

*The Bright Side: Ergodicity and Writing Beyond the Margins*

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1. Defining Ergodic Literature:

In *Cybertext, Perspectives on Ergodic Literature*, first published in 1997, Espen J. Aarseth invented the term ergodic literature. Borrowed from the field of mathematics, ergodicity as Aarseth saw it, addressed a direct correspondence between those problems that mathematic ergodic theory deals with and the need to describe the aesthetic and textual dynamics of the nascent genre of electronic literature—that is, literature which is created in and formed for the digital milieu. This budding genre of electronic or digital literature challenged traditional modes of narrative discourse like the novel, theatre and film. At its core, this new departure from the traditional mode was structural, and ergodic mathematics is a language of structures.

Cybertext, with its tangential hypertext linking, participatory narratives (as in videogames) and multi-player real-time virtual worlds among other innovations, presented a new approach to narrative and was expanding within culture and evolving. However, this new modality proved to not be confined to digital or electronic media. At bottom, ergodic literature refers to any narrative which necessarily places responsibility upon the reader—such that they may traverse the text—beyond the marginal effort of visually scanning the words with one’s eyes (or as in the case of Braille, the fingers, which would not be per se considered an extranoematic effort on the part of the reader) and the physical act of turning pages.

Originally the term *ergodic* (from the Greek words *ergon* and *hodos*, literally “work” and “path”) referred to the branch of mathematics and physics that concerns itself with the study of statistical properties in a dynamical system. In broad terms, ergodic theory describes the instantaneous temporal and physical position of a point within a non-random, relatively long running and

conservative system—like the swing of a clock pendulum or the flow of fluid in a vessel like a pipe or tube.

In terms of literature, this refers to the reader's position relative to the narrative. This is more than simply which page the reader is on. In ergodic literature, the reader is not passively standing outside looking in. It requires that the reader's perspective work as an agent within the system of the narrative itself, and how they behave will affect the overall state of the system.

In outlining the narrative structure of *The Brightside*, it became evident to me that this correspondence between ergodic mathematical theory and ergodic narrative was especially apt with regard to the behavior of particular dynamical systems—specifically those of *strange* attractors. In physics, attractors are models of dynamical systems and an attractor is deemed strange if it exhibits a nonlinear, sensitive dependence on initial conditions. In lay terms, this is often described as the “butterfly effect.” This refers to the deterministic sensitivity of complex systems to initial conditions, wherein the seemingly insignificant flutter of a butterfly's wings in Hong Kong as an initial condition can result in a later-state tornado in Kansas. It seemed to me that this so-called butterfly effect, coupled with chaotic nonlinearity within a narrative when stood vis-à-vis strange attractors—especially Lorenz or Hénon attractors' dynamical systems (see Fig. 1)—illustrated what I viewed as the three critical aspects of ergodic literature as a genre insofar as my intentions were concerned. These three aspects being that the narrative is necessarily nonlinear, indeterminate and different upon each reading.

Of course, these three elements are present in all literature to one degree or another. The essential difference is that ergodic literature necessitates interactivity with the text beyond what is being read. As such, the reader assumes a role within the narrative. The narrative becomes a system with which the reader must engage through extra-hermeneutic means. This engagement on the part of the reader becomes either constructivist, or emergent. In the case of a constructivist system, the reader constructs the system within which they operate, rather than trivially

traversing the text. An emergent structure's whole has a transcendent property that the constituent elements do not have on their own. This transcendent property only emerges when the constituent elements are synthesized by the reader's engagement with the system (see Fig. 2).

These three aspects of ergodic literature do not each occur in a vacuum. They are not necessarily discrete isolated characteristics within the same work. These facets are each an extension of the others. For example, the nonlinear structure of a narrative may provide a framework upon which its indeterminacy depends, which in turn serves the uniqueness of the perception of each reading.

For my purposes, the nonlinear aspect was the jumping-off point. The narrative of *The Brightside* abandons the traditional beginning/middle/end (or first/second/third act) structure by oftentimes placing the reader in media res, embracing randomness, and requiring of the reader a comfort with a formidable degree of narrative chaos.

None of this of course intrinsically assures nonlinearity. After all, humans must necessarily read each word one at a time, irrespective of how the words have been presented. However, as in a Lorenz or Hénon attractor—for *The Brightside* in particular—nonlinearity emerges out of a multicursal, fragmented and asymmetrical structure in which the narrative circles back upon itself without passing through the same point twice—without looping—wherein the two halves of the whole are non-identical and non-mirrored. More specifically, between the center and the outside of the structure, there is more than one pathway. This would be achieved through the use of traditional devices such as multiple points of view of the same moments or events in the narrative, flash-backs, flash-forwards and tangential frames of narrative (such as notes in the margin, footnotes, etc.), acrostics and non-traditional devices like computer code, encryption and graphic design. Instead of a centered symmetry (as in a traditional story arch with rising action, climax and falling action), an amorphous asymmetry would become manifest. Notwithstanding this disorienting, multicursal and asymmetrical state, the narrative's structure would become observable, particularly when viewed *ex-post* and as a whole.

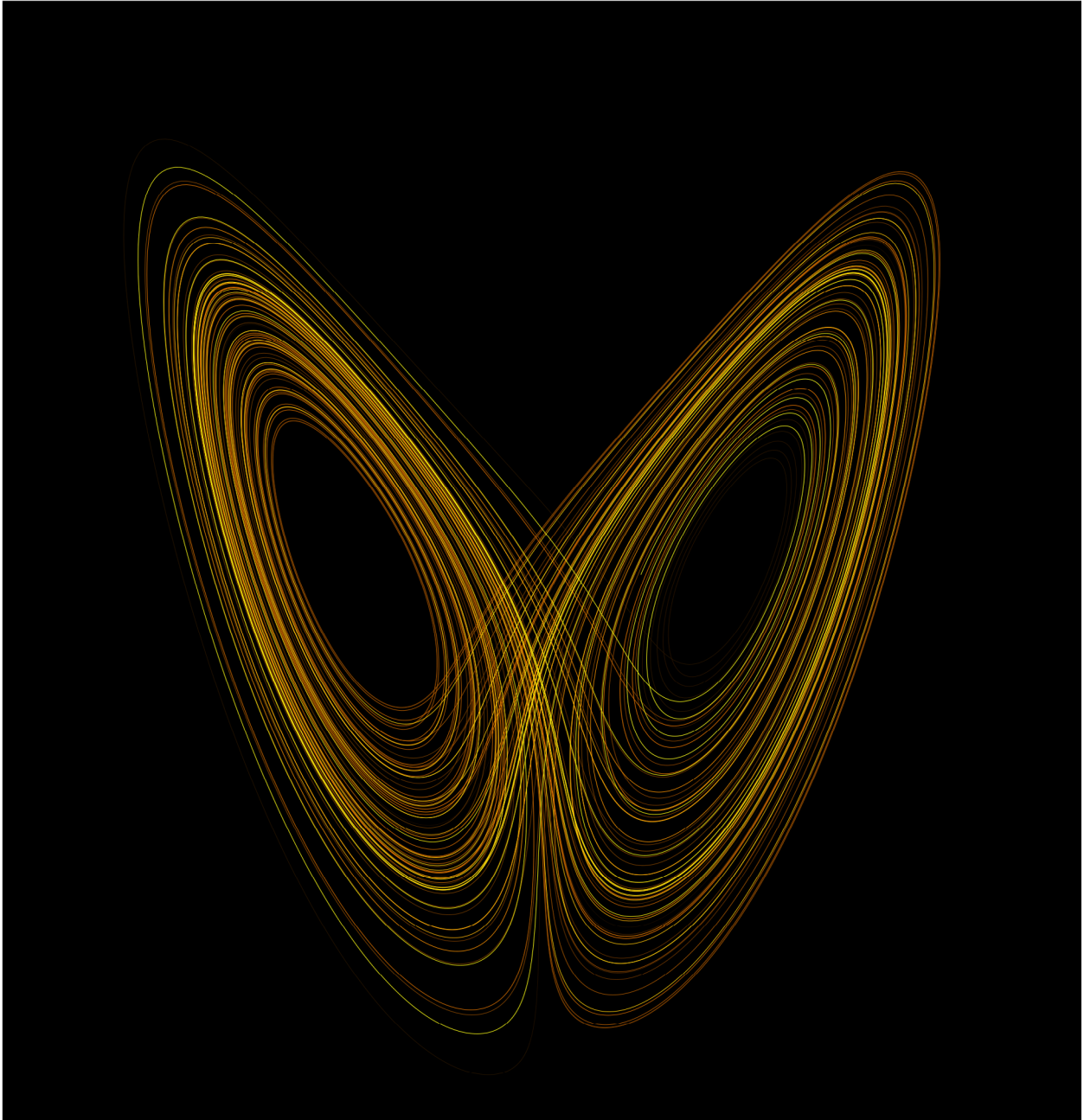


Figure 1 A model depicting a Lorenz Attractor. "File:Lorenz Attractor Yb.svg." Wikipedia, Wikimedia Foundation, 10

Feb. 2007, [https://en.wikipedia.org/wiki/File:Lorenz\\_attractor\\_yb.svg](https://en.wikipedia.org/wiki/File:Lorenz_attractor_yb.svg).

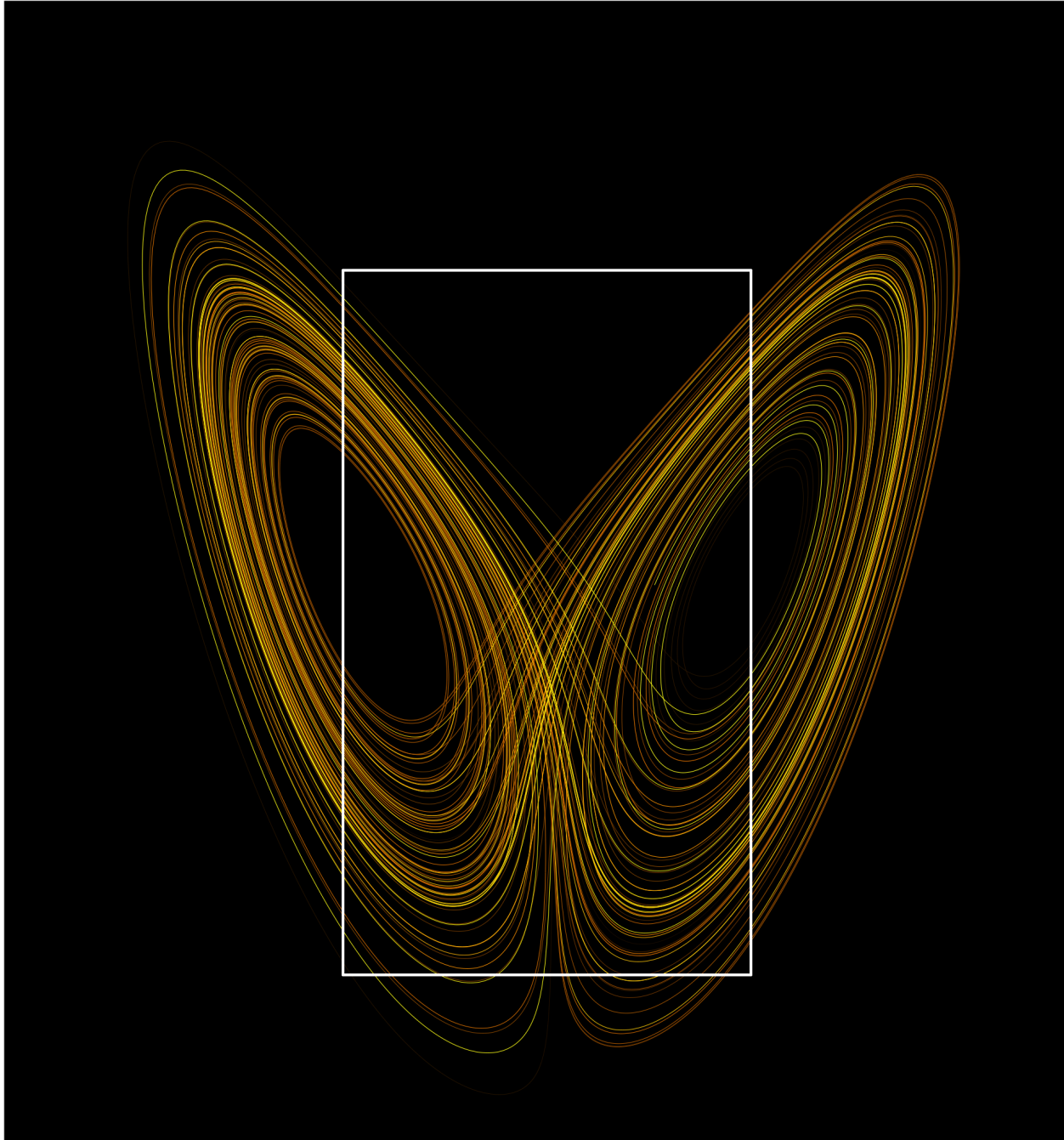


Figure 2 One theoretical example of a Lorenz Attractor as a descriptor of ergodic structure in literature. That which appears within the white square is the narrative structure as it exists within the margins of the page. That which appears outside this square represents the reader's perspective working as an agent within the system of the narrative itself, and how they behave will affect the overall state of the system. Such interactions are necessarily nonlinear, indeterminate and different upon each iteration—or reading, in this case. "File:Lorenz Attractor Yb.svg." Wikipedia, Wikimedia Foundation, 10 Feb. 2007, [https://en.wikipedia.org/wiki/File:Lorenz\\_attractor\\_yb.svg](https://en.wikipedia.org/wiki/File:Lorenz_attractor_yb.svg).

An outgrowth of this structural nonlinearity of *The Brightside* is the second facet—indeterminacy. Indeterminate literature eschews fixed themes, characters, and language in favor of a, “multiplicity of possible interpretations of given textual elements,” (Encyclopaedia Britannica). In this vein, the narrative of *The Brightside* abandons deterministic rationality in favor of its own heterodoxy. As such, the piece often—or entirely—dwells in a pluralistic authority, making room for aporia and randomness. *The Brightside* has its own logic presenting as embedded computer code, puzzles or riddles, for example. The effect creates a labyrinthine structure in which the reader’s active participation is necessary to shape and create how the story’s structure unfolds. The ways and means in which the story’s unfolding becomes realized in the reader’s perception may be tantamount in meaning to the events of the story itself.

Borne out of the aforementioned facets, the third aspect obtains—that is, the narrative is different upon each reading. Here, the form or layout of the text—not only for aesthetic purposes, but functional—challenges the notion of text hierarchy. In the English language, text is read left to right, top to bottom. Presenting the text—such as it is, whether in the form of embedded code, puzzles or other acrostic devices—with a different hierarchy confounds the notion that the text should be perceived in the same way and mean the same thing to each reader, or subsequent readings by the same reader. As a basic example, this could appear as an extension of the traditional narrative break that footnotes provide, wherein the reader’s attention is diverted from one physical location in the text to another. The reader is presented with a choice that must be made as to which thread is to be pursued first. In this way, because the narrative forestalls passivity on the part of the reader instead provoking the reader with extranoematic responsibilities, each reader would be confronted by the text differently from the first to the second to the third reading.

The meaning or import of any given passage is subject to the reader’s determination of which narrative furcation should receive priority, both temporally and thematically. As the narrative is rife with these tangents, thematic elements may diverge exponentially—to wit, the order of reading affects the texture and flavor of the narrative differently. To this end, the



narrative subverts the reader's expectations not merely for the sake of being subversive, but so that the text would be open to varied or multiple interpretations and meanings. It would require the reader to fill in the space where what was not said, or could not be said, exists.

## 2. *Ergodic Literature in an historical context:*

It is important to note that while Aarseth intended that the genre of ergodic literature should reconcile the new dimensionality of discourse which arose out of the digital milieu, it was by no means confined to electronic or digital media. The history of world literature is awash with authors who have chafed at the limitations of traditional, linear narrative—at language itself, perhaps—and instead have otherwise pursued the capture and expression of the depth and breadth of living experience upon the page. These writers may have been part of an avant garde, or singular and remote flashes of artistic expression in otherwise traditional form in which they approached their narratives through unorthodox or experimental constructions of text and language. Indeed, there is a great swath of literature that substantially predates the digital age which ergodic literature as a genre comfortably subsumes.

By way of example, Vladimir Nabokov's 1962 novel *Pale Fire* stands as a compelling illustration of nonlinear ergodic literature. Written before the digital age, its ergodicity lies in the quasi-recursive aspect of its narrative. Aarseth asserts that:

Nabokov's *Pale Fire*, however, leaves the mode of cursality up to the reader; consisting of a foreword, a 999-line poem, a long commentary of notes addressing individual lines (but really telling the commentator's story), and an index, it can be read either unicursally, straight through, or multicursally, by jumping between the comments and the poem (Aarseth ch. 1).

Nabokov challenges the reader by diverting their attention from one thread of the narrative (the poem itself, for example) to another (the commentator's notes) and back again. The structure of the narrative does not develop along a linear paradigm. This nonlinear structure creates a gestalt wherein the reader's phenomenal perception of the whole necessarily sublates the divided (and isolated) perception of the discrete narrative threads.

Consider also William Faulkner's 1936 novel, *Absalom, Absalom!* Faulkner's novel is emblematic of ergodic indeterminacy.

Here, the indeterminacy of Faulkner's prose is inherent—its interpretation is inextricably linked to the form. Faulkner deploys massive, complex sentences (the longest consists of 1,288 words) dotted with parenthetical and hyphenated digressions. He further employs deconstructive, stylistic peculiarities in his approach to language and grammar with inconsistent use of apostrophes in contractions (for example, “don't” is sometimes written as, “dont”), deliberate misspellings and by omitting commas and periods in various passages.

Faulkner's use of these disruptions to traditional prose serve to mystify the reader's perception of the narrative. These structural elements combine to create a narrative whose meaning is deliberately withheld—perhaps a Derridan infinite deferral of meaning—and whose interpretation is elusive and uncertain.

Finally, *I Ching*—also called *The Book of Changes*—was written during the Western Zhou Dynasty around 900 BCE and is perhaps the first acknowledged example of ergodic literature. It is a prime instance of a narrative that is different upon each reading.

The *I Ching* is not meant to be read from beginning to end. Rather, it is a matrix of 64 hexagrams, each consisting of a binary series of either whole or segmented lines. All possible permutations are presented within these 64 hexagrams. Each reading of the *I Ching* is a unique iteration and experiential interpretation for the reader.

### 3. *Two contemporary Ergodic Literature influences: Infinite Jest and House of Leaves*

In writing *The Brightside*, my intention was not to write an ergodic novel. Rather, I early discovered that I was writing a novel which happened to be ergodic in nature. I found that the complexity of the narrative I was creating required the freedom of ergodicity to be fully expressed—or as close to such as language allows. In addition to the aforementioned works, the ergodic nature of *The Brightside* owes much of its inspiration to two contemporary works of fiction especially—that of David Foster Wallace's *Infinite Jest*, and Mark Z. Danielewski's *House of Leaves*. Both of these novels, though very different from each other, lie securely in the

ergodic tradition.

In the case of *Infinite Jest*, Wallace's experimentation with form and language exhibits a deep tendency toward ergodicity, notwithstanding the fact that Wallace had completed the manuscript well before the term had been coined by Aarseth. The novel challenges the reader with a dynamic system that requires determination on the part of the reader to navigate the structure of its complex narrative. The components of nonlinearity, indeterminacy and being different upon subsequent readings are on full display. Inspecting Wallace's skillful employment of each of these dynamics enriched my appreciation of the system as a whole and had no small influence on my approach to *The Brightside*.

The nonlinear elements of *Infinite Jest* are manifold. The first and most conspicuous nonlinear device is Wallace's capacious deployment of endnotes. These endnotes often contain footnotes themselves. They create a dimensionality to the narrative reminiscent of Nabakov's *Pale Fire*, in which one of the main narrative frameworks occurs in the margins surrounding the main text itself. Further, the physical effort required of the reader to navigate the endnotes of *Infinite Jest* by flipping pages back and forth, coupled with the back and forth cadence of this extra-narrative prose fortifies one of the novel's main components, that of tennis. From this framework a sort of meta-narrative emerges. In a sense, the reader becomes a tennis player batting the narrative ball back and forth across the metaphorical net that is the page. Or perhaps the reader becomes a spectator of a tennis match, their head whipsawing back and forth as the narrative is volleyed to and fro.

Wallace further departs from traditional linear narrative in his use of voice. *Infinite Jest* alternates between a first person narrative—presented through different main character narrators (and sometimes unnamed minor characters) with little or no indication of such shifts—and a third person omniscient narrator. These shifts in voice serve to disrupt any sense of linearity within the narrative.

Wallace also experiments with nonlinearity by deconstructing the timeframe of the novel's events. *Infinite Jest* takes place in a future in which time has been "subsidized."

To wit, a calendar year now has corporate sponsorship. The events of the novel take place over the course of two years: the Year of the Depend Adult Undergarment and The Year of Glad. However, these years are not consecutive and the climax of the narrative—which is not portrayed in the text of the novel itself—takes place in the unnamed, intervening year.

The indeterminate quality of *Infinite Jest* exists in three dimensions. The first is tethered to the nonlinear aspect rather than divorced of it. When Wallace employs the aforementioned perturbations to the narrative's timeline, it serves to disorient and elude the reader. As such, any singular or universal interpretation of the text becomes uncertain.

With regard to the second dimension of *Infinite Jest*'s indeterminacy, as with Faulkner, Wallace's prose is fraught with incredibly long sentences and single paragraphs composed of unbroken blocks of text that go on for pages, effectuating a structural overload that is at the very least obfuscatory at some points and entirely impenetrable at others.

Finally, the third dimension of indeterminacy within *Infinite Jest* emerges out of the interaction of Wallace's ponderous digressions, intersecting narrative threads and outright omissions of plot elements. These interactions of course present a paradox, as Wallace is a writer who seems profoundly unable to leave any prosaic stone unturned, yet within his prolixity there are vast narrative holes and omissions. Consider the titular plot device—a film which is so entrancing, anyone who views it is unable to stop watching it over and over until they die or go hopelessly insane, and which is never manifestly described in the text. Here we see that that which is not said—or cannot be said—is in the service of the writer withholding or deferring meaning. The reader is challenged not to fix solely upon the plot crises of *Infinite Jest* as commentary on pre-professional tennis or addiction, for example. Rather, the reader is faced with a narrative structure which expands as it simultaneously and finally folds in upon itself.

In similar fashion, Wallace goes to elaborate lengths to safeguard that *Infinite Jest* is different upon each reading. One example of Wallace's skill in this vein is present right from the outset of the novel. Therein the reader is plunged into a first-person narrative without bearing or context for the characters, setting (both physical and temporal) or action—all of which Wallace

only provides a thousand pages later. This kind of experimentation with structure is threaded throughout the novel and this lack of context provides no meaning to reader. They are forced to race along the narrative, trying to make connections where none are to be had. At least that is, until the novel has been completed, upon which the reader—now baptized with context—will turn to the first page and begin anew. Wallace has assured that the second read will be experientially distinct from the first.

The other novel to which *The Brightside*'s ergodicity is indebted is Mark Z. Danielewski's *House of Leaves*. Danielewski's ergodic novel is sourced in the same structural elements as David Foster Wallace's *Infinite Jest* and though the novels are very different, they comfortably register with the likes of Nabakov and Faulkner in this regard. In surveying such ergodic characteristics in Mark Z. Danielewski's *House of Leaves*, some few and certain devices keep cropping up to achieve nonlinearity, indeterminacy and difference upon each reading.

Firstly, if the nonlinearity of *Infinite Jest*—at least in part—is realized by compelling the reader to engage with the text as though they were playing tennis with it, then *House of Leaves* similarly challenges the reader to engage with the text as though they were inside a labyrinth.

Consider that one of the chief motifs of *House of Leaves* is the Greek myth of Theseus and the Minotaur in the labyrinth of Knossos. In service of this motif, Danielewski deploys footnotes and endnotes in his narrative, far more extensively than Wallace does. For Danielewski, the device is even more keenly linked to the structure of his novel. He nests footnotes within footnotes within footnotes and experiments with the arrangement of the text on the page. Sometimes these footnotes are set sideways, inverted or backwards upon the page to represent portals through the pages themselves. There are points where the footnotes supplant the main text entirely for pages. At such times, Danielewski challenges text hierarchy, sometimes to dizzying effect. In so doing, the narrative's multicursal nonlinearity becomes for the reader a literal manifestation of the labyrinth with its manifold furcations.

Danielewski further effectuates the nonlinearity of *House of Leaves* in the form of the *Whalestoe Letters*. This epistolary supplement to the main narrative depicts a correspondence

between two of the main characters and appears in one of the novel's appendices. Within the letters there is a code which once decrypted, portrays yet another multicursal dimension to the mainline narrative (or narratives, such as they are).

We can begin to examine the indeterminate quality of *House of Leaves* by once again looking to the treatment of text hierarchies. In addition to carrying in part the nonlinear aspect of *House of Leaves*, Danielewski's treatment of text imparts an indeterminacy to the narrative.

For example, by experimenting with text color, he destabilizes the meaning of the text itself. The word "house," only appears in blue text and the word "minotaur," and several **struck out passages**, only in red. Except for stylized graphic blue squares that border certain passages which is also working in service of this same device, these are the only deviations from printer's black in the text. At first blush, this may appear to be an artistic flourish, perhaps for emphasis on certain themes. However, this soon begins to have a phenomenal and experiential effect upon the reader which diverts them from one narrative thread to another.

As for the word "house," in blue, Danielewski, in discussing his novel, has stated that he intended that this was to signal to the reader that the house serves as a chroma key. A chroma key in photography and filmmaking is a field upon which one can impose whatever mark or image they wish. Here, Danielewski is shifting the position of the reader on a conceptual level with regard to the narrative from a passive observer to an active participant, tacitly inviting the reader to engage with the text with more authority.

To this end, with the word "minotaur," appearing in red, the reader becomes enmeshed in the literal and figurative implications of the creature's presence in the narrative. He or she marks such appearances and begins to track its import and meaning within the context of each appearance of the word in red. In a sense the reader becomes Theseus, hunting his monster in the maze.

The struck-out passages that appear in red seem to support this as they serve as a warning to the reader to not pursue these threads, or that they are not to be considered when mining for meaning in the text. Yet they remain within the text, bridging the space between what cannot be

said and what must be said.

Similarly, Danielewski employs anagrams within the narrative. When the character Zampano makes circumspect reference to the “main route,” within the Navidson house, this can be read as a slanted anagram for “minotaur.” The same is true for references to the character Johnny Truant when he is referred to as, “Mio Truant.”

These devices serve to obfuscate the identity and the meaning of the figure of the Minotaur within the narrative. The Minotaur is never expressly portrayed in the text, yet remains a looming figure throughout the narrative both literally and figuratively. The author leaves only breadcrumbs—maybe—by which the reader can navigate the text in search of meaning. These are but a few examples of leveraging a multiplicity of possible interpretations of meaning within the text in service of the indeterminacy within *House of Leaves*. Is this a monster tale, a psychological thriller or an academic examination of obsession? Or something else entirely? In seeking to determine the ultimate meaning within the narrative, the reader may become hopelessly lost in the labyrinth themselves.

Of the novels discussed herein, *House of Leaves* is perhaps the most experientially different from one reading to the next. A major theme within the narrative is the impossibility for the characters to map the inside of the Navidson house (perhaps not surprisingly, mapping is a major theme in *Infinite Jest* as well). This parallels the novel itself in that the labyrinthine structure, as dense as it is complex, is very nearly impossible to traverse the same way twice.

However, even if one were to set aside the logistical difficulty of doing so, a deeper element promptly becomes apparent as the reader negotiates the text. At the fore of this aspect is the question of the narrator’s authority. Who is the author of *House of Leaves*? The front matter of the novel credits three different authors. These authorial presences can be described as separate valences—I borrow the term from chemistry because these distinct voices (there are in fact at least four) are better described as a theoretical sphere within a sphere within a sphere within a sphere—orbiting the narrative of the novel. The innermost shell—the one with the most emotional or psychological distance from the reader, yet which lays closest to the narrative

core—is the Navidson record. Orbiting this valence is the academic voice of Zampanò which is in turn orbited by the voice of Johnny Truant. The outermost valence would logically appear to be the voice of Mark Z. Danielewski. However, it turns out that the ultimate valence orbiting this particular narrative is of course the reader and whatever they are projecting into the narrative—whatever they are projecting onto that blue screen.

As I compose *The Brightside*, I find myself entering a creative moment in which the English language that I love, with which I interpret my reality and through which I filter and codify my own consciousness, proves to be insufficient. I take comfort in the knowledge that this is not new. Such a creative place exists within both an ancient literary tradition and a nascent and blossoming digital tradition. In suspending *The Brightside* over an ergodic space, I am optimistic that the words on the page will transcend the margins.



## Works Cited

- Gardner, Martin. "MATHEMATICAL GAMES." *Scientific American*, vol. 230, no. 1, Scientific American, a division of Nature America, Inc., 1974, pp. 108–13, <http://www.jstor.org/stable/24949988>.
- Aarseth, Espen J. *Cybertext: Perspectives on Ergodic Literature*. Baltimore, Md: Johns Hopkins University Press, 1997.
- Britannica, The Editors of Encyclopaedia. "indeterminacy". *Encyclopedia Britannica*, 1 Sep. 1999, <https://www.britannica.com/art/indeterminacy>. Accessed 15 November 2021.