

Digital Humanities

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We might have expected, following the first wave of hypertext fictions written for the stand-alone desktop computer, that a literary genre was likely in formation. The professional networks were all in place by the mid-1980s and so were the necessary, marginal formations. Lines of communication opened between print and digital practitioners; critical encounters were sustained, and these were, at times, edgy. The digital practitioners were aware of academia but they were careful not to self-identify programmatically as a part of literary theory or creative writing—whose rise was contemporaneous and whose principled, respectful, and professional noncommunication was mutual. In the meantime, in the second decade of the twenty-first century both theory and creative writing have been each untouched by a subsequent rise in the digital humanities. That process of institutional, functional differentiation, more than the production of literary genres and the renewal of an audience for literary writing in digital media, will be as much a part of any history of “digital literary arts,” as the identification, evaluation, reproduction, and recirculation of works themselves.

When hypertext entered the scene in the 1980s, a metafictional awareness and postmodernist sensibility were prevalent. It would be a mistake, however, to regard the experimentation in new media as a continuation of the previous generation of print fictions, for example by Thomas Pynchon, Don DeLillo, William Gaddis, Joseph McElroy and, notably, Robert Coover, who, unlike his compeers took an active interest in writing for the stand-alone computer, then the 3 dimensional (CAVE) environments and, eventually networked devices. Though Coover knew enough (as he approached his seventies) to restrict his own experimental creative practice to print fiction, he was instrumental in his support of the founding (by Scott Rettberg and Jeff Ballowe) of an Electronic Literature Organization (ELO) and at the same time he brought many emerging digital talents to his program in Literary Arts at Brown University. I recall Coover remarking, during the Q & A at a 2007 colloquium in Paris,¹ that all of the writers who would become known as “postmodern” arrived independently, through very different topical and stylistic practices at a common understanding: they all realized for reasons of their own that the modernist project was finished; that the works they’d been weaned on needed to be totally reconfigured in a postwar, filmic, broadcast radio, and televisual world where mass media was no longer a novelty; not Walter Benjamin’s “mechanical reproduction” nor Baudrillard’s “simulation culture.” Our media environment had become more a reality in and of itself, a powerful way of shaping consciousness and organizing lived experience and increasingly licensed communication. Neither were media a nuisance that could be kept at bay through critique and creative deviation, the “detournment” practiced

by Situationists of the second half of the twentieth century. By the time Coover and his contemporaries came on the scene, the modernist project was no longer itself a driver of innovation and that was the thing, modernism itself, that needed to be reconfigured if not dismantled.² But if the theorists gave this common project a name—“postmodernism”—the literary creators themselves never regarded that practice (as many modernists did) self-consciously as a “movement.” It was more a commitment to continued formal and stylistic experimentation, for a while consistent with alternative lifeways, identities, and social formations that emerged in the 1960s and 1970s, until these alternatives, eventually became a cultural mainstream 

Apart from systematically imposed, professional separations, what kept postmodern print and early hypertextual practices separate, materially, was a recognition of the need for hypertext authors to explore their medium (and not just reflect on it)—for authors to engage the digital at the operative level. Many literary practitioners became proficient at programming and this in turn encouraged transformations in their literary practice as the medium itself followed a path of continuous platform upgrades, the computers became networked and the software more user friendly—without regard for the interests of literary experimentation, necessarily. An independent publishing concern did emerge with Mark Bernstein’s Eastgate Systems. Its *Storyspace* platform (1987) for composition was created by an established literary scholar, J. David Bolter, together with an accomplished practitioner, Michael Joyce. But this at once commercially and technologically innovative, self-consciously non-populist venue for “Serious Hypertext” was neither an academic press nor a conventional commercial enterprise: it turned out to be, like so much of the intermedial hybridity of first-generation hypertext, the only one. Apart from *Storyspace* and John McDaid’s “HyperEarth™,” which anticipates Google Earth by fifteen years, not so many literary authors have attempted to innovate with the software and textual content simultaneously or scale the upgrade path that is likely to render their own work unreadable.

A series of influential and recognized narratives nonetheless issued forth, but there were few followers in any given storytelling mode; few ways for a creative artist to enter a collective of like-minded or productively contrarian practitioners, of the sort that Coover and his fellow experimentalists had stumbled upon independently in print a decade or two earlier. Scholars at conferences began to speak of the “one *Afternoon: A Story*” phenomenon. The “one *Patchwork Girl*” problem. These are works  that continue to be studied and read in classrooms (along with McDaid’s *Uncle Bud’s Funhouse*, Stuart Moulthrop’s *Victory Garden* and the work of Judy Malloy and Dene Larson, William Bly and Kate Pullinger, among others); recently some of the works written for stand-alone computers have been replayed by the authors themselves on carefully reconstructed Apple *Ile*’s and IBM 286s where they first emerged, in homes and offices. The retrospective performances are described in a 2017 MIT Press collection of essays, *Traversals*, and interviews, *Pathfinders*, put together by Mouthrop and Dene Grigar. Malloy’s dream dialogue with near contemporaries Carolee Schneemann, Chris Burden, and Kathy Acker; the ancient Greek (and later Roman) texts collected in the *Project Perseus* that inform the work of Bly—each of these re-visionings, rewritings, and (not least) *relocations* of past practices in digital media constitute much that’s distinctively literary about electronic literature. And the conversations just as often cross national and linguistic borders even as they enter digital pathways that can alter the course of literary criticism.

Coover may have understood this “creative and technical ebullience” as a unique convergence not merely of two fields, the technological and the aesthetic, but of two



definitively modernist formations that were each freshly available for innovation and renewal on the part of an incoming generation of authorial and technological practice; yet the entirely actualizable aesthetic and “technical ebullience,” no less than a concurrent “irrational exuberance”³ in the economic sphere, turned out to be short lived and unreproducible. “The End of Books” that Coover formulated, as more of a thought experiment in his widely cited *New York Times Book Review* essay (1992), would be reconsidered by Coover less than a decade later as a “Golden Era” of hypertext experimentation.⁴ The “complex textual webworks of multilinear narrative and, to a much lesser extent, lyrical or poetic webworks,”⁵ however radical they might have been as means of disrupting and possibly reshaping habits of readerly attention, were nonetheless constrained by the digital formats of the day. Designed for shelvable floppy disks, UNIX Shell Scripts or CD-ROMs (*Read Only* in more than one sense of the word), the first-generation hypertexts for all their open-ended narrative formats were, materially, “mostly discrete objects like books.”⁶ That gave authors and readers from both domains, print, and digital, an opportunity for the most part textually to trace and cognize radical diversions from linear narrative in the new medium; habits of reading might change, to be sure, yet reading as such (not viewing or listening) remained the primary activity, and the alternative sequencings and linkages made possible by the computer, were gathered into one place—not distributed in networks.

In 1999, it may have been too soon to anticipate just how thoroughgoing restrictions would be on access to commercially monitored digital platforms; and how increasingly distanced readers of “user friendly,” handheld apps would be from any awareness of the underlying software architecture (except when a system slowed down or crashed). Though Coover doesn’t say so explicitly, the move to networked multimedia would make DIY technical experimentation on the same order as “creative” writing unlikely, even by litterateurs with some programming savvy. Michael Joyce and Shelley Jackson, regarded by Coover and many others as the most accomplished hypertextualists, would each shift or (in Joyce’s case, return) to print for their continuing experimental practice.

The early hypertexts are part of literary history but they never became an avant garde or a *movement*, along the modernist model for literature, sound, and visual arts of the previous turn of the century. The nonlinear or nonsequential hypertext narrative made possible by the computer, unlike (for example) the novel, poem, or short story in print, never became a *genre*. The process was unified by an experimental tendency that flourished briefly, with the same stand-alone Apple and IBM computers on which they can now be read in a few curated labs (notably in Dene Grigar’s program at the University of Washington, Victoria, Matt Kirshenbaum’s Human-Computer Interaction Lab at Maryland, and Lori Emerson’s lab at the University of Colorado, Boulder). Subsequent platforms such as *Twine* and Erik Loyer’s open source *Stepworks Library* (<http://step.works/>, dedicated to a form of “one button storytelling”) are unlike *Storyspace* in that the reader is expected not just to click or tap or scroll and see what alternative pathways the author has set in place; readers tend, rather, to be engaged as coauthors who can themselves enter a work and adjust its content at will, and then pass their own versionings on to others.⁷ In such networked hypertextual practices, the above cited “dream dialogues” among near contemporaries (enacted by Judy Malloy) can now be opened to a general readership and expanded to authors more distant in time; there is no longer a self-contained product that the artist circulates, it’s rather a series of processual pages and platforms “available for you to perform, modify, or replace with your own content. You can remix the content of any story with the look and feel of any other.”⁸

John Cayley emerged as a digital literary artist just a few years after the *Storyspace* era, when the internet was in place and he was appointed to direct the same Brown University writing program that had been attended by *Patchwork Girl* author Shelley Jackson along with early net artists such as Mark Amerika and Noah Wardrip-Fruin. Cayley is well placed, then, to comment on the early reception and never realized potential of a hypertextual literary practice: since then, “the myth of computational media’s indeterminacy, openness, freedom has . . . become just that, still affectively powerful, but merely a story from the hyper-distant recent past. The actual world of computation within which we now dwell has an architecture that is as substantial and determinative as that of bricks and mortar.”⁹ The materiality may be softer, more a matter of programming and information flows, but the digital infrastructure (what Cayley terms “Big Software”) is by now no less necessary for the construction and maintenance of buildings, institutions, and (not least) communicative pathways within a tightly controlled corporate lifeworld. While that particular corporate transformation transpired within little more than a decade, it is not easy to describe any similar or concurrent transformation in the literary arts: to the contrary, the corporate expansion of text based writing for mainly commercial purposes (and the predominance of digital data mining in the humanities) arguably helped to sideline the internet’s literary affordances and may continue to do so. Just as it took centuries, not decades, for the novel to emerge after the installation of (for example) the Gutenberg press, and lifetimes following the Industrial Revolution for the realist novel of Austin, Dickens, and George Eliot to emerge, we should perhaps not expect a speedier emergence of a digitally structured literary practice, whether for popular or professional audiences or emerging arts networks in the gallery system.

What we can say, for sure, is that as yet no known economy (not even the “gift economy” of academic writing made freely available in return for an author’s promotion and tenure), has emerged to support and sustain the development of literary genres and practices in new media. As Martin Eve argues in his essay, “Scarcity and Abundance,” we have not yet put in place a “discovery space” for the act of reading, and writing online:

For what, we might ask, are the quality markers that make it possible to discern where one should direct one’s time within the electronic world? Guides, such as those produced by the Electronic Literature Organization (ELO) are one such signal. Indeed, the ELO Showcase and Electronic Literature Collection act as signposts of value, while admitting their own non-comprehensivity.¹⁰ However, the fact that the ELO brackets the works in which it is interested under a medium of form—however hard this may be to define¹¹—means that a given piece of electronic literature will only be discovered here by those seeking it through the medium, rather than it being an honest competition with print. In other words, only readers who seek “electronic literature” will find electronic literature. . . . Many works, including [Emily Short’s tale of magical rewriting,] *First Draft of the Revolution*, ask users to “play” them, rather than “read” them. Of course, the term “play” has many resonances for literary theorists.¹² To my mind though, when confronted with a digital object that asks to be “played,” my thoughts turn more to *games* than to books for any comparison.¹³

We may nonetheless postulate, given the growing corpus of born digital literary objects, what an emergent electronic literary practice (and economy) might look like, whose innovations no longer take place so much through direct literary applications of technologies under development (as happened with *Storyspace*). As I’ll argue momentarily, current practices tend rather to set themselves *against* the material emplacements of a digital infrastructure

that is now pervasive and unavoidable, and whose innovative power, such as it is, is not so often or so openly made available as before. But first, so that we have a sense of what it is literary scholars should be looking for by way of a post-digital corpus, we might look further into some of the specifically literary sources of that “still affectively powerful” narrative of a trans-medial, breakaway writing practice. Robert Coover himself, in a little-known essay (occasioned by a 1986 collection titled *Sudden Fictions*) sought to link the potential of a nonlinear, post-digital practice not so much to innovation as to a perennial persistence of deviant storytelling. Noting his own inspiration in the preceding generation of Kafka, Beckett, and Borges, but also recalling the prehistory through millennia of what would eventually settle into present forms of storytelling and novel writing, Coover lists—not many, but a number of past practitioners, some of them working singly but many more in collaboration, who “have taken short fictions and linked them up . . . , moving from disparate short narratives toward longer, more Complex ones.”¹⁴ Such is the mode of the Book of Genesis, which was “done by gathering up a mass of traditional tales, widely available, and attaching them, linking them to a name, to a character” (Abraham). And so it has been for all our mythical heroes and (in Coover’s United States) national frontiersmen: “And thus Odysseus, thus King Arthur, thus Br’er Rabbit and the Saturday morning TV cartoons: webworks of borrowed fragments.”

One might have expected the reformulation of such “webworks” using fictions short enough to be viewed on a single computer screen, whose networks are custom made not just for linking but the carrying over (that is, the “borrowing”) of fragments, their redistribution, and a consequent expansion of such practices to a newly forming, popular reading audience. The latter, unprecedented audience expansion did in fact happen but with much more conventional realist (and often racy) narratives such as E. L. James’s *Fifty Shades of Gray* that were self-published by individual authors on fan fiction sites and Amazon.com. But there was also the prospect, similarly unrealized, of the revival and wider circulation of classic (and classically deviant) framed narratives on the order of Boccaccio’s *Decameron*, Basile’s *Pentameron*, Chaucer’s *Canterbury Tales*, and (in Coover’s words) the “freer, less programmatic approach” of Cretien de Troyes, whose “own loose narratives are much more playful and full of unexpected, sometimes dissonant, but often very creative juxtapositions, including a number of wildly improbable linkages that through creative displacement helped to generate a whole new literary form.” Never mind that the newness was the discovery of an “ancient idea of books buried in books”: Cervantes used “all of these devices,” often parodically, in the invention of a different sort of book; namely, the literary novel: “*Don Quixote* Part I is still essentially a loosely linked collection of short fictions based on sequential parodies of contemporary literary forms, but Cervantes gets the whole package integrated and put together in Part II, and the novel, the classic form of the Gutenberg era, is born.”¹⁵

What then, has held back a comparable literary formation in the post-digital era? Coover is able to cite the self-described “hypernovel,” *Invisible Cities* (1972) whose author, Italo Calvino, was able (albeit in print) “to concentrate all [his] reflections, experiments, and conjectures on a single symbol.” Calvino says that he was able to “build up,” in this volume “a many-faceted structure in which each brief text is close to the others in a series that does not imply logical sequence or a hierarchy, but a network in which one can follow multiple routes and draw multiple, ramified conclusions.”¹⁶

But that was all done exclusively in print, in Calvino’s published work as in Coover’s own. The series of “sudden link[s]” made by Coover in this one short essay, he recognizes, would be much easier to follow on a screen, and so presumably would the “deeper

mainstream” of proto-, parodic, and persisting novelistic fictions that Coover traces. Calvino sets out, and realizes notionally in *Invisible Cities* multiple routes “aimed at tracing the lightning flashes of the mental circuits that capture and link points distant from each other in space and time.” But the current digital media that embody such linkages, operationally, have yet to produce anything quite like the literary mainstream these experimental authors (Calvino, Coover) imagine in print.

There’s another aspect, however, to Calvino’s art that Coover doesn’t mention—one that moves the discussion past the organization of story elements (whether in print, on stand-alone computers, or the internet) toward a more generalized consideration of literary writing as *writing under constraint*. Calvino after all was a part of the Oulipo, the *Ouvroir de littérature potentielle*, which looked to the materiality of literary arts, and more generally to the mathematics of inscription, frequencies of words and letters and also spacings; mental linkages generated not so much by unconscious or affective states as by material constraints: the determination to write a novel without the letter “e,” for example (*La Disparition*; Perec 1968; translated as *A Void* by Gilbert Adair in 1995; *A Vanishing* by Ian Monk; *Vanish’d!* by John Lee; and *Omissions* by Julian West), or the recombination of the fourteen lines in ten sonnets that produces, potentially, 10 to the 14th or *Cent Mille Milliards de Poèmes* (A Hundred Thousand Billion Poems).¹⁷ Comparable endeavors using computational means have been accomplished by Nick Montfort and Stephanie Strickland, whose mining of texts by Emily Dickinson and Herman Melville can be, not only read but also *rewritten* by interested readers. The same is true of Jhave Johnston’s *BDP: Big Data Poetry* (“Almost poems generated from almost big data by an almost programmer-poet”).¹⁸ Jhave’s remix of some 10,557 poems from the Poetry Foundation, 57,000+ hip-hop rap songs from Ohhla.com, and over 7,000 pop lyrics,” however freewheeling they might appear, has struck critics Davin Heckman and James O’Sullivan as a precise enactment of writing under constraint within an internet environment. Jhave presents himself as reading “along with the machine, verbally stitching and improvising spoken poems,” an activity that is, for Heckman and O’Sullivan, perhaps “the only possibility of overwriting” the machine’s own “writing constraint.”

Another approach, by John Cayley and Daniel Howe,¹⁹ is to locate in the everyday speech and writing posted to the internet, sequences of text that happen to repeat **phrase** or lines in the published writing of Samuel Beckett: “We address,” Cayley and Howe write, “the association of phrases with an authorized text, exploding its integrity and discovering the same words ‘in the wild,’ so to speak—among fragments of feral language both human and posthuman, in the common tongues that are proper to the contemporary linguistic commons.” Here the conscious creative participation of the reader is neither expected nor needed, since what we say collectively, is likely over time to iterate all that has been said by Beckett or for that matter any published author. The gist of all these engagements, is not so much to keep alive a tradition by acknowledging its “influence” (the framework advanced by T. S. Eliot in his essay, “Tradition and the Individual Talent”); rather, it’s a way for each of these writers to engage both the corpus and the vernacular *as data*, and so to demonstrate accidents and coincidences of machinic processing whose patterns actually have little at all to do with (for example) Calvino’s “multi-faceted” structures and “lightning flashes of the mental circuits.” Unlike the Oulipian constraints whose authorial imposition and embrace are *generative* of unexpected mental connections on the part of human authors and readers, the machinic, enacted computational constraints tend rather to make us aware of our distance from a literary corpus that has relocated *as data*: the “linguistic commons” thus conceived has the capacity to reproduce all past poetries,



stories, and novelistic sentences, if the net is cast widely enough, and our access is kept open. But this latter requirement (Open Access), though it can be found in databases such as Poetry.org is never certain (not for long) when our linguistic “commons” increasingly is enclosed, as Cayley and Howe again emphasize: “Big software that are, as we speak, enclosing language, in order to find the words of an authorized text where they are still, if only momentarily, associating freely.”²⁰

The constraints within which writers of internet self-consciously work, are thus (again) significantly different from those of the preceding generation of constraint based writing, as the hypertext innovators differed from their immediate postmodern predecessors. Queneau, who studied mathematics as well as “Letters” as a graduate student in the Sorbonne, was no doubt fully aware of the instrumentalist applications of the emerging digital media in particular; he was also, in the words of the *Encyclopedia Britannica*, “a reader for the prestigious *Encyclopédie de la Pléiade*, a scholarly edition of past and present classical authors, and by 1955 was its director” (Wikipedia). Grounded in the classics as much as Robert Coover or Italo Calvino, Queneau resisted the idea of a literary “movement” (after early encounters with the French Surrealists and Dadaists), but he was devoted to the idea of sustained collaborations among a persisting communicative cohort.²¹ The resonances, the capacity for linkage and reiteration of older forms, are however quite different when these are *generated* by machinic processes, not introduced (however arbitrarily) by the authors.

The introduction, *into the literary* of material and mathematical formalisms, is also consistent with a now unavoidable collocation on the internet of text, sound, and image—a co-presencing that has very real implications not only for how we cognize the work and its boundaries, but also for the professional structure and performative practice of literary arts. Freedom in such practice ceases to be associated with individual choices within a bounded field determined by an author, but is more to do with a recognition of nonhuman material constraints on all medial and mental linkages, and this recognition is as relevant to sound and visual elements as it is to the generation of text, for a strain of authors and artists larger than the literary centered Oulipo but never so large as the mainstream commercial practitioners in literature and the arts. Hence, Manuel Portela, in his essay “Writing Under Constraint,”²² is able to cite Igor Stravinsky²³ as readily as Queneau or Calvino. “I shall go even further,” Stravinsky writes:

My freedom will be so much the greater and more meaningful the more narrowly I limit my field of action and the more I surround myself with obstacles. Whatever diminishes constraint, diminishes strength. The more constraints one imposes, the more one frees one’s self of the chains that shackle the spirit.

What is noticeable about many such experiments in constrained writing, no less than acts of visual and sonic composition, is the way that they self-consciously *deviate* from established means of organizing the aesthetic experience—away from story and plot lines in fiction, and against harmony in music, for example; opening the composition to folkways and aesthetic forerunners on the one hand, and also to accidents, noises, or (as in the work of John Cage) silences that take on new qualities as they are brought into a highly structured work. In music, such off modern, off kilter practices never supplanted the classical or popular, folk or bluesy modes; the rioting audience on the opening night in Paris 1913 of *The Rite of Spring* (compellingly reimagined by Thomas Pynchon in his debut novel, *V.* [1963]), may have established an avant garde credibility but as the disruption, inevitably, recedes and the often equally compelling, performative

practitioners pass on, the constraints that enabled such experimentation carry on and inspire other, often lasting expression.

Such practices, as they resumed for example in the work of John Cage in the sixties, have in fact found a surprisingly wide acceptance. As Philip Clark notes at the end of a *London Review of Books* essay on John Cage, “many assumed his work would die with him. Cage’s quixotic ideas, they believed, required his presence and charm if they were to be sold to a skeptical audience hungry for Beethoven and Mahler. Yet in the years following his death the message of his silence roared ever louder. As if to vindicate Cage’s faith in technology, the compact disc arrived: the new medium’s absence of background hiss suited the often delicate textures of his music better than vinyl, and his music began to appear in abundance on CD.”²⁴ And there were others—never a mainstream, but always more—who followed in his wake: Brian Eno (who brought so many commercially successful artists from David Bowie to Devo to the Talking Heads into areas they might not have reached on their own); “Cosey Fanni Tutti, the British post-punk group Throbbing Gristle,” and “the Wandelweiser Group, a collective of composers and improvisers who to this day grapple with the question: after silence, what next?”²⁵

When the “myth of great composers and the stories their music told” is stripped away, what’s left is “sound. Then listening becomes a proactive responsibility. Music is no longer entertainment. You must sit, sometimes in silence, and listen hard.”²⁶ It is a lot to ask, and less and less likely to happen the more and more mediated input succeeding generations are asked, and more often required, to process. (Coover himself recognized, even as he noted the passing of hypertext’s “Golden Age,” that an author’s imagination of “the patient reader, if there are any left in the world,” was nonetheless the foundation to literary creation in any media.) But Stravinski and Cage and enough others show that such a mediatic, environmentally open approach can indeed find and sustain an audience in spite of all the danger (and distraction). Does the present exploration under way in literary experimentation give us reason to believe that something similarly off kilter and off modern can emerge in post-digital literary writing?

In a sense, on the literary side we may be moving toward a *return* to the open-ended prehistoric, proto-novelistic explorations in the exemplars and antecedents listed by Coover. None of these can be said to form anything like a formalized storytelling practice (of the sort advocated in commercial publishing and creative writing programs) or the settled practices of nineteenth-century-realist fiction. Yet they offered something more, a practice much older than stories or novels that runs against the grain of generic practices and genre fictions; a tradition that never settles into fixed forms, but instead deviates from the norm at any given time.

That we should look not solely to the literary canon but to experimental practices in the sound and visual spheres that textual writing now encounters, opens literary practice to the same kind of citational aesthetic that brought environmental sounds and silences into experimental music; and for this we may expect to find more written works conceived not for this or that computer or some other device, but for (and with) the internet. Here, too, Michael Joyce’s print fiction, *Was: A Novel of Internet* gestures in the same direction: “A highly elliptical, discontinuous, polyglot work that clearly has its own genetic relationship to the experimental tradition of modernism, though more in the line of Stein or Pound than Fitzgerald.”²⁷ Joyce’s novel also appropriates lines from the internet, as often (or as readily) as it sets down lines that the author himself thought up (to the extent that the language we form in our minds is ever our own). Joyce’s print novel is thus “part of an extended intercourse” that now includes the internet as much as spoken

conversation or written signage, and so are several born or genetically digital works that take the print canon or corpus not so much as a living “tradition” and not even as “Big Data,” in the sense that we may now regard the thirty million books scanned by Google (as of this writing, circa March 2017; over 140 million are expected to fill out Google’s Library Project). As Nick Montfort points out in conversation,²⁸ however, there is nothing inherently “big” about the corpus of all books available everywhere now in databases:

It only seems big because we have been focused on much smaller data sets. Our discussion of “big data” does not pertain to how much data there is, but rather what our traditional means of data collection and analysis have led us to expect. When those expectations change, what seems like “big data” now will no longer seem big. It will just be “data.”

And that data can be, in turn, resituated at will by authors with the programming knowledge and access to the sites, the collections, and not least the software that organizes databases. The literary, as such can be present only so long as authors can go on engaging not data and not conventional traditions but I would say, rather, cohering and continuing literary practices—through direct and indirect citations, reorganization, and the cognitive dissonance of continually comparing our internalized speech and thought patterns with the written, recorded speech and thought of others (including past authors).

Montfort and Stephanie Strickland’s own *Toroko Gorge* (2012) illustrates this recombinant conversation clearly, by steadily and continuously working variations on lines from Emily Dickinson and Herman Melville (together with input from readers). We are able to see the results (which are infinite) at any moment forming in front of us on the screen. The mechanism underlying each of these clearly articulated, unrealizable (never to be finished and sometimes unreadable) projects are nonetheless entirely accessible and available—no less than the formerly, largely notional recombination of textual elements was essential to our experience of Queneau’s and Calvino’s antecedents.

At the same time, all works within the Dickinson and Melville corpus that are reworked by Strickland and Montfort are out of copyright, and the database from which they have been retrieved is Open Access. There is no reason to suppose, to stay with our current example, that Google’s scanned corpus of thirty-plus million (and growing, albeit haltingly²⁹) will be similarly available for such recombinant reading. Cayley’s “Big Software,” with its infrastructural constraints, might well be the greater challenge than any concern with the tracking, counting, and accounting for “Big Data” that has preoccupied so many humanities researchers. And as the mechanisms become more and more hidden, our creative attentions today turn more to errors, liminalities, and glitches that reveal our mediatically determined situation; these are what now define a contemporary digital “Glitch Poetics.”  ~~And our own constrained writing activity, which was offered as an option not a requirement in Queneau’s or the majority of Montfort’s or Strickland’s interactive works, is now unavoidable, even as the documentation in databases of our every click, tap and keystroke is less and less accessible to us, and our own published works are most often retrievable one work at a time in databases protected by moving paywalls.~~

A networked literary practice that enters easily into “dream dialogues” with near contemporaries and canonical cousins, to recall Judy Malloy’s early formulation, is one promise of the internet that is currently realizable. It will engage massive data, for sure, but it won’t be a continuation of the maximalist ambitions of the postmodern fiction authors of the previous generation, Coover among them, who assembled “sudden stories” into epical, enveloping world fictions. Something quite different, if in some ways more worldly would appear to be in formation in the sphere of digital literary arts. Coover’s intuitive

focus on an unbounded interconnection of “short fictions,” closer to the prehistory of the novel is a valuable first pass at describing this development; Calvino’s many-faceted, nonhierarchical and nonlinear structure that sought to invoke “mental circuits,” and Caxley and Howe’s rediscovery of Beckett’s sentences in found texts on the internet, all point to another characterization—one that we might identify as a “minor” literature of a sort that was recognized by another key precursor to digital aesthetic and cultural theory, namely, Gilles Deleuze. As Laura Shackelford and Laura Marks have recently noted, Deleuze’s “minor science” takes us toward “emerging, immanent, practice-based methods for diagnosing and pursuing the shifts in language and poetics and their larger literary, symbolic, and political economies.”³¹

For Shackelford, discerning a “minor” literature involves our “retracing these digital literary strains of inquiry into language and emerging, computation-based digital media, and their bioinformatic symbolic and political economies and circulatory regimes.” For Rob Wittig, who in 1989 attended a seminar with Jacques Derrida and has practiced an alternative, improvisational mode of digital writing since the early days of the *In.S.Omnia* project in Seattle, a thing called “Netprov” represents a hitherto unrecognized practice (“minor” by design) that recalls emergent practices in print by Defoe, Sterne, H. G. Wells and Mark C. Danielewski, even as its embrace and detournment of any and all social media sets it squarely in “contrast to high literary forms such as the holy trinity of poem, short story and novel.” Where much that is innovative and avant garde in electronic literature has found a limited audience mostly in academia, Wittig’s collaborative and contrarian Netprov remains

informal in contrast to works vetted, edited and published in major journals, *interactive* because reactions from readers are expected and can rapidly be published alongside the text, and *vernacular* because they are cultural practices that develop from everyday use and are not, or not yet, taught in schools and universities. (Note that I use the word “vernacular” here not as linguists do, but as graphic designers do. In design scholarship it means design done by untrained creators. Such work is beloved in graphic design culture, sometimes with a camp sensibility, more often with genuine admiration.)

Wittig’s elaboration points to the necessarily populist, potentially but not necessarily commercially popular aspect of Netprov, and to an internet whose restrictions, once noted, can occasion improvisational writing under constraint. His reference to “graphic design culture,” like our previous invocation of experimental music, helps to fill out the affective and sensual multiplicity that is the likely environment for reading activity, going forward. ~~A self-consciously “minor” practice that situates itself neither in commercial “discovery spaces” the academic gift economy: here is the place that has come closest to realizing the literary/human potential of the internet.~~

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NOTES

1. The (March 22–24, 2007) colloquium was held in honor of Marc Chenetier on the occasion of his retirement from the University Paris 8.
2. I cannot recall the exact terms used by Coover, but the sense at that 2007 conference—there are no tweets nor proceedings that I know of—was that postmodernism had been undergoing some as yet unnamed transformation in the new, digital environments.

The continued inability to name or periodize the present moment, and a spate of “new” practices—Media, Materialisms, Medievalisms, even the “New IRS” that preoccupies David Foster Wallace in *The Pale King* (2011)—all are symptomatic of the incomplete establishment of a post-print, predominantly digital practice in professional communication and the literary arts.

3. The term was advanced by then chair of the Federal Reserve, Alan Greenspan, in “a speech given at the American Enterprise institute during the dot-com bubble of the 1990s” (Wikipedia).
4. October 29, 1999 Keynote Address, Digital Arts and Culture, Atlanta, Georgia. Coover’s speech was also published in *Federal Reserve Magazine* in 2000.
5. Robert Coover, “Storying in Hyperspace: Linkages,” in *The Tales We Tell: Perspectives on the Short Story*, eds. Barbara Lounsberry, Susan Lohafer, Mary Rohrberger, Stephen Pett, and R. C. Feddersen (Westport: Praeger, 1998).
6. Coover, “Storying in Hyperspace.”
7. Apart from the interactivity that readers can practice, the act of reading in *Stepwise* remains very much on the model of turning pages. As Loyer and Marino write, “These actions are like turning pages in a book. They’re digital ways of saying “next, please.”
 “Press SPACE BAR to continue.”
 “Click to continue.”
 “Tap to continue.”
8. Erik Loyer and Mark Marino; email circulated March 10, 2017 via the Electronic Literature Organization listserv.
9. John Cayley, “The Advent of Aurature and the End of (Electronic) Literature,” in *The Bloomsbury Handbook of Electronic Literature*, ed. Joseph Tabbi (London: Bloomsbury Press, 2017). Cayley’s recognition of an unfulfilled promise is echoed by his younger contemporary, Nick Montfort. As Cayley (and I) acknowledge and wish to specify a lost promise when a term, and practice such as “hypertext” is supplanted, we can also see this happening with so many other terms, such as “push media” and “cyberspace” which, as Montfort notes “sound very outmoded now, but I don’t mean to be dismissive when I refer to them; some of those underlying ideas have been important and remain so, and yet, obviously, everything promised by such terms did not persist (or never came to be in the first place). How do terms such as these represent hopes, imaginations, fascinations, and also misconceptions.” That question posed by Montfort (Nick Montfort, “Self-Monitoring and Corporate Interests,” Interview with Roberto Simanowski, *Digital Humanities and Digital Media: Conversations on Politics, Culture, Aesthetics and Literacy* [Ann Arbor: Open Humanities Press, 2016], 209), seems to me a worthwhile research agenda for the incoming generation of scholars taking a *literary* interest in modes of digital expression, an interest that can run counter to the upgrade path and at times meme-happy pursuits of first-order digital production. ~~A glossary of such terms, as my graduate and postgrad colleagues and I have under way at the Electronic Literature Directory, is one reference point for such scholarship: www.eliterature.org.~~
10. “Showcase.” *eliterature.org*. 2006. <https://eliterature.org/news/showcase/>
11. “For an indication of the difficulties here,” Eve references Caroline Levine, *Forms: Whole, Rhythm, Hierarchy, Network* (Princeton: Princeton University Press, 2015), 1–23.
12. ~~Most notably through the Derridean legacy. Jacques Derrida, “Structure, Sign and Play,” in *Writing and Difference* (London: Routledge, 2006), 351–70.~~
13.  Martin Paul Eve, “Scarcity and Abundance,” in *The Bloomsbury Handbook of Electronic Literature*, ed. Joseph Tabbi (London: Bloomsbury Press, 2017).

14. Robert Coover, "A Sudden Story," in *Sudden Fictions*, eds. Robert Shapard and James Thomas (Salt Lake City: G. M. Smith, 1986), vii–xii.
15. Coover, "A Sudden Story."
16. Italo Calvino, *Invisible Cities*, trans. William Weaver (New York: Harcourt, Inc., 1974).
17. Raymond Queneau, *Cent Mille Millions de Poèmes* (Paris: Gallimard, 1961).
18. David Jhave Johnston, "About," *BDP: Big Data Poetry*, <http://bdp.glia.ca/about/>
19. John Cayley and Daniel Howe, "'How It Is in Common Tongues': An Interview with John Cayley and Daniel Howe," Scott Rettberg, *Vimeo*, November 3, 2012, <https://vimeo.com/59669354>
20. Cayley and Howe are cited in the entry on John Cayley and Daniel Howe, "Common Tongues," *ELMCIP*, Posted by Elisabeth Nesheim, <https://elmcip.net/node/4677>
21. Members of Oulipo were admitted for life, and they remain members after their passing.
22. Manuel Portela, "Writing Under Constraint," in *Bloomsbury Handbook of Electronic Literature*, ed. Joseph Tabbi (London: Bloomsbury Press, 2017).
23. Igor Stravinsky, *The Poetics of Music in the Form of Six Lessons* (Cambridge: Harvard University Press, 1947), 65.
24. Philip Clark, "I have Nothing to Say, and I am Saying It," *London Review of Books* 38.24 (December 15, 2016): 31.
- ~~25. Clark, "I have Nothing to Say, and I am Saying It."~~
- ~~26. Ibid.~~
27. Stuart Moulthrop, "Lift This End: Electronic Literature in a Blue Light," in *Bloomsbury Handbook of Electronic Literature*, ed. Joseph Tabbi (London: Bloomsbury Press, 2017).
28. Montfort, "Self-monitoring and corporate interests," 210.
29. Jeffrey R. Di Leo sees the slowdown in Google's acquisitions (mostly from books gathered and scanned from US lending libraries), as a sign of "digital fatigue" (Jeffrey R. Di Leo, "Digital Fatigue," *American Book Review* 37.6 [September/October 2016]: ~~2–14~~). This may be so, but Google has been patient, it has so far successfully waited out the unresolved legal objections to its practice and could do so  as long as it takes to complete the scanning of an anticipated corpus numbering well over a hundred million. As Montfort suggests, the data thus obtained is not so "big" if one is handling only the numbers, the page and word and sentence counts and so forth (assuming these will be made accessible). But if the current practice of accessing (and fragmentary reading) continues, one book at a time on the Google Book site with occasional purchases of the entire print copy, then the majority of readers will be right back where we started: dipping in and then reading another self-contained artifact, be it online or in print.
30. Nathan Jones, "Glitch Poetics," in *Bloomsbury Handbook of Electronic Literature*, ed. Joseph Tabbi (London: Bloomsbury Press, 2017).
31. Qtd. by Laura Shackelford, "Postmodern, Posthuman, Postdigital," in *Bloomsbury Handbook of Electronic Literature*, ed. Joseph Tabbi (London: Bloomsbury Press, 2017). Shackelford is here drawing on Laura U. Marks' work (Laura Marks, *Touch: Sensuous Theory and Multisensory* [Minneapolis: University of Minnesota Press, 2002], xiv), in which she applies the term *minor science* to her discussion of experimental film, video, and digital art. ~~See Marks, *Touch*. The term originates with Gilles Deleuze and Felix Guattari: Gilles Deleuze and Felix Guattari, "Treatise on Nomadology: The War Machine," in *A Thousand Plateaus* (Minneapolis: University of Minnesota Press, 1987), 361.~~

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