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"Living Letterforms": The Ecological Turn in Contemporary Digital Poetics

faut-il se rappeler
que l'on peut n'être seul
parmi cette autre multitude

it comes to one thing
one cannot be alone
amongst the multiple beings

David Jhave Johnston, *Sooth*

The work of Canadian artist David Jhave Johnston—in *Teleport*, subtitled "a tiny tale of inter-body tourism," in his post-Fukushima *Extinction Elegies*, and particularly in his video poem, *Sooth*—contains in miniature many of the central themes and formal features of digital poetry as it evolved over the course of the last decade. If Talan Memmott's poetic practice, specifically in his well-known *Lexia to Perplexia*, exemplified the self-reflexive engagement with inscription technologies particular to "writing machines" at the turn of the millennium, Jhave's practice is paradigmatic of work after 2000 in its enactment of a different type of media ecology, one not exclusively concerned with human-computer interactions or computational processes.¹ In its articulation of an ecological matrix of natural spaces and built environments and a diversity of life forms, Jhave's practice also serves as an important counter to the "narcisystem," Memmott's neologistic formulation for our fetishistic attachment to the enclosed circuits linking the human

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1. Johnston uses "Jhave" as his artistic signature, so I refer to him that way throughout.

subject and the apparatus (“Delimited Meshings”). Narcisystems, as Memmott explains, “privilege local space over removalal [*sic*] attachment,” while the ecological systems articulated in Jhave’s work instead foreground these very attachments, those formed as a consequence of making oneself available to, and responding to, the entities, bodies, or “multiple beings” contained within it. In broad terms that cannot, of course, be comprehensive, digital poetry in the past ten years has made a similar turn from the human-machine loops that structure text generators and combinatorial works alike toward ecological matrices that are at once mediated and lively. Brian Kim Stefans’s Flash-based *The Dreamlife of Letters*, with its elegant animated design, is another key bookend for the beginning of the decade, one that might serve as a contrast between a poetic practice that plays with text behaviors and the concrete arrangement of letters in a monochromatic and two-dimensional screen space and the work that starts to emerge with different software platforms and scripting languages, that which makes intensive use of video and ambient sound and thereby invites new modes of sensory apprehension and both reflects upon and opens up into the world beyond the screen.

That digital poetics should necessarily be included in a survey of poetry of the first decade of the twenty-first century gives some indication of its newly established institutional presence. Now the subject of university courses, dissertations, monographs, edited collections, journals, festivals, and literary anthologies, digital poetics is no longer widely subject to the charge that it is a mere curiosity or technocratic exercise that privileges technique over poetic language. In light of the significant material investments in personnel, infrastructure, and exhibitions, reductive evaluative distinctions between a proper poetic practice supported by the weight of history and ephemeral tinkering within a particular production environment now seem especially outmoded.² Indeed, nearly every commentary on the fundamen-

2. For an account of the structural and epistemological gaps between digital poetry and educational institutions, along with a prescriptive call to “bohemianize the classroom” so as to resituate digital poetry within it, see Filreis.

tal changes we have seen in our reading and writing practices, whether anecdotal or based on expert knowledge, recognizes the transformative potential of “electronic” or “digital” text, broadly conceived. Participation in the field has also grown, which is attributable both to the shifts in cultural status and to the increased range of modalities of practice made possible by technological developments.

My claims for the newfound prominence of digital poetics, however, might be offset by the wide variety of terms used to describe it—New Media poetics, e-poetry, electronic literature, New Media writing, networked and programmable poetry—and by the repeated gestures to define it that come at the outset of almost every text written on the subject. Adalaide Morris argues that “definitions of new media poetics that do not account for code miss the synergy crucial to its operations, its realm of discourse, and its self-reflexivity” (“New Media Poetics” 9). Christopher Funkhouser stipulates that a digital poem is such “if computer programming or processes (software, etc.) are distinctively used in the composition, generation, or presentation of the text” (319). For Stephanie Strickland, the link to platform is even more motivated: “e-poetry relies on code for its creation, preservation, and display: there is no way to experience a work of e-literature unless a computer is running it—reading it and perhaps also generating it.”³ Katherine Hayles explains how a digital poem is “brought into existence when the program runs on the appropriate software loaded onto the right hardware. . . . ‘eventilized,’ made more an event and less a discrete, self-contained object with clear boundaries in space and time” (“Time” 181–82). The editors of *p0es1s: The Aesthetics of Digital Poetry* suggest that the label “digital poetry” refers to “artistic projects that deal with the medial changes in language and language-based communication in computers and digital networks” (13). And, according to Talan Memmott, digital poetics cannot be considered in terms of genre but rather needs to be thought about in

3. For a collection of essays that on the whole agree upon the same basic descriptive point about the inextricable connection between digital poetics and computational environments, see Kac, *Media Poetry*.

terms of applied poetics or “creative cultural practice through applied technology” (“Beyond Taxonomy” 293). It is certainly the case that in pragmatic terms, the history of digital poetics in the past decade is linked to the development of software and hardware—from the Storyspace environment of Judd Morrissey and Lori Talley’s *My Name Is Captain, Captain* (2002) to mobile applications by Aya Karpinska and Erik Loyer, and from the range of Flash poems archived in Megan Sapnar and Ingrid Ankerson’s *Poems That Go* (2000–2004) to John Cayley and Daniel Howe’s *Readers Project* (2009), which is written in Java and Processing and uses the RiTa natural language processing library developed by Howe. A comparable classificatory statement, then, is that digital poetics is a practical, philosophical, and aesthetic exploitation of the resources of computational media; that computational processes are in fact integral to poetic production and signification; and that these processes have allowed digital poetics to become fully multimodal.

Digital poetics can be hypertextual, concrete, visual, literal, 3-D, procedural, ambient, kinetic, aural, appropriative (an expression of remix culture), locative, programmable, or code-based. Digital poems can be word toys or textual instruments, and they can be stand-alone, installation-based, mobile, or networked.⁴ It follows that claims for generic unity and a stable taxonomy are both unsustainable and impractical, such that one could make the case for a kind of radical singularity or, as befits the medium, discreteness. As Memmott argues:

[I]t is essential to understand each digital poetry application as an environment or poetic microculture with its own grammar and customs. Applied poetics vary greatly from one practitioner to the text. Each application is its own Galapagos: a singularity in which elements are allowed to evolve or be invented for the survivability of poetic intent.

(“Beyond Taxonomy” 302)

While it may be the case that digital poetics might share platforms and scripts, particularly production environments (for

4. These and other tags are used in the second volume of the *Electronic Literature Collection*.

example, Shockwave) or lines of code, neither software nor technique can function as a unifying or homogenizing rubric that would authorize the instantiation of digital poetry as a singular genre. Marjorie Perloff has carefully explained how transmedial texts are always differential, “exist[ing] in different material forms, with no single version being the definitive one,” but so too are all digital texts, simply because they are read in different media environments, where hardware and software both can result in a manifestly different object and thus reading experiences that can be shared only via a distinct abstraction from the particularities of material form (146).⁵ Hence Sandy Baldwin’s strong critique of grand pronouncements about the ontological fact of digital poetry, which makes a powerful case “against digital poetics” on the basis of its predominantly discursive rather than descriptive or taxonomic function—that is to say that rather than capturing some essence of the objects themselves, rather than labeling or tagging an actually existing practice, “digital poetics” as such has more to do with its own classificatory or categorical function.

None of this, however, prevents the identification of common patterns, themes, and modes of inscription, an analytical move that is similarly part of the established discourse of the field. Adalaide Morris, for example, delineates two generations of electronic literary production as they have manifested in academic discourse, the first more closely aligned with narrative and the second with poesis (“New Media Poetics” 12–15). The first generation might be described as the age of StorySpace, the writing platform created by Jay David Bolter and Michael Joyce for the production of hypertext, which is organized in units called nodes or packets and interconnected through links. The StorySpace era was marked by a critical and creative fascination with the poten-

5. Even a poetics of “radical mimesis,” such as Kenneth Goldsmith’s “uncreative” retyping of the September 1, 2000 edition of *The New York Times* word-for-word in *Day* must necessarily register a difference, which is all the more clear when one considers the newspaper in relation to the printed book, and especially so when one considers Kent Johnson’s *Day*, an exact copy of Goldsmith’s book with Johnson’s name affixed to the jacket so that he appears as the actual author. Clearly, no two style sheets are created equal.

tial of hypertext for narrative, with discourse on the fiction of forking paths organized around questions of sequence, linearity, narrative closure, and the role of the reader, who was now understood to play a significant part in the actual production of the text. In order to incorporate the rich variety of poetic practices that emerge as part of the second generation into a viable critical heuristic, Morris identifies a set of family resemblances that give rise to the categories literal art, poem-games, programmable proceduralism, real-time programmable poems, participatory programmable poems, and codework (17–31). While the first generation was deeply invested in questions of interactivity, whether in terms of play or readerly engagement with texts that require physical effort to traverse, the second, in Morris's analysis, is more self-reflexive and self-consciously critical about its role and function in the network society. It is certainly the case that both the first and second generation of electronic writers as outlined by Morris were caught up in a negotiation of both print genres and computational culture. She persuasively suggests that much digital poetry from the first half of the past decade "actively smash[es] the conventions of the mainstream lyric" such that "only a few contain anything that resembles lines or stanzas," adopting instead the mode of what we might call late-minimal literal art, with the basic unit of composition the letter, if not occasionally the pixel, harking back to Lettrism and modernist graphic design ("How to Think").⁶ Morris's taxonomy—or "taxanomadism," following Memmott, so as to suggest that it cannot fully capture its moving target—does indeed function as a useful tool, in that it produces "new media poetics" as a critical object, "new" so as to express the relationality of media forms and to retain the idea of the differential text.

In this essay I posit two different shifts in digital poetics in the last decade, the combined effect of which is to rearticulate a

6. Though a strong case could be made for its lyricism, *The Dreamlife of Letters* is an oft-cited example of the notion that the networked, programmable poem negotiates its relationship to the print lyric either by antagonism or outright destruction. Here, too, one might think of the moment in Memmott's *Lexia to Perplexia* in which the reader-user is summoned to "pull the plug why don't you," a link that closes out the open window and necessitates a restart of the entire text.

media ecology that eschews the technological determinism of Marshall McLuhan—"all media work us over completely" (26)—but takes seriously, and even pushes to a limit, McLuhan's notion that "all factors of the environment and of experience coexist in a state of active interplay" (63).⁷ The first and most significant turn, as I have already begun to discuss, is from a poetic engagement of the "narcissystem" to an engagement of the ecological system, an embedding of humans and computational media within a larger assemblage comprised of human and nonhuman actors and lively, vibrant, animate matter. The second marks a turn from a mode of composition in which different media elements—such as text, image, video, sound, and algorithm—are contiguous but distinct to a mode of composition in which they are more clearly syncretized. In the work of David Jhave Johnston, an analysis of which will form the basis of this essay, one can see different media elements brought into co-arrangement, such that the relations among them become less contingent and more structurally and logically motivated—in other words, so that they constitute a distinctive media ecology. This change is not a historical shift in compositional practice—the use of video in Jason Nelson's *Game, game, game, and again game* (2007) is illustrative because the files are embedded as separate "click here" features in some of the game levels, and the mode of the piece clearly transitions from game to video at the end—but at the same time, one could conclude that the shift is attributable both to technological developments and a certain habituation to twenty-first-century media environments that are themselves characterized by a certain admixture. For Lev Manovich, these contemporary environments are to be understood as hybridized. With hybrid, as opposed to multimedia, he explains, "interfaces, techniques, and ultimately the most fundamental assumptions of different media forms and traditions are brought together resulting in new species of media," as with Google Earth's blending of photography, Geographic Information Systems (GIS), 3-D

7. An engagement with the whole discourse on media ecology is beyond the scope of this essay, but I am in general terms influenced by Matthew Fuller's sophisticated analysis of dynamic systems.

graphics, and satellite images (75). With multimedia, on the other hand, different techniques and elements may be proximate but not synthesized: “[M]ultimedia does not threaten the autonomy of different media. They retain their own languages, i.e. ways of organizing media data and accessing this data. . . . [Hybrid media] exchange properties, create new structures, and interact on the deepest level” (76). Hybrid media is not collage, which would suggest juxtaposition rather than true amalgamation: “what gets remixed today is not only content from different media but also their fundamental techniques, working methods, and ways of representation and expression” (110). In my view, a particular fusion takes place in Jhave’s compositions—his poetic practice includes programming, video art, and interface design, incorporating the techniques of concrete poetry, digital technologies, photography, cinema, and print—that is at least subtly different from work such as John Cayley’s *riverIsland*, in the sense that the media elements are more tightly integrated, more concerned with fluid phases rather than discretely related phenomena. In this respect, they more strongly attain the status of assemblage.

As I will suggest, using *Sooth* as my primary example, Jhave’s poetic technique both emerges from and expresses a distinctive ecological sensibility, one that embraces relationality and animism, or the vitality of nonhuman things, including textual forms. These textual forms—which are tactile, audiovisual, and interactive—function as an intermediary between the reading subject and the environment, where environment encompasses other actors and entities, landscape, the natural world, and simply life itself. This enactment of ecology in Jhave’s work, and in the contemporary field of digital poetics more generally, goes hand-in-hand with a shift away from the overtly self-reflexive engagement with the protocols of the medium that marked digital aesthetic practice at the beginning of the decade. This is not to argue for a distinction between the digital and the ecological, or the artificial and the natural: indeed, *Sooth* in particular, with its hypermediation of landscapes and bodies, challenges these very concepts. But Jhave’s work is emblematic of both the subtle shift in poetic production toward the fully integrated multi-

modal work and the shift from the metadiscursive reflection on technology itself to an engagement of the politics and ethics of ecology.⁸

My own overview of the field of digital poetics does not endeavor to be comprehensive; for example, I omit entirely the myriad text-generators such as the Perl and Python programs precisely so that I can work with relatively stable (and shared) linguistic content. In this respect, I am generally in sympathy with Roberto Simanowski's argument that our current analytic approaches to digital art are too caught up in issues of operational logic and sensation at the expense of close reading and interpretation. This is by no means to suggest that formal studies of code are superfluous, and indeed, proper study of Nick Montfort's poetry-generators requires and also rewards precisely that sort of labor. But the range of expression in digital poetics also warrants the critical attention to linguistic form and aesthetic practice that has historically been given to print genres. Study of computational processes has perhaps never been as prominent as it is at present—of particular note is Noah Wardip-Fruin's *Expressive Processing*—but even so, a review of work from the past decade, and particularly that published in the second volume of the *Electronic Literature Collection* (2011), reveals a wide variety of poetic forms and traditions that need also to be read in a conventional sense, even as we acknowledge that attending to those processes, as well as structures of participation and signifying elements such as temporality, means our reading practices themselves have fundamentally changed. Perloff succinctly contends that "in evaluating *electronic poetries* . . . we should not subordinate the second term to the first," such that medium trumps aesthetic practice (160; emphasis added). What I seek is greater balance, rather than critical priority.

Possessed of a rich body of work that might be situated under the sign of "perplexia"—whether it be Lettrist alphabet soup,

8. So understated about technique is Jhave that he notes of his own programming that "strict compiling makes it impossible to refer to imaginary objects (that might have been deleted or simply not even created yet). . . . I primarily use scripting languages (not OOP) which permits me to stitch together spontaneous fragments" ("Re: Article comments").

interface design inflected by a David Carson–like sensibility in its breaking with all of the typographic conventions that ensure legibility, or practice as practice (placing an avant-gardist emphasis on rules and processes of construction)—we can now take account of poetic techniques that extend beyond proceduralism and a self-reflexive engagement with computational media. The codework performances of mez (Mary-Anne Breeze) and NN (Netochka Nezvanova) in the late 1990s, and of Memmott as well, were exemplary in their critical negotiation of the social, cultural, and political protocols of network culture. (“Codework” refers to the use of code as medium and content, either by incorporating elements of programming languages into a text or by writing scripts that would generate or modify a text.) Their work foregrounded the conventions of networked communication by violating them, injecting linguistic and visual noise into listserv conversations and interface design. *Lexia to Perplexia* is the paradigmatic representation of that noise, of the transition from the language of print to difficulty, illegibility, and perplexity. It is, as Barrett Watten notes, a definitive “address to the contexts of the emerging media culture in which it was created” in its “foregrounding [of] the mechanisms of communication within the medium *as* communication” (365).

In the latest phase of digital poetic production, however, the computational difference has almost been naturalized, such that it is more rare to encounter texts with the heightened self-consciousness about form or applied technology that one can see in the work of writers such as Memmott, mez, and NN. In my view, texts from this more recent phase are not quite stylized in the same way; they assume or presume a certain relationship to screen environments, a naturalizing that suggests that electronic literature truly has come into its own as an artistic practice. A comparison with Franco Moretti’s quantitative analysis of the contraction of novel titles in the period 1740–1850 is instructive. Instead of a title page announcing the publication of *Clarissa, or the History of a Young Lady: Comprehending the Most Important Concerns of Private Life. And particularly shewing, the Distresses that May attend the Misconduct Both of Parents and Children, In Relation to Marriage* (1748), it became possible simply to announce the

publication of *Emma: A Novel* (1815). From the data on the contraction of titles in the era of the rise of the novel, Moretti concludes that the reading public became habituated to the genre and eventually no longer needed to be told what it was they held in their hands. Put succinctly, “as the market expands, titles contract” (153). The novel as genre did not need to announce itself with the overly long and ornate titles common to the moment of its emergence. So, too, I think, readers of digital works no longer need to be told how to read them in the same way as they did a decade ago. If the electronic literature classroom of the 1990s and the early years of the past decade required patient descriptions of the principles of navigation and perhaps even elaborate analogies with music (as opposed to the one-sitting consumption of a long-form print text, both electronic literature and music necessitate repeated consumption over time), now the instructions for use are so basic that they echo the Norwegian viral video of the medieval help desk: the brevity of “requires Flash,” “explore,” “follow navigational cues,” “use the up and down arrows,” and “click on the icons” suggests that the place of digital compositions in the contemporary literary field is secure.

Jhave’s *Sooth*, particularly when considered in the context of his work as a whole, is a deliberate and direct address to our contemporary media culture. In sum, his work makes concentrated visual, aural, and architectural use of ecological processes and thereby notably differs from a digital poetic practice predominantly concerned with computational processes. Jhave’s engagement with the ecological “real” is perhaps most palpably and poignantly evident in his work on energy, as in his recent treatment of nuclear devastation in the post-Fukushima video poem “Extinction Elegies” (2011), which invites readers to introduce incremental mutations (mutant words) into a text superimposed upon video shots of the arable plains of La Société des Plantes in Quebec, such that leveling up to a mutation rate of seventeen, for example, might result in a formulation such as that in figure 1.

Another stark instance of Jhave’s engagement with ecology is “Cold Light” (2009), a forty-second video poem constructed with the Mr. Softie text-editing software developed by Jason Lewis

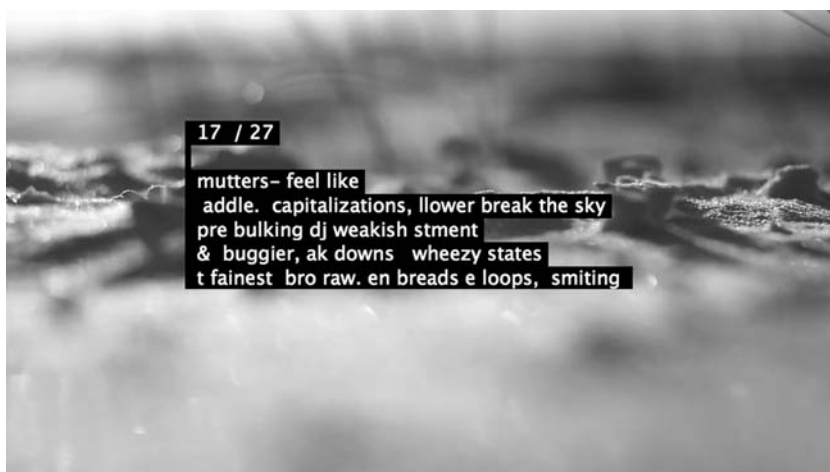


Fig. 1

and Bruno Nadeau at Concordia University. The poetic text of “Cold Light” is layered upon a close-shot backdrop of rivulets of oil that trickle across a surface that appears to be both organic and inorganic (figure 2). The absorption of the liquid—“the cold lines” of “oil blood / oil tears / oil time”—into what appears to be the topographic equivalent of a coastline produces a certain shock, particularly in that it metonymically evokes Deepwater Horizon, Montara, *Hebei Spirit*, Jiyeh, *Exxon Valdez*. The temporal scale of “oil time” is unknown, the damage still unfolding into the future, as “the cold light / these machines / weep is time.”

How media technology affects aesthetics is a question the field has long engaged, but what Jhave’s work also invites us to consider is how eco-philosophical politics inform digital poiesis. In my view, his work emblemizes a different phase of digital poetic production, one not necessarily or overtly self-reflexive about the production of new subjectivities and new modes of cognition effected by our contemporary media environments so much as attuned to their ethical, political, *and* aesthetic potential.

“Sooth,” the first of six video poems that make up *Sooth*, opens with a somewhat halting camera pan across a scene of undulating waves of plant leaves appearing like grass or palm fronds;



Fig. 2

the scene is silent, and jutting into the image field from the left is a gnarled, twisted stick overlaid with a palm frond. Clicking the image draws out the poetic lines that pop into the foreground (figure 3) and then zoom to the point of the cursor, as if drawn by a magnet, before drifting away to coalesce with the others into the figure of a swarm, the lines hovering around each other as if mutually responsive, almost as though the spatial arrangement were a matter of self-organizing behavior. The new lines of text—at times single words—are granted a few seconds of visual and spatial priority before receding into a dynamic cluster that consists of the most recent phrases, the transition between foreground and background visually accomplished by a reduction of font size and a muting of the brightness of the text. And the code is itself an ecology, as Jhave explains:

[T]he motion of each phrase originates from a recursive function, named `live()`, that is called once at its birth and seeded with the name of the phrase. There is a population limit; if the number of phrases exceeds the limit, then the user's click kills the oldest phrase and provokes the birth of a new one at the location of the click.

("Re: Article comments")



Fig. 3

The movement of the clustered lines does not conform to precise geometric vectors, though there are regional constraints keyed to the looping of the video. While the lines unfold sequentially, they flow and adopt a kind of ambient motion rather than a precisely coordinated linear unfolding from left to right, as with a scroll or ticker tape. What results are not just potent juxtapositions but also a complication of order—at once a precisely linear unfolding of a conventional poetic sequence and a collage effect, an unsettling of diachronic order. Since there are English and French versions of each of the six poems—the default language setting can be changed at any point in the reading—the effect is that of a dynamic and only partially realized parallel text alignment, with a click calling up the respective cluster of lines in translation.

The predominant strand in all six video poems—"sooth," "weeds," "body," "root," "soul," and "snow"—is that of the lyr-

ical subject valorizing his lover, who is the addressee of the entire sequence.

with a simple touch	d'un simple toucher
i sooth nebulous space	j'apaise l'espace nébuleux
i sooth i with you	m'apaise en toi
u sooth u with i	t'apaise en moi
o is what our mouths do	ou n'est-ce que le mouvement de nos lèvres
when the sinuosity seizes us	quand la sinuosité nous rattrappe
to feel it is enough to be	n'est-ce que cela exister et vivre
immersed complete and immaculate	immerges totalement immaculés
in rich tenuous resilient joy	dans cette joie frêle mais tenace
and know with sharp indisputable	et savoir si clairement si
clarity	parfaitement
love	acérée comme une lame que l'amour
and	est
that is enough	là tout simplement

This lover is also the visual subject of “weeds,” which opens with a tight frame of her hand as she reclines on her side and then slowly moves up to her face, eyes shut, opening briefly to look into the camera. There are English and French versions of all six poems, and the lovers are “ravished by disingenuous wonder” (“violée par l’infidèle émerveillement”) (“body”), psychically and physically entangled: “even my own limbs / remind me of yours” (“même mes propres branches me rappelle à toi”) (“root”). The lovers are more than merely linked: they share biological inheritance, “the primate in us” (“root”), and they are fundamentally intertwined at the subdermal level by “tides of tissues and ligaments” (“marées de peau et de ligaments”) that have rhizomatic aspects, such that the “roots of longing / dissolve rhythm into reticulation” (“perdus dans les racines de la mélancolie / mêlant le rythme aux veines”) (“body”). The bond between the lovers maintains a wild, untamed, unpredictable quality: “torrents,” “avalanche pathways,” “rivers without name or destination.” These bonds are also precisely that, for they are “ineluctable” and akin to a “tentacle” (“body”). The conven-

tional aspects of these lines might initially seem to be in tension with their complex visual rendering, but it is precisely the complexity of the code that cautions against a reading of *Sooth* as merely expressing a lyrical subjectivity. To loosely adopt a formulation by Hayles, there are both human and nonhuman cognizers at work in the text: the phrases “read” the video and constrain their movement accordingly; the audio “reads” the phrases and adjusts volume dependent on their size; and the video “reads” the movement of the phrases and responds to the clicks of the user (“Distributed Cognition at/in Work”). Any identification of a coherent individual personality, the iterated “I” of the poems, must necessarily be complicated by the algorithmic animate text, the behavior of which is somewhat unpredictable. Moreover, in both the visual grammar and the poetic diction, the subject is grounded in the material world, and the connections he seeks are not only to his lover but also to that world.

As the reader draws out each of the poems line by line, the colors mutate, beginning with a naturalistic rendering of the scene but then oscillating among filtered hues of primary colors that vary with each reading of the text, at times almost a fluorescent green, at others a highly saturated pink, at still others a blend of muted blues. The self-conscious style of the handheld camera—the shaking movement of the videos in “sooth” in particular—conveys a sense of immediacy, as if the image were unfiltered and the reader materially present on the scene. But on the other hand, the variable framing, the saturation of colors, and the use of sound convey a sense of hypermediacy, reminding the reader of the extent to which the mediated frame conditions her reading of the text. Since the frame is often marked as such, as with the left-to-right pan from gnarled stick to filter pipe in “sooth,” which demarcates the visual space, the reader is invited to consider what lies outside the frame, what has not been selected for display.⁹ Tight framing is usually understood to con-

9. Jhave describes the making of the “sooth” video in these terms: “It was shot in a single gesture on the camera I had in my pocket pressed against the glass and slid” (“Re: Glia.ca events”).

vey restricted movement, to confine the subject within the frame, but in this context, the use of close-ups serves rather to prevent visual capture of a putatively self-contained media ecology that would then enact a gap between viewer and scene. The optics, even in the instance of “weeds,” which is the videographer’s intimate surveying of the body of his lover, are not that of voyeurism. This latter scene is intimate, but the situating of text within the frame draws in the reader as subjective participant.

The videos were all shot in the extreme cold, while Jhave was in residence at La Chambre Blanche, an arts center in Québec; the “sooth” video in particular was taken in the Montreal Biodome (“Re: Glia.ca events”). But these videos are not simulative in the ordinary sense because the settings themselves constitute a media ecology; that is, mediation should be understood not as a manipulation or re-presentation of the real, but as a manipulation rather of a video file. That the Biodome, with its replicated ecosystems, should itself be a simulation is particularly apposite; whether the result of conscious design or serendipity, the use of a simulated ecosystem as material referent further displaces nature-as-objective-correlative from a “real.” The reverse also holds in the video image of “body”: that which appears to be a wholly artificial sketch of a desert landscape, which almost seems designed to negate itself as a rendering of an original model, is in fact the outline of his lover’s hip, the visual subject of “weeds” here instantiated as a kind of evacuated referent. Nature is further denaturalized in *Sooth* in its treatment of ice and water as writing and reading surfaces, what Jhave calls “animated interfaces,” and in its distinctive use of ambient sound. Each line of text in the suite of six poems is associated with a sound that pans and changes volume dependent on its position and size on the screen. With echoes of the work of Matmos—experimental electronic musicians with a penchant for uncommon sampling—the sounds are at once found and synthesized, at times so ambiguous as to resemble an aural Rorschach test, with referentiality suspended in favor of signal processing. At other times, it is possible to discern the inflections of organic, physical sounds, such as the movement of water, but these, too, have been synthesized. The source of the sounds and the video

images alike cannot be stabilized; they are neither a purely realist representation of concrete environments nor computationally generated, neither organic nor inorganic. Instead, there is a complex interplay between the two as they are synthesized within a common horizon of “media ecology.” There is, then, a certain ambiguity in the ontologies of the ecological, which constitutes a refusal of “nature” as such.

The argument for the development of a critical vocabulary particular to electronic literature is as old as the field itself. With his delineation of the features of ergodic literature, Espen Aarseth introduced the notion that interactivity needed to be considered a fundamental signifying element. So, too, John Cayley has made the case for temporality as a signifying element, precisely and elegantly arguing that digital poetics needs to delink itself from the temporal structure of print in the form of the definitive print edition that decays and that there is a significant need to develop a critical language to account for temporal processes in the networked and programmable text. There has also been substantial discourse on performance and operation in this regard so as to attend to versioning, the sense that each reading experience is distinct. What follows from an emphasis on temporality and operation is the acknowledgment that criticism needs to attend to phases, to flows of matter (as opposed to the state, which implies fixity, the phase is a moment in a larger continuum). But all textual forms are embedded in previous forms, which means that even as we heed the call for a critical vocabulary particular to the medium, we still need to consider the modes of reading one gives the text in the traditional sense of poetic language, so as to be both appreciative and interpretive.

How then to extract meaning from a text such as *Sooth*, given its complex relations among text, video, and audio? What would it be to read against the grain of *Sooth*? Can such a thing be done if there is a prior interpretive framework for genre (conventional lyric) but not for the precise text in question, if it is itself already strange? Since its composition was dependent upon computational tools, it seems appropriate to gesture toward creative deformation as a reading practice. Deformative criticism—which

includes reading backwards, selecting certain parts of speech, altering the physical presentation of the text, and adding letters or words to it—draws upon the resources of digital technology in order to reveal patterns and structural features that might otherwise escape notice. As Jerome McGann and Lisa Samuels explain, one deforms so as to upend the customary function of criticism, which is to inform and preserve the sanctity of the text: “critical and interpretative limits are thus regularly established . . . at the Masoretic wall of the physical artifact, whose stability and integrity is taken as inviolable” (115). Deformance is both interpretive activity and play; in other words, deformance can be both productive and nonproductive. One of the rationales for deforming *Sooth* (so as to read it) is Jhave’s own experiments with semantic analysis: his “Language as Relation,” for example, randomizes pairs of keywords extracted from the writings of ten authors, himself included, so as to make visually comprehensible their core ideas, a reading method that is intended to complement traditional textual exegesis.¹⁰

An exercise in reading *Sooth* backwards reveals the extent to which it is wed to the loop structure: its cyclical aspect underscores the rhythms of desire; it is repetitive and thus insistent (“the way i feel about u / ce que je ressens pour toi”), seemingly insatiable, the intensity never relieved. However, while *Sooth* needs the reiterative structure to articulate desire, the poems function in the same way at a basic semantic level when the order is reversed, which situates the text in a continuous—and perceptual—present. So, too, the relationship commemorated in the text is not yet one of memory but rather firmly located in the present, while still oriented toward future pleasures that have yet to be determined. This is not a “spot of time,” but there is a sense in which the passion conveys a kind of transcendence in the guise of ecstatic longing. A summary conclusion from this exercise in deformance is that the poems have a fundamentally determinative structure at nearly every level: not only do the poems maintain semantic continuity when they are upended, but also

10. The keywords in this piece are autoextracted using Andrew Klobucar and David Ayre’s GTR Language Workbench.

the poetic lines unfold in the same order with each reading; the lines are responsive to input in the sense that one can know with some degree of accuracy where the lines will emerge when one clicks on a certain quadrant of the video image; and there is a kind of temporal stability in the present. The color variations are a major exception, but on the whole, the use of determinative structures as anchors is all the more interesting for a poetic field the major texts of which overwhelmingly feature stochastic processes. A determinative structure means that cause is linked to effect; for every mouse action, one can generally predict the output. Responsiveness is thus literally encoded into the text.

Giving a full account of the figuration of ecology in digital poetics is outside the scope of this essay, but it is possible for the sake of comparison to highlight a number of individual works that incorporate ecology as a principal motif.¹¹ Many digital works that engage the ecological do so at the level of the letter, literalizing natural language by blending alphabetic and organic forms. A visually striking instance of the typographic articulation of landscape is Alison Clifford's appropriative Flash poem *The Sweet Old Etcetera* (2006), an animation of short poems by e. e. cummings, four of which are keyed to a branch of a tree. Here the flow of the text across the screen space is structured such that the dynamic movement of the typographic characters mimes the movements of a grasshopper in an animation of "r-p-o-p-h-e-s-s-a-g-r" or a bee in "un(bee)mo." As the reader accesses the individual poems, a word-picture of the landscape progressively emerges from foreground to background.¹² Cyrille Henry's *Verbiage Végétal* (2007) is visually related in that here, too, trees are composed of words, but in this instance each branch

11. An extended analysis of ecology in contemporary digital poetics would need to take account of Stephanie Strickland and Cynthia Lawson Jaramillo's *slippingglimpse* and John Cayley's *riverIsland*, thorough readings of which have been provided by critics such as Hayles and Maria Engberg.

12. Peter Cho's typographic *Wordscapes and Letterscapes* (2002) nominally invokes the concept of landscape but might be more accurately described in terms of dynamic and interactive alphabetic characters.

is algorithmically generated from a selected seed word on a webpage. More sustained and direct engagement with the natural world occurs in Oni Buchanan's *The Mandrake Vehicles*, a differential text composed both as a print poem and Flash animation that she describes as being "scored for paper, letters and imagination" (*Spring* 85). With the mandrake plant as the central rhetorical figure, the text is structured in three installations, each divided into seven distinct phases or "liquid" layers. In alternating phases, the densely descriptive and lyrical prose poetry is subject to processes of mutation and dissolution as letters are pared away to reveal the embedded words within. In successive intervals, the text is reassembled into conventional poetic form that grows more compact as each installation winds down to a conclusion. Thus what begins in the first phase as "the upheaval of plane from below, as from a slow lymphatic magma congregating its massive but disparate angers—call it desire—and the stem emerging, *forth*, and the volume of sky in blue, like a cellophane to enfold in sheer the arriving, to laminate the pushing blade" ends in the form of "A mule to chafe / arid stems, / sever dirt." As the deselected letters cascade to the bottom of the screen, seemingly chance juxtapositions result in delightful and ephemeral incongruities before the letters come to rest in the form of new lexicographical sequences: "opiate proximate dumpling gyroscope peony gurney sonata paisley demean ruminant." Ecology informs *The Mandrake Vehicles*, and with its liquid phase transitions, the work creates a kind of ecology in turn.¹³

Perhaps the predominant aspect of Jhave's digital poetic practice is his experimentation with typography, his rendering of letters as dynamic, sculptural objects. While exploring the various genealogies of typographic experimentation in his formal and informal critical writing, with a particular focus on concrete poetry and font design, he has also produced a range of sketches and prototypes, notably with the aforementioned Mr. Softie text-edit-

13. A conceptual link might be drawn here to Jhave's *Thaw*, which he dedicates to "transitions" (*Bathroom Sketches*).

ing software. The resulting collection of “softies,” or “wrinkled squirming typographic poems”—of which “Cold Light” is a part—is, however, much more than an instrumentalist demonstration of the software. In other words, operational logic is not granted priority over meaning, and the dynamic display of text does not come at the expense of signification, as evinced by “stand under,” which plays with the spatial and cognitive meanings of understanding. These are poems that have both auratic presence and semantic content and reflect upon the material transformations of text in the context of a multisensorial, multi-processual media ecology. In his manifesto-like statements on these transformations, Jhave formulates a neologistic concept to describe his poetic practice: TAVIT, “Text Audio-Visual Interactivity,” or text inhabiting an interactive audiovisual environment (“Aesthetic Animism” slide 6).¹⁴ Such a nominative act is responsive to the notion that our existing critical vocabulary is not adequate to the new states and conditions of language in a computational environment. As he notes, “Poetry is crossing an ontological membrane from being an abstract printed system to becoming a system of quasi-entities: words and phrases that are dimensional, kinetic, interactive, code-full, context-aware and tactile” (slide 8). But TAVIT is not merely descriptive; in other words, its purpose is not simply to function as a keyword or tag that establishes the fundamental properties of computer-mediated text and then hermetically renders it as a discrete element. The acronym does make a classificatory gesture—it does, after all, identify text as such and demarcate the environment in which it is situated—and in this sense rhetorically functions as criticism in its illumination of shared features and patterns. But it is also a theorization of TAVIT that opens up certain questions about its ethical, political, and cognitive uses and implications. In Jhave’s work, dynamic text becomes the formal means by which to articulate an ecophilosophical poetics.

14. TAVIT is part of the rich history of kinetic text that can be traced in part to Eduardo Kac’s efforts thirty-odd years ago to articulate a new “poetic language,” one that would be “malleable, fluid, and elastic” and freed from the page (247).

A core mission of Concordia's Obx Lab, with which Jhave is affiliated, is to experiment with "living letterforms," to conceive of letters as dynamic and sculptural objects in the interests of pushing computationally-based poetic expression to a kind of limit (Lewis). From within this creative environment, Jhave has developed his notion of "aesthetic animism," the recognition of liveliness within digital poetic language, the animate qualities of the letterforms simulating life itself. Citing the ActiveText application *It's Alive* as a precursor—*It's Alive* was developed by Alex Weyers and Jason Lewis, who heads the lab—Jhave's project is to produce poetic text that is "tactile and responsive in ways that emulate living entities" (*Aesthetic Animism* iii). His letterforms are endowed with an animate quality even at the level of rhetoric; thus he refers to them as "re-naturalized technologically enhanced word-object organisms" (71). The means by which language is "re-naturalized," by which it comes to be perceived as live, is hypermediation. In plain terms, "the more mediated language becomes, the more it will seem alive" (70). The context here is not artificial intelligence; in other words, it is not the sophistication of computational processes that will produce a sense of liveness. Rather, it is that hypermediation deepens the capacity and intensity of sense perception. Aesthetic animism fundamentally complicates the distinctions between living and mechanistic systems, but it does so not simply by emulating life, but also in its prompting of an embodied recognition of that very liveliness.

Here it is instructive to reconsider the significance of the swarm movement of the poetic lines in *Sooth*. The swarm is a model for self-organized collective movement that coheres but does not cohere around a central controlling structure. Its movement is nonintentional and not directly responsive to stimulus (that is, not a causal structure of input and output); its behavior is thus emergent. Swarm movement cannot necessarily be stabilized with a clear moment of origin and of closure, and disruption is reabsorbed into the processes of movement. In a virtuosic reading of the twinned etymological derivation of *swarm* as fanaticism and elative enthusiasm, Gabriele Brandstetter in a sense reinjects affectivity and emotion into a figure

that tends either to be linked to insects, usually bees, or to hollow out participants as “users” in formations adopted by, or deployed in the interests of, economic forces. What, she asks, is the place and function of the observer in relation to the swarm, some aspect of which, because of its intrinsic mobility and uncertainty, must necessarily resist both discursive and perceptual capture? Brandstetter articulates a multisensorial “movement relationship” between observer and swarm, one marked by mutual influence but not linear causality (93). The attention of the observer produces structure or figures, and then attention itself becomes an object of observation, which is to say self-reflexive. As the observer’s perspective shifts from a spectatorial outside to a “falling into step with the movement of a collective body and its unpredictable synchronization,” her own “movement disposition”—that is to say, her attention in/to movement—becomes intertwined with, and interfused by, the swarm’s inherent enthusiasm, its rooted history as aesthetic-political experience (102). That swarm movement should have a “contingent exchange with the environment” is a valuable insight in a reading of Jhave’s poetic project.

Throughout Jhave’s work, language is embedded in the media ecology such that it “belongs like a mitochondria to images” (“Aesthetic Animism” slide 25). In *Sooth*, the poetic lines appear to heed physical laws of collision detection, their swarming movement further emphasizing the extent to which they are organically situated within the frame. Apart from the movement, the text behaviors in this work are minimal; there are no morphs and none of the stylistic tricks of the Softies prototypes that would concentrate the reader’s attention on the material form of the letters themselves. This is as close to font transparency as it is possible to come within Jhave’s meticulously designed compositional universe. The type is, in Beatrice Warde’s terms, more filter than crystal goblet, thus serving to emphasize semantic content, responsiveness (to input and to sounds), and intermediary function. Here poetic language—specifically TAVIT—is very carefully articulated as an intermediary between subject and environment in its expanded sense. That language should serve this function is not in itself a new idea, but the ambient

and interactive aspects demand an immediate, hands-on response from the reader, a response that involves both symbolic analysis and sense perception. This responsiveness—coupled with the interaction among the different media elements, as text seems to respond to both image and sound—allows for different relations with the ecological to emerge. Sensory knowledge of the environment is materialized in and through TAVIT, specifically as registered in its mutability and responsiveness both to reader input and other media elements such as sound. Embedding TAVIT in an environment asks for a certain response from the reader, and responsiveness is ultimately about responsibility: to be responsive to, in other words, is to be responsible to.

In order to make the case that media ecologies—in the McLuhanian sense of sociotechnological systems—are composed of negotiations between people and artifacts, one must first argue that artifacts have agency. This notion does not require the presence of machine intelligence as it is ordinarily understood but rather seeks to account for the behavior and nature of machines so as to correct the fallacy that holds that only humans can serve as intentional actors. So in order to appreciate Jhave's project of "aesthetic animism," it is necessary to consider his treatment of the life of things. In a reflection upon the role of ecology in his work, Jhave notes: "[I]t is probable that all matter is quasi-sentient and that computation offers an opportunity to perforate through, to enter into contact with that sentience. Cameras, software, instruments are organic life which offer subtle feedback" ("Re: Glia.ca events2"). Echoed in this statement are aspects of actor-network theory, assemblage theory, vitalism, and even object-oriented philosophy.¹⁵ It also hints at a reimagining of life itself à la Catherine Malabou, who suggests that we "conceive life as not confined to living organisms, but as movement, a radical becoming" (3).

To see how this approach plays out in Jhave's work, first consider *Teleport*, the long-form combinatorial video poem that thematizes "tourism between bodies." Operating on both horizontal

15. I have Graham Harman in mind here, specifically his speculative commentary on the psychic life of so-called inanimate objects (213).

and vertical axes, the text consists of 123 poetic lines traversed by use of the left and right arrows and 121 photographs that are accessible with the up and down arrows. The photographs, which might be paired with any of the textual nodes, tend on the whole to foreground a single figure, whether in the form of an actual object (rock, leaf, rusty nail, remnant of fabric, puddle), entity (infant, dead bird), or isolated geometric form (a crack in cement).

Texture is a strong component of the photographs, such that even a pattern formed from rocks or the contours of a barren landscape have a figural and animate quality that is achieved by the suggestion of depth, dimension, and hidden attributes. Here, too, aesthetic animism plays out at the level of content: “life oscillates its forms” (29/123), forms that are “interconnected across levels of scale” (81/123). Consider as well that the two poems in *Sooth* featuring organic beings in the videos—in “weeds,” the camera tracks from a tight close-up of the hand of a reclining woman to her eye, and in “soul,” the head of a live fish juts into the frame from the bottom right—are also those with lineated prose verse, such that visual grammar is aligned with direct address in the seeking of a response. The use of extreme close-ups here and in much of Jhave’s video poetry situates the figure, whether animate or inanimate entity, in visual and spatial proximity to the reader and materializes relations between them, particularly in that the entities are usually foregrounded and situated partly out of the frame, such that the viewer is not looking at a scene that has been hermetically closed (figure 4). Proximity, then, suggests the stabilizing of the material fact of relationality as opposed to actual stable relations. The entities are almost never inert: if they are captured in a photographic image, those images are rendered as frames and plotted on a video timeline; if captured on video, the absence of spatial fixity (as in the trickling of oil or plant leaves moving in the wind), the vibrating movement of the camera, and the use of abrupt pans suggest that there is no stable grid for the subject/actor. The entities are neither practically nor philosophically inert, then, with the sense of movement deriving also from their multisited aspect. Thus while at first glance Jhave’s video poems appears



Fig. 4

entity-driven, the whole of his work can be read in terms of the modeling of mediated relations, a postvitalist perspective embedded in the articulation of flows and movements.

In his critical writing, Jhave notes that he is working toward a reconciliation of animist and mechanist philosophy, toward an articulation of “a non-dualist viewpoint where both views co-exist, parallel and simultaneous” (*Aesthetic Animism* 77). Indeed, his ecophilosophical poetics are concerned with articulating the animism of all entities, the agency or life of such entities understood to be grounded in their material being. Jhave’s poetics are also concerned with the figuring of relations among these entities, connections that cannot adequately be described as networked, a concept that is at once too artificial and too militarist to suit his ecological sensibility. It is not simply that we are connected to each other and to the world by “tides of tissue and ligaments,” but also that we cannot be absolutely alone among the multitude of beings, or “que l’on peut n’être seul / parmi

cette autre multitude" ("snow"). It is in this last poem in *Sooth* that Jhave's thinking about the impossible singularity of being comes most directly to the fore. The default language for this poem is French, but it is also translated into English:

fusion de part et d'autre	one merges into one
unicité dissolvante	uniqueness dissolves
se retrouvant	we are with ourselves
particules absorbantes	absorptive particulates
unions osmotiques	osmotic unions
étrangers identiques à nous-mêmes	others identical to our own

A poetic yet unambiguous statement on the stranger—strangers are other and yet at the same time, because they are other, we are responsible to them—the text articulates both the singularity of being and the ethical demand for response to the other. It also theorizes while enacting the deep, physical yet mystical connections among all entities. Boundaries are figured as porous, and an animist spirit of life itself is figured in terms of liquidity and flows: "uniqueness dissolves" by osmosis and is reabsorbed by other actors, animate and inanimate. A digital poetic practice concerned with media ecology in the sense I have described it here perhaps no longer finds it necessary to foreground the exploration of binary and intersubjective relations between the human and the machine (and is post-narcisystem in this way), choosing instead to explore a matrix or assemblage of different actors. Aesthetic animism even as presented in lyrical form is less a demarcating and negotiation of a gap between self and other, subject and object, human and nonhuman, analog and digital, real and virtual, so as to determine the ontology of each, than it is a call to think relationally.¹⁶

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16. There is a connection here to Dorothy Nielsen's commentary on the ecologized lyrics of W. S. Merwin and Denise Levertov: "While the self of lyric strives to transcend materiality and to assert its separation from others, in contrast, the ecological subject defines itself as biologically interdependent" (128).

WORKS CITED

- Aarseth, Espen J. *Cybertext: Perspectives on Ergodic Literature*. Baltimore, MD: Johns Hopkins UP, 1997.
- Baldwin, Sandy. "Against Digital Poetics." *Electronic Book Review* Aug. 2009. Web. 21 Sept. 2011.
- Block, Friedrich W., Christiane Heibach, and Karin Wenz, eds. *P0es1s: The Aesthetics of Digital Poetry*. Ostfildern, Ger.: Hatje Cantz Verlag, 2004.
- Borràs, Laura, Talan Memmott, Rita Raley, and Brian Kim Stefans, eds. *Electronic Literature Collection, Volume 2*. Electronic Literature Organization, 2011. Web. 21 Sept. 2011.
- Brandstetter, Gabriele. "Swarms and Enthusiasts: Transfers in/as Choreography." *Parallax* 14.1 (2008): 92–104.
- Buchanan, Oni. *Spring*. Urbana: U of Illinois P, 2008.
- . *The Mandrake Vehicles*. *Electronic Literature Collection 2*. Web. 21 Sept. 2011.
- Cayley, John. "Time Code Language: New Media Poetics and Programmed Signification." *Morris and Swiss* 307–33.
- Cho, Peter. *Wordscapes & Letterscapes*. *Electronic Literature Collection 2*. Web. 21 Sept. 2011.
- Clifford, Alison. *The Sweet Old Etcetera*. *Electronic Literature Collection 2*. Web. 21 Sept. 2011.
- Engberg, Maria. "Morphing into New Modes of Writing: John Cayley's *river-Island*." *Leonardo Electronic Almanac* 14.5 (Sept. 2006). Web. 19 Oct. 2011.
- Filreis, Alan. "Kinetic Is as Kinetic Does: On the Institutionalization of Digital Poetry." *Morris and Swiss* 123–40.
- Fuller, Matthew. *Media Ecologies: Materialist Energies in Art and Technoculture*. Cambridge, MA: MIT P, 2005.
- Funkhouser, Christopher. "Digital Poetry: A Look at Generative, Visual, and Interconnected Possibilities in its First Four Decades." *A Companion to Digital Literary Studies*. Ed. Ray Siemens and Susan Schreibman. Oxford: Blackwell, 2008. 318–35.
- Harman, Graham. *Prince of Networks: Bruno Latour and Metaphysics*. Melbourne: re.press, 2009.
- Hayles, N. Katherine. "Distributed Cognition at/in Work: Strickland, Lawson Jaramillo, and Ryan's *slippingglimpse*." *Frame* 21.1 (2008): 15–29.
- . "The Time of Digital Poetry: From Object to Event." *Morris and Swiss* 181–209.
- Henry, Cyrille. *Verbiage Végétal: Poésie visuelle*. 2007. Web. 21 Sept. 2011.
- Johnston, David Jhave. "Aesthetic Animism: Digital Poetry as Ontological Probe." *E-Poetry: An International Digital Poetry Festival*, Buffalo, May 2011. Web. 21 Sept. 2011.
- . *Aesthetic Animism: Digital Poetry as Ontological Probe*. Concordia University Ph.D. Thesis, 2011.

- . *Bathroom Sketches*. 2008. Web. 21 Sept. 2011.
- . "Cold Light." *Softies: Wrinkled Squirring Typographic Poems*. 21 Sept. 2011.
- . "Extinction Elegies." May 2011. Web. 21 Sept. 2011.
- . "Language as Relation." 2007. Web. 21 Sept. 2011.
- . "Re: Article Comments." Message to the author. 24 Sept. 2011. E-mail.
- . "Re: Glia.ca events." Message to the author. 22 Aug. 2011. E-mail.
- . "Re: Glia.ca events2." Message to the author. 11 Sept. 2011. E-mail.
- . *Softies: Wrinkled Squirring Typographic Poems*. 2009. Web. 21 Sept. 2011.
- . *Sooth*. 2005. *Electronic Literature Collection 2*.
- . *Teleport: A Tiny Tale of Inter-Body Tourism*. 2006. Web. 21 Sept. 2011.
- Kac, Eduardo. "Key Concepts of Holopoetry." *Experimental—Visual—Concrete: Avant-Garde Poetry since the 1960s*. Ed. K. David Jackson, Eric Vos, and Johanna Drucker. Amsterdam: Rodopi, 1996. 247–57.
- , ed. *Media Poetry: An International Anthology*. Chicago: Intellect Books, 2007.
- Lewis, Jason. *Obx Labs*. Concordia University. Web. 21 Sept. 2011.
- Malabou, Catherine. *What Should We Do with Our Brain?* New York: Fordham UP, 2008.
- Manovich, Lev. *Software Takes Command*. Draft manuscript. 20 Nov. 2008. Web. 21 Sept. 2011.
- McGann, Jerome, and Lisa Samuels. "Deformance and Interpretation." *Radiant Textuality: Literature after the World Wide Web*. London: Palgrave-Macmillan, 2004. 105–35.
- McLuhan, Marshall. *The Medium Is the Message*. Berkeley, CA: Gingko, 2006.
- Memmott, Talan. "Beyond Taxonomy: Digital Poetics and the Problem of Reading." Morris and Swiss 293–306.
- . "Delimited Meshings: A White Paper." *Cauldron & Net* 3 (Spring 2001). Web. 24 Oct. 2011.
- Moretti, Franco. "Style, Inc.: Reflections on Seven Thousand Titles (British Novels, 1740–1850)." *Critical Inquiry* 36 (2009): 134–58.
- Morris, Adalaide. "How to Think (with) Thinkertoys: *Electronic Literature Collection, Volume 1*." *Electronic Book Review* Oct. 2007. Web. 21 Sept. 2011.
- . "New Media Poetics: As We May Think/How to Write." Morris and Swiss 1–45.
- Morris, Adalaide, and Thomas Swiss, eds. *New Media Poetics: Contexts, Technologies, and Theories*. Cambridge, MA: MIT P, 2006.
- Nærum, Knut. *Medieval Helpdesk with English Subtitles*. 26 Feb. 2007. Norwegian Broadcasting Company, 2001. *YouTube*. Web. 19 Oct. 2011.
- Nielsen, Dorothy. "Ecology, Feminism, and Postmodern Lyric Subjects." *New Definitions of Lyric: Theory, Technology, and Culture*. Ed. Mark Jeffreys and William Cain. London: Taylor, 1998. 127–49.
- Perloff, Marjorie. "Screening the Page/Paging the Screen: Digital Poetics and the Differential Text." Morris and Swiss 143–62.

- Simanowski, Roberto. *Digital Art and Meaning: Reading Kinetic Poetry, Text Machines, Mapping Art, and Interactive Installations*. Minneapolis: U of Minnesota P, 2011.
- Strickland, Stephanie. "Born Digital." *Poetry Foundation* (2009). Web. 21 Sept. 2011.
- Warde, Beatrice. *The Crystal Goblet: Sixteen Essays on Typography*. Ed. Henry Jacob. London: Sylvan, 1955.
- Wardrip-Fruin, Noah. *Expressive Processing: Digital Fictions, Computer Games, and Software Studies*. Cambridge, MA: MIT P, 2009.
- Watten, Barrett. "Poetics in the Expanded Field: Textual, Visual, Digital. . . ." *Morris and Swiss* 335–70.