Perceptual Depth: Cave Works and Three-Dimensional Hypertext

ABSTRACT

"Perceptual Depth" posits that the form of hypertext, far from becoming obsolete, is actually in the process of being reexamined and redefined. Uniquely, the nexus for this self-consciousness and probing, I argue, is found at Brown University's "Cave" system and the three-dimensional literary compositions produced there. In this paper, I put forth that the virtuality and playfulness of these Cave works expose holes and indeterminacies behind the basic assumptions of hypertext; in particular George Landow's formula of "lexia" and "link." Through hyperspatial and aural functions, most evident in the expansion of the formerly two-dimensional "lexia" (or inscribed plane of writing), the Cave works offer new perceptions of how literary sequences are tied together in a hypertextual scheme and what new directions may be possible for media-reliant "narrative," broadly defined.

by

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> *For it was now like walking among matrices of a great digital computer, the zeroes and ones twinned above, hanging like balanced mobiles right and left, ahead, thick, maybe endless.*
> —Thomas Pynchon, *The Crying of Lot 49*.

HYPERTEXT AND ITS COHORT

Hypertext is in a tenuous position. Rendered institutionally obsolete by Robert Coover's recantation of the form in 1999,[1] after he initially championed it as "The End of Books" in 1992,[2] the operating mechanisms of the genre have become more diffuse. A major residue of hypertext's current archive is visible through the Electronic Literature Organization's two (thus far) published volumes of its *Electronic Literature Collection*; with electronic works marked by an at least vaguely "hypertext[ual]" designation among other genres of "generative," "flash," and like derivations.[3] Similarly, the moniker's utilization in academic discourse has been mainly in christening hypertexts in retrospect, or print-based materials that have exhibited curiously hypertextual behavior before the mass availability of programmed literature. The era of 'classical' hypertext expansion and development seems to have passed, mostly giving way to a self-reflexive and self-analytic period of exploring the current resonances of the now sealed form. Most telling of this pause is the relative lack of any comprehensive study on the subject itself since George Landow's 1991 *Hypertext*;[4] barring its recontextualization as a member of the "ergodic,"

or literature requiring "nontrivial" effort,[5] in Espen Aarseth's 1997 *Cybertext*.[6] Landow's theorizations have been so uncontested as to be canonical: primarily his basic formula of hypertext as textual "lexias," or inscribed planes of writing (a concept borrowed from Barthes's *S/Z*), and the "links" connecting these planes to one another.[7]

Curiously, and I would say most importantly, one of the arenas where hypertext *has* resurfaced and been probed most poignantly is in the three-dimensional composing environment of Brown University's "Cave" system. The Cave at Brown being "an eight-foot cubicle in which high-resolution stereo graphics are projected onto three walls and the floor to create an immersive virtual reality experience,"[8] where the user is equipped with location-based goggles and a controlling wand; further technical functionality is explained in John Cayley's "Lens" article cited below.[9] Brown is known for its long-standing commitment to electronic writing–primarily through its "Literary Hypermedia" genre as a subset of its Literary Arts (i.e. Creative Writing) program–and for inventing many basic components of hypertext, presenting with the Cave a unique capacity for three-dimensional composition. Its "Cave Writing" workshop, in which one writes for an artificial three-dimensional environment, offers the opportunity for a semester-long creation of a unique "Cave work" (or three-dimensional literary piece) to be exhibited at the end of the semester. These works, unguided except by occasional instructor prompts, manifest a unique toying with the perception of text, both prose and fragmentary, along with the potential to 'select' options from within the illusory interior of the all-encompassing Cave; an open forum for the more abstract investigation of interactive textuality, to say nothing of hypertext. The periodic, semester-long nature of the workshop also allows these works to examine one major Cave function in detail, offering
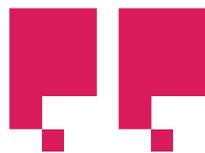
The Cave, therefore, acts not only to re-imprint hypertext upon a new medium, but also to internally redefine the mechanism as such via the imposed aspects of virtuality.

a selective analytical introduction to the Cave's various capabilities and their potential applicability to hypertext.

Previously, however, the Cave has been discussed largely in terms of poetics, concrete in particular, and the necessity of phenomenological investigation of "text in space." [10] The categorization of concrete is a logical one, as the notion of a poem perceived as an immanent or foreign object becomes much more legible when the literal poetic formations are three-dimensional, tangible, and viewable from a range of perspectives. This would, perhaps, be interpreting what a hypertextualist might refer to as a lexia as rendered poetic text. However, when coupled with the notion of 'choice,' present in the ability to (however superficially) direct the progress of the work, in conjunction with the occasional longer-term accumulation of something resembling a plot in more complex works, the Cave works I have studied suggest something closer to fiction and, in particular, hypertext fiction. These new lexias, composed of the dense accumulation of sensory information that the Cave may individually manifest, are united structurally

through a complex system of links embedded in each individual landscape. Likewise, there is a unique fictional element arising in how these complex aural and visual stimuli unravel; the 'blocks of text' one expects to encounter are instead splintered along multiple axes of different media sensations, structurally agglomerating into unique effects as one strings them together through individual 'choices,' however facile.

The very conception of the Cave works as hypertext in three dimensions raises unusual problems and, most essentially, urges a redefinition of Landow's canonical elements of lexia and link. Lexias, represented in 'classical' hypertexts as two-dimensional inscriptions of text (and occasionally pictures) resembling digitized sheets of paper, become in the Cave three-dimensional, room-shaped units encapsulating its various phantasmagoria at any given moment. This isn't entirely new, as such a pan-media possibility was intimated by Theodor Nelson when he first coined the term "hypertext," simultaneously raising the possibility of "hypermedia," or a broader range

of audio, visual, and other non-textual data being similarly hyperlinked. [11] However, the stable lexias in the Cave's 'room' offer a multiplicity of spatial and multimedia dimensions: transparent walls, deceivingly infinite boundaries, discordant overlaps of different narratives at varying distances, a startling closeness that may 'touch' or surround the user, aural cues in sound and noise, and enmeshments of all. These in themselves are subdivided further in terms of self-regulating sequences, or expansions of the individual lexia into peripheral choices and mutations. This may bleed over beyond the 'room,' or be contained within it; unique sequencing entailing where one lexia ends and another begins.

In terms of 'reading,' these new lexias also offer the user textual information across a variety of planes, depths, and sensory mechanisms, while one must simultaneously 'read' such environments for narrative clues. Similarly, notions of rote linearity that are still present in 'classical' hypertext, such as the blocks of traditional text one still reads upon the lexia, are condensed and morphed by the Cave's ability to encode a vast amount of setting and detail into one's very environment and aural composition. One then doesn't need to read *about* a certain setting. Rather, one is *in* a particular setting, the difference between the actual and the mimetic version we inhabit offering an additional zone for authorly distortion and influence. Furthermore, the limning or obscuring of links, formerly the assumed responsibility of the writer to keep things running smoothly, become instead the domain of artistic choice and creative redefinition: one may be intentionally 'lost,' or forced to chase a link to 'escape,' lending a physical urgency to what would normally be sterilized words upon a plane. The Cave, therefore, acts not only to re-imprint hypertext upon a new medium, but also to internally redefine the mechanism as such via the imposed aspects of virtuality.

For the broadest overview and fullest repertoire of the Cave's narrative function, one must look at Ben Nicholson's *to begin*. [12] Completed over three semesters, as opposed to the usual one semester time period, and featuring contributions from John Cayley and Robert Coover (long associated with Literary Arts), *to begin* evidences a multi-part structure and integration of performance art, sound art, and typographical flexibility, all under the aegis of interactive narrative. The piece is essentially split between a new typographical reinterpretation of Samuel Beckett's novel *How It Is*, in which a narrator mired in an endless mud recounts his sequential existence before, during, and after a brief but toxic coupling with an 'other' called Pim, and an original storyline, by Nicholson, regarding the absenteeism of an unnamed father. The mixture of the two story-lines is enacted in a way only conceivable in the Cave: the two are allowed to intermix and inform each other by vocal cues (Cayley reading Beckett's text, Coover reading Nicholson's), as well as via unique symbols appearing in various portions of the Cave's lexia. These symbols appear, much as different memories might be lit in different zones of a projected brain, as they become relevant.

The complexity of the brain-like structure of the Cave and its respective lexia in this piece is immediately apparent when, after we view Beckett's text 'crawling' mimetically through the 'darkness' and 'mud' of the Cave's blackened foreground, we are struck by a peripheral image. What comes out of a blind spot to one's right, and fully banks on its ability to surprise and make us squint to discern what is arriving on the horizon, is a dense 'vortex' of words and abstract imagery. The vortex, essentially an abstract multimedia sculpture, arrives as an intermixed, dream-like cluster of thematic fragments from both *to begin* storylines: a foregone hope for escape, an overwhelming despair of inundation in mud and

darkness, yet also, as hinted by thin platelets of figural images, intimations of Nicholson's father-oriented side-story. The disruption of linearity is furthered as the vortex encompasses the viewer and temporarily obscures any discernible link prompting the next lexia; an aural screaming and textual swirl making the space additionally untenable. The link's implied 'choice' is also somewhat futile: it is an escape to a 'new' sequence, yet only presents another one-directional progression into the darkness. The vortex's platelets we saw earlier now recur as a nod towards the disrupted temporality and truly memory-like aspects of the Cave; upon the vortex's dissolution, these flattened planes of recollection drift down slowly to our left. These planes, we now realize, were intimations of the 'absent father' memories immanent in the prior *How It Is* sequence.

Beyond this dense enactment of shifting lexias and their abstract virtual sculptures, however, the piece ends with a final negation of all prior memory-like mutability and one's potential for 'choice,' however fruitless, by forcing the reader into solitary darkness to seek possible resolution. Once the final sequence sets in in which the *How It Is* text would call for a resumption of the narrator's isolation after Pim's departure, we too are isolated in the blackness of the Cave with only a continuing, droning narration to accompany us. The user waits for some sort of visual cue or new triggering link about fifteen minutes, yet none arrives. The darkness and interminable waiting become all the more palpable and despondently felt as we have been trained, in the various pseudo-choices given thus far, to expect at least the veneer of choice to extract ourselves from the encounter or end it conclusively. In this seclusion we are performatively mired far more than Beckett's own despondent mud-crawler and, stripped of the thin level of autonomy we have thus far been allotted, left far more uncertain of what the darkness may evoke for us.

A NEW LEXIA AND LEXICON

Implied in this dense coagulation of various synaesthetic impulses, the first most important redefinition of "hypertext" via Cave work is the reconception of lexia as a multisensory cube. This notion of both a macrocosmic and condensed informational block used within a network of 'rooms' is, however, not entirely new. Espen Aarseth notes a similar arrangement in Egyptian tombs wherein additional narrative dimensions from outside the actual hieroglyphic content of the individual tombs were available in their total relational arrangement to one another. [13] However, the ontology of a multimedia and more programmably rich 'room' in the Cave is a different matter altogether; the difficulty of capturing a single extractable moment of a dense and continually morphing aural environment being seemingly insurmountable. Literary studies has yet to fully integrate three-dimensional aesthetics, however a useful corollary may be found in video game studies; particularly Henry Jenkins's notion of video game layout as "narrative architecture." [14]

The field of video game studies has been marked, somewhat like the existing critical discourse on programmed literature, by a basic split between "ludology," or emphasis on the inherent, more puzzle-oriented "game" elements of video games, and "narratology," or an emphasis on the potential story-telling abilities of the medium. [15] In an attempt to collapse these two divergent models of video game analysis, Jenkins offers instead the notion of game landscape as "narrative architecture"; a freeze-frame-
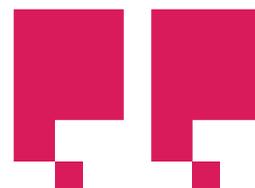
The difficulty of perceiving an abstractly recalled memory through its concrete symbol, much like Freud's dream condensation.

like apperception of a virtual space manifesting implied stories in its very fold and overlap. [16] Within this slice of sensory material, he also notes "spaces ripe with narrative possibility," where even the limitation or diegetic framing of what the puzzle or path may be, or lead into, holds an extra-textual resonance for the user. [17] One can easily see the transfer of this to the Cave's lexia, and particularly its attempt to spatially render literary effect by the very proximity, distance, or visibility of suspended text within it.

Indeed, in our original text of *to begin*, a thematic keystone to this paper, the "architecture" becomes primarily that of the words themselves, and their occasionally grinding interplay and adjacency to one another evoking "narrative possibility" in their very proportion and intimacy. [18] For instance, in the middle of the work, where the narrator meets his accursed other Pim and subjects him to a series of intensive questions such as "DO YOU LOVE ME?" the

text's spatial and proximal lay-out reifies its narrative content. The questions, distant and urgent, glue and cluster together with a claustrophobic sense of nearness, while the 'internal' register of the answers to these questions, primarily "No," is flashed all around the user in a too-intimate smother. These traces then fade quickly to leave one in a lingering registration of loneliness enhanced by the re-emerging blankness of our personal space.

Similarly, an illustrative example exists in the tension created via the 'paternal' memory sequence discussed earlier. As the platelets representing supposed figures from a buried childhood drift slowly downward, intentionally flat and false-seeming, the lightness of their descent reifies the ephemeral and out-of-reach nature of these memories; now rendered flat, canonized, and falsely documented. Simultaneously, however, one is forced to hover over a panel on the Cave's floor recounting the 'actual' text of the memories: dark and cryptic accounts of "blood

dripping," a father who doesn't come home, the placement of trash in the family bed. Yet this text too, rendered in neon-green font and obscurely projected on the floor, is difficult to read and revealed in slow, overly cautious chunks. The difficulty of perceiving an abstractly recalled memory through its concrete symbol, much like Freud's dream condensation, [19] is summed up in these falsely legible 'documents'; the poignancy further heightened by the fact that the urgent import of these memories–verging into murder, isolation and family deterioration–is physically close yet thwarts our reading nonetheless.

This is present throughout *to begin*: from text that 'crawls' and slides through the mud sympathetically with us to a cartoon-torture of the word "Pim" that uses blinding, close-proximity images to remind us of a conflicted morality. Spatiality, the overlapping intersection of text rendered virtual, coupled with additional aural stimuli, informs a lexia with seemingly innumerable opportunities for narrative possibility.

There is also a departure from 'classical' hypertext in the very arrangement of these room-based lexias within the larger 'hyperspace' the Cave works exist in; the virtual construct surrounded by a sea of uncoded black. This potentially infinite exterior space surrounding the renderings of the work is perceivable in most pieces and available in all through a free-ranging preview mode available off-site. While drawing attention to the rote artificiality of the narrative path we are seemingly forced along, this also has the unique side effect of at times allowing one to see a complete lexia-arranged schema at once; or rather see beyond the particular enclosed room one is currently occupying. This in itself is a revision of the lexia configuration in 'classical' hypertexts, in which the authorial hand, or master plan of one's potential paths through the 'maze' of lexias, was kept from the user.

Similarly, certain Cave works utilize such hyperspace as a trope of their very fictional constitution, such as the geometrically titled *Cubes^3,* composed by Ian Hatcher with aid from Adam Veal. [20] Among pieces inspired by or utilizing work from Borges (a telling example of the confoundedness and labyrinthine quality of the Cave's potentially infinite lexias when

perceived simultaneously), is a Cave-adaptation of Borges's "The Library of Babel." [21] The user is situated within a suspended 'cube' of text (this piece's lexia), in which fragments of Borges's actual text are visible as a thin, minimalist frame forming the basic dimensions of a cube, and one's only options for navigating (backward, forward, up, down, left, right) are activated by selecting six individual letters. One is given what appears to be novel and new fragments of an overall narrative as one reaches a new cube, yet the user quickly realizes these fragments are being recycled; and, in fact, one cannot complete the story or receive the total impression of what the piece may contain. Much like Borges's own infinite library, the illusion of the individual cubes is such as to gesture at infinity; yet the inherently limited options of what one may choose offer an unusually sharp commentary on the innate limitedness of hypertext, and by extension, choice within hypertext.

THE UNCERTAINTY OF THE LINK

Amongst this immediate and hyperspace-oriented dislodging of order, or one lexia immediately preceding the next, Cave works offer another central rearrangement in the link. The basic notion of a link–such as the illuminated hyperlink stylistically and typographically set off from the rest of the narrative in early hypertext–as an immediately apparent, lucid, and recognized-as-such 'key' to the next screen is challenged in the Cave. Indeed, if a user has no idea of where a link may be spatially on a screen, let alone what constitutes a link–perhaps analogous to the "what do I do?" question raised in puzzles within three-dimensional video games–the narrative will not be allowed to progress. This can be a dynamic falling solely under stylistic reinterpretation in the Cave: a spatial 'lostness' in the vein of *House of Leaves* [22] or *Hopscotch* [23] rendered to a palpable and all-surrounding dimension, implying a built-in possibility

for user panic in the fact that one cannot simply flip to the next recognizable or amenable page.

While seemingly an issue allied only to three-dimensionality, such intimations of authorial aloofness or the deceptiveness and purposeful defusing of the next sequence are present even in canonical hypertexts such as Michael Joyce's *afternoon, a story*. [24] Aarseth notes that *afternoon* has no "visible links" or links explicitly marked, and further that "some links are conditional; they are available only if the user has earlier traversed unspecified scriptons [Aarseth's term for a block of smaller textual units essentially operating as a lexia]." [25] In the Cave's three-dimensional environment, this degree of uncertainty reaches a much more pointed complexity, with greater opportunity for new narrative inscription in line with Jenkins's notion of "spaces ripe with narrative possibility."

The nature of the 'uncertain link' is most obviously toyed with in Ben Nicholson, Jason Lee, and Jinaabah Showa's *Glitch*; a piece exploring the dynamics of a literally glitch-ridden Cave work. [26] In *Glitch*, we are perhaps initially most frustrated by the link titled "reset," occurring after we have been processionally pulled through a long, text-lined hallway, which then forces us to proceed again through the same hallway three times with varying modifications. Though such "reset[ting]" and temporal displacement eventually wears through and 'cracks' the sequence, bringing us to a final arena to complete the work, we are initially unsure of whether obsessive-compulsive re-clicking will have any result at all or if we are perhaps missing a hidden clue. Similarly, one finds another troubling link in the form of an abstract human heart composed of various, collaged layers of text arising throughout the piece. In a self-reflexive commentary, perhaps on the 'over-worn' nature of the link in hypertext, the heart proceeds to disintegrate after each successive click,

becoming increasingly difficult to select until it finally shatters apart completely (heralding the program's final 'crash,' to be analyzed later in this article). Recall also that one is spatially suspended within the three-dimensional projection of the Cave, hence the shattering of said heart becomes an activity of both physical disorientation and frustrated hermeneutic analysis as one attempts to discern and select the remaining fragments (and text), in order to activate the next sequence.

This same tendency is enacted with heightened instability in another piece: Terrence Ma's *Dreams*. [27] In *Dreams*, we are presented with various, selectable glyphs leading to separate dreams we must view and complete to 'finish' the story. However, one of these dreams, set on a seemingly idyllic beach, presents trouble in its ostensible openness to users selecting alternate links. Here, one has the option of either clicking a stable block of text floating on the water, which with repeated selection will eventually 'complete' the dream with ease, or what appears to be a migrating link in the form of a seagull above. Clicking the seagull, if one can get in a position to see it, will dislodge one's stable position as spectator and yank one around in a roving 'ride' of violent perspective shifts (made additionally disorientating and nausea-inducing by the immersive nature of the Cave) until the seagull is clicked again. Whether this is an intentionally detached coyness on the part of the author in misleading the user isn't entirely certain: the 'trust' in the link is additionally undercut by the
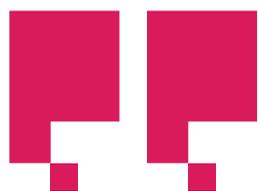
The sense of anticipation for what comes next grows stronger the more time one takes in deciding how to proceed.

possibility that this is simply a 'glitch,' that we've somehow ruptured the construct of the program itself. The level of potential authorial bad faith seems also to push what was previously understood as sheer poetic inscription, or a stable 'program,' into how Nick Montfort frames "interactive" fiction: an elusive form which, in its forcing of the user into role as novitiate in a new system of knowledge seeking "answer[s]," has its closest literary cousin in the riddle. [28] The question then becomes what happens when one is unable to 'guess' correctly, or has simply been led into an interpretive corner?

A PERCEIVABLE LOSTNESS

Beyond sheer redefinition of hypertext's basic formula of link and lexia, however, the Cave also opens up an additional narrative quality in the link's disorientation within the expanded province of the lexia. A useful corollary can again be found in Montfort and, in particular, his discussion of "interactive fiction," or fiction rendering a quest or adventure through an unseen landscape constructed entirely of text and studded with "puzzles" that both obstruct and shape one's narrative path. Here, as a premonition of the Cave's very active sense of 'lostness,' or narrative quality of making one feel adrift, one is locked between textual sequences if one is unable to come up with the desired or correct "answer"; the liminal

space of the "riddle" Montfort claims these games resemble. [29] However, he notes a peculiar sort of pleasure in the potential stalls indicated by this required 'correct' information; namely in redefining Barthes's famous description of a traditional reading experience as akin to a spectator at a nightclub jumping on stage and undressing the dancer in a quicker version of her own striptease. The pleasure of the interactive text, he claims, is that one must figure out simultaneously *how* to unravel the particular dancer's clothes and in which order, allowing a conflicted satisfaction beyond that of simply "reading." [30] The sense of anticipation for what comes next grows stronger the more time one takes in deciding how to proceed; a sensation much more incarnate and tangible in the immersive environment of the Cave and its recurrent fetishization of occasional stalls and an all-encompassing sense of futility.

Similarly, there is another useful comparison to the Cave in Montfort's defining of interactive fiction by its necessity of receiving proper textual input, and the rapport between user and machine when one isn't submitting 'correct' information or is uncertain of the next step. [31] A unique and productive aspect emerges, similar to the Cave's aestheticization of obstructions and user befuddlement, in which the submission of 'wrong' or unrecognized information will–somewhat in the vein of Foucault's repressive hypothesis [32]– generate more text. The dialogue, however automatic,

is simply 'more;' it is a palimpsestic accumulation of the journey traveled thus far, regardless of one having chosen correctly or incorrectly. Hence, I wish to posit that even the submission of poor, negative, or false information in the Cave still has the possibility of generating either semantically rich text or narratively significant delays on the part of the user. This, again, takes an amplified form when rendered three-dimensionally; and one's sense of 'lostness' becomes an all-defining sensorial state rendered by the enclosed and perceptually convincing nature of the Cave itself. 'Lostness' then becomes a tangible, perceivable phenomenon capable of producing unique aesthetic sensations, while also influencing one's reading of or ability to read a text regardless of one's understanding. A similar sensation in print text might be to read the first chapter of *The Sound and the Fury* [33] without any guide or foreknowledge, a unique impression granted whether one followed an intended authorly schema or not.

This adventure quality, and the unmoored sensation underlying it, is most consolidated and manifest in a dominant sub-category of Cave works that form an updated 'detective' genre. Reinterpreting cues from the first wave of pulp and hard-boiled novels, in which the slippery unknowability of the contemporary world is rendered via the protagonist's avid, and at times fruitless, seeking of clues, these detective-oriented Cave works investigate this instability and potential unknowability in a three-dimensional atmosphere. One work in particular, *The Hydra*, by Hector Ramirez, Jak Konig, and Theo Goodell, reveals the novelty of Cave works to spatialize 'lostness' in its burying of 'useful' links or narratively significant 'clues' among the discordant media sensations one receives from the Cave. [34]

The Hydra, in a play on the beast of innumerable heads and the logarithmic pattern in the heads'

regeneration when severed, queries whether programmatic text can ever add up to a whole, perceivable narrative. We begin in a seedy hotel room rendered as a cartoon mock-up of the Cave, a reductive replication of various Cave stimuli spread faux-accessibly around the deceivingly simple layout: sound, visual, and textual clues manifest as gramophone, painting, and letter. One isn't quite sure, however, what presents a relevant link or valid selection for one's readerly intent; indeed, one is never told the 'rules' for navigation, nor do we even know what constitutes narratively valuable information for the case we must solve. In selecting the seemingly innocuous gramophone we only hear a piercing and warbling noise that continues until one clicks it again. When one *does* find an actual link, and this link moves one to another similar and mechanically titled room/lexia (labeled 2A, 2B, and so on), here one finds the exact same clues with only occasional alteration. One such alteration, a cut-and-pasted light switch appearing patently false, again contains a bewildering and hostile defusing of our attempt to parse or taxonomize the information available to us, let alone detect any means of progression. On clicking the light switch, we are plunged into darkness and subjected to near-nonsense 'text speak' that lines the black walls like the rantings of a madman; text which we are uncertain whether to perceive as 'readable' or simply a tear through to the illegible code backing the program. Finally, after cycling through a series of similarly arranged rooms and additional narrative 'traps' (for example a riddle about a beheaded woman holding us in abeyance until we solve it), we come upon the room containing the eponymous "Hydra." Instead of a singular beast we have the capacity to slay and thereby obtain resolution, we are instead subjected to a chaotic and ear-rending barrage of static noise and chopped text (described by the authors as being randomly culled from Google), leading itself only into a cycle back to the origin of the story. The terminus

to our case seems to be meaningless or nonexistent; a possible aporia of textual static and disarray, any actual 'case' or narrative conclusion left troublingly unresolved.

Again, here we find the 'good faith' of strict, ludology-oriented game playing and the assumption that there is a solution, or even discernible rules, to the 'puzzle' undercut; as well as a decentering of any final terminal meaning or solution. *The Hydra* instead finds a unique and somewhat dadaistic enjoyment in the splintering of sensation that occurs when one is overwhelmed or inundated with seemingly random texts and increasingly indiscernible meanings; finding spaces where one is 'lost,' or unsure of the next step, and fetishizing this uncertainty, to say nothing of narrativizing it. We are lost, much as a hard-boiled detective would be lost in gluing together fragmented clues of an unstable world into some pattern of meaning. Yet, as we are locked into the uncertainty of the virtual, we are unable even to determine what objects are 'real,' or at least real to our experience of the game at hand. Objects are simultaneously stripped of their practical function (light switches of light, gramophones of music) and their ability to complete or further the narrative at hand. *The Hydra*'s method might then be thought of as a three-dimensional and ontologically muddling version of Burroughs's cut-up method; **35** here we see the bleed-over from the 'back end' of code and technological scaffolding of the deceivingly simplistic media sensations we take for granted. We are then forced to question whether we as users may ever accurately perceive their meaning, or how 'true' these falsely honed 'front-end' constructs may be. It may not all add up in *The Hydra*, but the detective-minded pursuit of various programmatic 'raw data' and undiagnosed sound and visual/textual display reveals a unique ability to aestheticize chaos, or at least the fractured remains of a computational scheme kept aloof from us.

GLITCH AS ORDER

This skepticism is furthered in later Cave works which, arriving after a small yet idiosyncratically canonized corpus had been established, exhibit an even more self-reflexive quality about the falseness and deceptiveness of the Cave mechanisms. Much in the same way that modernism became wry and aware of supposedly self-evident text as a medium in and of itself, so too does a more self-aware Cave writer make manipulative use of the Cave's own assumed processes of projection and visual tricks. In Cave writing, however, the patent deconstruction of the work is much more evident and pointed, as the notion of a simplistic visualization being born on a potential sea of unviewed code and technological processes allows rife space for slippage and informational osmosis between these two realms. Similarly, such shifts, aside from allowing a jumbled textualism between the 'front-end' stylistics and 'back-end' code language (as apparent in *The Hydra*), also leave the viewer, wholly enmeshed in the audio-visual illusion, subject to the jarringly physical sensations this may cause.

However, the most patent self-consciousness, and utilization of this self-consciousness for stylistic end is found in the aforementioned *Glitch*. The Cave-conscious tricks accrued from arriving at the tail end of an already established Cave paradigm are immediately evident. The piece opens up with an overt awareness of the mechanisms that have been previously taken for granted, or simply unconsciously assumed in order for the illusion of the Cave to work. A blunt disclaimer
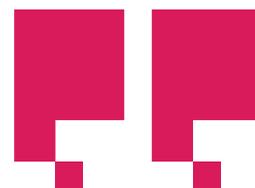
In the Cave's expansion of a hypertextual system to the point of stylistic excess and crash, new narrative and textual opportunities are opened.

streams before us that "there are screens all around you," followed by a sequential flash of "to the left," "to the right," "even below you" on the accompanying walls and floor; the suddenness and unexpectedness of these revolving screens a joke about the Cave's penchant for manipulating blind spots. This is followed by an even more sinister dismantling of the Cave's holographic magic as "just reflected light," additionally stating that, far from arriving serendipitously, "these screens are controlled" and no longer are we allowed to drift through an authorially detached construct we take for granted. This is expanded to a more general critique of the veracity of the 'image,' and in particular the journalistic image, as the piece then claims that the Cave's constructed convincingness is one similar to "all images," that they are only "real because you believe they are," followed by a picture of the World Trade Center.

The piece ultimately unfolds as a narrative about a 'glitch,' again capitalizing on the knowledge that

there is already an established Cave procedure to then dismantle and hack. The unique progression of this narrative, sponsored by a loose, unmoored and purple "w" (one of the eponymous glitch[es] that acts to disrupt everything from the title sequence to the general text of various corridors) shows an escalated awareness of the medium beyond the usual jaded Cave technique of revealing chopped up, semi-legible code or text speak. One's spatial expectations are constantly unhinged, presumably due to this mostly invisible yet occasionally emergent 'glitch.' As mentioned before, one is forced to repeatedly 'reset' the same sequence and follow the same hallway over and over again: a thwarting of the assumed linearity of the Cave, furthered when we are then forced to watch our initial progression from afar, the fakeness of its guided construct now evident. One is then told that we are being tracked, a reference to our location-based glasses and that the wand we were using to 'control' the program is no longer necessary. This is brought to an utter, back to reality conclusion

when one is commanded to "remove our glasses" and then, as one final link is made available and selected from amidst a flurry of devolving text (ironically, the word "crash"), the piece itself crashes. Making this final disassembly of the work itself an implicit part of the piece's own narrative evidences a terminal end to the 'computational contract' in which the unseen programming is supposed to hold the perceivable text and function aloft, while also performing a deconstruction unique to a programmable environment such as the Cave.

CONCLUSION

Hence, in the Cave's expansion of a hypertextual system to the point of stylistic excess and crash, new narrative and textual opportunities are opened. Particularly, a potential in the full terminus of the supposedly simple components of lexia and link becomes most viewable and clear, in their inherent limitation, when self-conscious 'errors' and 'glitches' arise. In the disparate and seemingly endless trailing after multimedia 'clues,' as in *The Hydra*, and in the fragmentation of a narrative architecture's stability, as in *Glitch*, we are allowed to see even deeper into the fractured spaces between the Cave's new lexias. In like fashion, by viewing how Cave works distort and expand the basic qualities of hypertext, one can see the assumed ideology of 'classical' hypertext and its early programmed fiction equivalents much more apparently through such ideology's devolution and breakdown than first canonization. In the troubling and teasing of the assumption of where one will arrive next, for instance, one sees the threadbare nature of the link as a deceivingly simple portal to another predetermined slice of narrative; particularly destabilized if one is suspended amongst a sea of disorienting lexias. Likewise, the falsely two-dimensional nature of a Landowian lexia might now be assumed to contain more deeply enmeshed code

work behind the false simplicity of the screen, ready to rupture through given the smallest hole in the programming.

In such decay and deconstruction, Cave works seem to posit that there is ripe mulch for a new virtual aesthetic. Indeed, the sheer innovations made with the basic operation, and failure, of hypertext suggest even a productive potential in the 'null' and 'outdated' itself; capitalizing on this perceived 'failure' to create somatic and thematic effects within a deceivingly real environment. The procreativity and fruitfulness of Cave works' ability to expand the mechanics of hypertext via glitch and at times self-reflective cynicism is similarly wrought from a former postmodern agenda; the notion of disassembly to find new implied patterns stretching back to Burroughs's cut-ups [36] or John Cage's mesostics. [37] Or, as relevant to this programmatic field and posited by Brian Kim Stefans, to the discord between the central processing "demon" and the "human" poetic content it processes, imaginably offering new linguistic fragments through such communicative friction. [38] Yet the Cave, in its ability to condense sensation through its stacked, transparent, and abstract visual space, coupled with the potential to leave one 'locked' in such a space without a discernable exit, offers the potential to protract and draw from a variety of fields—whether video game studies, programmed literature, or the abstract tactics of postmodernism— while tapping the narrative modalities and paradoxes of all. In funneling these phenomena through the singular 'dead' art of hypertext, Cave works offer a particularly poignant tampering with the notion of chained and restricted space within programmed fiction in general: the Cave offering not so much the entwined sequences of lexia and link, but the potential of the black and unmapped spaces around and within them. ∎

ENDNOTES AND REFERENCES

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2. Robert Coover, "The End of Books," *New York Times*, June 21, 1992, http://www.nytimes.com/books/98/09/27/specials/coover-end.html

3. Electronic Literature Organization, "Electronic Literature Collection," http://collection.eliterature.org/ (last modified February, 2011). For an exhaustive study of the genres contained within electronic literature, as well as hypertext's role as a pioneering and influential figure for ensuing forms, see N. Katherine Hayles's essential introduction to the field as a whole, *Electronic Literature: New Horizons for the Literary*, Ward-Phillips Lectures in English Language and Literature (Notre Dame: University of Notre Dame, 2008).

4. George P. Landow, *Hypertext: The Convergence of Contemporary Critical Theory and Technology* (Baltimore: The Johns Hopkins University Press, 1992).

5. Espen J. Aarseth, *Cybertext: Perspectives on Ergodic Literature* (Baltimore: The Johns Hopkins University Press, 1997), 1.

6. A useful survey of early attitudes towards hypertext, from both a critical and writerly perspective, may be found in the introduction to Stuart Moulthrop's "Traveling in the Breakdown Lane: A Principle of Resistance for Hypertext." In *Mosaic* 28, no. 4 (1995): 57-77.

7. George P. Landow, *Hypertext: The Convergence of Contemporary Critical Theory and Technology*, 4.

8. Brown University Computer Graphics Group, "Project Overview," http://graphics.cs.brown.edu/research/cave/home.html (accessed November 1, 2012).

9. John Cayley, "Lens: The Practice and Poetics of Writing in Immersive VR," in "New Media Poetry and Poetics," special issue, *Leonardo Electronic Almanac* 14, no. 5-6 (2006), http://programmatology.shadoof.net/pdfs/cayleyLens.pdf. See, in particular, Cayley's compendium of sources (for both specialist and lay audience) on page 15.

10. Ibid., 3-4. [page numbers refer to PDF at above link]

11. Theodor H. Nelson, "A File Structure for the Complex,

the Changing, and the Indeterminate," in *The New Media Reader*, eds. Noah Wardrip-Fruin and Nick Montfort, 144 (Cambridge: The MIT Press, 2003).

12. See: Ben Nicholson, "*to begin*," https://wiki.brown.edu/confluence/display/wdm/Cave+Writing+Presentations#CaveWritingPresentations-TOBEGINBenNicholson%28MEME%2FLitArts%2711%29 (last modified December 14, 2011). The link contains only a brief statement of authorial intent, as the full functionality of the pieces can essentially only be viewed within the Cave, or with proper download of Cave Writing software and matching .xml files. This follows for the other Cave links referenced in this piece.

13. Espen J. Aarseth, *Cybertext: Perspectives on Ergodic Literature*, 9.

14. Henry Jenkins, "Game Design as Narrative Architecture," *Electronic Book Review*, http://www.electronicbookreview.com/thread/firstperson/lazzi-fair (last modified July 10, 2004).

15. Steven E. Jones, *The Meaning of Video Games: Gaming and Textual Strategies* (New York: Routledge, 2008), 3-5.

16. Henry Jenkins, "Game Design as Narrative Architecture."

17. Ibid.

18. Ibid.

19. Sigmund Freud, "The Work of Condensation," in *The Interpretation of Dreams*, trans. James Strachey (New York: Basic Books, 1955), 296-321. Freud discusses this compaction as follows: "The first thing that becomes clear to anyone who compares the dream-content with the dream-thoughts is that a work of *condensation* on a large scale has been carried out. Dreams are brief, meager and laconic in comparison with the range and wealth of the dream-thoughts" (296).

20. See: Ian Hatcher and Adam Veal, "*Cubes^3*," https://wiki.brown.edu/confluence/display/wdm/Cave+Writing+Presentations#CaveWritingPresentations-CUBES3AdamVeal%26IanHatcher%28LiteraryArtsgrads%2710%2F%2711%29 (last modified December 14, 2011).

21. Jorge Luis Borges, "The Library of Babel," in *Ficciones*, ed. Anthony Kerrigan, trans. Emecé Editores (New York: Grove Press, 1962), 79-88.

22. Mark Z. Danielewski, *House of Leaves* (New York: Pantheon Books, 2000).

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24. Michael Joyce, *afternoon, a story* (Watertown, MA: Eastgate Systems, 1990).

25. Espen J. Aarseth, "Nonlinearity and Literary Theory," in *The New Media Reader*, ed. Noah Wardrip-Fruin and Nick Montfort, 767, 771 (Cambridge: The MIT Press, 2003).

26. See: Ben Nicholson, Jason Lee, and Jinaabah Showa, "*Glitch*," https://wiki.brown.edu/confluence/display/wdm/Cave+Writing+Presentations#CaveWritingPresentationsGLITCHJasonLee%28MCM%2709%29%2CBenjaminNicholson%28%2711%29%2CJinaabahShowa%28EA%2FLitArts%2710%29 (last modified December 14, 2011).

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28. Nick Montfort, *Twisty Little Passages: An Approach to Interactive Fiction* (Cambridge: The MIT Press, 2005), 3-4.

29. Ibid.

30. Ibid., 3.

31. Ibid., ix, 19.

32. Michel Foucault, "The Repressive Hypothesis," in *The History of Sexuality, Volume 1: An Introduction*, translated by Robert Hurley (New York: Vintage Books, 1990), 15-50.

33. William Faulkner, *The Sound and the Fury* (New York: Vintage Books, 1990).

34. See: Hector Ramirez, Jak Konig, and Theo Goodell, "*The Hydra*," https://wiki.brown.edu/confluence/display/wdm/Cave+Writing+Presentations#CaveWritingPresentations-THEHYDRAHectorRamirez%28LiteraryArts%2712%29%2CJakKonig%28VisualArts%2712%29%2CTheoGoodell%28PlaywritingMFA%2711%29 (last modified December 14, 2011).

35. For more information see: William S. Burroughs, "The Cut-Up Method of Brion Gysin," in *The New Media Reader*, eds. Noah Wardrip-Fruin and Nick Montfort, 90-91 (Cambridge: The MIT Press, 2003).

36. Ibid.

37. For a basic introduction to the origin and method of mesostics see John Cage, foreword to *M: Writings '67-'72* (Hanover, NH: University Press of New England, 1973), ix-x.

38. Brian Kim Stefans, *Fashionable Noise: On Digital Poetics* (Berkeley: Atelos, 2003), 64.

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