickening suggests (*Dichtung* being the word for poetry or the poetic), a theory of *poiesis* underlies topological reading and its attention to repetition, concentration, and coagulation within language. Where Foucault works with a rather clear sense of the demarcations between discursive formations and their constituent parts—what he calls “statements”—the topological cluster is more akin to Paul Valéry’s notion of the *objet ambigu*: that which makes us aware of the problem of division.³¹ There is nothing fixed about a discursive object in a topology—the “object” is merely the identification of a visual thickness, a contingent, and relational, articulation of a scalar unity that could always be otherwise (more capacious, more concentrated). Indeed, such unities are themselves composed not of unchanging elements (so-called “statements”), but the same striation of lexical presence and absence at an even smaller scale. In any given concentration within a topology there resides another entire topology (Figure 4). Deleuze’s celebration of the diagonal or transversal reading of Foucault doesn’t quite do justice to the reticulation of likeness and difference that constitutes the topological field.³² Reading topologically doesn’t move us from a space of alienation to one of emancipation, to a space of clarity, illumination, or enlightenment as the book had done for Augustine (“as I came to the end of the sentence, it was as though the light of confidence flooded into my heart and all the darkness of doubt was dispelled”). Instead, as Bruno Latour has suggested regarding networked thought more generally, topology moves us from an entanglement to *more* entanglement, from a space of bibliographic intimacy to one of topological implication.³³

The more we move away from a system of equivalences (words as keys) to one of dispersion (words as dimensions), the more topologies allow us to rethink notions of the work of language itself—indeed, language as a form of work. In a topology, language is not understood

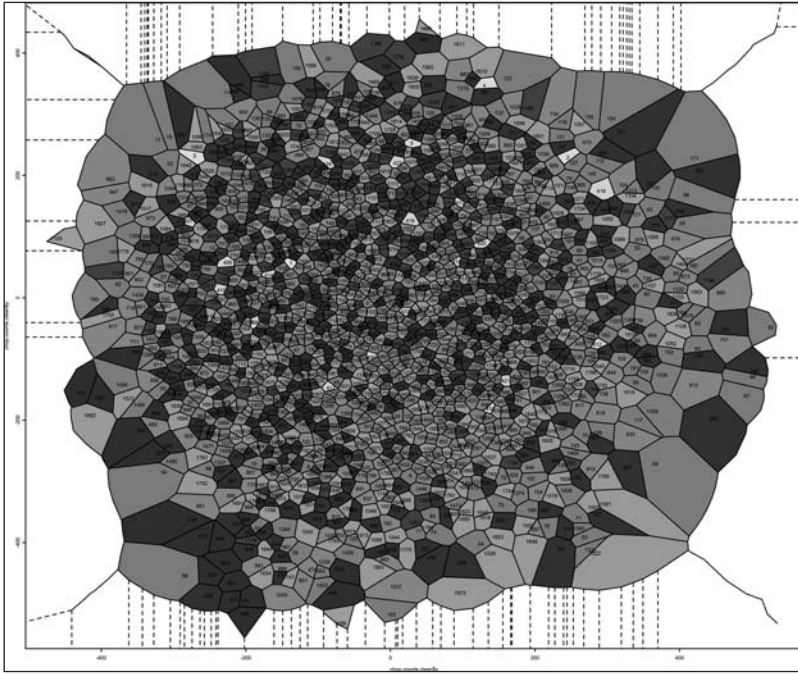


Figure 4. This is a topology from *within* the topology in Figure 1, consisting of the nine works that correlate most strongly with Goethe's novel, *The Sorrows of Young Werther*. Each tile represents a unit of 200 words, or the average length of a page from the first edition of *Werther*. In the online version, it has been color-coded to correspond to the ten works on display. The diagram arranges the pages of the individual works according to how alike they are to one another in their containment of *Wertherian* words. The process is akin to throwing the pages of nine separate works up in the air and watching them fall to the floor, a floor that has been magnetized to pull those pages closest to each other depending on the correlation within them of *Wertherian* words. The topology performs, following Morrissey, a radical act of interleaving.

solely as an engine of meaning, an instrument of significance, but also as a medium of conductivity, as a force that acts on a field.³⁴ Topology theorizes language's instructional, rather than semiotic function, the word not as a sign to be displayed, but as an action waiting to happen.³⁵ A topology does not start with a context that is used to explain a certain text, nor does it start the other way around, with a text that is used to interpret a context. Rather, a contingent text (the set or "model") brings into view a contingent discursive environment, which is then, in recursive fashion, used to interpret that text.³⁶

In this way, topology is aligned with Foucault's emphasis on studying "the rules of formation" that govern discursive objects, rather than the content of those discourses.³⁷ But where Foucault's "rules" were themselves often devoid of linguistic content, topology is premised on the idea that language is both the subject and object, rule and outcome, of any textual environment (the rules of words must themselves be comprised of words). Topology attempts to grant a greater agency to the medium of language, treating it as a "quasi-object" in Latour's terms, wrestling away some of the purer agency that is thought to reside in either notions of authorial creativity or its opposite, readerly poaching.³⁸ It puts that work into the words themselves. What do words *do*, we might ask, beyond the intentions of either readers or writers? In this, topology trains us to read "*protocologically*," following the work of Eugene Thacker and Alexander Galloway, to identify the linguistic and narrative techniques—the literary rules or protocols—that help govern a discourse's future circulation.³⁹

In their modeling of linguistic action, of a distinct lexical futurity, topologies can also be important tools for thinking about historical knowledge. As spatial instruments, topologies are also powerful tools with which to think time. On the one hand, topologies can be radically historicizing. Rather than resist something like the Romantic ideology in Jerome McGann's terms—our subsumption of a historical vocabulary or set of tropes through which we then understand that past—topologies privilege precisely this self-reflexive nature of historical understanding.⁴⁰ Rather than use our terms to understand the past, topologies can use the past's own terms to identify pattern, structure, and affinity within that past. Topologies are deeply autochthonic.

But on another level, topologies allow us to address this problem in a more recursive fashion. As Marjorie Levinson has argued in what remains one of the most cogent reflections on the question of historical knowledge, historicism presents us with a challenge of how to think the past as both a part of and distinct from the present.⁴¹ Where the old model of historicism understood our relationship to the past in developmental or devolutionary terms—the way the present was seen as the necessary outcome of the past (either progressively or as a form of decline)—New Historicism carved up history into atomistic and unrelated elements, severed off from each other and from us. "It is precisely our failure," writes Levinson, "to articulate a critical field that sights us even as we compose it, that brings back the positivism, subjectivism, and relativism of the rejected [old] historicist methodology."⁴² In distancing ourselves from this past, Levinson continues,

“we construct for ourselves an experience of freedom and power with respect to our negotiations with the past.”⁴³ There is a comfort, a kind of palliative care, in our New Historicist tendencies today, just as its reverse, an overabundance of presentism, can serve as a tool for the avoidance of the past’s remainder, its uncanny presence.

Topology, by contrast, allows us to account for the interactions of past and present as mutually constitutive. Instead of structuring a textual past according to the language of that past, we could instead structure that past according to the history of our understanding of that past. The set of words used to model *Werther* (or life or character) would thus no longer be drawn from the eighteenth century, but the subsequent critical discourse on *Werther* (or life or character). Instead of searching for the lexical regularities through which a historical discourse forms itself, we would be using the lexical regularities that grew out of that past and that extend into our present in order to understand that past. Life in the eighteenth century would no longer be understood as the sum of statements about life in the eighteenth century, but as a set of statements about life in the eighteenth century made *after*. In this way we are not only sighting ourselves in relation to a particular past but modeling our present as the aggregation of all the pasts *that were the future of a particular historical moment*. In place of the either/or of historicism (the question of the difference or sameness of the past to the present), and in place of the pure self-reflexivity of metacritical analysis (subjecting the terms of our present to historical analysis, thus restarting the problem over from the beginning), topology uses history understood as a temporal process to understand history as a temporal unity. Topology uses a lexical diachrony to structure a theoretical synchrony. It represents, to use the words of Virginia Jackson, “a new plane of historicity on which several temporalities unfold at once.”⁴⁴ Compared with the bibliographic object and its prioritization of the discrete, the rare, and the linear, topology allows for far more circular and looped structures of historical knowledge. Topology entangles us with time.

III. DIAGRAMMATICS

Reading is not just about taking time and thinking time, it is also a deeply visual experience. This is what Sybille Krämer calls *Schriftbildlichkeit* (the visuality of writing) and Garrett Stewart has termed “the look of reading.”⁴⁵ Whether we are decoding the shapes of letters, the patterns of words, or the structural conditions of the

page, reading is always simultaneously a practice of visual interpretation (not including the presence of such overtly visual categories like illustration). Indeed, topology undoes the binary distinction between text and illustration and rethinks text *as* illustrative. Topology moves us from the domain of the facsimile to that of the diagram. In this it belongs to the longer history of the spatialization of knowledge, from the medieval tree of knowledge, to the early modern schemas of Petrus Ramus and his school, to the eighteenth-century work of William Playfair and Johann Lambert, to the nineteenth-century diagrammatic theories of C. S. Peirce and John Venn, down to today's growing interest in the field of information visualization.⁴⁶ If topology pushes against the sequestration of number from language, it also forces us to reconsider the long history of literary iconoclasm.

Like all diagrams, a topology is first and foremost a reduction of complexity in the name of representing more complexity. Like the pages of a book, a topological diagram is an approximation of a more complex whole for which it stands. But unlike the page, with its deeply metonymical visual logic, the topology interleaves the metonymical with the metaphorical in new and dynamic ways. Where the set that is used to generate a topology is always *pars pro toto* (the set of words used to model *Werther* is not entirely coincident with *Werther*), the topology itself is largely metaphorical. It claims to represent a whole (but always only ever *a* whole, and not *the* whole). Unlike the pages of a book, which can never be observed all at the same time (a fact beautifully demonstrated in the images by Idris Khan that consist of illegible, superimposed pages of books), the topology allows visual access to a textual corpus in its entirety. It replaces the haptic totality of the book with the visual totality of the diagram.

But in keeping with the logic of redundancy that underpins topological thought, such visual likeness is not fundamentally mimetic, an attempt to look *like* something; instead, it is one of differential relations, of *resolution*. The whole for which a topology stands is always only ever a part of an even greater whole, just as its parts can also be considered as potential totalities unto themselves. The visual essence of the topology is not the facsimile, but the vector.⁴⁷

In his landmark work, *Allegories of Reading*, Paul de Man argued that the point of critical reading was to reverse the directionality behind a naïve form of reading that moved principally from a metonymical understanding of language to a metaphorical one. For de Man, reading naïvely, as opposed to critically, relied on a cognitive process through which figural parts could come to stand for imaginative totalities that

in turn could stand for a lived reality outside of the text. Reading's popular efficacy, according to de Man, resided in the way it allowed us to substitute a series of linguistic constructs for a reality that existed beyond the book, the way what we read can be so powerfully *equivalent* to life.⁴⁸ The critical reader, one trained above all on the work of Marcel Proust, was to de-mask this process of substitution and see it instead as a form of succession, of an unceasing chain of figural parts masquerading as experiential wholes.

De Man's allegory of reading can itself be read as a deeply bibliographic one, one that accords with a basic seriality underlying the structural logic of the page, where we read either forward or in reverse (as in the much-invoked phrase today, to read "against the grain"). Topology by contrast doesn't aim to move us in a single critical direction (from metaphor to metonym, from naïve to critical, forward to backward), but instead tries to take seriously this oscillation between the metaphorical and the metonymical, the necessity of synthesis alongside the inherent contingency of such synthesis. It is this combination of the metaphoricity of topology—its world-making—along with its metonymic contingency—that there are always an infinite number of possible topologies at different scales—that lends the topological diagram its critical force. As Deleuze writes:

Every diagram is intersocial and constantly evolving. It never functions in order to represent a persisting world but produces a new kind of reality, a new model of truth. It is neither the subject of history, nor does it survey history. It *makes* history by unmaking preceding realities and significations, constituting hundreds of points of emergence or creativity, unexpected conjunctions or improbable continuums. It doubles history with a sense of continual evolution.⁴⁹

Instead of moving us to a single, as well as singular, state of insight (or revelation or truth or de-masking), topology conjoins the twin acts of critique and belief, theory and action, through the persistent visual reconstruction of reading's textual artifacts. Topological conversions are framed as multiple, ongoing, contingent, and yet no less real (as Deleuze remarks, they produce "a new kind of reality"). In a topology, the text is literally, not just metaphorically, remade each time it is read, just as it is remade as a totality, as a metaphor for the real to which it claims to correspond. As a "model," the topological diagram is always both metonym and metaphor, part and whole. Unlike the grammaticality of the book, the topological diagram undoes reading's unidirectionality, the *telos* of attachment or enlightenment that reading

books has historically been thought to engender (whether forward as in Augustine or backward as in de Man).

In so doing, topology alters our emotional relation to reading, along with our sense of reading's intellectual outcomes—reading's loves and learning—by putting them in conversation with one another, in a kind of circulatory exchange. In a topology, belief is reinscribed *within* critique, not conceived as its opposite. They are part of an oscillatory process. Put another way, we could say that topology rethinks the notion of revolution, the idea of a single radical change that resides at the core of readerly conversion, and rethinks it as a function of *resolution*. Reading topologically becomes a matter of both scale and persistence, a series of contingent commitments—resolution in the double sense. It dramatically and profoundly alters the affective potentiality of our relationship to the text. There is a loss of attachment that topology produces that must be reckoned with, whether in pedagogical or personal terms. Part of the nostalgia for books is no doubt tied to this sense of attachment that accompanies modes of bibliographic reading. Topology does not so much cancel our attachments as make them radically contingent.

If the visual nature of topology rewrites the correlation between metonymical and metaphorical reasoning behind reading, it also puts us in a position to reconsider the very question of figure that resides at the core of textual analysis. In its diagrammatic nature, topology is a persistent encounter with the shape of language. In moving from the haptic totality of the book to the visual totality of the diagram, topology allows us to reengage with the notion of the textual *corpus*—as a body in space whose surfaces and contours have meaning. In place of the book's geometric continuity—from the one-dimensional line to the two-dimensional page to the three-dimensional codex that is the sum of its two-dimensional parts—topology marks an entry into a textual universe of far greater formal and structural diversity. In returning us to the question of form, topology is also a *figurology*.⁵⁰

Take, by way of a concluding example, this topology of Goethe's poetic corpus (Figure 5). In this visual presentation of the poems Goethe wrote over the course of his life, we are left to ask: What is the meaning of the shape of an author's corpus—or a period's? Would Wordsworth's or Baudelaire's or modernism's corpus look different? What would happen if instead of the two-dimensional plane of the Voronoi diagram we used three-dimensional shapes to represent literary categories? What would the surfaces and depths of the relationality between literature tell us?

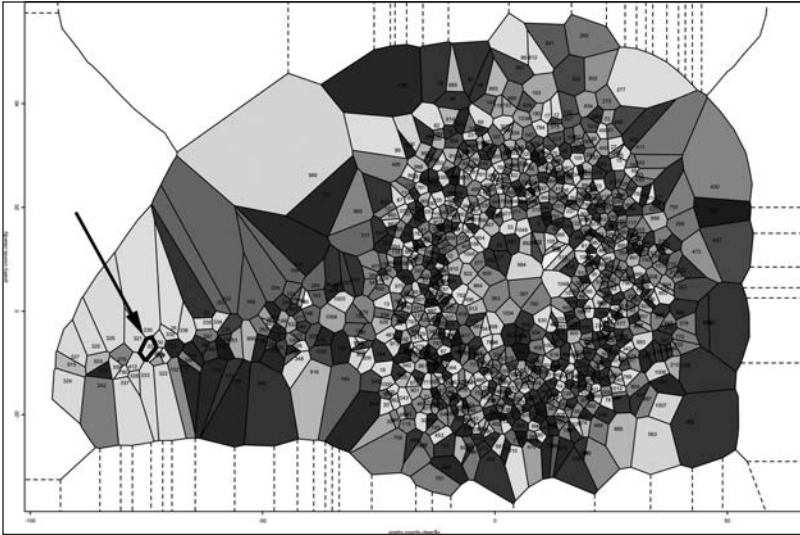


Figure 5. A topology of Goethe's poetic corpus, consisting of over one thousand items. In the online version, it is colored by the genres Goethe himself used to designate his work, with the blues denoting works that were published posthumously. As in the above examples, the poems are brought into a relational field through the commonality of lexical recurrence within them. The light pink genre on the left of the diagram stands for Goethe's sonnets, a genre he only ever wrote in once in his life. The highlighted tile is the opening sonnet, "Mächtiges Überraschen [Powerful Surprise]."

These are all very hypothetical questions at the moment, but they are immanent to topological reading. As a way of illustrating how topology conjoins knowledge of form with that of language, I want to conclude by looking briefly at this particular topology of Goethe's corpus in which we see a figure that approximates, with remarkable schematic fidelity, either a particular osteological shape (such as the shell of a horseshoe crab), a botanical shape (such as a flowering plant), or a mathematical one (a Mandelbrot set). The point is not that Goethe wrote his poetry to correspond to a particular figure within nature, but that this figural shape has meaning, one that bears on the meaning of the individual poems and the larger corpus to which they belong. If we attend for a moment to the tail of this shell or the base of this stem (the place of either germination or transformation), we see how it consists principally of the genre of the sonnet (indicated in the very light gray tiles at the far left of the diagram and pink in the color version). That is to say, at the turn or vertex of the corpus lies

the genre most heavily inflected by the category of the stylistic turn (the so-called volta). Goethe only ever wrote in the form of the sonnet once in his life, after his confidant Friedrich Schiller died. His opening sonnet to the sequence ends with the words, “a new life,” with clear reverberations of Dante’s *Vita Nuova*. This is Goethe theorizing life defined by a radical turn, by conversion, in the genre most defined by a structural turn. And he does so in ways that are the most lexically unique according to the entirety of his over 1000-poem corpus.

If we continue reading through the diagram and into the poems’ contents, what we find imbedded in the opening sonnet, the core of the figural stem, is a new way of thinking about language, about the relationality between words and ideas. The opening sonnet, “Mächtiges Überraschen” (Powerful Surprise), which is highlighted by the arrow in the image above, is one of the most written-about of Goethe’s corpus. It should come as no surprise that a criticism premised on the principle of individuation and distinction should choose to exert much of its critical energy upon one of the most lexically unique objects in that corpus.⁵¹ At stake in the poem, however, is not an argument about radical novelty (the new life) but one that tries to theorize a new way of thinking about relationality, about life founded upon a principle of the continuity of the discontinuous.

The sonnet tells the story of the fall of a massive rock into a river, a chance event that leads to the creation of a new form—the rock dams the river to create a lake, thus interrupting the genealogical relationship between two distinct sources of water (the spring and ocean). After this fall, this turn of events, we are left with a lake instead of, or rather within, a river which intermittently reflects the heavens’ stars in its crashing waves:

The wave sprays and staggers back and yields
And swells upward to devour itself perpetually;
The striving toward the father is now restrained.

It careens and rests, dammed back as a lake;
Stars, reflecting themselves, regard the twinkling
Of the wave’s crash against the cliff’s walls, a new life.

[Die Welle sprüht und staunt zurück und weicht
Und schwillt bergan, sich immer selbst zu trinken;
Gehemmt ist nun zum Vater hin das Streben.

Sie schwankt und ruht, zum See zurückgedecket;
Gestirne, spiegelnd sich, beschaun das Blinken
Des Wellenschlags am Fels, ein neues Leben.]⁵²

We thus move over the course of the sonnet from a genealogical relationship between words and things (spring to ocean), a necessary—and necessarily linear—connection, to a relationship premised on the idea of likeness, difference, and recursivity (embodied in the parallel planes of the lake and sky and the intermittently blinking stars through which they are united). We are led, in other words, to a spatial knowledge of form, one that is no longer temporally finite, as in the river's voyage, but recursively infinite, as in the twinkling reflection. There is a deep structural affinity between the form of the sonnet, the poetic figures deployed in the sonnet, and the overall shape of the poetic body to which it belongs and which the topological diagram makes visible.

IV: CODA

In his reflections on the legacy of the work of Michel Foucault, Deleuze opened his short book with a parable of the figure of the archivist. The archivist of old, according to Deleuze, was a guardian of rarity, someone who, as in Franz Kafka's tale of the law, watched over the fragility of the material history of human culture as well as its improbably accessible significance. The old archivist, in other words, was a purveyor of cultural inaccessibility. The archivist of the future, for Deleuze, was to become above all else a surveyor of the rarity of regularity, an *overseer* of the differences that resided within cultural repetitions, indeed, culture understood as a set of differential repetitions. Instead of a guardian of significance, the new archivist was to make visible the configurations of language. The new archivist was to be an expert of repetition and redundancy.

In his attention to the question of recurrence, Deleuze was of course entering into a debate with one of the foundational texts within the history of both philosophy and reading (that is, philosophy understood as a philosophy of reading), that of Plato's *Phaedrus*. As Socrates famously argued, the problem with writing is that it keeps telling us the same thing over again. In some of the most quoted lines of philosophy—in words, in other words, that keep repeating themselves—Socrates says of writing, “You'd think they were speaking as if they had some understanding, but if you question anything that has been said because you want to learn more, it continues to signify just that very same thing forever.”⁵³ Unlike speech, which we can convey

multiply and in multiple versions to ensure that it has truly been understood, writing is inert and repetitive, inert *because* repetitive. In this way, reading could never, according to Plato, provide access to true knowledge.

We now know of course that texts don't simply repeat themselves. The history of textual change, the deep and lasting instability of writing, is one of the great topics of human culture, not to mention a vibrant field within literary study. For Plato's Christian and bibliographic successor Augustine, however, the point was not so much that texts change, but that *we* change when we reencounter them. For Augustine, time solved the problem of reading's redundancy. According to the model of readerly conversion offered by the *Confessions*, the same text will tell us something profoundly different the next time we read it. Repetition, understood as a function of time and ensured by the medium of the book, was to serve as the principle of radical insight, the possibility of human knowledge of the divine.

For Morrissey, by contrast, the knowledge of reading provided by the electronic text is the way it brings into view, makes us conscious of, the redundancy *within* reading, the way any textual field is at base a configuration of differential repetitions. The miracle is not that texts change, but that so much of them stay the same. The electronic field for Morrissey is not constituted by a set of radically transient contingencies; instead, it is comprised of both more copies *and* more versions. Topology becomes the means of accessing this knowledge of increasing recurrence and change.

In its attention to lexical recurrence, topology marks out an encounter with what Martin Heidegger would call *das Geringe*, the trivial, but also that which comes *around*.⁵⁴ In so doing, topology undoes one of the most historically prominent biases that has structured the discipline of literary studies and that is premised on the dual notions of significance and signification. In attending to the patterns of how language repeats itself, topology draws our attention to a very different idea of meaning and the meaningful. It combines a sense of the latency of meaning, what a text says without saying it (that which is signified beyond the text) with a sense of the manifest nature of textual meaning, that a text says nothing more than what it says (prioritized by the newly coined "descriptive turn" or "surface reading").⁵⁵ In so doing, topology privileges the latency of the manifest, what we might call "dispersive reading"—all of those words that have historically resisted our attention through their familiarization, their presence, and their over-availability, but also through their diverse dimensionality and

complex localization within a textual field. Topology brings into view something akin to what Walter Benjamin might have called history's "lexical unconscious"—a textual marginality that encompasses both the vast majority of texts as well as the vast majority of words of any single text. As Barthes beautifully and honestly asked in *The Pleasure of the Text*, "Has anyone ever read Proust, Balzac, *War and Peace*, word for word?"⁵⁶ Topology does. It shows us where our critical attention stops being critical, revealing the concentrations of language, the *Verdichtungen* or lexical infrastructure, upon which critical meaning rests. The automaticity of computational reading helps undo, ironically and perhaps even somewhat tragically, the automaticity of our own critical reading. It visualizes precisely those spaces marked by the absence of attention, where critique is arrested in the face of the habitual, the familiar, and the so-called insignificant. In attending to the significance of non-significance, topology introduces a different, perhaps more elementary order of meaning into the field of language and the space of literature.

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NOTES

¹ Michel Foucault, *The Archeology of Knowledge*, trans. A. M. Sheridan Smith (New York: Pantheon, 1972), 131.

² Judd Morrissey, *The Jew's Daughter* (2000), <http://www.thejewdaughter.com/>. Also available at http://collection.eliterature.org/1/works/morrissey_the_jews_daughter.html.

³ Morrissey, 3.

⁴ Morrissey, 30.

⁵ Morrissey, 31.

⁶ See the influential theorizations by N. Katherine Hayles, who speaks of the electronic "flickering signifier" (*How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics* [Chicago: Univ. of Chicago Press, 1999], 25–49); and Alan Liu, who speaks of the "data pour" to understand the contingent visibility of electronic text ("Transcendental Data: Toward a Cultural History and Aesthetics of the New Encoded Discourse," *Critical Inquiry* 31.1 [2004]: 49–84).

⁷ Augustine, *Confessions*, trans. R. S. Pine-Coffin (New York: Penguin, 1961), 177.

⁸ For a reflection on the tactility of reading, see Andrew Piper, "Take It and Read," in *Book Was There: Reading in Electronic Times* (Chicago: Univ. of Chicago Press, 2012), 1–23.

⁹ See Hans Blumenberg, *Theorie der Unbegrifflichkeit* (Frankfurt: Suhrkamp, 2007). One could place Blumenberg within a longer twentieth-century theoretical tradition from Theodor Adorno to Jacques Derrida of reading negativity.

¹⁰ See Christopher Cannon's essay "The Art of Rereading" in this issue of *ELH*. See also Deirdre Lynch, "Canon's Clockwork: Novels for Everyday Use," in *Bookish Histories: Books, Literature, and Commercial Modernity, 1700–1900*, ed. Ina Ferris and Paul Keen (Basingstoke: Palgrave Macmillan, 2009), 87–110.

¹¹ Steven Connor, "Topologies: Michel Serres and the Shapes of Thought," <http://www.stevenconnor.com/topologies>.

¹² This section is greatly indebted to Marjorie Levinson, "Of Being Numerous," *Studies in Romanticism* 49 (Winter 2010): 633–57.

¹³ Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (Minneapolis: Univ. of Minnesota Press, 1987), 12.

¹⁴ See D. F. McKenzie, *Bibliography and the Sociology of Texts* (Cambridge: Cambridge Univ. Press, 1999). More recently, see James F. English, "Everywhere and Nowhere: The Sociology of Literature after the 'Sociology of Literature,'" *New Literary History* 41.2 (2010): v–xxiii.

¹⁵ See Gilles Deleuze, "Ethology," in *Incorporations*, ed. Jonathan Crary and Sanford Kwinter (New York: Zone, 1992), 624–33.

¹⁶ Gilles Deleuze, *Foucault*, trans. Seán Hand (London: Continuum, 2006), 70.

¹⁷ Friedrich Kittler, *Optical Media* (Cambridge: Polity, 2010), 230. For an attempt to think the congruences between writing, images, and number, see Sybille Krämer and Horst Bredekamp, eds., *Bild, Schrift, Zahl* (Munich: Fink, 2003). For the way the numerical table marks a recurrence of one of the oldest forms of writing—the list—which was always strongly tied to calculation, see Umberto Eco, *The Infinity of Lists* (Paris: Musée du Louvre/Rizzoli, 2009); and Robert E. Bellknap, *The List: The Uses and Pleasures of Cataloguing* (New Haven: Yale Univ. Press, 2004).

¹⁸ See in particular the work of Sara Cordes and Rachel Gelman, "The Young Numerical Mind: When Does It Count?" in *The Handbook of Mathematical Cognition*, ed. Jamie I. D. Campbell (New York: Psychology Press, 2005), 128–42; and Stanislas Dehaene, *The Number Sense: How the Mind Creates Mathematics* (Oxford: Oxford Univ. Press, 2011).

¹⁹ Oscar Milosz, *Ars Magna*, vol. 7 of *Oeuvres complètes* (Paris: André Silvaire, 1961), 23. My translation.

²⁰ Alain Badiou, *Number and Numbers*, trans. Robin Mackay (Cambridge: Polity, 2008), 70. For Badiou the historical origins of this notion of number belong to the late nineteenth century and the invention of set theory, at which point infinity is no longer considered an absolute term, a singularity, but as a multiple, as an infinite number of infinities. The set, then, is one of the basic elements in constructing the contingency at the heart of topological understanding.

²¹ Roland Barthes, *The Pleasure of the Text*, trans. Richard Miller (New York: Hill and Wang, 1975), 49.

²² Gertrude Stein, *The Autobiography of Alice B. Toklas* (New York: Vintage, 1990), 41. For another critique of the sentence as the organizing principle of literary criticism, see M. M. Bakhtin, "The Problem of Speech Genres," in *Speech Genres and Other Late Essays*, trans. Vern W. McGee (Austin: Univ. of Texas Press, 1986), 60–102, esp. 71.

²³ See Tanya Clement, "'A thing not beginning and not ending': Using Digital Tools to Distant-Read Gertrude Stein's *The Making of Americans*," *Literary and Linguistic Computing* 23.3 (2008): 361–81.

²⁴ This distinction between repetition and redundancy is an important one. Repetition is one form of redundancy, but redundancy does not always imply repetition. For example, I might repeat my words to make sure you've heard them properly, but the double-negative in French or the universal appearance of the letter *u* after *q* in English are forms of redundancy that are not based on the repetition of the same thing. Reading involves an encounter with both forms of redundancy, though in this essay I am principally interested in the former rather than the latter, what it means for

words to repeat themselves as opposed to what it means for a text to encode higher or lower rates of informational redundancy within itself, which is something to be taken up in a separate article.

²⁵ Foucault, 55.

²⁶ For a discussion of the historical shift away from the association between words and keys, principally through the end of the *roman à clef*, see Piper, *Dreaming in Books: The Making of the Bibliographic Imagination in the Romantic Age* (Chicago: Univ. of Chicago Press, 2009), 41–45; see also Michael McKeon, *The Secret History of Domesticity: Public, Private, and the Division of Knowledge* (Baltimore: Johns Hopkins Univ. Press, 2007), 506–546, 598–614.

²⁷ For the strongest philosophical argument for the linkage between set theory and class theory, see Alain Badiou, *Being and Event*, trans. Oliver Feltham (London: Continuum, 2005).

²⁸ See Mark Algee-Hewitt, *The Afterlife of the Sublime: Toward a New History of Aesthetics in the Long Eighteenth Century* (Ph.D. diss., New York Univ., 2008).

²⁹ Deleuze, *Foucault*, 55.

³⁰ Foucault, 44.

³¹ On the statement, see Foucault, 103–116. The idea of the ambiguous object occurs in Paul Valéry's neo-Socratic dialogue, *Eupalinos, or The Architect*. It is found by Socrates on the seashore one day and its formal ambiguity becomes the starting point of his questioning after the nature of divisionality itself. In Valéry's words,

SOCRATES. Yes. A poor object, a certain thing that I found while walking. It was the origin of a thought that divided itself between building and knowing.

PHAEDRUS. Marvelous object! An object comparable to Pandora's box where all good and evil things are contained together.

Valéry, *Eupalinos; L'Âme et la danse; Dialogue de l'arbre* (Paris: Gallimard, 1945), 61. My translation. Or as Phaedrus will remark later on regarding Eupalinos and the centrality of a relational or environmental understanding of creativity: "He believed that a ship was to be created to a certain degree through knowledge of the ocean and almost formed by the wave itself!" (92).

³² See Deleuze, *Foucault*, 20.

³³ Bruno Latour, *On the Modern Cult of the Factish Gods*, trans. Catherine Porter (Durham: Duke Univ. Press, 2010), 61.

³⁴ See Kathleen M. Carley and David S. Kaufer, "Semantic Connectivity: An Approach for Analyzing Symbols in Semantic Networks," *Communication Theory* 3.3 (1993): 183–213.

³⁵ One of the crucial sources for topological thinking derives from the related field of bioinformatics, where a particular four-letter code is understood in instructional terms. Repetition in an organic setting is the condition of producing enormous degrees of variation. As the idea of life is increasingly understood in textual terms, it bears thinking how knowledge of organic textual processes can be brought to bear on the understanding of the history of cultural textuality.

³⁶ For an explication of this model, see Bruno Latour, "There are No Cultures," *We Have Never Been Modern*, trans. Catherine Porter (Cambridge: Harvard Univ. Press, 1993), 103–6.

³⁷ Foucault, 33.

³⁸ Latour, *We Have Never Been Modern*, 51–55.

³⁹ See Eugene Thacker and Alexander Galloway, *The Exploit: A Theory of Networks* (Minneapolis: Univ. of Minnesota Press, 2007).

⁴⁰ See Jerome J. McGann, *The Romantic Ideology* (Chicago: Univ. of Chicago Press, 1983).

⁴¹ See Marjorie Levinson, "The New Historicism: Back to the Future," in *Rethinking Historicism: Critical Readings in Romantic History*, ed. Levinson and others (Oxford: Blackwell, 1989), 18–63.

⁴² Levinson, "The New Historicism," 20.

⁴³ Levinson, "The New Historicism," 34.

⁴⁴ Virginia Jackson, "Introduction: On Periodization and its Discontents," in *On Periodization: Selected Essays from the English Institute*, ed. Jackson (American Council of Learned Societies, 2011), paragraph 4. For a recent reflection on spirality and history, see Lisa Brooks, "The Primacy of the Present, the Primacy of Place: Navigating Spiral History in the Digital World," *PMLA* 127.2 (2012): 308–316.

⁴⁵ See Krämer, "'Schriftbildlichkeit,' oder: Über eine (fast) vergessene Dimension der Schrift," in *Schrift, Bild, Zahl*, 157–76; see also Garret Stewart, *The Look of Reading: Book, Painting, Text* (Chicago: Univ. of Chicago Press, 2006). For a discussion of the neurological relationship between reading and seeing, see Stanislas Dehaene, *Reading in the Brain* (New York: Viking, 2009), 122–42.

⁴⁶ For an introduction to the history of the diagram, see John Bender and Michael Marrinan, *The Culture of the Diagram* (Stanford: Stanford Univ. Press, 2010); and Matthias Bauer and Christopher Ernst, *Diagrammatik: Einführung in ein kultur- und medienwissenschaftliches Forschungsfeld* (Bielefeld: Transcript, 2010). For a review of current information visualization practices, see Manuel Lima, *Visual Complexity: Mapping Patterns of Information* (Princeton: Princeton Architectural Press, 2011); and Janet Abrams and Peter Hall, eds., *Elsewhere Mapping: New Cartographies of Networks and Territories* (Minneapolis: Univ. of Minnesota Design Institute, 2005).

⁴⁷ See Matthew Kirschenbaum, "Vector Futures: New Paradigms for Imag(in)ing the Humanities," *Poetess Archive Journal* 2.1 (December 2010), <http://paj.muohio.edu/paj/index.php/paj/article/view/5>.

⁴⁸ See Paul de Man, "Reading (Proust)," in *Allegories of Reading: Figural Language in Rousseau, Nietzsche, Rilke and Proust* (New Haven: Yale Univ. Press, 1979), 57–78.

⁴⁹ Deleuze, *Foucault*, 30–31 (my emphasis).

⁵⁰ The work of Hans Blumenberg on "metaphorology" is an essential precursor to the work of topology. For Blumenberg, we need to start with how figure structures concept; that is, the way figure is the condition of our knowledge of concepts. Rethinking the notion of the "corpus" as form as much as a material object is an important addition to the expanding field of research into the materiality of texts. See Blumenberg, *Paradigms for a Metaphorology*, trans. Robert Savage (Ithaca: Cornell Univ. Press, 2010).

⁵¹ For one of the most extensive readings of this sonnet as an argument about contingency, see David Wellbery, "Contingency," in *Neverending Stories: Toward a Critical Narratology*, ed. Ingeborg Hoesterey, Ann Clark Fehn, and Maria Tatar (Princeton: Princeton Univ. Press, 1992), 237–55.

⁵² J.W. Goethe, *Werke*, vol. 2 (Weimar: Verlag H. Böhlau, 1999), 3. My translation.

⁵³ Plato, *Phaedrus*, trans. Alexander Nehamas and Paul Woodruff (Indianapolis: Hackett, 1995), 80–81.

⁵⁴ There are two important limitations to Martin Heidegger's notion of *das Geringe* for topological thought that are worth pointing out. The first is its emphasis on "nearness"—the way trivial things bring us close to that which is close, to a sense of closeness itself. Topology is far more concerned with bringing the categories near/far into relation with one another, the sense of the nearness of textual distances and the

distances of even that which is close. The aspect of scale at the heart of topological reading problematizes the absolute nature of this historical binary. Secondly, the sense of the harmonic encoded in the collectivity of *das Geringe*—in the circularity of the “ring” that gathers diverse things together, embodied most prominently in the form of the jug—stands in contrast to topology’s far more atonal thinking about language’s dispersion. See Heidegger, “Das Ding,” in *Vorträge und Aufsätze*, vol. 7 of *Abteilung: Veröffentlichte Schriften, 1910–1976* (Frankfurt: Vittorio Klostermann, 2000), 167–87.

⁵⁵ For a discussion of the descriptive turn, see Heather Love, “Close but not Deep: Literary Ethics and the Descriptive Turn,” *New Literary History* 41 (2010): 571–91. See also Stephen Best and Sharon Marcus, “Surface Reading: An Introduction,” *Representations* 108.1 (2009): 1–21.

⁵⁶ Barthes, 11.