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# A Calculus of Fire: Strange Loops and Autopoietic Consciousness in Selected Twentieth-Century Fiction from James Joyce to Philip K. Dick--A Cognitive Poetic Approach

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A CALCULUS OF FIRE:  
STRANGE LOOPS AND AUTOPOIETIC CONSCIOUSNESS IN SELECTED  
TWENTIETH-CENTURY FICTION FROM JAMES JOYCE TO  
PHILIP K. DICK—A COGNITIVE POETIC APPROACH

A Dissertation

Submitted to the School of Graduate Studies and Research

in Partial Fulfillment of the

Requirements for the Degree

Doctor of Philosophy

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May 2013

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Title: A Calculus of Fire: Strange Loops and Autopoietic Consciousness in Selected  
Twentieth-Century Fiction from James Joyce to Philip K. Dick—A Cognitive  
Poetic Approach

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Douglas Hofstadter's *Gödel, Escher, Bach: An Eternal Golden Braid* remains one of the most influential interdisciplinary works of the twentieth century. This dissertation explores the applications of his "strange loop" concept to literary theory and criticism. A strange loop describes any self-referential system that proceeds through various levels or frames, and then inexplicably returns to its point of embarkation. This pattern delineates the recursive processes underlying Hofstadter's self-representational theory of consciousness. After outlining the connections between strange loops, autopoiesis, and complex systems theory, I argue that similar patterns exist in twentieth-century cognitive fictions. The first three chapters focus on self-organization and embodied consciousness. Chapter One discusses strange loops and autopoietic consciousness in James Joyce's *Ulysses* and *Finnegans Wake*. Chapter Two explores strange loops in Franz Kafka's *The Castle*. Chapter Three discusses strange loops and Eleatic paradoxes in Samuel Beckett's *Three Novels*. The middle three chapters focus on the relationship between strange loops and the metafictional paradox. Chapter Four discusses strange loops and set theory in Jorge Luis Borges's short fictions. Chapter Five explores strange loops and chaos theory in several works by Italo Calvino. Chapter Six discusses the authorship triangle in Flann O'Brien's

*At Swim-Two-Birds*, *The Third Policeman*, and *The Dalkey Archive*. The last three chapters discuss strange loops and time. Chapter Seven explores temporal strange loops in *The Sirens of Titan* and *Slaughterhouse-Five* by Kurt Vonnegut. Chapter Eight explores strange loops, cybernetics, and cognitive science in Thomas Pynchon's *Gravity's Rainbow*. Chapter Nine discusses the connection between strange loops and schizophrenia in Philip K. Dick's *Lies Inc.* The broader ramifications of this study for literary theory and cognitive science are discussed. I suggest that strange loops offer a fruitful means of reconciling the Two Cultures debate between the sciences and the humanities.

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Projects of this magnitude are never accomplished alone, even though at times one feels stranded in the wilderness that is the scholarly condition.

First and foremost, I would like to thank Jim Cahalan, without whom I could never have completed this project. Jim, you are not only the most thorough reader I've ever had the pleasure of working with, but also the quickest gun in western Pennsylvania. If I can be half as attentive, patient, upbeat, and caring with my students as you've been with me, I'll consider it a success. Many thanks also to Ken Sherwood and Adrian Wisnicki, who prodded me early on to ask more questions, and who pushed me to write a dissertation that is much stronger than it might otherwise have been.

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*Millie grazie* to Dr. Nicholas Reboli, who got me started on this scholarly road many years ago when I was merely a "yellow-haired, North African rodent of unspecified origin" struggling to remain conscious as he mangled what in more capable hands might have been the elegant Latin of Aquinas and Boethius. For propelling me on this path, I can never forgive you. You should have told me what I'm sure you were thinking when I told you that I was pursuing a scholarly career: *Lasciate ogne speranza, voi ch'intrate*. I'll see you in the Ninth Circle, Doc; you're in good company.

I would also like to thank those psychologists and cognitive scientists at the University of Miami and Florida Atlantic University who first introduced me to the big questions about "how the mind works": Iris Berent who taught me that Chomsky and Pinker were not merely faddish thinkers, that the mind really is modular and domain-specific, and that representationalism isn't a dirty word; Todd Shackelford, who introduced me to the work of Dan Dennett, to the notion that the mind evolved as any other organ does, and for convincing me that you don't have to run fMRIs in order to formulate a solid theory of mind; and Edward Large and J. Scott Kelso for introducing me to complex systems while reminding me that I really am not at all evolved for high-order mathematics or dynamical systems research.

I would be remiss if I also didn't extend thanks to Douglas Hofstadter at Indiana University-Bloomington for proposing an idea so quirky, so strange, that it just might be true. You're inspiration for this project cannot be overstated. When we finally meet in person, I hope you'll forgive my gushing.

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A final thanks to Al Patti, not just a man but an Indiana, PA institution. You know the drill: filet, Pittsburgh rare, French, side of pierogies.



## DEDICATION

This dissertation is dedicated in loving memory to Kate Alden Taylor (1982—2011). Dearest Kate, know that you endure in all things beautiful—and in this strange loop.

“DVM SPIRITVS HOS REGET ARTUS”

(“So long as breath controls my being”)

—Aeneas to Dido, *Aeneid* Book X.2

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## PREFACE

*In any field find the strangest thing and then explore it.*

—John Archibald Wheeler

Picasso once said that art is the lie we tell ourselves to get closer to the truth.<sup>1</sup> Although truth has since the Enlightenment ostensibly been the province of the sciences, something in the work of art resonates with the notion that the artist somehow makes us see the world differently, more lucidly. There lurks a certain irresistible allure in Keats's oft-invoked exclamation that "Beauty is truth, truth beauty, —that is all / ye know on earth and all ye need to know!"<sup>2</sup> One might even intuit a certain affinity between the aesthetic and the true. Indeed, art speaks to that curious element in our nature determined to deduce the inner workings of reality by replicating and interpreting it—and modifying it, refracting it in the process. As a species, we likewise seem endlessly fascinated by art's ability to communicate thoughts about other minds and possible worlds. Consequently, the work of art is both an integral element of our condition as cultural animals and an artifact of cognitive processes that define what it means to be human.

Art poses numerous problems for any scholar seeking to understand it as a cognitive process while also maintaining a childlike sense of wonder at its intricacies. Thus, when I began my collegiate career at the University of Miami, I was like the author and scientist C. P. Snow, trapped between two apparently incompatible poles. On the one end, I was a neuroscience

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<sup>1</sup> There are many variations of Picasso's statement. The most well-known was translated by Marius de Zayas: "We all know that Art is not truth. Art is a lie that makes us realize at least the truth that is given us to understand. The artist must know the manner whereby to convince others of the truthfulness of his lies" (Picasso 3).

<sup>2</sup> "Ode on a Grecian Urn" (lines 49-50).

major, fascinated by the processes underlying cognition. To put it as bluntly as psycholinguist Steven Pinker, whose colleagues and students would serve as my primary mentors early in my graduate studies, I wanted to know *how the mind works*.<sup>3</sup> Part of this fascination was a fierce curiosity about the mechanisms at work in my own mind, a purely subjective reason with which many cognitive scientists would likely agree despite some of their purported beliefs in absolute objectivity (whatever we take that to mean). Yet alongside my coursework in neuroscience—which covered everything from chemistry and physics to biology and psychology—I simultaneously pursued coursework in my other fervent interests: art and literature. I had always been an active musician and graphic artist, driven to create with that sort of neurotic dilettantism that propels an artist from one medium to another. But beyond art as praxis, I was even more interested in art as theory: why art exists, what distinguishes it from other phenomena, and especially how it emerges from and interacts with the human mind.

Of all art forms, the one that remained the most intricate, the most elusive for me was literature. What was it that set literature apart from other modes of discourse? Why did my scientifically-minded professors malign it so frequently as an anti-science? Was it possible to reconcile what I was learning in literature courses, especially all the fascinating interpretive permutations available to the theoretically-informed reader, with what I was learning in the cognitive sciences? So I pursued a seemingly schizophrenic course of study—as a scientist moonlighting as a humanist, a humanist masquerading as a scientist. I had metamorphosed into a strange sort of chimera, a neuroscience major who was also a literature major, someone who oscillated between experimenting on crayfish neurons and dissecting sheep cortexes to reciting Blake and wrestling with *Beowulf* in Old English within the range of a single day. Needless to

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<sup>3</sup> This is the perhaps overly-ambitious title of a technical but accessible work on representationalist models of cognition by Pinker.

say, I frequently avoided bringing this up in conversation with my peers and professors to excuse myself from the need to explain this apparently taboo combination of academic foci.

As Snow fretted, his personal dilemma arose because so many intellectuals believed these two “paradigms”<sup>4</sup> were irreconcilable, both in their methods and their worldviews—an opinion that stubbornly persists in many enclaves of the contemporary academy. The Science Wars that followed the so-called Sokal Hoax<sup>5</sup> are perhaps the best evidence of this tension. In what to some was an outrage and to others a revelation, in 1996 physicist Alan Sokal published a paper in *Social Text*, a respected humanities journal, which contained bogus science such as radical conclusions about the social constructedness of gravity. When he published a follow-up essay in *Lingua Franca* admitting that the paper was a hoax, a kind of mayhem ensued. In the articles’ wake, Sokal decried humanists such as Jacques Lacan and Julia Kristeva for blatantly misusing science to uphold their theories; humanists accused Sokal of attacking a perspective he did not fully understand in a continuation of what they saw as science’s imperialistic enterprise. Whether one believes that this conflict strengthened these respective territories or weakened them, what is certain is that the Science Wars seemed to confirm what many suspected: there was indeed a gap between the Two Cultures as Snow forewarned. Any attempt to resolve this gap would have major consequences for the ways knowledge is organized. And this dilemma was by no means unique to the English-speaking world, finding remarkable parallels in what

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<sup>4</sup> This ubiquitous term was coined by Thomas Kuhn in *The Structure of Scientific Revolutions* (1962) to describe the radical epistemic break that occurs when a new scientific paradigm overthrows an older one. It is similar to Foucault’s concept of the *episteme*. It is interesting to note that Kuhn does not use the word “truth” at all in his book. Kuhn also admits that he adopted the basis for his paradigm shift concept from historians of art and literature (172), making the term valuable for discussing the relationship between literature and science.

<sup>5</sup> For accounts of the Science Wars, see Sokal and Bricmont’s *Fashionable Nonsense* (1998), which discusses the aftermath from a scientific perspective and extends Sokal’s critique of postmodernist humanities scholarship. For a broader perspective from the humanities side, see the collected essays in *Science Wars* (1996), edited by Andrew Ross. For an argument that looks at the fundamental fracture between the two sides, Ian Hacking’s *The Social Construction of What?* (1999) is useful for pointing out the need for an ongoing debate between social constructivism and essentialism (like other scholars, Hacking identifies science with the latter).

Italian scholar Elio Vittorini called *le due tensioni*.<sup>6</sup> There could be, for many hardliners, no compromise. Scientists lambasted humanities scholars, and particularly the literary establishment, for its reputedly flimsy logic and obscurantist appropriations of scientific concepts; the other side criticized scientists for holding overly systematic and monocular visions of reality that minimized the subjective aspects of experience in favor of a cold, inhumane, and essentialist metaphysics.

Needless to say, from the very beginning of my studies I found this division to be a major obstacle on the path to reaching a unified theory of knowledge (you can hear echoes of my youthful, naïve optimism even now) through both humanistic and scientific study, logic and intuition. I felt—and now I know that many others commiserate with my perspective—that without a union between the sciences and the humanities, the university was doomed to fall into ruin in the manner predicted by the late Bill Readings.<sup>7</sup> And as the “crisis in the humanities” became a constant topic of discussion both inside and outside the classroom, I began to feel that my only option for a fruitful scholarly career would be in the sciences. The humanities, so many of my scientist mentors and peers repeated, were a dead end. *Vae victis*, so to speak.

Thankfully, their pessimistic view of the humanities proved quite wrong. After several years studying psycholinguistics in psychology departments and music cognition in centers for complex systems, I began to see that there was a great need for scholars who could converse with both camps, able to navigate the bilingual landscape of terminologies that had to be traversed if the often polarized members of the academy were to achieve any reconciliation. After several years pursuing a doctorate in the cognitive sciences, I decided to abandon (at least on paper) my

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<sup>6</sup> This translates literally as “the two tensions.” *Le Due Tensioni: Appunti Per Ideologia della Letteratura* is the title of a posthumously published book of Vittorini’s previously unpublished notes. See my Chapter Five for more on his connection to Calvino.

<sup>7</sup> See Reading’s *The University in Ruins* (1997).

future as a cognitive scientist and pursue the oft-maligned, but endlessly fascinating, field of literary theory. More specifically, I became entangled in just how explosive theory had been in its heyday, and feeling somewhat disappointed to have “arrived at the party” a little too late, I binged on anything and everything related to literary theory, while also consuming literary texts like one “with burning forehead and a parching tongue” (Keats, line 30). I kept up with the scientific research as best as I could, but these empirical explorations had lost much of their magic. Only in the poem, the novel, the short story did I find the mysterious complexity that I had been seeking all along.

Along this quest for truth—yes, as a scientist I still believed in such a concept, and continue to some degree to hold that there is truth, though certainly not upper-case-t Truth of Francis Bacon—I became enamored with semiotics. Suddenly everything fell into place. I thought that I had found a theoretical set of systems that encapsulated all of the phenomena that until then had been relegated to different fields. Here was my holy grail, an epistemological and methodological scaffold that promised to hold together diverse elements in systems that, despite their apparent dissimilarity, were after all quite alike in process and pattern. Especially in the work of C. S. Peirce, Thomas Sebeok, and Umberto Eco, I saw semiotics as a means of drawing together scientific paradigms with the often frustrating but marvelously creative ideas that had emerged out of French structuralist semiology and its poststructuralist successors. But alas, even here the mind was largely absent, except in the most abstract sense. Moreover, semiotics seemed obsessed with the microlevels of sign and sentence rather than the macrolevels necessary for the development of a comprehensive semantics, let alone a broader hermeneutics.

It was only relatively recently that I became aware of the sub-field within literary criticism known as cognitive literary studies, itself heavily indebted to semiotics and narratology.



This fusion of various literary theories with the scientific perspectives from evolutionary psychology, psycholinguistics, neuroscience, and other cognitive sciences suddenly offered a paradigm wherein my two irreconcilable interests united. *Brain and book, neuron and noun, text and transmitter*—suddenly a world of fused lexicons had been opened to me, a world where minds and texts could co-exist in peaceful theoretical harmony. Of course, one first becomes enamored of a theory and then later, if one is a careful critic, begins to see the cracks in it. But that is where we find the questions worth asking, if only to convince ourselves that some aspects of reality are indeed solvable. One might even begin to reassert a belief in some notion resembling truth or meaning, something to grab onto in an actual reality often so dynamic and unstable that we cannot but hope for some branch with which to pull ourselves up from the whirlpool. But how can one bridge these disciplinary boundaries? How can one attempt to solve, in part, the notorious “binding problem” that arises when attempting to explain higher-order phenomena such as literature as the effective sum of their causal parts? How can we avoid reducing literature to just another mental process, devoiding it of the mystique that drew many of us to it in the first place? All of these questions loomed large.

Then, frantically scouring a used bookstore while in the throes of my master’s thesis, I stumbled upon a tattered copy of Douglas R. Hofstadter’s *Gödel, Escher, Bach: An Eternal Golden Braid* (1979).<sup>8</sup> Suddenly I had found my thread through the labyrinth. Here was a theory of consciousness that drew its examples from art and mathematics, music and cognitive science. At the time it was the most intricate book I had ever seen, in both form and content, but one that seemed to hint at more than it suggested. And the parallels with semiotic and literary theoretical ideas, while tacit, were uncanny.

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<sup>8</sup> Hereafter cited as *GEB*. Hofstadter’s book, in many ways a primer for cognitive science in general, won the 1980 Pulitzer Prize for General Nonfiction.

In *Gödel, Escher, Bach*, Hofstadter introduces the concept of strange loops, a term describing any self-referential system that passes through a variety of levels or dimensions only to suprisingly return to where it started. He finds examples of such systems in everything from self-referential Gödel statements in mathematics to Bach's canons in music to the fascinating and bizarre graphic artwork of M. C. Escher. Indeed, the book's scope is dizzying, but I couldn't help but feel, at the same time, a sense of disappointment. If the patterns uncovered in the book were so ubiquitous, so central to consciousness, why was literature neglected? Where were the literary authors in Hofstadter's triumvirate? Where were the examples from novels or poems in his otherwise comprehensive exploration of strange loops? So I began looking and, lo and behold, similar patterns in literary works began cropping up at every turn.

The explication of these patterns in light of both literary theory and cognitive science constitutes the core of this dissertation. In tracing strange loops in literary texts, I have had to resist the temptation to stray into any and all genres, choosing instead to focus solely on experimental twentieth-century fiction. Undoubtedly, my choice of authors will appear to some to be either symptomatic or idiosyncratic, but I have deliberately chosen authors whose work provides a firm basis from which to sally forth into more ambiguous territory where Hofstadter's theory may or may not apply. Instead of providing texts representative of any and all literary periods and genres, I hope that this selection will undergird my primary argument while evoking new questions about the appropriateness of transferring cognitive models to literary texts. Also, there is something poetic about likening experiments in fiction to those in science.

In my introduction, I will elaborate upon this rationale by presenting a brief survey of cognitive literary studies and its relationship to both cognitive science and literary studies more broadly. In doing so, I hope to provide the necessary context for readers who might be

unfamiliar with cognitive approaches to literature. Next, I will supply a literature review of previous research on strange loops and their relationship with literature, as well as present the outline of a psychosemiotic model of consciousness based on this relationship. Afterwards, I will present an abbreviated history of consciousness (albeit in broad strokes) in order to disentangle the term from its many conflicting connotations. Finally, I will describe and define the criteria of Hofstadter's strange loop concept and situate this concept within the broader discourse of cognitive literary studies.

In homage to Hofstadter's habit of mimicking musical structures in his work, as well as his tendency to formulate triads, the body of this dissertation is divided into three movements, each of which corresponds to one of the three major aspects of strange loops. In the first movement, I explore the self-organizing nature of consciousness and the self and investigate how strange loops might elaborate its paradoxical and embodied aspects. In Chapter One, I focus on James Joyce's *Ulysses* and *Finnegans Wake*, explicating strange loops in both novels while focusing on how Joyce's stream-of-consciousness techniques produce strange loops to describe the patterns formed in the creation of a conscious self. In Chapter Two, I discuss Franz Kafka's *The Castle* with a particular emphasis on paradox and the absent center. In Chapter Three, I develop the lines of inquiry posed in the first two chapters through Samuel Beckett's trilogy *Molloy*, *Malone Dies*, and *The Unnamable*, with an emphasis on embodiment and Beckett's debate with Cartesian dualism.

In the dissertation's second movement, I focus on metafiction and its implications for a cognitive literary theory of consciousness. In Chapter Four, I explore the labyrinth trope in Jorge Luis Borges's fictions as an example of a strange loop, particularly as it is connected with set theory and infinity. In Chapter Five, I discuss metaleptic strange loops, using Italo Calvino's

fiction as a primary example to describe fiction that violates ostensive boundaries between text and context. In the movement's last chapter, I discuss the notion of the authorship triangle and enumerate strange loops in three novels by Flann O'Brien.

The third and final movement is the most speculative, but one where I extend Hofstadter's strange loop concept into areas not yet considered elsewhere. In Chapter Seven, I explore temporal strange loops in two novels by Kurt Vonnegut, drawing comparisons between strange loops, Vonnegut's representation of time, and Gödel's corollary to Einsteinian relativity. In Chapter Eight, I discuss paradoxes and inversions of cause/effect relationships in Thomas Pynchon's *Gravity's Rainbow*, as well as the novel's cybernetic strange loops. In Chapter Nine, the most speculative in this last movement, I explore the relationship between strange loops and double bind theories of schizophrenia through the work of Philip K. Dick. Finally, in my conclusion I will discuss a few tantalizing loose ends that emerge over the course of the dissertation, review the broader impacts of my study, and look forward to other applications of the paradigm that I have suggested.

Let me make a few preliminary qualifications before delving into my primary argument. A cursory glance at the list of authors treated here will certainly cause some readers to wonder why I have chosen only fictional texts from male writers in the Western tradition. First, let me say that this choice was more coincidence than intention, and must not be misread as a neoimperialistic move or an oversight; rather, I see this limitation as a restriction of variables. Rather than adopting a masculinist approach, I merely restricted the texts to make the project a feasible one, and I expect others to expand my findings to texts across gender, cultural, and geographical boundaries to see just how far it might be extended.

To anticipate questions about genre, let me also mention that I chose these authors because their work exemplifies a certain range of genre categories. But they all might be classified under a loosely affiliated rubric such as “cybernetic fictions” (Porush), “self-conscious fictions” (Stonehill), or the “literature of consciousness” (Kawin). Although these terms are useful, I will sometimes refer to the texts in this study as what Joseph Tabbi calls “cognitive fictions,”<sup>9</sup> which “all share a self-consciousness about language and a respect for its creative power to feed back into, and so alter, the experience that produces it and of which it is a part. Through organizing structures that often resemble a Möbius strip or a spiral more than a circle, each of these novels uses the problem of consciousness to reflect back on itself” (*Cognitive* 4).

These works also fit into two other genre categories: the Literature of the Absurd and Slipstream. Although he traces a variety of definitions in his comprehensive treatment *The Absurd in Literature* (2006), Neil Cornwell describes the absurd in literature as “born of nihilism, out of existentialism, fuelled by the certainty of death” (5), but also rich in comedy and incongruity (15). Cornwell also cites Hofstadter several times throughout his study, an interesting link between the absurd and Hofstadter’s strange loop theory. “Slipstream” was coined by cyperpunk author Bruce Sterling in 1989 as “a kind of writing which simply makes you feel very strange; the way that living in the twentieth century makes you feel, if you are a person of a certain sensibility” (5). A recent anthology edited by James Patrick Kelly and John Kessel, *Feeling Very Strange: The Slipstream Anthology* (2006), has refined the concept even

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<sup>9</sup> These two words are important enough to Tabbi that he makes them the title of his book. Tabbi notes cognitive awareness in fiction by Joseph McElroy, Ben Marcus, David Foster Wallace, as well as Pynchon, Don DeLillo, and the Oulipo group. This discussion of genre, while not central to my argument, also raises the question of why strange loops seem to be more prevalent in some texts than in others. In graphic art, one might similarly ask why strange loops seem to be a pattern indicative of surrealist work rather than impressionists or even cubists.

further.<sup>10</sup> Nevertheless, while each of these terms describes most of the novels in the following discussions, I have preferred Tabbi's term "cognitive fictions" for its appeal to the cognitive sciences. Precedents for this "genre" read like a veritable primer for (post)modernist literature: Lewis Carroll's *Alice* books, Laurence Sterne's *Tristram Shandy* (1767), and Cervantes's *Don Quixote* (1615) come to mind.<sup>11</sup> All of these works integrate cyclical structures that approximate strange loops, experiment with narrative levels, and explore consciousness to one degree or another. They also serve as literary touchstones through which the twentieth-century authors I will discuss must be understood in order to situate strange loops as narrative structures that are not restricted to twentieth-century experimental fiction.

Also, let me offer a few words on why I have chosen to limit my investigation to twentieth-century cognitive fiction. First, this sub-genre supplies texts that both conform to and confound the strict application of strange loop theory onto literary artifacts, suggesting that Hofstadter's model is less rich without literary examples. Second, only through literature composed in the twentieth century, which witnessed the advent of both the quantum and Einsteinian revolutions, as well as the cognitive revolution in the sciences of mind, can I evaluate these aspects in the texts and their relationship with strange loops in a properly historical context. Although the phenomena in question do predate the theoretical formulations thereof, this historical restriction provides a narrower focus within which to test my thesis. Third, I have restricted myself to generally "canonical" texts in order to lay a firm foundation with texts established in the literary canon before delving into the possibilities of reading for strange loops

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<sup>10</sup> A particularly important connection between Slipstream fiction and strange loops is suggested in "A Working Canon of Slipstream Writing," a panel at Readercon in 2009 by Cox et al. The list includes works by all nine of the primary authors I discuss here, although Borges and Kafka appear most often. The journal *Science Fiction Studies* also had a special issue on Slipstream in 2011; see especially Wenaus, who discusses strange loops explicitly in the work of Jeff Noon.

<sup>11</sup> One critic even notes the "Shandyesque structure" of *Gödel, Escher, Bach* (Miers 1215).

in less conventional texts. I do not mean to align myself with more traditional canonists such as Harold Bloom, nor do I want to come off as somehow dictating the superiority of these texts over all others, although it is still part of a critic's duty to do this also, despite the fear in many camps of anything resembling a value judgment. Furthermore, if the twentieth century was the century where the mind/brain finally came into focus within the optic of cognitive science, it seems likely that the best evidence of ideational cross-fertilization would come from analyzing cognitive fictions from this period.

Although I do discuss shorter forms, I have chosen to focus primarily on novels, following the suggestion of Dan Lloyd in *Radiant Cool: A Novel Theory of Consciousness* (2004). Lloyd's book, a theory of consciousness which is two-thirds novel and one-third theoretical argument, assesses a variety of theories of consciousness through the framework of a murder mystery. In the appendix, where Lloyd outlines his own argument in favor of phenomenological approaches that integrate neuroscientific evidence, Lloyd boldly asserts that only methods from the humanities will provide any coherent theory of consciousness. Specifically, Lloyd argues that the novel provides the best vehicle for such theories, and he calls for the inauguration of "a novel science of consciousness" (226). I have taken up Lloyd's suggestion in the present study from a slightly different angle, analyzing a theory of consciousness through novels rather than writing one that expresses them. Nevertheless, the spirit remains the same, particularly in my insistence that phenomenology must be tempered with cognitive science—and both with literary analysis—in order to develop a theory of consciousness.<sup>12</sup> Furthermore, Lloyd stresses temporality as the most important stage in the

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<sup>12</sup> Lloyd does criticize the "computer metaphor" common in cognitive science, but sympathizes with connectionism and radical embodiment. I agree with Lloyd that the computer metaphor is oversimplistic, as well as with his endorsement of radical embodiment. However, I am not as convinced as he that connectionism offers the best angle for approaching a theory of consciousness.

conscious process of reconstructing reality, which I focus on to varying degrees in my last three chapters.

Here is perhaps a good place to lay out why Hofstadter's model serves as my basis rather than another more properly literary schema. First, it is inherently transdisciplinary and interdiscursive, cutting across boundaries in a way that complements the cognitive literary approach. Second, Hofstadter's idea lends itself particularly well to abduction (in the Peircean sense) into literary theory. In many ways, the dialogues that alternate with chapters in *Gödel, Escher, Bach* make it a postmodernist literary prose work itself, one that encourages anti-hierarchical playfulness, blurs genres, and interrogates the meaning of meaning: Hofstadter weaves between Socratic dialogues, formal logic, Carrollian wordplay, genetics, and a slew of other linguistic experiments that situate it in a somewhat postmodernist vein. As Allen Thiher notes, "There are two dominant figures of the postmodern imagination, the baroque embeddings of infinite regress and the crossing circles of the strange loops that, as Hofstadter has shown, characterize the graphic world of an artist like Escher" ("Theory" 343). In this sense, I am reading Hofstadter's strange loop concept as both a model of consciousness and an important literary theoretical tool.

Another purpose is to open up the cognitive discourse to those outside its boundaries, particularly literary scholars who may be unfamiliar with the basic tenets of this science. In doing so, I hope to develop the image of the cognitive literary scholar as a conduit between two ways of speaking about the mind. It would seem that for two disciplines where mind and language play such important roles there should be a productive transaction between them, but in order to accomplish this there needs to be, on both sides, scholars capable of a certain bilingualism. On one hand, such a scholar must understand the basic tenets of cognitive science



and be able to parse through the data in scientific studies in order to discern the best, most parsimonious explanations for any given cognitive process. On the other hand, such a scholar must be fluent in literary theory and criticism so as to situate the findings of cognitive science in this larger framework and thereby refine how we think about textuality and consciousness. This endeavor is not a matter of jettisoning one vocabulary in favor of another, nor is it a reduction of literary theoretical terms to “more accurate” cognitive ones. Rather, it is a true dialogue, a bidirectional discourse that might, with time and careful theorizing, form a foundation upon which to erect a cohesive theory—while resisting the temptation to construct a framework that attempts to include everything and anything within its purview. Likewise, cognitive literary studies is not an attempt to make a literary science,<sup>13</sup> but rather to understand literature as a cognitive process rooted in a robust realism.

With these points in mind, I hope this study will help catalyze conversation between literary scholars and cognitive scientists about what literature does, how it works, and how it can illuminate our understanding of consciousness, arguably the most complex problem remaining in philosophy of mind. I have tried to promote accessibility at both poles of the sphere, avoiding overly technical jargon from the cognitive sciences while refraining from ostracizing the non-literary specialist with an excessively specialized argot. However, because mine is a highly theoretical argument, I have had to resort to literary theory extensively, and for this I hope those outside the discipline will forgive me. I hope that my reasons for doing so will become both clear and acceptable.

Let me also add a brief note on my method here at the outset. Despite its inherent interdisciplinarity, my argument will be a literary one that draws upon the cognitive sciences

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<sup>13</sup> Even though in the always hyperscientific German academy, literary studies is still known as *Literaturwissenschaft*, literally “literature-science.” Similar approaches, subjected to much abuse at the hands of postmodernists (generally rightly, I believe), were attributed to the New Critics and Russian Formalists.

while remaining primarily concerned with fostering a firmer appreciation of literature and its relationship with theories about the mind. In spite of the potential problems of such an integrative approach, especially the risk of dilettantism rather than specialism, I will emphasize the prospects for nurturing dialogue between literary and cognitive studies to produce a body of knowledge that, while rooted in empirical evidence, does not lose sight of the imaginative beauty that makes literary art so fascinating and emphasizes the pivotal importance of narrative in our mental and social lives.

## INTRODUCTION

### STRANGE LOOPS, CONSCIOUSNESS, AND COGNITIVE LITERARY STUDIES

*It is not unlikely that literature will forever give far deeper insight into what is sometimes called “the full human person” than any mode of scientific inquiry can hope to do.*

—Noam Chomsky<sup>1</sup>

Contemporary developments in the cognitive sciences are beginning to demonstrate empirically art’s crucial role in how our minds configure reality. This idea is, of course, not new. We are, as Kenneth Burke reminded us, “symbol-using animals” (*Symbolic Action* 3), infatuated with defining ourselves through our production of semiotic systems and our consumption of the artifacts they produce, especially aesthetic and linguistic ones. Our minds are perpetually manufacturing meaningful concepts out of an often erratic physical world that, when mollified by art, is not as nasty, brutish, and short as it might otherwise be. Indeed, as cognitive scientist Jerome Bruner suggests in *Actual Minds, Possible Worlds* (1986), our minds accomplish this extraordinary feat of organizing the world’s chaos largely through *narration*: by creating autobiographical, parabolic, and situational stories, we compartmentalize an otherwise disparate material reality into a more manageable linguistic one.<sup>2</sup> As such, we are also *literary animals*.<sup>3</sup> Indeed, literature is singularly concerned with communicating our otherwise hermetically sealed subjective experience through language, and it is for this reason that literature, among all the arts, is most closely bound to questions about consciousness.

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<sup>1</sup> See Chomsky’s *Rules and Representations* (9).

<sup>2</sup> For a forceful counterargument against this “narrativist position,” see Strawson.

<sup>3</sup> This term is the title of a collection of Darwinian literary criticism and scientific discussions of literature edited by Gottschall and Wilson.

What *is* consciousness? There is perhaps no question more important—or more dreaded—in any field. The term brings with it mystical connotations, conceptual vagaries, and problems of definition. Until recently, even mentioning consciousness in departments of psychology was unthinkable—the topic, like love or death, was best left to philosophers and literary critics. Of course, there is also no comprehensive way to answer the question of consciousness satisfactorily, even with an in-depth recourse to neuroscience, psychology, and philosophy of mind, a project that lies outside the bounds of this dissertation. But beyond the growing need in cognitive science to find a neural correlate of consciousness lays an array of questions pertinent to literature. For example, how can applying cognitive models of consciousness to literary texts extend our current methods in hermeneutics and poetics? What do cognitive scientists stand to learn from investigating literature through this paradigm? What does adopting a cognitivist approach add to our current literary theoretical toolkit? This study is an attempt to build on these questions by exploring how cognitive models of consciousness might shed light on literary texts, and vice versa.

One of the most fecund—and I would argue most overlooked and misapplied—ideas about consciousness to emerge from the cognitive sciences is Douglas Hofstadter’s strange loop concept. Over thirty years after its initial publication, Hofstadter’s seminal work *Gödel, Escher, Bach: An Eternal Golden Braid* remains one of the most important interdisciplinary works of the twentieth century, synthesizing topics as diverse as aesthetics, semantics, cybernetics, and cognitive theory. *Gödel, Escher, Bach* explores a wide assortment of what Hofstadter calls “strange loops” in both the arts and sciences: Bach’s “endlessly rising canon,” Kurt Gödel’s Incompleteness Theorems, and the recursive graphic artwork of M. C. Escher, to repeat the quintessential examples.

Yet, except for the overt influence of Lewis Carroll's paradoxical literary-logical experiments and allusions to Zen kōans and Socratic dialogues in his work, Hofstadter does not explicitly propose the existence of strange loops in literature, a rather patent omission when one considers the possibilities of including such texts in this discourse.<sup>4</sup> Was this omission deliberate or incidental? This fact is even more surprising given that Hofstadter's work in part focuses on meaning and language, which would suggest literary examples as a matter of due course. Several theorists and critics, however, have begun to ask whether certain texts, like Bach's fugues and Escher's lithographs, might also exhibit strange loop properties. I will attempt to expand these preliminary efforts in order to bring strange loops into conversation with cognitive literary theory. As I will soon discuss in my literature review, several scholars have written articles about strange loops in literary texts; but there has yet to be a book-length study on strange loops and literature, let alone any discussion about the relevance of this idea for cognitive literary theory. I intend to rectify this by exploring strange loops in selected twentieth-century literary texts and demonstrating how interpreting these texts through a neurophilosophical and cognitive poetic framework informed by Hofstadter's concept enriches both the texts and the strange loop concept itself.

In their simplest formulation, strange loops describe phenomena that proceed through various hierarchical levels only to inexplicably return to their original state or point of embarkation. As Hofstadter defines it in *Gödel, Escher, Bach*, a strange loop is a "phenomenon [that] occurs whenever, by moving upwards (or downwards) through the levels of some hierarchical system, we unexpectedly find ourselves right back where we started" (10). What

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<sup>4</sup> Hofstadter does mention Lewis Carroll, but only anecdotally and not among his triumvirate of Gödel, Escher, and Bach. In his later works *Metamagical Themas* and *Mind's I* (the latter co-authored by Daniel Dennett), Hofstadter does discuss Borges, Stanislaw Lem, and several other authors. However, given that *GEB* is largely about meaning and language, it seems curious that Hofstadter omitted literary examples from this work.

results is a tangled hierarchy,<sup>5</sup> a system within which strange loops occur. These patterns appear in various media and are perhaps best visualized in works such as Escher's well-known Surrealist lithograph *Drawing Hands* or his less well-known *Spiralen*. To some degree, these patterns resemble the loops that dominate Celtic design—which I discuss in Joyce's work in Chapter One—but they incorporate a self-referential twist that produces unexpected circularity and elicits a feeling of strangeness.

Hofstadter's concept is as much about cognition as it is about aesthetics. Throughout his work, the types of level-crossing reflexivities characterized by strange loops are not merely structural oddities; they are patterns isomorphic with the patterns that describe consciousness. “What is literature? also asks, What is mind?” cognitive literary theorist Norman Holland<sup>6</sup> tells us, “because literature is a human process” (*Brain* 10). As such, if one is to accept Hofstadter's suggestion that strange loops are the fundamental structural constituents of higher-order human consciousness,<sup>7</sup> one must consider how and where such patterns emerge in literary works.

With its many playful diversions and mind-boggling scope, *Gödel, Escher, Bach* is difficult to distill; however, its follow-up, *I Am a Strange Loop* (2006),<sup>8</sup> refines and clarifies Hofstadter's concept into a more complete phenomenology.<sup>9</sup> Lamenting that the central thesis of

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<sup>5</sup> Although a Tangled Hierarchy is “a system in which a Strange Loop occurs” (*GEB* 10), appropriations of Hofstadter often use “strange loop” and “tangled hierarchy” interchangeably. I have followed this precedent, but I have tended to use “tangled hierarchy” to designate larger networks of strange loops.

<sup>6</sup> Holland is perhaps best known as a psychoanalytic critic who also contributed to reader-response theory. I discuss his early cognitive work in my overview of cognitive literary studies later in this introduction.

<sup>7</sup> Hofstadter derives this idea largely from Gödel, although his conclusions are significantly different. I discuss this difference in my conclusion.

<sup>8</sup> Hereafter cited as *SL*.

<sup>9</sup> I use “phenomenology” here to intentionally draw Hofstadter's Anglo-American scientific ideas into conversation with Continental philosophy: “To speak of phenomenology in the same breath in which one speaks of the philosophy of science, and in particular of the philosophy of the natural sciences, sounds suspiciously like a bad joke. For ‘we all know’ that the two are philosophical worlds apart and express incompatible tendencies of thought” (Compton 99). The arguments against phenomenology usually draw attention to its subjectivism, its radical

his earlier work had been largely misinterpreted, Hofstadter explicitly posits in *I Am a Strange Loop* that strange loops underlie the mysterious nature of consciousness itself. He also offers a more complete definition of strange loops as “not a physical circuit but an abstract loop in which, in the series of stages that constitute the cycling-around, there is a shift from one level of abstraction (or structure) to another, which feels like an upwards movement in a hierarchy, and yet somehow the successive ‘upward’ shifts turn out to give rise to a closed cycle” (101-02). It is this level-crossing self-referentiality that offers us the most general way to describe the pattern that he argues underlies consciousness.

Consciousness has traditionally been the domain of philosophy although, since the cognitive revolution in the late 1950s, it has garnered an increasing amount of attention within the cognitive sciences. Rather than a unified discipline, “cognitive science” designates a loosely affiliated group of fields centered on questions about human cognition. It emerged out of experimental psychology as well as the interdisciplinary movement known as cybernetics, from which it inherits many of its fundamental assumptions. These assumptions include a cognitivist philosophy, which posits that the mind is essentially an information-processing organ that accomplishes its circus of functions through the complex manipulations of symbols or concepts. In addition, cognitive science advances that feedback loops underlie most thought processes, and that these processes occur in the physico-organic brain. Lastly, as in cybernetics, cognitive science sees the mind as a complex subsystem in a larger network which includes environment, society, and culture.<sup>10</sup>

empiricism, or the risk that it leads back to the introspectionism that psychology since James has striven to exorcise from the discipline. But Compton and others have noted that this trend is changing, and that scientific realism is no longer bound to reductionist or physicalist doctrines (101). A similar syncretic idea was propounded by early theorists of autopoiesis, which I discuss shortly.

<sup>10</sup> This is, admittedly, an oversimplification of cognitive science, which is still being defined. Cognitive science draws primarily upon cognitive psychology, linguistics, the neurosciences, artificial intelligence (AI), and

In recent years, certain scholars have begun to seriously explore the likely possibility that the cognitive sciences have valuable information about literature—and that literary criticism has much of value to say about the cognitive sciences in turn. Although there have been mixed responses to this movement, often labeled cognitive literary studies, this subfield is growing in importance and scope. Early proponents of this movement rightly believe that a union of cognitive research and literary theory might provide “the inevitable ground of the study of English in the age of cognitive science” (Turner, *Reading* 247). Likewise, pioneers in cognitive literary studies realize that “the arts are not marginal for understanding the human mind. They are not even one somewhat significant area. They are absolutely central” (Hogan 3). This development parallels similar attempts by scientists such as sociobiologist E. O. Wilson and neuroscientist Eric Kandel<sup>11</sup> to reconcile what C. P. Snow, in his now famous Rede lectures, dubbed the “Two Cultures” to describe the apparent incommensurable worldviews of the sciences and the humanities.

Far from being the colonizing attempts feared by disciplinary territorialists, these injunctions call for an enriched dialogue—and it is perhaps science that stands to benefit just as much as the humanities from this exchange. Throughout its history, “[a]cademic criticism often felt the need to firm up its disciplinary foundations, an impulse that led it to seek various rapprochements with scientific methodology” (McDonald x); but rather than a detriment to disciplinary purity, such rapprochements tend to enliven the various discourses that constitute the field, and provide new vantages for looking at old problems. Indeed, “cognitive science cannot philosophy of mind, although it has branched into other fields such as economics and anthropology. For a more complete overview of the history of cognitive science with particular attention to its debts to cybernetics, see Dupuy’s *On the Origins of Cognitive Science* (2009). For an excellent survey of the contributions of cybernetics to modern notions of mind and brain, see Pickering’s *The Cybernetic Brain* (2011).

<sup>11</sup> See Wilson’s *Consilience* (1998) and Kandel’s *The Age of Insight* (2012). See also Dennis Dutton’s optimistically Darwinian, though perhaps overly broad, *The Art Instinct* (2010).



afford to ignore literature and the arts” (Hogan 3), and only by understanding our species-specific instincts to produce and consume literary art are humanists likely to understand the human being *in toto*. If we agree that bettering our understanding of human beings in all their multifarious dimensions is the goal of the humanities as a whole, then cognitive literary studies offers a promising line of inquiry that not only advances the humanistic project, but also contributes to the enterprise of creating a viable Third Culture capable of discoursing on both sides of the divide.<sup>12</sup>

Nevertheless, there are some who fear that such an endeavor somehow demeans literature, bringing it under the aegis of a rationalist scientific enterprise that betrays an unfortunate tendency to siphon the mysteries from everything it touches. Robert Frost summarized this opinion in “Why Wait for Science”: “Sarcastic Science she would like to know, / In her complacent ministry of fear, / How we propose to get away from here / When she has made things so we have to go / Or be wiped out” (lines 1-5). Contrary to this pessimistic view of science, a cognitive literary studies does not diminish our wonder at the marvels of literature precisely because the means through which literature interacts with—and is produced by—the mind are so exquisitely complex. Cognitive literary theorists do not want to see literary criticism relegated to merely another footnote in the grand narrative of cognitive science.<sup>13</sup> Instead, a

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<sup>12</sup> Snow coined the term “Third Culture” in *The Two Cultures: A Second Look* (1963). The term has been both used and abused to varying effects. See David L. Wilson and Zack Bowen’s *Science and Literature: Bridging the Two Cultures* (2001) and *The Third Culture: Literature and Science* (1997), edited by Elinor Shaffer. John Brockman’s book *The Third Culture: Beyond the Scientific Revolution* (1996) adopts a very different definition of the term and distorts Snow’s original meaning almost beyond recognition, but is worth noting because the book’s omission of humanists reflects an unfortunate trend in certain scientific circles.

<sup>13</sup> Simon was a pioneer in cybernetics, and given this approach’s optimistic goal to define reality in terms of a single, all-inclusive paradigm, Simon’s view is both a symptom of the times and a reflection of an extremist scientific viewpoint that holds that science can—and will—definitively solve every problem in the knowable universe.

cognitive approach to literary texts opens up new interpretive possibilities while maintaining traditional critical and theoretical methods.

Because of these various anxieties, cognitive literary studies is still marginalized in the contemporary theoretical discourse.<sup>14</sup> For example, Paul Fry's *Theory of Literature* (2011), an otherwise mostly comprehensive recent overview of theory, does not mention it at all. Part of my aim is to demonstrate the strengths of a cognitive theoretical approach to literature, and to show that such an approach is in fact compatible with a startling array of ideas from various literary theories. This becomes particularly evident when one examines literature with and against Hofstadter's strange loop concept, an approach fundamentally interdisciplinary in nature. Thankfully, the much-lamented disjunction between literary studies and the cognitive sciences that pervaded earlier eras is gradually being rectified through similar efforts by a variety of scholars.

### **Cognitive Literary Studies: A Brief Look**

In order to examine literature in light of Hofstadterian strange loops, I must first briefly describe cognitive approaches more broadly to situate Hofstadter's ideas within this context. Given the nascent status of cognitive literary studies, this serves to both introduce what such approaches have tended to look like thus far, as well as familiarize this approach for anyone unacquainted with its methods and philosophical foundations.

Of course, the idea of integrating the psychological sciences into the domain of literature is by no means new, but most attempts to do so have relied upon an antiquated psychoanalytic tradition that has lost much of its force among contemporary cognitive scientists. However, I. A.

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<sup>14</sup> The exception is various overviews discussing science and literature more broadly. See *The Routledge Companion to Science and Literature* (2011), edited by Bruce Clarke and Manuela Rossini, for one such treatment. Joseph Tabbi's chapter on cognitive science is particularly helpful (77-88).

Richards presciently suggested, in his now-classic *Principles of Literary Criticism* (1924), that when assessing the aesthetic value of literary texts, “all is right here and now in the nervous system” (246). Although Richards is perhaps best known for pioneering the New Critical practices of close reading and for anticipating William Empson’s emphasis on literary ambiguity, he also emphasized the potential for an alliance between the post-Freudian psychological sciences and literary studies. Yet for many years—and particularly through the turbulent and fascinating developments in literary theory between the 1960s and 1980s—Richards’s injunction to seek literary meaning in the mind and its processes was, with the exception of various psychoanalytic schools, largely overlooked.<sup>15</sup> However, with the fervor surrounding the cognitive sciences since their rise to prominence in the 1990s, literary scholars are indeed taking up Richards’s challenge and looking to the mind to augment our understanding of language and literature.

Because the field of cognitive literary studies is so new, there is no core body of texts, much less an urtext, from which scholars draw. The approaches and methods within cognitive literary studies are therefore remarkably diverse. Some scholars such as Norman Holland have taken a more psychoanalytic approach, particularly in *The Dynamics of Literary Response* (1968) and *Five Readers Reading* (1975), studies that also influenced reader-response theory. More recently, Holland has taken a more cognitivist stance, still somewhat traditionally psychoanalytic in *The Critical I* (1994), but embracing the emerging paradigm of neuropsychanalysis in *Literature and the Brain* (2009). In the first study, Holland uncovers, if a little too tersely, the shortcomings of those he calls “The New Cryptics” (*Critical* 149), mostly poststructuralist

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<sup>15</sup> One notable exception is Roman Ingarden’s *Cognition of the Literary Work of Art* (1973). Another exception is George Szanto’s *Narrative Consciousness: Structure and Perception in the Fiction of Kafka, Beckett, and Robbe-Grillet* (1972), which was seen as overly formalist by many critics. Nevertheless, Szanto does offer an early instance where consciousness in the psychological sense was investigated through literature. Szanto notably adopts a largely phenomenological stance, focusing largely on the relationship between consciousness and perception.

theorists whom he sees as perpetuating an antiquated Saussurean semiology without acknowledging Chomsky's cognitive revolution.<sup>16</sup> He makes a valid point that literary scholars cannot continue to practice criticism as if the cognitive turn had never occurred. Yet, given the taboo nature of psychoanalysis of any kind within the cognitive sciences,<sup>17</sup> approaches such as Holland's seem to be repeating—in a way similar to *The New Cryptics* he derides—an outdated paradigm with only a few broad amendments. In *Literature and the Brain*, Holland embraces a largely neuroscientific approach, but still retains his characteristic psychoanalytic slant. Nevertheless, Holland's work is an early example of a cognitive approach to literature because he integrates his psychoanalytic readings with cognitive evidence.

Other cognitive literary approaches have taken a more cognitivist position. However, many of these subsequent approaches are primarily arguments for why the cognitive sciences are important for literary studies (and vice versa), but they often neglect any solid consideration of what a cognitive literary theory might look like in critical practice. Consequently, a slew of neologisms have emerged attempting, through one optic or another, to delineate integrative methods, foundations, and justifications for this approach. In psychonarratological frameworks, the text is a mental phenomenon that should be understood by combining narratology with cognitive psychology. For cognitive poetics, the emphasis is generally placed on reader-response and stylistics. For literary Darwinists, the cognitive approach is necessarily rooted in

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<sup>16</sup> Holland lists Barthes, Derrida, de Man, Foucault, Eco, and others in this list. However, he drastically oversimplifies their theories and, particularly in the cases of Foucault and Eco, neglects to mention the former's debate with Chomsky or the latter's repeated use of cognitive linguistics in his semiotic.

<sup>17</sup> This taboo generally cites the failure of Freudian psychoanalytic theory (or indeed Jungian or Lacanian versions) to explain cognitive processes such as memory or language. Psychoanalytic theories have been contradicted by a vast number of cognitive experiments and clinical case studies. However, there is some resurgence of psychoanalytic ideas in the budding field known as neuropsychanalysis, which combines traditional psychoanalytic thinking with neuroscientific data. Also, my own cognitive "topology" bears some striking (though coincidental) similarities to Lacanian knot theory.

how literature evolved and how it contributes to evolutionary fitness. None of these approaches is entirely comprehensive, but they all suggest the potential of cognitive approaches to cope with a wide array of literary problems.<sup>18</sup>

All of this early work in cognitive literary studies emerged from an acknowledgment by literary scholars such as Mark Turner and Patrick Colm Hogan that, to its detriment, literary criticism largely neglects cognitive psychology and its related disciplines. It was perhaps Turner<sup>19</sup> who first suggested in *Reading Minds: The Study of English in the Age of Cognitive Science* (1993) that literary studies must embrace the cognitive revolution or face an irreversible decline in significance outside its own corridors: “what the profession lacks is a grounding, integrated approach to language and literature as acts of the human mind” (7). Pioneering cognitive literary research such as Turner’s work on conceptual blending, H. Porter Abbott’s cognitive readings of Samuel Beckett, and Howard Mancing’s cognitive readings of Cervantes have established cognitive literary studies as an emerging subfield within literary studies—and not, as cyberneticist Herbert Simon once suggested of literary criticism as a whole, “simply as a branch of cognitive science” (24). In contrast to Simon, in the present study I will try my best to follow the precedent in cognitive literary studies of synthesizing literary theory with empirical findings from the cognitive sciences without losing track of the centrality of literature as the object of study.

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<sup>18</sup> See Bartolussi and Dixon’s *Psychonarratology: Foundations for the Empirical Study of Literary Response* (2003). For the foundational texts in literary Darwinism, see Joseph Carroll’s *Evolution and Literary Theory* (1995) and *Literary Darwinism: Evolution, Human Nature, and Literature* (2004). Cognitive poetics, a term coined by Reuven Tsur, is a bit more difficult to define, but it usually refers to the work of Turner and those following him. For an example of the latter, see Collins.

<sup>19</sup> Turner’s approach is thoroughly cognitive, especially his work with cognitive scientists George Lakoff and Gilles Fauconnier. See Turner and Fauconnier’s *The Way We Think*.

In maintaining the central importance of literature, I am following arguments such as Turner's in *The Literary Mind* that place literature at the very core of understanding the mind's processes.<sup>20</sup> Similarly, in *Cognitive Science, Literature, and the Arts: A Guide for Humanists* (2003), Patrick Colm Hogan<sup>21</sup> reiterates Turner's injunction to bring literature into closer discursive contact with the cognitive sciences, but rightly warns that this approach is not an attempt to use science to justify or validate literary theories, nor to subsume cognitive science within literary studies. As Hogan notes, "I doubt that it is either possible or desirable for literary critics to be the dominant figures in an area that encompasses such a wide range of technical scientific fields . . . The important point is that humanists should not think of themselves as simply applying cognitive science to literature" (2). What Turner, Hogan, and others are suggesting—and what I have tried to demonstrate in the following discussions—is that a thoroughly literary approach to problems of mind and cognition can draw upon cognitive science without either supplanting or merely supplementing it.

Despite the range of problems already engaged by this nascent movement, most cognitive literary researchers have focused primarily on Theory of Mind, conceptual blending, and prototype theory to situate literature in a cognitive context. The first two concepts are relevant to my discussion of literary strange loops. Theory of Mind<sup>22</sup> is the apparently human-specific ability to attribute to other people subjectivity or a "mind." It is also crucial to understanding

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<sup>20</sup> Darwinian literary criticism also does this. Because my argument is not primarily evolutionary, I will only occasionally mention Darwinian literary theorists such as Joseph Carroll and Brian Boyd, who sometimes overextend some aspects of Darwinian theory in their studies of narrative. I will focus more on cognitive theory's ability to compliment current interpretive methods. Evolutionary considerations must, however, always remain implicit in any viable cognitive approach.

<sup>21</sup> For another excellent survey of the present state of cognitive literary studies, see *Cognitive Literary Studies: Current Themes and New Directions* (2012), edited by Isabel Jaén and Julien Jacques Simon.

<sup>22</sup> For a comprehensive cognitive literary critical overview of Theory of Mind in literature, see Leverage et al.

fictional narratives, the experience with which requires that readers attribute minds to characters in order to make sense of their actions, thoughts, and words. As Lisa Zunshine notes in *Why We Read Fiction: Theory of Mind and the Novel* (2006), this type of mind-reading is what allows us to confer cognitive capacities to other selves, including fictional ones, and underlies how we read—and derive pleasure from—our encounters with fiction. Theory of mind is partially a result of conceptual blending between concepts such as self and other, an important aspect of the strange loop concept.

Conceptual blending is a term developed by Mark Turner to describe metaphor as the combination of concepts, themselves literally patterns in the neural substrate of the “mind/brain.”<sup>23</sup> Turner draws upon George Lakoff and Mark Johnson’s celebrated work *Metaphors We Live By* (1980) and posits metaphor as both central to cognition and rooted in our embodiment. These tenets also find themselves expressed in Hofstadter’s philosophy. But, as important as these studies are, their authors all tend to ignore considerations of how these cognitive literary models might be put into practice, and consequently, cognitive literary studies “has not so far tended to offer a hermeneutic, a mode of reading that allows us to produce novel interpretations of texts” (Crane 76). Critics following this approach also tend to avoid questions about consciousness.

Instead of consciousness, many cognitive approaches to literature also focus on the evolutionary adaptiveness of narrative or on cognitive applications for reader-response theory, rather than on how literary texts might be fundamental tools for both testing and assessing theories of consciousness emerging from the cognitive sciences. I want to open a new line of research that is fundamentally text-based but that remains rooted in—but neither parasitic upon

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<sup>23</sup> “Mind/brain” is a term introduced and popularized by Patricia Churchland. Although I cannot endorse her eliminative materialist philosophy without some misgivings, mind/brain is a convenient term because it constantly reminds us that we cannot think of the mind without always also thinking about the brain.

nor deferring to—contemporary cognitive science. I also hope to redress a gap in the cognitive literary corpus, which generally ignores Hofstadter’s contributions despite his prediction that the fundamental self-referential processes his strange loop theory describes would become “the focus of all attempts to understand how human minds work” (*GEB* 714). In my attempt to accomplish this, I will build upon Hofstadter’s model of consciousness as a strange loop, as well as attendant ideas from philosophy of mind. In order to do so, it will be necessary here at the outset to provisionally trace the development of the term “consciousness” and explore several theories that attempt to explain it in order to situate Hofstadter’s concept within a broader philosophical context.

### **Consciousness: A Very Brief Overview**

Consciousness poses many problems for any scholar seeking a concrete definition in part because of its long and complex history. The word “consciousness” itself implies other perplexing terms such as “mind,” “self,” and “qualia,”<sup>24</sup> all of which have turbulent histories. One cannot disentangle this matrix because consciousness is integrally related to—indeed, it largely comprises—these constituent elements. In order to investigate the connection between literary strange loops and consciousness, it will be necessary to provide a *petite histoire* of the term “consciousness” and define it, at least provisionally, in order to distinguish my usage of the term from its various permutations.

The term “consciousness” did not assume its modern connotation until the seventeenth century, notably after Descartes first explored the term independently of its moral implications.

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<sup>24</sup> “Qualia,” a term coined by W. V. O. Quine, refers to the qualities of our experience of phenomena. Philosophers such as Dennett have denied their actuality, although this is heavily disputed.



Indeed, a brief glance at the term's philological background shows two primary developments in its evolution.<sup>25</sup> The first was the division of the moral "conscience" from the cognitive "consciousness." Even today, the French *conscience* still denotes both "conscience" and "consciousness," evidence of the term's moral connotations. The second development was the elevation of consciousness as an object worthy of inquiry itself rather than simply an assumed given without any need for explanation. In Descartes's *Meditationes de Prima Philosophia* (*Meditations on First Philosophy* [1641]), consciousness first became the focus of questions about mind and self, and in many ways Descartes defines thought in terms of consciousness, albeit often as if it were understood *a priori*. For Descartes, the self was transparent—that is, knowable to itself through introspection. For my purposes here, it is important to note that reflexivity—most famously formulated in the Cartesian motto *cogito ergo sum*—first becomes an integral aspect of consciousness in Descartes's philosophy;<sup>26</sup> subsequently, it becomes especially pivotal for Cartesians such as Antoine Arnauld and Louis de La Forge. Arnauld asserts that "*thought or perception is essentially reflective upon itself: or, as it is said better in Latin, est sui conscia. For I do not think without knowing that I think*" (71). This is an early elaboration of the importance of self-reference in explaining consciousness, a fundamental aspect of strange loops.

Still, consciousness never takes the center stage for Descartes or his successors. Instead, Cartesians tend to emphasize his notion of mind/body dualism wherein mind and body are not

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<sup>25</sup> See Dennett's *Consciousness Explained* or Ramachandran's *A Brief Tour of Consciousness* for more comprehensive overviews of the term's development.

<sup>26</sup> The notion of consciousness dates to the pre-Socratics and Aristotle, but there is no direct equivalence between "consciousness" and the Greek *nous* or *psyche*, because these terms refer to broader phenomena of which consciousness is but a part. It is also important to note that Descartes does not extensively analyze "consciousness" *per se*, but is the first to use the term in a psychological context. For a detailed discussion of Descartes and consciousness, see Alanen.

only different in order but also different in kind. For Descartes, the *res cogitans* of the mind is an entirely different substance from the *res extensa* of the body. This parallels a persistent tendency toward dualism in Western metaphysics, but with Descartes this dualism first attempted to found itself upon rational inquiry rather than mere speculation. Yet it is against such dualisms that Hofstadter's concept positions itself, and thus I will come into conflict with him repeatedly throughout my argument. Particularly in my discussions of Beckett and Flann O'Brien, Cartesian dualism becomes an important point of contention within these authors' works.

The next relevant development in the study of consciousness originates with Kant's critical philosophy in his *Critique of Pure Reason* (1781). Consciousness for Kant, as with everything in his systematic philosophy, is an exceptionally complex and ambiguous topic; any comprehensive treatment is impossible here.<sup>27</sup> What is important to note, however, is that Kant introduces several notions central to the subsequent cognitivist philosophy upon which Hofstadter's ideas rest. The first is that consciousness is more specifically self-consciousness, that is, awareness of one's self as a self or "I." But unlike Descartes, Kant does not believe that the self is transparent, that it can know itself through mere introspection, a reflection of contemporary neurophilosophical awareness that "introspective awareness may not yield truths about the way the mind works" (Churchland 248). This vindicates the necessity of a cognitive science that can uncover the hidden and often innate faculties that guide perception and cognition. Kant therefore denies the reality of the cogito: The "I" is not a substance, but a process. Kant's position is in part a result of his belief that reality is ultimately unknowable to our limited senses of perception, that there exists a noumenal reality behind the world of phenomena. This tension between perceived and actual realities appears repeatedly as a theme in

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<sup>27</sup> See Kitcher for an assessment of Kant's contributions to consciousness studies.

my argument, especially in my discussion of temporality in Vonnegut and schizophrenia in Philip K. Dick.<sup>28</sup>

Although the discourse regarding consciousness begins with Descartes and matures in Kant, it did not develop into a serious object of scientific discussion until the work of the American pragmatists William James and C. S. Peirce, the latter an important contributor to semiotics (or as Peirce preferred, “semeiotic”). For James, consciousness itself becomes an object of study, separate from (but integral to) theories of mind in general. Although he does not explicitly define it in his formative work *Principles of Psychology* (1890), James considers consciousness to be a complex process, one that is personal, dynamic, and intentional.<sup>29</sup> Additionally, both James and Peirce, while largely indebted to Kant, reject the division between noumenal and phenomenal realities, insisting instead on a single reality that is knowable through the senses and techniques of scientific inquiry. This perspective is what I might call, for lack of a better term, scientific realism. Hofstadter emerges from this tradition.<sup>30</sup> Furthermore, all of the authors in my study configure themselves within or against this tradition to varying degrees. In this respect, I have tried to select authors representative of the entire spectrum, some sympathetic

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<sup>28</sup> A brief mention must also be made here of Julien Offray de La Mettrie, a philosopher whose work *L'Homme Machine* (1748) in many ways prefigures contemporary materialist perspectives of mind such as Hofstadter's. La Mettrie was the first philosopher to systematically argue that, contra Descartes, the human mind was not some spiritual substance but entirely *physical*, that its apparently seamless higher-order unity was the result of a myriad of lower-order, mechanical processes. Indeed, La Mettrie's perspective is “now an integral part of the dominant Weltanschauung of our time” (Glicksberg 49), and the general consensus among cognitive scientists advances La Mettrie's mechanistic perspective rather than Descartes's dualism. Similarly, Hofstadter's strange loop concept owes an explicit debt to La Mettrie (*GEB* 729), although he eschews outdated, Hobbesian arguments for a strictly mechanistic universe. Rather, Hofstadter's concept situates consciousness as an emergent process, one that we shall repeatedly see contrasted against Cartesian dualism.

<sup>29</sup> Intentionality is an important addition to consciousness, although outside the purview of this study. See Dennett's *The Intentional Stance* (1987) for an important early work on the topic.

<sup>30</sup> For an excellent collection of James's essays, see *The Essential William James*.

with and others antagonistic towards science, in order to reduce the possibility that this pattern occurs only in authors writing from a scientific perspective.

In addition, William James is vital for any literary discussion of consciousness, given his massive influence upon literature, both indirectly through his brother Henry and directly through his students, including Gertrude Stein.<sup>31</sup> James's most important contribution to literature is stream of consciousness, the notion that consciousness unfolds dynamically as a mental narrative or internal monologue.<sup>32</sup> James adopts this fluid metaphor because he saw consciousness as a dynamic process rooted in the embodied brain, a central tenet in post-Jamesian psychology. Another important idea introduced by James is that the self is not a coherent entity, but rather a composite one.<sup>33</sup> Although James never jettisoned the Judeo-Christian notion of a soul, he did believe that consciousness co-evolved with the brain, placing him more in line with contemporary cognitive science than with the spiritualist or Cartesian perspectives that characterized earlier epochs in psychology. Yet in "Does 'Consciousness' Exist?", written near the end of his life, James asserts that consciousness "is the name of a nonentity, and has no right to a place among first principles" (*Essential* 45). This assertion contradicts James's earlier position but finds remarkable support in contemporary cognitive evidence; it becomes especially important in Hofstadter's system.

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<sup>31</sup> Stein studied under James at what is now Radcliffe. For a comprehensive treatment of James, see Robert D. Richardson's *William James: In the Maelstrom of American Modernism* (2006).

<sup>32</sup> This term was actually coined by George Eliot's lifelong partner, George Henry Lewes, in his unfinished *Problems of Life and Mind* (1879), but was popularized and developed by James, who uses it in "On Some Omissions of Introspective Psychology" (1884) and again in *The Principles of Psychology*. See J. Gill Holland's article for an in-depth history of the term.

<sup>33</sup> George Herbert Mead proposed a similar model distinguishing the personal "I" from the social "me," a distinction that is relevant because it shows a movement away from essentialist thinking about the self and towards a more complex perspective of the self as a multiplicity.

The philosophical and psychological tradition after James is replete with competing theories of consciousness, but a contemporary one that is particularly relevant to literary studies is that proposed by Hofstadter's colleague and frequent collaborator, philosopher Daniel C. Dennett. In his audaciously entitled *Consciousness Explained* (1991), Dennett proposes three especially fruitful notions about consciousness in what he calls the Multiple Drafts Model.<sup>34</sup> First, Dennett argues against any theory that posits a Cartesian Theater, a term designating some hypothetical cognitive arena where a homunculus (literally, "little man") interprets reality as a viewer might interpret a film.<sup>35</sup> Instead, consciousness for Dennett is a dynamic process of re-writing and revising. As such, Dennett's Multiple Draft Model is intrinsically narratological, even literary, in nature; consequently, it harbors a special appeal for literary scholars investigating consciousness.

Second, Dennett introduces the notion of the Self as a "center of narrative gravity." "Like the biological self," Dennett explains, "this psychological or narrative self is yet another abstraction, not a thing in the brain, but still a remarkably robust and almost tangible attractor of properties" (*Consciousness* 418). This center resembles a strange attractor, a term from complex systems theory that I will address shortly. Third, Dennett emphasizes that consciousness, and therefore the self, emerges as an illusory feeling of cohesion that actually arises from the parallel, mechanical processes of the brain. This corresponds to similar models of consciousness proposed by neuroscientist Antonio Damasio and physicist John G. Taylor, who likewise posit

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<sup>34</sup> Dennett has since replaced his Multiple Drafts Model with what he calls the "metaphor of fame in the brain," but I have maintained his original terminology for its literary appeal. For this new metaphor, see Dennett's "Are We Explaining Consciousness Yet?" (2001).

<sup>35</sup> This idea is related to the "sensorium" of Boethius and, much later, of Newton.

that consciousness is a distributed rather than localized process.<sup>36</sup> These observations will become particularly important in my discussions of Joyce and Beckett.

Of course, Dennett's notion of consciousness as a narrative center of gravity has met with some skepticism, not least of all from literary critics.<sup>37</sup> But what is more surprising is that, as Ellen Spolsky notes, Dennett's theory is not so much revolutionary as belated given similar models of consciousness explored by literary Modernists: "[Dennett's] theory scans the territory that modernist literature has been exploring for almost a century now: it confirms the realism of those representations of mental life found in the stream of consciousness writing of James Joyce and Virginia Woolf" (38). It is therefore appropriate that Dennett refers to consciousness as a "Joycean machine" throughout *Consciousness Explained*, something I will revisit in my treatment of Joyce in my next chapter.

Dennett also draws our attention to another term often ignored in the cognitive criticism: *self*. This too has an air of folk psychology about it, but it is absolutely central to any theory attempting to describe consciousness and its relationship with literature. For both Dennett and Hofstadter, the self is a sort of "cerebral symphony" played by the orchestra of brain and body, albeit an orchestra without a conductor.<sup>38</sup> The link between the self and consciousness is complex, but Hofstadter follows Dennett in largely equating these concepts. Whereas most discussions of the psychological self in literature (for example, Heinz Kohut's) tend to adopt

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<sup>36</sup> See Damasio's *Descartes' Error* (1999) and Taylor's *The Race for Consciousness* (1999).

<sup>37</sup> For example, Merlin Donald suggests that *Consciousness Explained* would be more appropriately labeled "Consciousness Explained Away" because it relegates consciousness to a virtual non-entity, the result of many simpler, lower-order processes rather than a centralized commander of all cognition. See Donald's *A Mind So Rare* for an alternate view from a cognitive literary perspective. For sustained, though quite different, philosophical critiques of Dennett, see McGinn and also Žižek.

<sup>38</sup> I've borrowed "cerebral symphony" from the title of William Calvin's book on consciousness. The metaphor of the orchestra comes from an article by W. Singer, "The brain—an orchestra without a conductor."

psychoanalytic approaches equating self with the essential ego, Hofstadter and Dennett instead emphasize the protean nature of the self as an emergent system rather than an essential ego.<sup>39</sup> This is in keeping with James's proposal that the self, or "soul," evolves in tandem with the neocortex, and contemporary cognitive models that see self-concept as a dynamic process.

The self is a crucial aspect of consciousness, in many ways inseparable from it. But is the self the same as the conscious mind? It would seem that in common parlance when I speak of someone's mind or their consciousness, I am indeed speaking of their self.<sup>40</sup> However, each of these words has a salient etymological history, and therefore I will frequently refer to them with a Joycean neologism as the "mindself." As Dennett reminds us, the mind is emergent, and thus the self—as a function or subsystem of the mind—is emergent: "The mind begins to emerge as a self-designing system of representations, physically embodied in the brain" (Hofstadter and Dennett 15).<sup>41</sup> Thus, Dennett's—and subsequently, Hofstadter's—phenomenology is a self-representational theory of consciousness.<sup>42</sup>

Despite their important contributions, cognitive scholars of literature generally do not consider the issue of consciousness at all, partially because consciousness is relatively poorly

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<sup>39</sup> See Kohut for an influential psychoanalytic discussion of the self and the humanities. See Lifton for a detailed treatment of proteanism in self psychology.

<sup>40</sup> As neuroscientist V. S. Ramachandran notes, "the problem of self and the problem of qualia, and they're two sides of a Möbius strip" ("Conversation"). Ramachandran's comment is perhaps a better metaphor than he intends, for it encapsulates that specialized geometry inherent in the complexity of consciousness. Experiencing qualia (that is, the subjective experience of phenomena in the world), is for Ramachandran what it means to *be* a self. In addition, both Dennett and Hofstadter agree with Ramachandran that consciousness is intimately intertwined with the notion of the self insofar as they coevolved.

<sup>41</sup> I have omitted any discussion of qualia, a term used by Quine to describe the qualitative aspects of experience that science has yet to satisfactorily explain. In part, this is because neither Dennett nor Hofstadter provide an explanation for it, seeing qualia instead as the result of our hallucinatory consciousness.

<sup>42</sup> See Kriegel and Williford's edited collection *Self-Representational Approaches to Consciousness* (2006) for a thorough treatment of this approach and explorations of how it differs from representational and higher-order monitoring theories of consciousness that tend to dominate science and philosophy. The collection notably includes essays by Hofstadter, as well as one co-authored by Antonio Damasio.

understood compared to other cognitive functions. Moreover, consciousness is often verboten because of its centrality to human experience, as if this inner sanctum of the mind, its Holy of Holies, was off-limits to rational inquiry. Perhaps too many scholars have subscribed to the New Mysterianism of thinkers such as Colin McGinn, who argues that consciousness cannot be understood by our limited mental faculties.<sup>43</sup> Contrary to this argument, Hofstadter sees consciousness as a process that can, and will, be understood entirely. Indeed, I share his optimism, and argue that literature is a crucial tool for extending this broader project. One of the benefits of Hofstadter's concept from both a literary and cognitive point of view is that it defines consciousness, and specifically the self, as the result of semiotic, symbol-manipulating processes in the brain, and thus makes it pivotal for *meaning*. As such, it is also conceivable that consciousness and the self might be better understood through a concert of literary and cognitive theory rather than written off as some inexplicable mystery.

When I speak of consciousness, I am therefore speaking of it in the cognitive sense: as a process rooted in neural activity that is also anchored in embodiment, emotionality, and a complex network of bottom-up (neural to modular to cognitive) and top-down (consciousness as possessing causal agency capable of affecting those processes which give rise to it) processes. As cognitive literary critic Howard Mancing notes, "In today's cognitive science, the prevailing view of human consciousness prominently involves memory, feedback loops, mental imagery, emotion, inner speech, social context, dialogue, representation, and mind-body interaction; it is an emergent, nonlinear, autopoietic, contingent, contextualized, dynamic function or process" (163). It is this comprehensive definition of consciousness that I will follow.<sup>44</sup>

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<sup>43</sup> See McGinn's *The Mysterious Flame* (1999).

<sup>44</sup> This is not to say that other uses of the term, particularly sociological and anthropological definitions of consciousness are not relevant, but I am focusing on the psychological definition of the term which forms the basis



Lastly, I must mention that, although there is a widespread movement in the cognitive sciences to remove folk-psychology terms from discourses about consciousness, neither that field nor readers in general have offered viable alternatives to every folk term. Consciousness, according to neurophilosopher Patricia Churchland and others,<sup>45</sup> is one such term—but one for which no comprehensive alternative exists. For that reason, I will use terms such as “consciousness” and “self” not only because there are no accepted, feasible alternatives, but also because the cognitive research continues to use them despite their semantic baggage. They also have very rich traditions in both literature and criticism. Having made these qualifications, I can now discuss previous attempts by literary scholars to adapt Hofstadter’s strange loop concept before moving on to treat the concept in more detail and lay the foundations for his phenomenology which will underpin my readings.

## **Literature Review and Rationale**

My argument that strange loops exist in literary texts is not without precedent. Although I will provide more detailed literature reviews for each respective author at the beginning of my chapters, here I would like to list some of the better known discussions of literary strange loops

of these higher-order structures. Thus, Marx’s notion of false consciousness, or ideology, is a broader sort of the more basic, individual consciousness I am talking about; they can never be entirely separated because individual consciousness gives rise to these higher order forms of consciousness, the highest of which is culture (in the anthropological rather than the Arnoldian sense). This superorganic system is itself composed of ideational units generated and sustained by individual minds, which in turn are conditioned and shaped by these cultural forces. Furthermore, it is necessary to note that consciousness is largely a process of internalization. This internalization entails the inner realization of material forces such as technology, culture, and the matrix of institutional systems that compose society. Just as the self-system interacts with itself, with its imaginative capacities, and with its position in spacetime, it also forms strange loops with its sociocultural environment.

<sup>45</sup> Churchland’s *Neurophilosophy* (1986) is an excellent, if slightly dated, introduction to the basic tenets of combining philosophical and neuroscientific approaches such as the one propounded by Hofstadter. Also, although Churchland has campaigned vigorously to remove the folk psychologism that she sees plaguing the behavioral sciences, its terminology remains difficult to dislodge due to both its usefulness in common discourse and the mounting evidence in the cognitive sciences that, although perhaps overly broad, these terms do in fact provide a useful frame for discussing the lower-order phenomena that undergird them.

and trace how the term has been applied by literary critics and theorists up to this point. Given the wide audience achieved by Hofstadter's book, it is no surprise that many literary scholars engaged its ideas. Indeed, in the wake of *Gödel, Escher, Bach*'s publication, strange loops gained a certain ephemeral popularity in literary circles.

As early as 1981, when *Gödel, Escher, Bach* was still being widely discussed in both popular and academic discourse, the grand old man of modernist studies, Hugh Kenner, suggested the possibilities of strange loops in both *Ulysses* and *Finnegans Wake*.<sup>46</sup> However, very few scholars took up the challenge, either in Joyce's or in other authors' texts. Nevertheless, there are several exceptions to this general silence about strange loops and their connection to literary studies. Barbara Stevens Heusel suggests the presence of strange loops in Joyce's novels in her essay "Joyce and the Drama of Cognition: Escher as a Visual Analogue" (1988), comparing the recursive, level-crossing graphic artwork of M. C. Escher as a mode of visualizing Joyce's texts. Yet, while Heusel's suggestions are provocative, she evades Hofstadter's central thesis about strange loop patterns underlying consciousness, a surprising omission given that Joyce's stream of consciousness elutes a series of strange loop properties, as I will argue in Chapter One. Another exception is Allene M. Parker, who explores strange loops in the post-Joycean Argentinian author Jorge Luis Borges's short fiction. Like Heusel, Parker does not elaborate upon her claim beyond drawing parallels between Hofstadter's examples (notably Escher) and these authors. Despite this misreading of Hofstadter, I will follow the precedent set by Heusel and Parker to treat strange loops as a valuable tool for ekphrasis, and will therefore frequently refer to visual analogs of strange loops in my literary analyses.

Other critics of Kafka, Beckett, and Pynchon have similarly alluded to strange loops without making the concept their central focus. In "Kafka's Double Helix," Stanley Corngold

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<sup>46</sup> See note 2 in Chapter One.

discusses the strange circularity in Kafka's novels, but he never quite makes the jump to identify them as strange loops. Likewise, H. Porter Abbott makes similar suggestions about Beckett's work in *Beckett Writing Beckett* (1996) without developing the notion. Finally, discussions of Pynchon, particularly by Hayles in the final chapter of *The Cosmic Web* (1984), have noted the strange loops at work in his fiction without positioning them within any sort of cognitive framework. I will expand upon these suggestions in my discussions of the respective authors, but I will emphasize the cognitive rather than mere structural similarities between the texts and Hofstadter's concept.

In addition to these author-specific studies, Hofstadter's discussion of metalevels and narrative stacking has received considerable attention from literary critics in general, especially those interested in postmodernist literature. Brian McHale presents a wonderfully inclusive discussion of this aspect of strange loops in the "Chinese-Box Worlds" chapter of *Postmodernist Fiction* (1987). Through topical readings of an imposing list of postmodernist works, McHale notices that the transgressions of hierarchical levels characteristic of strange loops are quite common in this type of fiction, and he suggests that the structure is perhaps one of the movement's defining features, a structure he calls a "Chinese-Box." The primary problem with McHale's otherwise impressive analysis lies in his occasional confusion between Chinese-Box structures and strange loops, which share features but are not homologous. True, both strange loops and Chinese-Boxes exhibit a *mise-en-abyme* structure of forms-within-forms; however, the Chinese-Box omits the circularity implicit in a strange loop, and while both are strange and self-referential, only the strange loop is strange, self-referential, and *cyclical*. In my discussion of Calvino in Chapter Five, I will discuss the relationship between McHale's Chinese-Box model and Hofstadter's strange loops in more detail.

Several dissertations have also attempted to flesh out the connections between strange loops and literary texts. In “The Uses of Entrapment: Navigating Strange Loops in Literature,” J. Terry Gorton focuses on reader-response theory, using the strange loop as a metaphor for rhetorical entrapment, whereby readers become enmeshed in the various levels of the text.<sup>47</sup> Although this approach certainly offers pedagogical prospects for strange loops, it does not engage the deeply cognitive-theoretical nature of the strange loop pattern. Other dissertations by Mario Badio and Maria Elena Lopez have seen strange loops in Borges’s work, and Elizabeth Ann Bayerl discusses strange loops in Pynchon’s *Gravity’s Rainbow* in her 1985 dissertation. But like Gorton, none of these scholars acknowledge the cognitive context of the strange loop concept. Again, the strange loop is ignored for what it truly is: a cognitive pattern underlying the processes that give rise to human consciousness. Any theory attempting to extend the concept’s usefulness to literature must pay attention to the cognitive aspects described by the strange loop. While all of the scholars that I have mentioned note the existence of strange loops in literature, no one has yet taken this supposition further than mere suggestion, let alone attempted to use literature to enrich the theory and expand it into new research paradigms such as the one I am proposing.

I contend through this application that the self-conscious text functions like a mind, indeed in some ways *is* a mind, because it replicates the very processes that defines *mind* from other processes.<sup>48</sup> Self-conscious fiction can comment upon its own limits, upon its own artifice, and in doing so it becomes a means of understanding consciousness. Readers come to a firmer understanding of consciousness through such texts because they splay out before them the very

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<sup>47</sup> Gorton focuses on Tennyson’s “Ulysses,” Steinbeck’s “The Chrysanthemums,” and Browning’s “My Last Duchess” as examples of literary strange loops. This goes to show just how widely the concept might be applied.

<sup>48</sup> I explore this possibility in more depth in Chapter Five. See Kawin for a similar argument.

mechanisms underlying its processes. By extrapolating the processes that are unique to consciousness and putting them in another medium, these authors allow us to see just what it is that makes consciousness unique. The strange loop offers an excellent means of understanding these properties because it can cope with aesthetic artifacts, it emphasizes strangeness, and it allows one to speak about form without falling into many of the traps that plague structuralism.<sup>49</sup>

Another crucial point to note is that, as with all literary criticism, a cognitive critic always maintains that the narratives involved are fiction. This means both that they are made (“fiction” coming from the Latin *fictio*, or “something made,” as anthropologist Clifford Geertz reminds us) and are also unrestricted by science’s obligation to objective truth. As Ricoeur notes, such “poetic language” as that found in fiction “does not tell us how things are, but what they are like” (*Interpretation* 68). This definition does not, however, mean that literature does not speak about truths; it merely reveals them in different ways. Indeed, literary analysis is more properly concerned with meaning rather than truth, a concern I have tried to keep in mind. Instead of validating one with the other, I am using literary texts to shed light on cognitive theory, using Hofstadter as a testing ground to explore the possibilities of using models such as his in literary criticism. We must be careful, of course, not to let such a method interfere with the aesthetic experience of the text as art—that is the primary purpose of all literature, whether it is didactic or not.

As I outlined in my preface, I have selected texts by James Joyce, Franz Kafka, Samuel Beckett, Jorge Luis Borges, Italo Calvino, Flann O’Brien, Kurt Vonnegut, Thomas Pynchon, and Philip K. Dick as paradigmatic cases where strange loops seem to be evident, while also

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<sup>49</sup> David Miers’s review of *Gödel, Escher, Bach* makes an important point on this: “Although Hofstadter’s sources are largely drawn from the hard sciences and he never directly mentions structuralism, much of the book serves well as an independent substantiation of contemporary structural theory” (1216). Nevertheless, given its anti-hierarchical playfulness, *Gödel, Escher, Bach* is more poststructuralist than structuralist, always prodding its readers to question anything that might seem like a tidy binary or a clear-cut boundary.

suggesting similar instances in other literary texts. I have chosen these authors because—like Hofstadter’s triumvirate Kurt Gödel, M. C. Escher, and J. S. Bach—their work serves to elucidate the complexity and variety of strange loops while also presenting textual laboratories within which to examine Hofstadter’s ideas. I might just as well have selected other authors, and in part these choices reflect personal literary taste as much as theoretical concerns. To some extent, I have adopted the approach common in comparative literature of selecting triads of authors from different cultural and language groups. Yet as I mentioned in my preface, many of these authors fall within similar descriptive categories such as “cybernetic fiction,” “slipstream,” “literature of the absurd,” and “cognitive fiction.” One might even classify them as the “literature of strangeness.” However, as mine is not a study in genre, I will merely reiterate here that these texts share certain common features and these features open up interesting questions about the relationship between literary strange loops and questions about genre. That said, I would next like to describe strange loops in more detail in order to refine the concept, distinguishing it from and relating it to related ideas from both literature and science.

### **Refining the Strange Loop Concept for Literature**

As Dennett notes in *The Mind’s I*, “‘Mind is a pattern perceived by a mind.’ This is perhaps circular, but it is neither vicious nor paradoxical” (Hofstadter and Dennett 200). It is this sort of self-reference that forms the core of Hofstadter’s concept, itself derived largely from the work of mathematician Kurt Gödel. In 1931, Gödel notoriously dismantled Bertrand Russell and Alfred North Whitehead’s *Principia Mathematica* by demonstrating that mathematics was an

incomplete system.<sup>50</sup> In brief, Gödel demonstrated that mathematics—indeed all formal systems—were necessarily incomplete because they were unable to encapsulate all of their propositions without referring to themselves. Gödel had succeeded in mathematically formulating what are known as the Eleatic paradoxes, and using them to produce a self-referential formula—and in doing so, he unsettled the formerly unshakable foundations of Western logic. These paradoxes form not only the conceptual foundations of the strange loop, but also occur frequently in my discussion of such loops. Gödelian incompleteness features prominently in Kafka’s and Pynchon’s works, a connection I discuss in Chapter Two and Nine.

The best known Eleatic paradox is the Liar Paradox, sometimes known through variations attributed to Epimenides and Eubulides.<sup>51</sup> One version of this paradox describes Epimenides’s statement “All Cretans are Liars.” Since Epimenides was himself Cretan, the statement must be false. Yet if it is false, then Cretans are not liars and it becomes true. A simplified version, attributed to Eubulides, presents us with a statement such as “This statement is false,” the veracity or falsity of which is seemingly impossible to prove: if the statement is true, then it is false, but then it is true. It goes, as Lewis Carroll might put it, “round and round the mulberry bush” (Hofstadter, *GEB* 688). These patterns appear repeatedly in literary texts, particularly in Kafka and Beckett, and I discuss their relationship with strange loops in Chapters Two and Three. But rather than merely coincidental isomorphisms, the appearance of the Liar Paradox in Beckett and Kafka is often an allusion to consciousness. Furthermore, the Liar

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<sup>50</sup> As philosopher W. V. O. Quine puts it: “What Gödel proved, then, is that no axiom system or other deductive apparatus can cover all the truths expressible even in that modest notation [number theory]; any valid proof procedure will let some true statements, indeed infinitely many, slip through its net” (83). For an in-depth explanation of Gödel’s Proof, see Nagel and Newman. Hofstadter also outlines the proof lucidly in the early chapters of *I Am a Strange Loop*.

<sup>51</sup> For a comprehensive treatment of paradox in general, including insightful discussions of the Liar and its variations, see Sorensen.

Paradox produces a so-called “double-bind,” an idea that I explore in Chapter Nine as important for literary depictions of schizophrenia. The Liar Paradox also has particularly far-reaching relevance for literature. On the level of the sign, as Umberto Eco once said, semiotics is the study of “everything which can be used in order to tell a lie” (*Theory* 76). On a broader level, authors of fiction are, in a sense, professional liars. The Liar Paradox offers an interesting segue between this aspect of fiction and the strange loop concept.

Another set of Eleatic paradoxes underlying the strange loop are those of Zeno,<sup>52</sup> who notably argues that motion and therefore time are illusory. In short, Zeno’s first paradox (sometimes called Zeno’s Arrow) is the argument that motion is an illusion since for any object to move between point A and point B it must traverse an infinite number of intermediate points where it is at rest. Zeno’s second paradox is a variation of this, since to travel from point A to point B, any object must cover half the distance between them. But since there are an infinite number of half-distances in this sequence, one can move from A towards B but cannot arrive. Thus, for Zeno, both motion and time are illusions, constructs of the mind rather than constituents of physical reality.<sup>53</sup> All of these paradoxes will become important as I assess literary strange loops both for their structural similarities to these loops and for what they suggest about how these texts represent consciousness as an infinitely recursive system. Zeno’s paradox becomes particularly important in this respect in my discussions of Beckett, Borges, and Vonnegut.

Certainly paradox is a part of the concept, but what defines a strange loop from mere self-reference? Hofstadter outlines several more crucial aspects of strange loops in *Gödel, Escher,*

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<sup>52</sup> It’s important not to confuse Zeno of Elea, a Pre-Socratic, with the Stoic philosopher Zeno of Citium.

<sup>53</sup> For a more complete treatment of Zeno, see Sorensen (44-57).



*Bach*. First, strange loops must be loops: they must begin and end in the same place or state. Importantly, this does not preclude that the systems involving such loops cannot change; indeed by proceeding through levels, they can adapt and modify themselves into more complex systems.<sup>54</sup> In addition, we must remember distinguish “recursive definitions from circular ones” (*GEB* 133). Recursion describes a circular process whereby a system defines itself by reintegrating the products of its previous cycle to generate the next. A well-known example is the Fibonacci sequence, where the next number in the sequence is the sum of the two previous numbers (1,1,2,3,5,8,13,21,etc.). A concise expression of recursion can also be found in Hofstadter’s Law: “It always takes longer than you think it will take, even when you take into account Hofstadter’s Law” (*Metamagical* 47). In cognitive linguistics, recursion designates a property that may define language from other systems. One might suspect that these processes lead to vicious infinite regresses, and indeed Hofstadter admits that “[s]ometimes recursion seems to brush paradox very closely” (*GEB* 127). As I mentioned earlier, the Liar Paradox is one example where this is the case, particularly in literary strange loops.<sup>55</sup> Also, this mathematical connection becomes prominent in my discussions of Joyce, Beckett, and Borges.

In addition to (or because of) their recursiveness, strange loops are also infinite. As Hofstadter notes, “Implicit in the concept of Strange Loops is the concept of infinity, since what

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<sup>54</sup> I use “complex systems” here and throughout to refer to a very specific approach in cognitive science that sees higher-order mental functions emerging from lower-order ones. It is often identified, largely mistakenly, with the more popular term “chaos theory.”

<sup>55</sup> Recursion does not necessarily always lead to paradox: “Actually, a recursive definition (when properly formulated) never leads to an infinite regress or paradox. This is because a recursive definition never defines something in terms of itself, but always in terms of simpler versions of itself” (*GEB* 127). Similarly, “There is always some part of the definition which avoids self-reference, so that the action of constructing an object which satisfies the definition will eventually ‘bottom out’” (*GEB* 133). In Hofstadter’s system, as in cognitive science as a whole, this bottoming out occurs at the neural level.

else is a loop but a way of representing an endless process in a finite way” (*GEB* 15). Infinity<sup>56</sup> frequently arises in discussions of consciousness for a variety of reasons. Science-fiction author Rudy Rucker’s *Infinity and the Mind* (1982), in many ways inspired by *Gödel, Escher, Bach*, insinuates that infinity is what characterizes consciousness as the ability to embed sets within sets, to reflect upon itself endlessly. Rucker also importantly notes that infinity does not designate mere endless progression: “Cantor was able to show that infinity is not an all or nothing concept: there are degrees of infinity” (9). We must remember that the infinity conceptualized by strange loops is not necessarily outward or inward, but both. This is the infinity of Chinese-boxes described by McHale. This nesting function, like what one finds in Russian Matryoshka dolls, becomes especially important in the fiction of Borges, Calvino, and Flann O’Brien. But recursive infinity contrasts the traditional concept of infinity, elucidated by the work of mathematician Georg Cantor, as a never-ending sequence, an idea cognitive scientists Lakoff and Nuñez dub “The Basic Metaphor of Infinity” (159). Rather than this unbounded, outward infinity postulated by Cantor and other set theorists, the infinity of strange loops is recursive and self-referential. Infinity in this sense appears in the strange loops found in Borges’s literary labyrinths as well as Calvino’s metafiction, which I will discuss in Chapters Four and Five, respectively.

Recursion also implies nonlinearity. Following the path of such a loop, perhaps best illustrated by a Möbius strip, leads us into visual version of the infinite regresses of the Liar Paradox and its derivatives. Similar to these paradoxes, as one proceeds along the pattern created by the strange loop like ants along the Möbius strip, one’s exact location is always indeterminate. Hence, strange loops are broadly analogous to labyrinths, a trope explored

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<sup>56</sup> For thorough treatments of infinity see Gamow and Rucker. Rucker, himself an author, develops many of Hofstadter’s ideas in a different direction. As I will discuss in Chapter Four, he also makes extensive use of Borges to demonstrate various mathematical notions surrounding infinity.

perhaps most famously by Borges, but always a central preoccupation for Joyce and the other authors whose work I treat closely in this study.

Lastly, strange loops must be strange. In Hofstadter's original formulation, "the reason I call Strange Loops 'strange'" is that they elicit a sense of "surprise" (*GEB* 691). But this aspect of the concept also suggests that the phenomenon in question must defy "common sense" expectations of behavior, whether material or psychological. One result is that the system strange loops describe confounds hierarchical levels, producing a heterarchy, a "program which has such a structure in which there is no single 'highest level,' or 'monitor'" (134). Frames are confused such that—whether we are discussing frames between subject and object, reader and text, or time and space—the boundaries between them twist like a Möbius strip, confounding attempts to partition them into discrete binaries or tidy hierarchies. This aspect of the strange loop recurs in all of the authors that I discuss.

Another result of this strangeness is that the experience with the system elicits an unfamiliar feeling, in the sense of *Verfremdung* or "strangification." This calls to mind the "defamiliarization" or estrangement effect originally described by Victor Schlovksy—and subsequently adapted by cognitive scientists—to describe the event of perceiving something out of the ordinary. It also points to theories of humor. Incongruity theories of humor, such as the one recently proposed by Matthew Hurly, Dan Dennett, and Reginald Adams in *Inside Jokes: Using Humor to Reverse-Engineer the Mind* (2012), identify humor as arising from incongruous situations, where frames of interpretation are broken in various ways. All of the texts I discuss similarly evoke humorous responses because they frequently juxtapose the everyday against the strange. This elicits feelings of strangeness that often accompany such juxtapositions, as well as

the estrangement often affiliated with absurdist literature.<sup>57</sup>

The “strangeness” of these loops therefore describes their liminal dimensionality, their heterarchical nature, and the unexpected twists encountered when one traces these patterns.<sup>58</sup> However, strangeness implies other connotations particularly important for literature. Strangeness is, as the Formalists noted, an essential part of literature because “[l]iterary discourse estranges or alienates ordinary speech, but in doing so, paradoxically, brings us into a fuller, more intimate possession of experience” (Eagleton, *Literary Theory* 4). This connotation of “strange,” what Viktor Shklovsky called *ostranennie*, must be kept in mind as I investigate literary strange loops for several reasons. On the one hand, this strangeness defines literature against other modes of discourse for the Formalists, but, as I hope to demonstrate, the various permutations of strange loops in literature show just how this aspect of the pattern defines literature (and indeed language) in a broader context. On the other hand, the feeling evoked by literary experience is similar to the sort of strangeness described by Brecht, the so-called *Verfremdungseffekt* or “defamiliarization” that draws our attention to the strangeness of otherwise commonplace reality. *Verfremdung* in this sense is a means of joining everyday experience with transcendental experience: “Verfremdung is a part of a larger process that does not end with the shock of estrangement, but instead proceeds on a dialectical path to a new level of greater understanding” (Carney 18). This definition is also relevant to my co-option of the strange loop concept.

Another sense of “strangification” is also apparent in the strange loop concept:

“strangification” as an interdisciplinary strategy. Hofstadter suggests that Gödel’s proof, “with

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<sup>57</sup> As I briefly mentioned in my preface, Neil Cornwell frequently mentions Hofstadter in *The Absurd in Literature*. This relationship is perhaps partially due to the connection between the absurd and impossible objects.

<sup>58</sup> Hofstadter’s use of strange also finds its roots in the physics tradition, where we find concepts such as strange quarks and strange attractors.

its construction involving arbitrary codes, complex isomorphisms, high and low levels of interpretation, and the capacity for self-mirroring, may inject some rich undercurrents and flavors into one's set of images about symbols and symbol processing, which may deepen one's intuition for the relationship between mental structures on different levels" (*GEB* 707). These levels are frequently the domains of very different disciplines, such as cognitive science and literary studies. Bridging the explanatory gap between them therefore requires us to "strangify" them. Strangification in this sense was defined by Friedrich Wallner as a central concept of constructive realism,<sup>59</sup> and describes efforts "to transfer a certain system of (scientific) sentences from one context (of scientific theories, paradigms, etc.) into another system of sentences" (Löfgren 50).

Although Wallner's usage of strangification primarily explores the application of scientific paradigms (which he considers to be "microworlds" akin to Wittgensteinian language games) as descriptions of physical reality (*Realität*), the term also draws our attention to the benefits of discussing ideas from one discipline in terms of another. Thus, strangification is also a "*set of strategies* having one thing in common: they are transferring one (logical) system of propositions from their original context into another context" (Cohen et al. 106). This type of "ontological strangification" is precisely what my adoption of the strange loop concept in a literary concept attempts to follow by "[a]pplying a system (a set) of methods of one discipline to a very different discipline" (107). Peirce calls this process abduction, and the strange loop concept allows us to similarly strangify notions from cognitive science by reading them through

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<sup>59</sup> I am not, however, embracing an entirely constructive realist position such as that of the Viennese School of Philosophy of Science, which posits that "[n]atural science is not a description, but a construction" (Greiner 1). See Greiner and also Wallner for strangification in this context. Badie and Mahmoudi provide a recent overview of strangification in a broader context.

a literary lens. Now that I have defined strange loops more specifically, I can now briefly outline several other consequences of these cognitive patterns that are pertinent to my study.

### **A User's Guide to Hofstadterian Phenomenology**

Hofstadter has remarked that the intention of *Gödel, Escher, Bach* is often misconstrued as an exercise in consilience,<sup>60</sup> when in fact it is specifically a statement about the nature of consciousness and how nonsentient physical systems give rise to a “self-symbol” (*Mind's I* 200). In *I Am a Strange Loop*, this expanded phenomenology posits several major claims about consciousness not found explicitly in *Gödel, Escher, Bach* but that are nevertheless important for cognitive literary appropriations of his strange loop concept.

The first claim is that the strange loops of human consciousness are not confined to a single mind/brain like a “caged bird” (*SL* 259); rather, conscious selves interact with other consciousnesses, creating compound selves that consist not only in the subject's self but also in the representations of other consciousnesses within that self. That is to say, Hofstadter's model expounds a semiotic-cybernetic framework whereby the information patterns of other people's consciousnesses—most significantly those of individuals with whom one interacts with socially, but also including virtual consciousnesses such as fictional characters—come to partially inhabit our own consciousness in an almost symbiotic manner. This is Hofstadter's most radical application of the strange loop concept to consciousness, but it is one with some of the most profound consequences, as I will discuss in my readings of Joyce, Beckett, and Pynchon. Together, these components expand Hofstadter's strange loop concept from one that describes an isolated computational system to one that, in a literal, physical way, incorporates its social and

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<sup>60</sup> “Consilience” is a term coined by sociobiologist E. O. Wilson to denote intellectual endeavors bridging the sciences and the humanities. It has gained considerable currency since Wilson published *Consilience* in 1998.

material ecologies into itself. It is, in other words, an *open* system. In this respect, Hofstadter's model bears a striking resemblance to the concept of the "extended mind," the notion that the mind internalizes various aspects of its environment and is not confined to the brain as such.<sup>61</sup>

Another consequence of Hofstadter's strange loop concept expanded in *I Am a Strange Loop* is that consciousness is illusory.<sup>62</sup> As Hofstadter notes, the self or "I" is best understood "as a hallucination perceived by a hallucination . . . the 'I' as a hallucination *hallucinated* by a hallucination" (*SL* 293). For Hofstadter, the self is comparable to the eye of a hurricane or, better yet, the Kanisza patterns beloved by cognitive psychologists. In these optical illusions, the shape is defined by context, but it is not actually there at all. As such, consciousness is, like the image on a computer screen, the phenomenal output of more fundamental processes rather than a discrete entity.

This proposition might seem radical at first, but it is gaining momentum among both philosophers of mind and cognitive scientists.<sup>63</sup> Neurophilosopher Thomas Metzinger posits a similar idea in *Being No One: The Self-Concept Model of Subjectivity*.<sup>64</sup> Metzinger argues that the folk-psychological "self" commonly used in academic discourse is more precisely a

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<sup>61</sup> For detailed treatments of the extended mind hypothesis, see Clark and Chalmers, as well as the Menary's collection *The Extended Mind* (2010). It is worth noting that Chalmers, an influential contemporary philosopher of mind, was a student of Hofstadter's, though his antimaterialist position is contrary to Hofstadter's in many respects.

<sup>62</sup> A large body of research exist for the non-existence of cohesive selves. See Alan Watts's *The Book on the Taboo Against Knowing Who You Are* (1966) for an early accessible treatment of the idea in light of experimental psychology and Eastern religions. For more recent approaches, see Metzinger (discussed below), as well as Bruce Hood's *The Self Illusion* (2011).

<sup>63</sup> This idea of the self as a non-entity is by no means original to either Hofstadter or cognitive science. Indeed, it echoes earlier notions about the self such as Hume's belief that the self was merely its perceptions, as well as Wittgenstein's argument that the self is not an isolated entity but one bound to society, culture, and class. It is not, however, a version of idealist arguments such as those found in Berkeley or Guyau, for whom everything, including the self, is an illusion.

<sup>64</sup> Metzinger followed up this 2004 work with a recently published a version of this argument for a wider audience in *The Ego Tunnel* (2009).

“transparent self-model” because “no such thing as selves exist in the world” (337). This perpetuates an idea found in Wittgenstein: “The thinking, presenting subject; there is no such thing” (*Tractatus* 121). Like Hofstadter, Metzinger affiliates his neurophilosophical idea with Buddhist notions of the non-self. This idea is increasingly becoming a dominant paradigm in the cognitive sciences,<sup>65</sup> and it will become central to my discussions of Kafka, Beckett, and Borges.

Hofstadter’s notion of consciousness as a nonentity is not confined to the Western tradition. Perhaps the earliest formulation can be found in Buddhist teachings:

The instructed disciple of the Noble Ones does not regard material shape as self, or self as having material shape, or material shape as being in the self, or the self as being in material shape. Nor does he regard feeling, perception, the impulses, or consciousness in any of these ways. He comprehends these aggregates as it really is, that it is impermanent, suffering, not-self . . . (Kornfield 17)

In Buddhist philosophy, the self, like mind and body, does not exist “any more than musical notes lay heaped up anywhere” (18). Given Hofstadter’s frequent musical allusions, this statement particularly resonates with his position. Although Hofstadter remains rooted in the Western ratio-empirical tradition and does not adopt a Buddhist worldview, there is a certain affinity between the strange loop concept and the paradoxes of Zen kōans. Given recent neurophilosophical work on the affinities between emerging paradigms of self-concept in cognitive science and Zen notions of self (explored at length in J. H. Austin’s *Zen and the Brain* [1999]), this connection is an important bridge between two seemingly incongruent domains.

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<sup>65</sup> See Wegner’s *The Illusion of Conscious Will* (2002) and Bruce Hood’s *The Self Illusion* (2011).



In fact, throughout *Gödel, Escher, Bach*, Hofstadter recurses to Zen kōans to explain the paradoxical nature of strange loops. Specifically, Hofstadter sees parallels between kōans<sup>66</sup> and the double binds of self-referential paradoxes. The kōans tradition emerged out of Buddhism, and uses language akin to double binds: “Paradoxical though it may seem: There is a path to walk on, there is walking to be done, but there is no traveler. There are deeds being done, but there is no doer . . . The thought of self is an error” (Kornfield 18). Nevertheless, Hofstadter’s relationship with Zen is ambiguous. On the one hand, as a scientist, he squirms against the irrationality of its language games: “To me, Zen is intellectual quicksand—anarchy, darkness, meaninglessness, chaos” (*GEB* 246). On the other, he finds in Zen a particularly refreshing critique of various dualisms. For one, Zen expresses the inherent tension between language and truth: “the Zen attitude is that words and truth are incompatible, or at least that no words can capture truth” (246). This is not to devalue language but to recognize its limits. As Mumon once said of Zen: “It cannot be expressed in words and it cannot be expressed without words” (qtd. in *GEB* 253). For another, Hofstadter sees in Zen a means of skirting the reductionism so common in scientific inquiry. “Zen is holism,” Hofstadter reminds us, “carried to its logical extreme” (254). Instead of a contradiction, Hofstadter sees an opportunity. This connection between strange loops and Zen will become particularly important in my discussions of Pynchon and Philip K. Dick.

Of all Hofstadter’s claims, the claim that the self is a non-entity is perhaps the most disturbing to those desperately clinging onto an essentialist position of self. However, as I shall occasionally imply throughout this study, to develop a comprehensive theory of consciousness

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<sup>66</sup> According to Suzuki, the earliest Zen kōans appear in *Hekiganroku* (*Blue Cliff Record* [1125]) by Yuanwu Keqin and *Mumonkan* (*The Gateless Gate* [1228]) by Wumen. Hofstadter explicitly draws upon the latter (*GEB* 246), likening Escher’s *Day and Night* and *Another World* to Zen.

“we may have to abandon some of our more comfortable homilies and categories . . . we have sometimes had to encounter disturbing ideas, such as the notions that conscious awareness is merely an illusion and that our brains are ultimately as empty, and insubstantial, as the atoms from which they are constructed” (Donald xii). Hofstadter’s strange loop concept forces us to confront preconceptions about the nature of consciousness and self, demanding that we understand both processes as emergent, manifold patterns of a complex system rather than as essences.

Humanists tend to chide at “cognitive-biologist reductionism: the dismissal of subjective self-experience itself as mere ‘user illusion’” (Žižek, *Parallax* 174). Somehow, they feel that it devalues the liberal human subject, reduces men to machines. But acknowledging the self as such is not unknown in fiction, most notably in science fiction.<sup>67</sup> Although I address science fiction in my discussions of Vonnegut and Philip K. Dick, here let me simply note that the illusion of selfhood also becomes pronounced in the work of Kafka and Beckett, as I note in Chapters Two and Three. More importantly, Hofstadter’s work draws attention to the lamentable fact that “the account of a discontinuous self as a structural marker in a complex series of representations is supported by almost everything else *except* the official doctrines of the humanities” (Miers 1216). This is, with the advent of cognitive literary studies in particular, gradually changing. It is also a tenet that emerges in theories of the self that rely on two major ideas to emerge from cybernetics—autopoiesis and chaos theory. Because these ideas are becoming increasingly important in both cognitive science and literary theory—and because they both figure prominently in my own argument—I would like next to trace their connections to strange loops.

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<sup>67</sup> Although I have avoided solely discussing science fiction, the genre is renowned for exploring scientific ideas through a literary lens.

## Strange Loops, Autopoiesis, and Chaos Theory

Like strange loops, autopoiesis is an idea emerging out of the cybernetic tradition of that models consciousness as a self-organizing system based on feedback loops. This approach began with anthropologist Gregory Bateson, a pioneer in the use of total feedback loops, who used feedback to model culture and behavior in the 1960s and 70s.<sup>68</sup> Indeed, as Cary Wolfe notes, “total loops such as those imagined by Bateson must always turn into ‘strange’ loops of the sort imagined by M. C. Escher’s Möbius strip” (50). In many ways, Hofstadter’s model develops Bateson’s ideas, and by connecting Hofstadter’s theory to similar trends in information processing, philosophy, and anthropology, I see his strange loop pattern as part of an expansive understanding of consciousness as a complex, self-organizing system. It also offers a helpful segue between cybernetic treatments of literature and more current cognitive ones.<sup>69</sup>

The most important corollary to Hofstadterian strange loops to emerge from cybernetics is the notion of autopoiesis, an idea gaining currency in the literary critical discourse and worth briefly discussing here. This term was coined by Humberto Maturana and Francisco Varela<sup>70</sup> to

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<sup>68</sup> Bateson’s influence on Hofstadter is worth noting here; we know, for example, that Hofstadter was familiar with his work (*Metamagical* 19). As an early cyberneticist, Bateson exerted significant influence on the field, although his work generally focuses on anthropological applications of cybernetics and his “double-bind” theory of schizophrenia.<sup>68</sup> However, given Bateson and Hofstadter’s common interest in the roots of creative thinking, as well as their roots in cybernetics, it is highly likely that Hofstadter adopted many of his concepts about strange loops from Bateson’s earlier feedback loops, although whether this connection was direct or indirect is debatable. Furthermore, Bateson also drew upon Zen to formulate his ideas (Pickering 176).

<sup>69</sup> Most discussions connecting cybernetics and literature tend to focus on first-generation cybernetics, which failed to solve many basic problems of computation. Part of this failure stems from the insistence by early cybernetic theorists on exclusively symbolic or logical solutions to cognitive problems. It is only with second-generation cybernetics, with its emphasis on embodied cognition, that we see many of these problems resolved. Second-generation cybernetics also gave rise to complex systems theory, the dominant paradigm in the cognitive sciences. See Hayles’s *How We Became Posthuman*.

<sup>70</sup> Sometimes referred to as the Santiago School of Biology, Maturana and Varela first introduced the term in *De Máquinas y Seres Vivos: Una Teoría Sobre la Organización Biológica* (1973) and developed it later in *Autopoiésis y Cognición* (1980). See Livingston for an extended discussion of the idea as it applies to literature and culture.

denote processes in living systems that create themselves with themselves. As originally defined, autopoiesis is “*la condición de existencia de los seres vivos en la continué producción de sis mismos*” (*Autopoiésis y Cognición* 5; literally “the condition of existence of living beings in continuous production of themselves”). In addition to its importance in biology, sociology, and cognitive science, autopoiesis is becoming a major term in cognitive literary studies. Part of the reason for this is that it makes embodiment one of its central conceits, combining second-order cybernetics with phenomenology. As Paul Ricoeur notes, “Possessing bodies is precisely what persons do indeed do, or rather what they rather are” (*Oneself* 33). Embodied consciousness is both the dominant paradigm in cognitive literary studies and an important notion that reappears throughout the texts I will consider, particularly in Joyce’s *Ulysses* and Beckett’s trilogy. Indeed, elaborations of autopoiesis by Varela and others see their work following Maurice Merleau-Ponty’s vision of “bodies both as physical structures and as lived, experiential structures” (Varela, Thompson, and Rosch xv).

In addition, autopoiesis emphasizes the dynamic nature of embodied consciousness as process, an aspect it shares with the strange loop concept that distinguishes it from the synchronic tendencies of more structuralist approaches: “One difference between structuralist systems and autopoietic systems . . . is especially definitive: whereas structuralism tends to model systems as spatial organizations frozen at a single moment in time, autopoiesis understands them as patterns of ongoing events continually under construction” (Livingston 80). Connecting strange loops with autopoiesis underscores the importance of dynamicism in both concepts.

Embodiment in autopoiesis is the result of this process’s roots in feedback loops. The autopoietic biological system constructs itself in tandem with its environment, and this entails a

certain circularity similar to that which I see in strange loops. The mind and body in this view are not discrete but continuous because the “living body is a pattern of information, a fact and a fiction, something continuously being made and un-made” (Livingston 78). The enactivism espoused by Varela makes circularity central: “any such scientific description, either of biological or mental phenomena, must itself be a product of the structure of our own cognitive system . . . this kind of layering could go on, as in an Escher drawing” (Varela, Thompson, and Rosch 11-12). The reference to Escher is appropriate, and it emphasizes the recursiveness of autopoiesis. This is precisely the conclusion one draws from Hofstadter, a pattern that appears throughout the texts analyzed in my own project as well.

A final important point of contact between strange loops and autopoiesis is the fragmentary nature of the self, its illusory wholeness. As Varela, Thompson, and Rosch state, “The existential concern that animates our entire discussion in this book results from the tangible demonstration within cognitive science that the self or cognizing subject is fundamentally fragmented, divided, or nonunified” (xvii). In this respect, Varela, Thompson, and Rosch openly note their debt to Buddhist ideas. Again, this is worth pointing out because Hofstadter’s model also frequently appeals to Zen Buddhism, an unlikely source for Western science but one that nevertheless bolsters these models as especially humanistic and literary.

Autopoiesis has enjoyed a degree of success in the literary critical discourse. Some critics argue that the term is bound to the very notion of textuality. In *The Textual Condition*, Jerome McGann states that texts are “autopoietic mechanisms operating as self-generating feedback systems that cannot be separated from those who manipulate and use them” (15). McGann follows Maturana and Varela by contrasting an autopoietic system with an allopoietic

one; the latter constructs some structure that is not itself, whereas the former produces itself with itself like a strange loop.

Perhaps the most vehement statement of the importance of autopoiesis for literary studies comes from Ira Livingston. In *Between Science and Literature: An Introduction to Autopoetics* (2006), Livingston explores the manifold applications of this idea for literature and language, while simultaneously discussing intersections between literary representation and science more broadly. Although he primarily deals with Niklas Luhmann's sociological application of autopoiesis and attempts to reconcile it with poststructuralist theory, he rightly notes that autopoiesis represents perhaps the dominant paradigm in the postmodern period, a point Katherine Hayles emphasizes in her foreword to his book: "reflexivity in the contemporary era has become so interwoven with globalization, capitalist dynamics, scientific theories, verbal creations, and popular culture that it qualifies as the governing episteme of this period" (x). Hayles sees the reflexivity characterized by autopoiesis and strange loops as fundamental to understanding contemporary thought. Livingston's study serves as an important example of how autopoiesis might be. Livingston's notion of "autopoetics" is certainly promising, but I disagree with his insistence that we should remove the "i" from "autopoiesis" to further align it with poetics. Instead, I would stress that the "i" in autopoiesis is absolutely crucial given the concept's importance for describing self-organization.

Joseph Tabbi's *Cognitive Fictions* also discusses autopoiesis, emphasizing the similarities between this process in certain postmodernist novels and in hypermedia technologies. In the "literary system . . . the autopoiesis or self-making of the literary work of art, is much more central to the cognition of the literary work than narrativity, metaphor, or any of the purported 'origins' of language and consciousness" (Tabbi "Introduction" 4). For Tabbi, autopoiesis is not

merely an anomaly but a vital aspect of literature itself, because “an awareness that feeds back into itself defines all that is *literary* about [cognitive fictions]” (*Cognitive* 4).

Despite these comparisons between the two concepts, there are several ways in which autopoiesis differs from strange loops. First, as formulated by Varela, autopoiesis gets rid of the inputs and outputs that are inherent in the types of feedback loops described by Hofstadter. For Varela, emergent explanations such as Hofstadter’s lead to a “screwy logic where the snake bites its own tail and you can’t discern a beginning” (5)—an attribute that I see as a strength of Hofstadter’s model rather than a weakness. This reference to the Ouroboros, a type of strange loop, will reappear in my discussions of Beckett, Borges, and Pynchon.

Second, Hofstadter’s strange loop model rests on physical laws, whereas Varela rejects the necessity of the objective reality as an input. We must keep in mind that Hofstadter follows the *supervenience thesis*, the dictum that nothing mental occurs that is not accompanied by a parallel change, whether causative or correlated, in the physical substratum. Some readers might construe this as a version of reductionism, an accusation which Hofstadter repeatedly denies throughout his work. As he notes, “Surely we don’t want a description in terms of positions and momenta of particles; we want a description which relates neural activity to ‘signals’ (intermediate-level phenomena)—and which relates signals, in turn, to ‘symbols,’ including the presumed to exist ‘self-symbol’” (*GEB* 709). Whereas Varela sees consciousness inherent in (rather than a byproduct or emergent property of) matter, Hofstadter sees consciousness rooted in material reality, from matter upward toward biological systems and, ultimately, consciousness, contra Varela, for whom the conscious supersedes the physical.<sup>71</sup>

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<sup>71</sup> Although I do not discuss it here, Varela’s argument with Hofstadter finds a different expression in quantum theories of consciousness, such as Roger Penrose’s. See Penrose’s *The Emperor’s New Mind* (1989) for an accessible version of this argument. Curiously, Penrose founds his argument upon Godel’s Incompleteness Theorems, but comes to conclusions radically different from Hofstadter’s.

It is also important to note here that, in many ways, Hofstadterian strange loops are cognitive-specific geometries within the larger frame of autopoiesis. Autopoiesis is broadly applied to biological processes, and indeed if one maintains that literature, as the product of an organism, is also a biological process, then it fits beneath this rubric. However, although autopoiesis is certainly relevant to discussions of literature, language, and consciousness, the idea is not specific to cognition but rather to living systems broadly defined. For this reason, and because of the more aesthetically-inclined orientation of strange loops, I have favored Hofstadter's terminology over autopoiesis, albeit not exclusively.<sup>72</sup> I also prefer "strange loops" for its visual evocativeness, an almost geometric precision that the broader concept of autopoiesis lacks.

The second major scientific idea involved in the strange loop concept is chaos theory, a term that has gained some currency in literary studies, particularly after Katherine Hayles's *Chaos Bound: Orderly Disorder in Contemporary Literature and Science* (1990). In recent years, "complex systems" has come to replace, as a term, both cybernetics and chaos theory, these latter terms being largely deplored by cognitive scientists as buzzwords that have been abducted into so many contradictory and flat-out inaccurate contexts as to be virtually meaningless. Nevertheless, "chaos" and "cybernetics" resonate with certain valences which

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<sup>72</sup> Here I must briefly mention another term that bears a striking resemblance to the strange loop, namely the "holon," a term coined by Arthur Koestler in *The Ghost in the Machine* (1967). Hofstadter was certainly informed by Koestler's work, particularly his work on creativity, so it is no surprise that the strange loop bears resemblance to the holon in several respects. Holons represent units that are both whole and part, just as strange loops characterize both part and whole. In this respect, holons resemble the monads—of which human consciousness is one type—in Leibniz's philosophy which likewise reflect the system of which they are a part. I have tended to adopt Hofstadter's terminology because of its prior use in literary studies and its relevance to my more specific concerns here. Also, Hofstadter's naturalistic stance conforms to my own, one where physical reality determines and is determined by conscious reality—one cannot exist without the other, but the conscious rests upon the physical.



similar terms in complex systems theory lack.<sup>73</sup> First, these terms remind us of very specific transdisciplinary traditions predating complex systems theory. Second, both cybernetics and chaos theory have been used extensively in literary criticism to describe patterns similar to the ones that I explore here.<sup>74</sup> Hofstadter's strange loop concept shares many fundamental features with chaos theory and complex systems theory, especially its nonlinearity and recursiveness. In addition to their theoretical relevance, both cybernetics and chaos theory possess a certain poetic resonance that I, on the literary end of the spectrum, find appealing.

I am by no means the first person to notice a similarity between Hofstadter's self-referential strange loops and applications of similar organizational structures in complex systems theory. The relevance of chaos theory for literary strange loops is best summed up by Hayles: "As chaos leads to order, and order back to chaos, the narrative comes to resemble an organism that grows by periodically dissolving and reassembling, each time at a higher level of complexity. In this sense the narrative is a cybernetic organism, manifesting within itself the same self-organizing processes that the stories take as their subject" (*Chaos Bound* 128). This is, in part, no surprise given that complex systems theory arose from General Systems Theory, itself the scion of cybernetics. As Hayles notes, in addition to nonlinearity and complex forms, "complex systems share . . . *feedback mechanisms* that create loops in which output feeds back into the system as input" (*Chaos Bound* 14). To some, "system" evokes General Systems Theory's horrid schemes of diagrams that attempted to reduce everything to a crude series of flow-charts; but, more properly, "system" should evoke the thriving enterprise of Complex

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<sup>73</sup> For popular treatments of Chaos, see Prirogine and Stengers, and also Gleick. For a more technical treatment, see Strogatz.

<sup>74</sup> See Hayles's work and also Tabbi's *Cognitive Fictions*.

Systems Theory.<sup>75</sup> If such a theory can model hurricanes and brainstorm with equal grace, why not that most complex of systems, literature?

What is most important to note here are several features of the sorts of systems described as complex, as well as how they relate strange loops to the issue of chaos. As Hayles states, “Other characteristics that complex systems share are *feedback* mechanisms that create loops in which output feeds back into the system as input” (*Chaos Bound* 14), a characteristic which she links to postmodernist texts in particular. This is the crux of the comparison between strange loops, complex systems theory, and literature. But what most of the work aligning these two concepts in literary criticism has tended to do is remove chaos from its context and attempt to tease it out as a metaphor rather than as a real template for actual processes in the world. What is most important for me is the acknowledgement that chaos theory and complex systems theory share certain important features with strange loops such as self-referentiality, complexity, and recursion, and these features are especially prominent in literary strange loops.

As I mentioned earlier in my preface, Hofstadter’s strange loop theory addresses a variety of phenomena in aesthetics but does not directly address the presence of such structures in literary texts. Hence the questions must be posed: Why have theorists largely neglected this otherwise fecund idea? How can we use literary texts to both demonstrate Hofstadter’s theory and to investigate its usefulness in hermeneutics? What does a preponderance of literary strange loops say about this geometry’s usefulness for describing both literature and the mind that perceives and produces it? In the following chapters, I aim to engage each of these questions.

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<sup>75</sup> The description of literature as a complex system is often bandied about by theorists eager to mark their work as cutting edge, but they often do so without a firm notion of complex systems theory and its philosophical underpinnings. It is, in fact, a highly technical, thoroughly mathematical field, closer to physics in its methodologies than to fields such as psychology or biology where it is often applied. However, given the breadth of phenomena explored and modeled by complex systems theorists, it is a term always quivering on the brink of multiplicity.

In the process, I will investigate to what degree these fictional texts actually reflect the functions of the mind itself, offering a humanistic investigation to a problem that has until recently been entirely dominated by the cognitive sciences. To accomplish this synthesis, I corroborate my findings with the latest evidence from the sciences and philosophy of mind. In this way I suggest ways in which Hofstadter's theory represents a bridge between C. P. Snow's Two Cultures, willing to engage both the humanities and the sciences, and why such a bridge offers the best prospect for a truly comprehensive epistemology that incorporates humanistic and empirical methods. In doing so, I hope to contribute to the growing body of research in cognitive literary studies, an interdisciplinary approach that promises not only to expand our understanding of cognitive processes but also to enhance our ability to appreciate the elegance of literature as a fundamentally human art form rooted in complex psycholinguistic processes.

CHAPTER ONE  
ME, MINDSELF, AND I:  
STRANGE LOOPS AND JOYCEAN MACHINES

*Fiction here is likely to contain more truth than fact.*

—Virginia Woolf

It is perhaps no coincidence that philosopher Daniel Dennett, who collaborated with Douglas Hofstadter on *The Mind's I* (1981), refers to consciousness as a “Joycean machine” (*Consciousness Explained* 220). Given Dennett’s coinage and the affinity between his theory of consciousness and Hofstadter’s, it therefore seems appropriate to begin with James Joyce, testing the isomorphisms between his texts and strange loops. Both *Ulysses* and *Finnegans Wake* exemplify psychocybernetic<sup>1</sup> strange loops on several levels. Both novels wind themselves into tangled hierarchies through repeated leitmotifs, circularities, and non-Euclidean space that often lose readers along the way. Joyce also explores nonlinearities in time, tangentially in *Ulysses* and extensively in the *Wake*. But beyond these structural and thematic considerations, the strange loops in these texts serve to make very specific comments about consciousness, comments that find remarkable corroboration in evidence from the cognitive sciences.

As I mentioned in my introduction, my recognition of strange loops in Joyce is not without precedent. As early as 1981, Hugh Kenner first suggested (though not in print) the possible affinities between Joyce’s longer works and Hofstadterian strange loops.<sup>2</sup> Yet the only

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<sup>1</sup> This neologism emphasizes the debt of the strange loop concept to both cognitive psychology and cybernetics.

<sup>2</sup> Kenner made the suggestion at the 1981 Albuquerque James Joyce Conference. See Limon (191).

scholar whose work thus far draws any concrete connections between Joyce and Hofstadter is Barbara Stevens Heusel who, in “Joyce and the Drama of Cognition: Escher as a Visual Analogue” (1988), reads Joyce against Escher in light of Hofstadter’s strange loop pattern. She draws the notion of a “drama of cognition” from Marshall McLuhan,<sup>3</sup> for whom Joyce’s concern is always to construe consciousness as apprehension via the senses. Beyond expanding McLuhan’s somewhat limited picture of Joycean consciousness, Heusel rightly notes that Joyce’s entangled texts resonate with Escher’s graphical strange loops. But Heusel does not proceed very far beyond aesthetic considerations despite hints of cognitive levels at play in the works of both Joyce and Escher. For example, she remarks that both artists provide us with “moments when perception becomes cognition and when cognition can become art” (395). However, she never fully fleshes out the “drama of cognition” that she promises, and thus, like Ariadne, she leaves a thread that I shall pick up in order to better understand Joyce’s textual labyrinth. I intend to expand Heusel’s project in this chapter by taking into account Hofstadter’s wider schema, namely the possibility that the strange loop structure of the novels models consciousness as a self-reinforcing loop that generates a discrete self, or “I.” I will also follow her precedent of drawing comparisons between strange loops in graphic art and those in literary texts.

Strange loops occur at all levels in Joyce’s texts, but collectively they produce the effect as an epiphenomenon, which Hofstadter defines as “a collective and unitary-seeming outcome of many small, often invisible or unperceived, quite possibly utterly unsuspected, events” (*SL* 93). This definition of an epiphenomenon is also a dominant principle in complex systems theory, which describes the emergence of chaos out of order, often as a result of small perturbations in a

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<sup>3</sup> Heusel borrows this phrase from McLuhan’s “James Joyce: Trivial and Quadrivial.”

system.<sup>4</sup> Both of these concepts apply to *Ulysses* and *Finnegans Wake*, texts that constantly force readers to traverse ostensible boundaries between internal and external realities, between thought and action, and between author and text.

Both the form and content of Joyce's novels strive to replicate consciousness. Joyce pioneered the stream-of-consciousness technique<sup>5</sup> derived from William James's psychology, and modernist authors such as Faulkner, Stein, and Woolf likewise dabbled in this *style indirect libre* as a mode capturing in literature what the mind "writes" during cognition. This type of psychonarration<sup>6</sup> replicates inner monologue and rose to prominence with Joyce and his contemporaries. But Joyce's interest was not merely stylistic; Joyce once asked his friend and proponent Frank Budgen, "Why all this fuss and bother about the mystery of unconsciousness? What about the mystery of consciousness?" (qtd. in Ackerley and Gontarski 108). This statement stems in part from Joyce's ambiguous relationship with both Freudian and Jungian schools of psychoanalysis; but more importantly, it aligns him with the psychological project embodied by James, a project that led to the development of modern cognitive science. Although Joyce does explore unconsciousness ad nauseum in *Finnegans Wake*, consciousness remains one of his primary concerns, both in *Ulysses* and in his final novel.

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<sup>4</sup> The well-known "Butterfly Effect" is a version of this idea, popularized by Gleick.

<sup>5</sup> Édouard Dujardin, a pioneer of stream of consciousness techniques, is often cited as a formal influence on Joyce. In fact, Joyce brought this debt to the attention of his friend, author Valery Larbaud, who admitted that "[Joyce] told me that this form had already been used, and in a continuous fashion, in a book by Edouard Dujardin" (qtd. in Baron 226). For fuller treatments of stream of consciousness in general, see Humphrey and Chapter 5 in Scholes and Kellogg.

<sup>6</sup> Dorrit Cohn uses "psychonarration" throughout *Transparent Minds*.

## Strange Loops in *Ulysses*

An obsessively meticulous chronicle of a single day (June 16th, 1904, celebrated as Bloomsday) in the lives of Leopold Bloom, Stephen Dedalus, and Molly Bloom, Joyce's *Ulysses* weaves events, thoughts, historical facts, literary diversions, and cognitive bric-a-brac into a matrix both monumental in its scope and compulsive in its attention to detail. Whether one considers it endlessly readable or, as Joyce jokes in *Finnegans Wake*, "usylesly unreadable" (179), *Ulysses* presents a vision of consciousness replete with strange loops. In many ways, the text is a tangled hierarchy *par excellence*.

Several techniques produce the strange loops in *Ulysses*. One of the most salient is Joyce's consistent use of repetition. In part, this repetition finds its origin in the circular structures of Celtic art, perhaps best demonstrated by the *Book of Kells*, a masterpiece of medieval illumination techniques. Indeed, James M. Cahalan draws repeated comparisons between this ornate manuscript and Joyce's longer works in his critical history of the Irish novel.<sup>7</sup> These knot patterns decorating the manuscript are tantalizingly similar to strange loops: as one traces their intricate patterns, one finds oneself right back at the beginning of the design.<sup>8</sup> Similarly, the various threads in *Ulysses* often fold back upon themselves through sheer repetitive force. On the one hand, this repetition evinces Joyce's spatiotemporal schema, one that is markedly nonlinear, albeit mostly spatially in *Ulysses* before the full-blown spatiotemporal nonlinearity of the *Wake*. On the other hand, the thoughts of the characters and

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<sup>7</sup> In a chapter in his 2009 dissertation, Alexander B. McKee extends this argument in his chapter entitled "James Joyce's 'Book of Kills': Unfixing Identity in *Finnegans Wake*" (43-97). However, McKee takes a historical approach, although he does connect Joyce's use of *Kells* with Porter Abbott's notion of autography, something I adapt in my second chapter. Also, in a remark to Arthur Power, Joyce contended that studying *Kells* was the best means of confronting "the confusing and [ . . . ] jarring claims of Modernity" (Power 153).

<sup>8</sup> See McKee for a cogent exploration of Joyce's use of the *Tunc* page in his discussion of Joyce and the *Book of Kells* (56-65). The image also resembles the Ouroboros, which I discuss in Beckett's and Borges's works. Photographs taken at Trinity College Dublin by the author.

the behavior of the text itself continually return to certain nodes in a cybernetic manner, as a system of systems.

Joyce qua cyberneticist might seem at odds with the historical fact that he wrote well before Norbert Wiener and others established the field; however, Robert Scholes states that “Joyce is one of the few writers of his time, perhaps the only one, who arrived at a concept of fiction which is cybernetic rather than bioenergetic” (“Structuralist” 246), an appropriate description for a textual strange loop. *Ulysses* is certainly a cybernetic text, especially insofar as cybernetics coalesces with cognitive theory in concepts such as the strange loop and autopoiesis. Like the feedback loops that underlie cybernetic models of learning, the textual loops in *Ulysses* reinforce themselves by returning to—but never quite repeating—various leitmotifs. Among the most obvious of these “nodes”<sup>9</sup> are the misunderstanding about the horse Throwaway, Paddy Dignam’s funeral, Stephen’s mother’s death, the image of the kidney, Bloom’s missing coin, the forgotten key, and, of course, Molly Bloom’s infidelity.

In addition to these nodes, there are several recurring microstructures that make *Ulysses* even more strangely loop-like. For example, the novel mentions metempsychosis at several points throughout in part to emphasize its cyclical quality, again reminding us of knot-work in the *Book of Kells* as well as Druidic notions of spiritual transmigration. Likewise, the repeated mention of the “U. p.” postcard and various appearances of the mysterious M’Intosh, details that have long frustrated critics, serve in some ways as reminders of the novel’s recursive form as a

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<sup>9</sup> “Nodes” is a term taken in part from connectionism, an approach in cognitive science which models brain processes (and thus mental ones) with binary nodes representing neurons. This is usually contrasted with representationalism, which sees mental functions operating at a higher level which cannot yet be properly encapsulated by connectionist models. Although they were once believed to be mutually exclusive, connectionism and representationalism both seem to be approaching the same problems from different ends of Hogan’s cognitive architectures, that is, connectionism builds its models from neurobiological evidence while representationalism builds its models from broader, higher-order categorical processes derived from folk models of the mind. Yet it seems that these are complimentary programs that will eventually reconcile their data.



sort of Yeatsian gyre. These aspects of the novel approximate what Edward Lorenz first termed “strange attractors,” small nodes that create surprisingly self-reinforcing loop structures.<sup>10</sup> As Peter Francis Mackey remarks of this trend in *Ulysses*, “It would be like a spiral inexorably widening, turning back in upon itself, nearly but not quite repeating the exact form of a previous loop” (45). As recent complex systems research has frequently asserted, the mind itself functions on similar principles, especially in dynamic models of self-formation.<sup>11</sup> Such models are surprisingly similar to Hofstadter’s strange loops and offer insights into Joyce’s novel as one obsessed with autopoiesis of a particularly strange variety.

However, repetition, that oldest of rhetorical techniques, is only the most superficial example of strange loops in the novel. I consider *Ulysses* to be an example of a cognitive fiction and, consequently, the strange loop qualities of the text serve not merely as symptoms of aesthetic representation, but more accurately as modeling, rather than mirroring, functions. If the flow of pre-linguistic “mentalese” that constitutes consciousness is largely accessible only through the language faculty, Joyce draws us closer to understanding the inextricable link between mind and language. There are perhaps hints of a Sapir-Whorfian perspective here, but the common strange loop properties of mind and language urge us to recognize at least the possibility that consciousness is somehow bound to language. Indeed, both *Ulysses* and, to a greater degree, the *Wake* frequently remind us of this fact. Consequently, Heusel’s “drama of cognition” is perhaps a better description of *Ulysses* than she allows: cognition is at the very heart of both Joyce’s novel and Hofstadter’s strange loop concept. Although the formal strange

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<sup>10</sup> See Hawkins for a comprehensive discussion of strange attractors and literature.

<sup>11</sup> A huge body of work exists in this area, but see the work of Robin Vallacher for a more complete exploration of dynamic systems and self-concept, especially “The Dynamical Perspective in Personality and Social Psychology.” For an early but thorough overview of the self as system, see Annerieke Oosterwegel and Louis Oppenheimer’s *The Self-System: Developmental Changes Between and Within Self-Concept* (1993).

loops in the text certainly function as analogs to works such as M. C. Escher's *Spiralen* or Bach's *Canon per Tonos*, they signify something even more central to the text itself: human consciousness as an autopoietic strange loop.

Joyce's stream of consciousness best reflects a strange loop in its frequent and often subtle shifts between the Real and the Imaginary.<sup>12</sup> In *Ulysses*, Joyce takes the stream-of-consciousness technique, similarly employed by modernists such as Woolf and Faulkner, to an extremely sophisticated level—in fact, so sophisticated that I contend that it models consciousness as a strange loop. Close examination of the novel's internal monologues, especially those of Stephen and Bloom, allows us to see that the formal micro-details that I discussed previously are in fact evidential of consciousness's structure in the novel. Indeed, *Ulysses* is an especially "psychosemiotic"<sup>13</sup> text, and its chains of signifiers constantly reinforce the text's tangled hierarchy as one perpetually concerned with the stream described by William James's psychology and contemporary models of dynamic cognition.

Joyce perhaps best captures the strange loop qualities of consciousness through the ruminations of Stephen Dedalus, Joyce's most pervasive literary doppelgänger. Stephen's thoughts are extremely self-referential, so much so that they quite literally loop into themselves. Consequently, Stephen's sense of self is paradoxically both static and fluid. For example, he states that "I am another now and yet the same . . . A server of a servant" (*Ulysses* 10), a markedly recursive statement that points to the dynamic status of his self as a fluctuating multiplicity. He can only formulate an identity through constant reinforcement, yet this

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<sup>12</sup> These distinctions are used in Lacan's tripartite division between the Real, the Imaginary, and the Symbolic, but here my distinction is a more general division between the world as perceived and the world as it exists independently of our perception of it.

<sup>13</sup> Psychosemiotics itself is a term borrowed from Charles Saunders Peirce, whose own semiotic system was far more rooted in psychology than Saussurean semiology.

reinforcement does not allow him to deny the inherently dynamic nature of self-formation. In a particularly revealing musing, Stephen thinks that “[t]hought is the thought of thought” (21). Rather than begging the question or inviting circular reasoning, Stephen’s statement draws our attention to the strange circularity inherent in consciousness as a process of self-reference. This calls to mind Spinoza’s idea of the *conatus*, the “relentless drive of each being to preserve itself as itself” (N. Holland, *Brain* 219).<sup>14</sup> Like the *conatus*, Joyce’s theory of consciousness as expressed here as a strange loop is almost autocatalytic in its incessant self-creation.<sup>15</sup> In fact, given Joyce’s familiarity with Spinoza, it is possible that his own autocatalytic, autopoietic strange loops might partially originate in the Spinozan *conatus*.<sup>16</sup>

In addition to these recursive thoughts, the frequent transitions between internal and external levels in the text also mark Joycean stream of consciousness as a strange loop. By moving between hierarchical levels, “the prose switches from an internal to an external perspective, from the labyrinth of the mind to the labyrinth of the streets. This kind of shift in levels is obviously a privilege of verbal labyrinths not available to the explorers in visual manifestations of the design” (Faris 25). When Bloom or Stephen shift from perceiving the world to perceiving themselves within the world, they are replicating this process. This level-shifting is one of the central aspects of strange loops, and although it has often frustrated readers by blurring the boundaries between psychological/subjective and physical/objective levels of

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<sup>14</sup> Spinoza discusses this in his *Ethics* (passim). It is interesting that Damasio recycles the term relatively unchanged in his contemporary neurophilosophical theories of self, mind, and consciousness. The *conatus* also seems to presage autopoiesis (and likewise strange loops) as a self-organizing process underlying consciousness.

<sup>15</sup> Autocatalysis, a term introduced by AI pioneer Alan Turing, is often likened to autopoiesis (Livingston 86).

<sup>16</sup> Joyce references Spinoza in “Ithaca” by placing a fictional work, *Thoughts from Spinoza*, on Bloom’s bookshelf. Joyce also mentions Spinoza in “Cyclops,” although there it is more likely a comparison between Bloom and Spinoza as both were Jewish.

reality in the text, this very blurring demonstrates the important result of such a tangled hierarchy: neither level can be separated, because they exist in tandem.

This shift in levels is most pronounced in the “Proteus” chapter. As Stephen wanders along Sandymount Strand, his thoughts fluctuate between internal monologue and external perception, moving between levels in a way that defies any discrete boundary between interior subjectivity and exterior objectivity: “the text weaves in and out of Stephen’s mind without perceptible transitions, fusing outer with inner reality, gestures with thoughts, facts with reflections” (D. Cohn 495). For example, while he cogitates on the strand, Stephen occasionally returns back to “reality,” such as when the tides’ movements extract Stephen from inward thought back into the external physical world. This is highly reminiscent of the strange, mystic loop observed by Kierkegaard, with “every moment leaping into the infinite and every moment falling surely back into the finite” in a seemingly endless cycle.<sup>17</sup> Similarly, Kierkegaard famously defined the human self in *The Sickness Unto Death* as “a relation which relates itself to its own self” (147), a looping definition imbedded in Joyce’s own model of consciousness as embodied by Stephen. Rather than a tautology, Kierkegaard is emphasizing how important self-referential functions, such as those exhibited by Stephen, are for defining what a self is and how it emerges.

In this sense, the constant rising and falling of levels serve to reify Stephen’s self-concept; however, this concept is deeply entrenched in the novel’s often paradoxical conception of time and space. As Stephen states, “I am, a stride at a time. A very short space of time through very short times of space” (31). Stephen’s self therefore constructs itself in a thoroughly Einsteinian reality, one where time is nonlinear and loop-like, especially if one considers the

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<sup>17</sup> John Barth adopts this Kierkegaardian maxim in “The Literature of Exhaustion” (89).

closed time-like curves introduced by Gödel.<sup>18</sup> More importantly, this temporal schema allows us to understand Stephen as seeing himself both simultaneously, in the synchronic sense required to perceive a strange loop in its entirety, and linearly, in the diachronic sense required to experience the strange loop pattern from within.

Consequently, Stephen crosses not only the ostensible rift between subject and object, but also that between Newtonian and Einsteinian perspectives, looping between different configurations of spacetime. Both are important when considering strange loops in the text. On one level, a strange loop requires linear, sequential motion in order for a movement between hierarchical levels to occur diachronically; and, on another level, when an observer steps outside the strange loop—what Hofstadter calls “jootsing,” (that is, jumping outside of the system)—he or she sees it as organizationally permanent, that is, synchronically. Strange loops operate in both modes depending on the level of the observer. For example, Stephen’s statement in “Nestor” demonstrates this ambiguous temporality when he ruminates about his encounter with Mr. Deasy, “As on the first day he bargained with me here. As it was in the beginning, is now” (24). Stephen echoes both Christian credo and a markedly nonlinear vision of time. Rather than mere “abstrusities” (38), Stephen’s looping thoughts are mirroring the pattern described by Hofstadter, one that resembles a paradoxical “level-crossing feedback loop” (*Metamagical* 394). Yet, despite Stephen’s frequent musings on nonlinear time in *Ulysses*, the novel’s macrostructure remains largely linear, following the clock with an almost obsessive precision; Joyce does not depict genuine temporal nonlinearity until the *Wake*. Nevertheless, throughout “Proteus” Joyce entertains the possibility that time, like space, is indeed nonlinear.

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<sup>18</sup> Gödel proposed a corollary to Einsteinian relativity in 1949 whereby one could travel faster than light and thereby travel back in time by looping forward around the block universe. I explore this in detail in Chapter Seven.

One of the most debated questions posed in *Ulysses* likewise arises late in “Proteus” when Stephen, perhaps rhetorically, asks, “What is that word known to all men?” (41). Richard Ellmann argues that the answer is “Love,” while others have asserted that Joyce meant “death.”<sup>19</sup> I would like to pose an alternative and suggest that the sentence immediately following the question holds another possible answer. Stephen replies, “*I am* quiet here alone” (41, emphasis mine). If we read this as the reply, then the “word known to all men” is one that, unlike “love,” is undeniably universally applicable to conscious human beings, namely the personal pronoun “I.” The ghost of Stephen’s mother is therefore unable to answer his question later in “Circe” precisely because the word itself is incommunicable except in the first person. In other words, only the subject can truly understand the manifold dimensions of his own subjectivity, his own self-concept.

The repetition of “I am” later in the same passage in “Proteus” reinforces this suggestion. Stephen, in an almost mantric state, repeats “As I am. As I am. All or not at all” (41). Indeed, in some ways, Stephen’s comments are a reinforcement of that very statement, that without the notion of a realized self, of an “I” in all its manifold dimensions, one does not exist. This accords with Hofstadter’s idea that the apparent core of consciousness is the presence of an “I” that is capable of forming itself as such, and perforce reflecting on itself endlessly in a strange loop. Furthermore, that Stephen must reiterate his “I”-ness agrees with the notion that “we self-perceiving, self-inventing, locked-in mirages are little miracles of self-reference” (Hofstadter, *SL* 363). Indeed, self-reference in this sense pervades the entire novel.

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<sup>19</sup> See Ellmann's preface to the Gabler *Ulysses* for an elaboration of love as the “word that all men know.” Another possibility is “touch,” as the word surrounds the question. Certainly Stephen is primarily thinking about sex, but this too might reinforce my argument because, from a Darwinian perspective, sex is geared toward the perpetuation of the organism, or biological self. This contradicts Romantic notions of love as the abandonment of the self in the other (an idea upheld by Whitman), but it falls back upon Spinoza’s notion of the conatus, the drive of each being to preserve itself as itself, achieving its ultimate biological realization in procreation.

The repetition of “I Am” throughout the rest of the novel further evinces Joyce’s notion of an autopoietic self-concept. Certainly on some level “I Am” refers to both the Old Testament name of God “אֶהְיֶה אֲשֶׁר אֶהְיֶה” (often translated as “I Am That I Am”) in Genesis and the literal translations of the Cartesian *cogito ergo sum* (or alternatively, *je pense, donc je suis*) and the Freudian *ego*.<sup>20</sup> All of these concepts are intricately intertwined with the idea of consciousness, and the repetition of “I am” in Stephen’s—and also in Leopold Bloom’s—thoughts strengthens the argument that one of Joyce’s fundamental concerns is indeed representing consciousness itself as a self-reinforcing strange loop.

In “Scylla and Charybdis,” readers encounter perhaps the most explicit evidence of Stephen’s (and possibly Joyce’s) obsession with the self as such. In the midst of his exegesis of *Hamlet*, Stephen states, “Molecules all change. I am other I now . . . But I, entelechy, form of forms, am I by memory because under everchanging forms” (156). The flux of a self-concept here reappears, returning again to the notion of a dynamic, self-organizing “I.” Joyce’s use of “entelechy” is telling, because entelechy in Aristotle implies a certain sort of emergence, an actualization of potential that finds a parallel in the emergentism espoused by Hofstadter. Furthermore, the “form of forms” is the mind in *De Anima*, where Aristotle describes the Prime Mover as thought thinking itself. This conception of the deity is itself a self-referential strange loop, but more importantly it points to Joyce’s understanding that self-referentiality lies at the core of consciousness.<sup>21</sup> Stephen seems to be questioning the position held by thinkers such as

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<sup>20</sup> Descartes’s well-known phrase is usually rendered in English as “I think therefore I am.” Freud borrows “ego” from the Latin first person pronoun. In an interesting parallel, Hofstadter notes: “Although my strange loops are obviously very different from Freud’s notions, there is a certain similarity of spirit” (*SL* 211).

<sup>21</sup> An entire discussion might be made of the relationship between consciousness and divinity. It might be that consciousness so impresses us with its seeming infinitude that the deity is merely an anthropomorphic embodiment of consciousness on a larger scale. Writers such as Pynchon and Dick suggest as much; see my Chapter Eight and Nine.

Locke and Hume, who believe that consciousness is merely episodic memory or perception without any necessary reflexive or self-referential function. Instead, Joyce seems to be asserting that the “self-symbol” validates itself through its own autopoietic processes of self-creation, reiterating its selfhood in order to achieve some sense of metastability.<sup>22</sup>

This process achieves its clearest manifestation when Stephen proceeds to say “I, I and I. I,” followed by “A. E. I. O. U.” Although the latter sequence is a cryptic note of thanks to Joyce’s benefactor George Russell (who wrote under the moniker “AE”), it is interesting to note that the “I. I.” in the former would have been Joyce’s own initials in the classical Latin alphabet—one of many intrusions by the author into his own text. The repetition of “I” should also strike us as profoundly self-reinforcing, and while its position as the middle vowel in the “A.E.I.O.U.” sequence is on one level a coincidence of its alphabetical arrangement, it might also denote the conceptual centrality of the “I” for Joyce.

Furthermore, just as the self is constantly in a state of recreation, “so does the artist weave and unweave his image” (159). Here, Stephen begins to explain his most explicit idea of self-hood, invoking a Shelleyan paraphrase when he states “that which I was is that which I am and that which in possibility I may come to be” (160). Again, the self for Stephen is a self-organizing system, a strange loop in a constant process of autopoiesis. His meditation on the connection between art and the artist’s self-concept likewise reflects Joyce’s own act of autopoiesis through the text itself, a process that I will discuss in detail shortly.

Lest this connection be misconstrued as a hopelessly selfish or narcissistic portrait of Stephen, I would add that the mind is also a loop that is not confined, as Hofstadter notes, to our

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<sup>22</sup> Metastability is a crucial concept in complex systems theory, especially as used in cognitive science: “The metastable régime—which contains neither stable nor unstable states, no states at all, in fact—gives rise to a far more fluid, complimentary mode of operation in which it is possible for apparent contraries to coexist in the mind at the same time” (Kelso 183).



“crania.” Rather, consciousness behaves like a strange loop that actively engages and internalizes the physical and social world. As Stephen notes, “Yes, evening will find itself in me, without me” (41). As in Wallace Stevens’s “The Snow Man,” the external and internal worlds are not as distinct as Cartesian models might suggest. Rather they are intertwined, more like a tangled hierarchy than a disconnected, partitioned dichotomy. Escher’s *Bond of Union* is an excellent visual depiction of the strange loop in this context. Like the two figures in Escher’s lithograph, consciousness in both Joyce’s novel and Hofstadter’s model entwine, conflating the levels of self and other. The mind is constantly extending itself to internalize its environment as a level-crossing, integrationist loop.

Numerous critics note that Stephen is almost exclusively cerebral, that he privileges the mind over the body in typical Cartesian fashion. In contrast, I would argue that this is an oversimplification of both Stephen’s and Joyce’s impression of consciousness. For Joyce, as for Hofstadter, the mind can never be completely separated from the body. In an almost Blakean turn toward monism, the mind emerges from the body for Joyce. As Stephen notes, “Limits of the diaphane. But he adds: in bodies” (31). While he may be presumably commenting on Aristotelian notions of vision as a process of interacting corpuscular bodies, he is also commenting on the illusion of the Cartesian mind/body dichotomy. For Stephen and Joyce, the flesh is ever-present, no matter how extrasomatic the mind may seem. Likewise, Stephen meditates, “The cords of all link back, strandentwining cable of all flesh” (32). The body and the mind are likewise not mutually exclusive here, and “Joyce thus insists that physical experience produces consciousness” (Mackey 106). For Kenner, the “strandentwining cable” is language,<sup>23</sup> but, as I hope to show in my discussion of *Finnegans Wake* later in this chapter, both language

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<sup>23</sup> In *The Pound Era*, Kenner uses the phrase to describe Joyce’s philological project as a whole.

and consciousness are bound to the body in an umbilical, cybernetic fashion. Read as such, the “strandentwining cable of all flesh” likely refers to the mind, and more specifically to consciousness, itself necessarily both organic and linguistic, both protein and protean. Like Hofstadter, Joyce proposes that consciousness arises from iterative physical processes rather than from a Cartesian ghost in the machine.<sup>24</sup>

Yet it is Leopold Bloom, the central protagonist of *Ulysses*, who best demonstrates the physicality of consciousness and how it forms an inextricable loop with one’s physical and social environment. Like Stephen, Bloom’s thoughts traverse levels seamlessly. Throughout “Calypso” and “Lotus-Eaters,” Joyce unpredictably shifts from the real to the mental. In their dynamic shifts, Bloom’s thoughts “move like a complex system, spinning, turning, folding, almost but never quite repeating a restricted, creative path of personality, akin to how elements in a complex system follow parameters of behavior governed by other pattern-making attractors” (Mackey 119). This complex system is more specifically a strange loop, one that gives readers “a focused, intensified, even kaleidoscopic, perspective of Bloom” (121). Bloom’s mind is both immersed in and emerges from his surroundings. And like Stephen, he can never extricate himself from his physical environment, including his spatiotemporal body.

Joyce repeatedly emphasizes Bloom’s emergence of mind from body, echoing both Hofstadter’s strange loop as a geometry rooted in physicality and increasingly influential theories of consciousness, notably those proposed by neuroscientists Gerald Edelman and Antonio Damasio.<sup>25</sup> Both Edelman and Damasio argue that consciousness can only be understood as a

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<sup>24</sup> The notion of the “ghost in the machine” was coined by philosopher Gilbert Ryle in *The Concept of Mind* (1949) to denote the Cartesian mind/body duality. Arthur Koestler, whom I’ve suggested influenced Hofstadter, adopted it as the title for *The Ghost in the Machine*.

<sup>25</sup> For treatments aimed at a more general audience, Edelman’s *Bright Air, Brilliant Fire* is helpful, as are Damasio’s *Descartes’ Error*, *The Feeling of What Happens*, and *Self Comes to Mind*.

process that is not merely self-referential, but quite literally embodied. Indeed, the embodied nature of consciousness forms one of the central tenets of autopoiesis, as noted by Hayles in *How We Became Posthuman*, a central thesis of which is likewise that consciousness must necessarily be understood as embodied. Joyce also belabors this point, not only complementing his recurrent monism but, more importantly, positing that embodiment underpins consciousness.

In addition to this embodiment, the ultimate unreality of this self is addressed by Joyce. Neither Bloom nor Stephen truly completes his self-realization, though one may argue that Bloom comes much closer than the young, would-be artist. Hofstadter envisions the discrete “I” or self “as a hallucination perceived by a hallucination . . . the ‘I’ as a hallucination *hallucinated* by a hallucination” (SL293). Bloom’s hallucinatory experience in “Circe”—where Bloom most explicitly and dramatically struggles to stabilize his self-concept—implies that his sense of self is similarly manufactured through continual illusion. Rather than a denial of the self’s reality, Hofstadter’s statement is aimed at dissembling essentialist notions of selfhood. Although he complicates this aspect of his model through his insistent references to the self as the “soul” (while excusing any spiritual connotations in the term), Hofstadter repeatedly notes that his project is aimed at building a model of the conscious self as pattern rather than as some sort of essence or Form.<sup>26</sup> Throughout *Ulysses* this pattern strongly resembles the sort of strange loop that Hofstadter sees in Escher’s fantastic lithographs. However, neither Joyce’s nor Hofstadter’s purpose is to reduce the self to an idealist fantasy, but rather to demonstrate that the self is not some eternal and cohesive animating entity; it is a multiplicity, more like Dennett’s Multiple Drafts Model than Descartes’s cogito. Certainly the “I” or self “refers at one and the same time

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<sup>26</sup> Hofstadter maintains “soul” to retain the sense of mystery surrounding the self. Significantly, “soul,” like “conscience” is a crucial word in *A Portrait of the Artist as a Young Man*: “I go to encounter for the millionth time the reality of experience and to forge in the smithy of my soul the uncreated conscience of my race” (213).

to a highly tangible and palpable biological substrate and also to a highly intangible and abstract psychological pattern” (*SL* 298), but it is that very abstraction that often eludes us. Bloom similarly struggles to define himself in the novel, using his movements around Dublin in some sense as a peripatetic act of self-realization. As Bloom muses, “Every life is many days, day after day. We walk through ourselves, meeting robbers, ghosts, giants, old men, young men, wives, widows, brothers-in-love, but always meeting *ourselves*” (175, my emphasis).

To achieve this self-actualization, Bloom relies most explicitly on his senses. In fact, perception is for Hofstadter, as it was for William James, one of the central processes underlying consciousness. If the self is that which can make symbolic sense of the world—and indeed attempts to understand itself—then Leopold Bloom certainly takes up the challenge. In a rather ironic turn of phrase, Hofstadter notes that “[t]o perceive is to make a fantastic jump from James’s ‘blooming, buzzing confusion’ to an abstract symbolic level” (*SL* 300). In a similar vein, Bloom’s perceptual acumen is crucial to his self-formation. He defines himself as the world defines him, an ecological<sup>27</sup> strange loop of sorts. In some sense, “[i]t is the upward leap from *raw stimuli* to *symbols* that imbues the loop with ‘strangeness’” (187, emphasis his). Likewise for Bloom, it is the process of perceiving, of internalizing the external world as linguistic symbols, which allows him to proceed upward from raw, sensual stimuli to higher-order, symbolic understanding.

This same process underscores language itself, a means of moving from raw qualia to symbolic representation. As Hofstadter notes, language proceeds “by the compounding of old ideas in new structures that become new ideas that can themselves be used in compounds, and round and round endlessly, growing ever more remote from the basic earthbound imagery that is

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<sup>27</sup> The notion of an ecological self finds one of its earliest formulations in the work of anthropologist and cyberneticist Gregory Bateson. See Bateson’s *Steps Toward an Ecology of Mind*.

each language's soil" (*SL* 201). This fits snugly with the upward motion of Bloom's thoughts, from the corporeal to the abstract, then back to the corporeal. Like Bloom, we as readers must also move between the microscopic and macroscopic, since "[n]o meanings would remain down there, no sticky semantic juice" if we concerned ourselves only with minutiae (202). When viewed from these various parallaxic levels, both Stephen and Bloom provide examples of what Hofstadter calls the "Gödelian swirl of self" (236), consisting of an outer layer of world references, a middle layer of one's own life, and an inner layer of one's most private fears and anxieties. All of these layers pervade each other, forming a circuit that runs through all three levels in order to better solidify one's self-concept, a strange loop that thinks about itself thinking about itself.

Again, the centrality of self in the novel might seem like an egotistical streak in either the characters or Joyce, but self-perception is a most natural consequence of perception in general: after all, the self is the most persistent presence in a living organism's environment. As Hofstadter notes, "We are all egocentric, and what is realest to each of us, in the end, is *ourself*" (*SL* 92). Hence, it is the interaction of environment and organic mind in the novel that gives rise to selves, phenomena that emerge from and as a complex dynamic system. The emergence of selves is thus an example of what Hofstadter calls "Gödel's Trojan horse" (237), an appropriate Homeric metaphor describing the apparent paradox of consciousness emerging from materiality.

In addition to modeling the perceiving self as a strange loop, *Ulysses* also demonstrates the symbiotic nature of consciousness in the strange loop model. As Hofstadter notes of our social interactions with others, "We live inside such people, and they live inside us" (*SL* 253). Although this statement initially sounds highly contentious for its spiritual overtones, Hofstadter actually has a firm, materialist basis for this assertion. He proceeds to explain that with enough

cognitive interaction, human minds reach what he calls *critical mass*: “when having a pattern . . . amounts to having a significant percentage of the person—a significant percentage of their self, their soul, their ‘I,’ their consciousness, their interiority” within ourselves (232). Bloom’s internalization of both human and animal consciousnesses in *Ulysses* is remarkably similar to Hofstadter’s idea. One of the best examples of this sort of reciprocation of consciousness occurs in “Ithaca” when Stephen and Bloom briefly become “Blephen” and “Stoom” (635), entwined like the figures in Escher’s *Bond of Union*. Here, Bloom has internalized Stephen to the extent that the two men blend, each self containing and contained by the other. Likewise, Bloom frequently predicts what his wife Molly is thinking throughout the novel. And this exchange is not limited to humans: Bloom empathizes with his cat Pussens in “Calypso” to the point of sharing the feline’s thoughts. In effect, Bloom endows his pet with a Theory of Mind, a side effect of his consciousness as a process of integration.

As well as these overt confluences of consciousness, Joyce blends the characters’ idioms with the narration throughout *Ulysses* such that voices merge and intermingle. Kenner called this tendency the “Uncle Charles Principle” (*Joyce’s Voices* 15), and it reinforces the fluid notion of selfhood proposed by both Joyce and Hofstadter. Here the boundary between character and narrator is blurred, demonstrating that the narrator—and indeed Joyce himself—has so thoroughly employed his Theory of Mind to understand the thoughts of others that he quite literally thinks in their idiom. For example, throughout “Nausicaa,” the narration slips among the third-person narrator’s idiom and Gerty Macdowell’s. Similarly, Bloom dwells largely in the minds of others throughout the novel. He is, like most of us humans, endowed with a highly evolved and often overactive Theory of Mind, enabling him to “read” the minds of others and incorporate their strands of thought into his own stream. In effect, his consciousness contains

bits (a term invoking the idea's cybernetic basis) of others, conforming to Hofstadter's assertion that "we see that since we mirror many people inside our crania, there will be many loops of different sizes and degrees of complexity" (*SL* 212). This comment is particularly perceptive given recent neuroscientific evidence about mirror neurons, neurons that fire both when we perform an action and when we see others perform that same action.<sup>28</sup> Others quite literally exist within us, as both Joyce and Hofstadter suggest, as symbols that very well may have a correspondent neural network beneath them.

This consideration goes beyond the text proper. As Hofstadter notes, "Everything I do is some kind of modified borrowing from others who have been close to me either actually or virtually, and the virtual influences are among the most profound" (*SL* 250). Such virtual influences include characters in novels and historical figures—Bloom and Joyce, for example. Hofstadter's assertion does indeed lend itself somewhat to the memetic ideas proposed by Richard Dawkins in *The Selfish Gene* (1976), with consciousness able to nest itself in some form within other minds like a meme.<sup>29</sup> Similarly, the strange loops of the novel and its author "entwine." As such, they demand a comparison between how Joyce models consciousness in *Ulysses* and contemporary models in cognitive science. But to what degree does Joycean consciousness conform to Hofstadter's model? Although not precisely, I see them conforming remarkably well.

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<sup>28</sup> Mirror neurons are still poorly understood, but they seem to underlie many of the more complex human behaviors, particularly those that rely on imitation and empathy. See Rizzolatti and Sinigaglia's *Mirrors in the Brain* for the definitive overview of the topic.

<sup>29</sup> Dawkins's idea of memes is quite controversial. Originally used by Dawkins as a rhetorical metaphor, the idea was popularized by Hofstadter and Dennett in *The Mind's I*. Hofstadter seems to endorse a version of memetics, although he uses "scheme" for Dawkins's "meme complex" throughout *Metamagical Themas*. For a cogent treatment of the meme idea, see Dennett's *Darwin's Dangerous Idea*, as well as *Darwinizing Culture*, edited by Robert Aunger and featuring essays by a variety of supporters and critics of memetics. For a perceptive argument against memetics, see especially Sperber in the latter volume.

In addition to internalizing others, Bloom also internalizes the labyrinthine structure of Dublin, a structure prefigured by Joyce's use of the Daedalus myth in *A Portrait of the Artist as a Young Man*. Fully realized in *Ulysses*, the novel's setting loops into itself, and indeed the city becomes "Joyce's vision of a holographic and self-organizing world, a living chaosmos" (Kuberski 96). This chaosmos is a strange loop, a constant swirl of levels, and Bloom's interaction with it intimates a delicate entwinement between the city and his own consciousness. The frenetic movement of the city—"trams passed one another, ingoing, outgoing . . . squads of police marching out, back: trams in, out" (134-35)—mimics the chaotic looping structure of Bloom's mind. In this sense, "Joyce is stressing the labyrinth of the streets rather than the labyrinth of language: he is using the term to refer to the labyrinth of the city rather than the mental labyrinths that structure the novel" (Faris 29). Bloom's mental wanderings in "Circe" perhaps best insinuate the connection between the strange loops of Dublin and the strange loops of the mind. In many ways, the contorted structure of Dublin reminds us of "the labyrinths *in* the text reinforcing the labyrinths *of* the text" (15, emphasis mine).

Consequently, Bloom's journey around Dublin is itself a loop, at least spatially. Like Odysseus, he wanders from his Ithaca, endures bizarre adventures, then returns home. Indeed, this route is more than just circuitous; it is strange insofar as "despite one's sense of departing ever further from one's origin, one winds up, to one's shock, exactly where one had started out" (Hofstadter, *SL* 102). If we read Bloom as Virgil, as Derek Attridge suggests (122), we arrive at a similar conclusion: for all his wandering with Dante through Hell, the poet never actually gets anywhere, but remains confined to the inferno. Much the same is true of Bloom wandering the labyrinth of Dublin.



The image of the labyrinth, so often associated with Borges, is nevertheless equally associated with Joyce. A cadre of critics has addressed this connection,<sup>30</sup> but it is important to note that the labyrinth is itself another variety of strange loop. Like a strange loop, “the word *labyrinth* or the description of a labyrinthine structure serves as a symbol for a forest, a city, a mind, or a text” (Faris 10). In fact, Joyce’s schema for the novel explicitly lists the labyrinth as his model for “Wandering Rocks.” For my purposes here, it is important to note that the labyrinths in Joyce’s texts are particular types of strange loops, a connection that I will explore further in Chapter Four.

Nevertheless, the question remains: How do readers find their way out of the strange-looping labyrinth of *Ulysses*? Perhaps the best way is to recognize that the novel is indeed a tangled hierarchy of strange loops, a psychocybernetic labyrinth that contains infinity within finite bounds. This epiphany allows the reader to step back, consider the text as a whole, recognize its endlessness, and proceed transformed. As Robert Scholes has noted in a slightly different context, epiphany is “a key to the labyrinth of Joyce’s work” (“Epiphany” 65). Epiphany as explored in Joyce’s work by Morris Beja and others<sup>31</sup> is, on closer inspection, not so much religious (although given Joyce’s Catholicism, it is certainly this too) so much as a self-realization, a coming into consciousness through language and embodiment; it is the confession of the self as autopoietic, a secular and materialist realization that the mind is the ultimate and singular reality for the subject, but nevertheless part of a grander universal network. Epiphany is also the recognition by the subject that the labyrinth of consciousness is indeed the pattern formed by the emergence of a self-system aware of itself. This catalyzes a constant process of reappraisal that likewise forces us as readers to re-evaluate the text. As such, the epiphanic

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<sup>30</sup> Two of the best full-length studies on labyrinths in Joyce are those by Kumar and Faris.

<sup>31</sup> Beja’s *Epiphany in the Modern Novel* (1971) is an early, influential work on the subject.

moment in Joyce is the moment of strangification, the defamiliarization one feels in the presence of the ordinary made strange. The strange loops in the text urge us to reexamine what we might otherwise overlook and imbue everyday experience with strangeness. And one way out of such a labyrinth is to go back to the beginning and reread the novel, looking closely for such epiphanies and how they reflect the process of consciousness.

Another solution to the tangled hierarchy of the text is to attempt to discover the labyrinth's center. In this instance, that center might be construed as the labyrinth's maker: Joyce himself. In many senses, the "I" that is most reinforced by the novel's circuits is Joyce's own conscious self. As the labyrinth winds itself into itself, readers find at its center neither the characters nor Dublin, but rather Joyce's consciousness. Like the meditative labyrinths popular with Renaissance mystics, Joyce's peripatetic journey leads him to a firmer realization of himself and his place in literature. For example, through the maze of "Oxen of the Sun," a chapter where the narration progressively mimics the entire history of English literature, Joyce in some sense places himself at the center of the labyrinth of literature, concluding his stylistic wanderings in his own personal idiom. Likewise, with each rereading of the novel, readers also garner not only a firmer knowledge of the text and its characters' worlds, but also a firmer understanding of Joyce as artist and man. Incidentally, readers come to a greater realization of themselves as well. And that is perhaps the most profound impact of Joyce's novel: its ability to weave itself ever tighter around itself, its author, and its readers in a strange loop. We the readers (Theseus) find at the center of the labyrinth (*Ulysses*), ever and always creating and created by his creation, Daedalus (Joyce).

Indeed, Joyce is the central character of the novel in many ways, reinforcing the strange loop qualities of the text. As Richard Pourier notes, "The drama of *Ulysses* is only incidentally

that of Stephen, Bloom, and Molly; more poignantly it is the drama of Joyce himself making the book” (103). The artistic act of creating a modernist epic, a Sisyphean endeavor to any other author, becomes a crux of the novel. Reading *Ulysses*, one comes to a daunting realization that this novel is much more than it seems—more like what William Carlos Williams,<sup>32</sup> describing poetry, calls “a machine made out of words” than a printed text. Something about this *machine infernale* suggests that there is an authorial consciousness beneath it, another strange loop infusing its pages.

The autobiographical criticism on Joyce is legion, yet it is worth noting just how extensively his life pervades the novel. As Joyce’s friend and interpreter Frank Budgen notes, “It is truer of Joyce than of most writers to say that his books grew out of his own life” (323). Similarly, Louis Gillet states that “[w]hen your work and life make one, when they are interwoven in the same fabric,” the distinction between the two is not always clear (qtd. in Ellmann, *Joyce* 149). Gillet’s reference to weaving is again appropriate given the etymology of “text,” but more importantly, Joyce is indeed entwined with the work itself in a strange loop. One cannot understand either the novel or the author without reference to the other, leading one into an infinite regress, a psychocybernetic labyrinth with Joyce mischievously tinkering away in the center.

Of course, Joyce is not saying explicitly, as many postmodernists relish in saying, that he is a fiction, except perhaps in its etymological sense of “something made or fashioned.” Such a statement might lead to the sort of *regressus in infinitum* I mentioned as an aspect of the Liar Paradox. Rather than such a regress, Joyce is asserting through his fiction that the author and the text, like the mind and the body, exist in symbiosis, that they cannot be understood as discrete

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<sup>32</sup> Significantly, Williams contributed to *Round his Factification for Incarnation of Work in Progress* (1929), published by Joyce’s publisher, Sylvia Beach. This collection of critical essays discusses what would later become *Finnegans Wake*.

entities: author and text exist as a tangled hierarchy like mind and body, each begetting and begotten by the other. As I discuss in Chapter Two, this presents us with an interesting and unexpected theoretical possibility in applying strange loops to literary texts.

A final note on the verisimilitude of Joyce's work is necessary here. Many scholars have noted Joyce's dedication to realism, yet it is his painstaking attention to the detailed workings of the mind that perhaps best evinces this claim. In a rather Keatsian turn of phrase, Joyce calls beauty "the splendour of truth." Indeed, he posits in "Drama and Life" that "Art is true to itself when it deals with truth" (*Critical* 43-44), looking for "the underlying laws" that govern the universe. One of these laws seems to be the recursive nature of thought itself, a model of consciousness that resembles a Hofstadterian strange loop. Certainly Joyce was prescient in this regard, but I would add that there is no intention in this connection. Just as Bach or Escher unknowingly injected strange loop patterns into their work, so too did Joyce write his novel without that specific concept in mind. The same must be said of all the authors I discuss here. However, the text of *Ulysses*—both the physical artifact and its instantiation in its readers' minds during the act of reading—exhibits strange loop characteristics that are difficult to deny. If, as I am suggesting, one envisions the novel as a distinct consciousness unto itself, then a connection might begin to develop between theories of mind and theories of literature. In these ways, *Ulysses* stands as a prototype of literary tangled hierarchy, one from which so many of his successors, from Beckett and Borges to Thomas Pynchon and Philip K. Dick, have drawn.

### **Strange Loops in *Finnegans Wake***

If *Ulysses* is about the self as the embodied "I at the Center," then *Finnegans Wake* depicts the self's symbiotic nature, questions the self's boundedness to language, and takes the

cyclical geometries of the loop to an entirely new level of strangeness. Of course, reading the *Wake* is a “superhuman task. It involves not only reading the printed text and understanding its encyclopaedic complexities, but tracing its development through the pre-texts, and disentangling the accidental from the significant” (Adams 33); and enumerating every strange loop in the *Wake* would require a tangled hierarchy of its own exegeses. But for my purposes here it will suffice to demonstrate specific categories of strange loops within the novel and try to tease out some of their implications. This will lead us into a strange wilderness of chaos theory, theoretical mathematics, and non-Euclidean geometry, albeit only topically. Far from being a case in textual attention deficit disorder, this range of territory contained within the *Wake* reflects the all-encompassing scope that Joyce sought in “his drama parapolylogic” (*FW* 474); and it also further emphasizes just how extensively strange loops touch upon an array of ideas from the arts and sciences. Indeed, Joyce had a particularly consistent goal in mind for the *Wake*, one where art and science might coexist within a single matrix. Accordingly, this novel is a particularly appropriate place to play with Hofstadter’s ideas, given that, for Joyce, “sifted science will do your arts good” (440).

The strange loops in *Finnegans Wake* outline several aspects of this pattern that Joyce only tangentially touched upon in *Ulysses*. First, the *Wake* describes a dreamlike reality where characters’ discrete identities have no ontological reality except as they are defined in and through others, mirroring Hofstadter’s notion that consciousnesses are actually composite patterns composed through interaction. I discussed this cognitive symbiosis, or “entwinement,” in *Ulysses*, but *Finnegans Wake* takes the process as one of its central conceits. Second, this conflation between selves outlines the aforementioned relationship between strange loops and what has been referred to as chaos theory, itself heavily applied in the cognitive sciences. I will

briefly touch upon intersections between chaos theory and strange loops in light of the *Wake*'s apparent textual chaos. Third, the *Wake* takes the geometries that underlie strange loops to new levels of complexity, demonstrating just how radically strange loops can be used to conceptualize new forms. Specifically, I will show how Escher becomes a constant preoccupation for Joyce in the *Wake*, and how Escher's strange loops relate to patterns such as Poincaré's disks and Einstein's geodesics. What these three aspects reveal is a particularly cogent picture of language, especially as it is bound to consciousness; and by investigating strange loops in the *Wake*, one comes to a fuller appreciation of the possible applications of this pattern to understanding both Joyce's oeuvre and certain trends in literature and linguistics.

From the outset of *Finnegans Wake*, the self for Joyce is necessarily a narrative center of gravity such as the one posited by Dennett. A few such centers (I hesitate to call them characters) emerge throughout the text's involutions, but it seems that consciousness is constantly inscribing itself as a hybrid engram<sup>33</sup> of environment-body-mind through language in the novel. This confluence gives rise to the narrative self, a product of these interactions. Joyce acknowledges this tendency thus: "But the world, mind, is, was and will be writing its own wrunes for ever, man, on all matters that fall under the ban of our infrarational senses" (*FW* 19-20). Here I see feedback loops similar to those that populate *Ulysses*, circuits that form between the self and its environment where world and mind entangle in the process of their mutual writing. But as a dream-text, the mind in the *Wake* is more appropriately interacting with itself in its various permutations even more recursively than in *Ulysses*.

Before addressing the prevalence of strange loops in the novel, I should address how the *Wake*'s status as a "dreamwork" might provoke some questions about how a text apparently

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<sup>33</sup> "Engram" is a term taken from cognitive neuroscience to describe patterns literally inscribed in the neuronal structure of the brain during experience. It is becoming a central concept in memory research.

about dream-states could possibly shed light upon the self, let alone consciousness. Aren't we unconscious when we dream? In fact, there is a massive body of research in the cognitive sciences that suggests that the brain is in many ways more active during dreaming than during waking such that our usual privileging of wakefulness over sleep might be misplaced.<sup>34</sup> As far as the self is concerned, there is ample evidence that dreaming not only involves the self-concept but is also self-organizing and incessantly self-referential.<sup>35</sup> In part, through the multivocal selves of our dreams—themselves exhibiting a version of Bakhtinian heteroglossia—we come to know ourselves as a multiplicity rather than as a rational Cartesian unity. A relevant corollary here is William James's division of the Self into the individual "I," which is an agent with desires and will, and the social "me," which is defined through its social interactions.<sup>36</sup> This distinction provides us with an excellent corollary to the sort of multiple self which the strange loops in *Finnegans Wake* illustrate.

Various types of strange loops abound in the *Wake*, but the most obvious suggestion of this geometry is the novel's formal circularity. Joyce expands the spatial nonlinearity of *Ulysses* and Stephen's musings on nonlinear time into a full-blown metaphysics of nonlinear time in the *Wake*. Joyce's spirals resemble the grand historical cycles of Vico's *New Science* as well as Yeats's gyres; they are also the recursive spirals that characterize consciousness. Immediately, readers notice that the novel begins halfway through its final sentence—or, conversely, ends halfway through its first. The novel opens: "riverrun, past Eve and Adam's, from swerve of

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<sup>34</sup> For a recent, detailed treatment of dreaming from a cognitive perspective, see Pagel.

<sup>35</sup> One of the most promising models for dreaming as a self-organizing system is found in David Kahn and J. Allan Hobson's work. They propose that dreaming follows a certain autopoietic logic, and their notion of "bizarreness" is tantalizingly similar to the "strangeness" I am discussing here. For an anthropological take on this notion, see Jeannette Marie Mageo's edited volume *Dreaming and the Self*.

<sup>36</sup> Both George Herbert Mead and Vygotsky also adopted this perspective in their work on self-development.

shore to bend of bay, brings us by a commodius vicus of recirculation back to Howth Castle and Environs” (3). This “commodius vicus of recirculation” takes us, in a manner characteristic of a strange loop or a Viconian cycle (“vicus”), across the entire tome right back to the beginning: “A way a lone a last a loved a long the” (628). In strictly formal terms, the text is certainly a strange loop, having passed through various bizarre inversions only to find itself back at its point of departure. This signals both the end of teleological history and the nonlinearities of thought.<sup>37</sup>

As a legion of critics have noted, such circularity pervades the *Wake*, and Joyce makes no secret that his work is “cyclological” (220). As with *Ulysses*, the text constantly evokes the looping cyclicity of the *Book of Kells*, weaving with words what the monks wrought in ink: “And they leap so loopyly, loopyly, as they link to light. And they look so lovely, loovelit, noosed in a nuptious night” (226). Indeed, although the emphatic use of “loop” is coincidental, this line is an apt description of the strange loops that pervade the *Wake*. Cycles of day and night, life and death, waking and dreaming become for Joyce the stuff of both history and the mind.

Again, Joyce is not presenting mere cyclicity. Strange loops are not simply cyclical, but more specifically exhibit *recursive* circularity. As I have mentioned, the primary attribute of the strange loop is self-referentiality, and the *Wake* is replete with this process—as, for example, in the internal monologue of the stream of consciousness throughout the novel: “I have something inside of me talking to myself” (*FW* 522). There is no doubt that Joyce is wrestling with the Cartesian dualism that so pervaded his Jesuit education but, more importantly, he is again pointing to our experience of consciousness as a center of narrative gravity, albeit one that is in essence not a center at all.

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<sup>37</sup> I should mention here that Vico’s system is not entirely cyclical—it maintains an overarching grand narrative that is, ultimately, teleological in the manner of Augustine.



This absence of a center, as I will discuss in my explication of Kafka in Chapter Two, is in part the result of a system that relies upon self-definition. Throughout the *Wake*, Joyce presents a litany of such self-definitions, from the ontological to the subjective. On the ontological level, the narrator states that “that which Itself is Itself Alone” (*FW* 394), as if no outside qualifier can help to define the sort of Gödelian self-system Joyce is exploring. Again, this may seem like an example of the *petitio principii* fallacy whereby one justifies a proposition with itself, but Joyce is more accurately drawing our attention to the circular, self-referential nature of consciousness. There is no need for a transcendental explanation here, because everything in the dreamworld of the *Wake* vindicates itself simply by existing—or at least by asserting that it exists through words. This almost cosmic refusal of the great chain of being and its concomitant downward causality reinforces the recursive processes underlying selfhood as ones that are necessarily self-organizing. “I sign myself,” Shaun the Penman states (454), and throughout the *Wake* various characters from HCE (in all of his various permutations) to Anna Livia Plurabelle (in all of hers) note that they are products of their own self-signification.

This recursive self-formation unfolds in time and space, but the process is clearly delineated as a spiral, its “ownconsciously grafficking with his sinister cyclopes after trigamies and spirals’ wobbles pursuing their rovinghamilton selves” (*FW* 300). In addition to depicting a triangular and spiral geometry reminiscent of a triskele, Joyce also plays a wordgame with “I” and the Cyclopean “eye,” which he also does in the “Cyclops” episode of *Ulysses*.<sup>38</sup> In addition, Joyce depicts the self as a spiral, not just outwardly blooming but also returning to its own making, “ownconsciously” rewriting itself as a narrative constantly under revision, in accordance

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<sup>38</sup> In *Ulysses*, only this chapter and “Penelope” are narrated in the first person, although “Cyclops” only partly so. The unnamed status of the narrators in “Cyclops”—both the “I” and the mock-Homeric, mock-mythical ones—has been the subject of much speculation, and the connections with both the non-being of the self and with Beckett’s Unnamable are tantalizing threads that might be taken up elsewhere.

with Dennett's Multiple Draft Model. This process unfolds in a different sort of time, true, but the novel oscillates around repeating patterns that never quite stabilize themselves. Indeed, this metastability produces a pattern that "was cyclums cyclorum after he made design on the corse . . . again and agone and all over agun" (*FW* 336), constantly reborn in the very process of its recreation. This produces frustrating yet whimsical paradoxes because Joyce's text "moves in vicious circles yet renews the same" (184). Similarly, through its various permutations over time, the self changes but retains certain defining patterns, refashioning itself through constant autopoiesis.

Joyce uses several mythic symbols in the *Wake* that replicate this pattern. One of the most evident of these is the phoenix in its various guises. This trope reappears throughout the novel, a strange loop of sorts that is also a simple metaphor for the self's cyclical rebirth through the circadian cycle, and indeed across a lifetime. Although the phoenix traditionally emblemizes cyclicity, it also draws our attention to the paradoxes from which strange loops arise. A being reborn in the very process of its own death is another variation of the Liars' Paradox, if a weaker one, because it represents a case where two opposites coexist. Nevertheless, the cyclicity associated with the image of the phoenix is similar to the strange cyclicity associated with strange loops because it leads to creation rather than mere repetition just as readily as it confounds normal ideas about conceptual boundaries.

Other paradoxes inhere in the *Wake*, and Joyce inserts several instances of explicitly paradoxical statements: "Putting truth and untruth together a shot maybe be made at what this hybrid actually was like to look at" (169). Here is the Liar Paradox again; but that is the type of text *Finnegans Wake* constantly reminds readers that it is—a text reveling in its own paradoxicality between novel and encyclopedia, between narrative and nonsense, between saying

everything and saying nothing. Such paradox is often defined as the coexistence of two otherwise mutually exclusive facts or states, what Nicholas of Cusa called “*coincidentia oppositorum*” or “the coincidence of opposites.”<sup>39</sup> This is the central problem of the Zen kōans, themselves frequently used as examples of strange loops by Hofstadter. This connection is not superfluous either; kōans were certainly pertinent for Joyce, and he even coins an appropriate portmanteau, “Zoans” (57) as a hybrid of “Zen” and “kōans.” Such kōans are statements that defy logic yet seem true. Many strange loops present just this sort of problem to perception: How can something exist within its opposite? How can the self seem so unified yet be fragmented? How can it be that, as Rimbaud once put it, I is an other?<sup>40</sup> The sound of one hand clapping, perhaps the most well-known example, comes to mind, but I am not so much concerned about the insolubility of these paradoxes as much as their recursive circularity. A quandary similar to this Zen-like thinking appears in the coexistent tension throughout the *Wake* between chaos and order, which I will touch upon shortly.

In effect, these self-contradictory or self-defining statements depict a logical spiral. However, although the spirals in the *Wake* are apt analogs for the strange loop pattern, I should point out that the spiral alone is not a strange loop, but merely a pattern that approximates many of its features. Instead, Joyce seems to depict consciousness in the *Wake* as a strange loop, more like Hofstadter’s “eternal golden braid” or a Borromean knot than like the simpler Möbius strip. This eternal golden braid can be seen in the frequently diverging strains of text, called by Shaun the Penman “our twain of doubling bicirculars” (*FW* 295). Nor is this form merely a structural

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<sup>39</sup> Nicholas of Cusa, or Nicholas Cusanus, introduced this idea in *De Docta Ignorantia* (1453). It later became a major element in Jung’s psychology of archetypes, as well as an influential idea in Mircea Eliade’s work on myth. See Cusanus for the original instance of this idea.

<sup>40</sup> This is the usual translation of Rimbaud’s “*je est un autre*” (6). It is the basis for Ricoeur’s title *Oneself as Another*.

device: This braiding describes the entanglement Hofstadter proposes between different minds interacting with each other as well as individual minds as composites of various strands.

As autopoietic units, these strands are self-producing. Probably the most lucid—if I can use that word in reference to the *Wake* at all—expression of this self-organizing, self-referential structure appears during the “Dolph and Kev” section: “the unitate we have in one or hence shall the vectorious readyeyes of evertwo circumflicksrent searchers never film in the elipsities of their gyribouts those fickers which are returnally reproductiv of themselves” (298). Here I see a clear example of a strange loop, both cyclical and recursive, replete with “gyribouts” and “elipsities” suggestive of gyres, ellipses, and other circular imagery. But again, these patterns are not merely circular, because they are “returnally reproductiv of themselves.” This hints not only at Joyce’s cyclical time-scheme, but also addresses the autopoietic nature of self and language. Indeed, Joyce’s neologism “reproductiv” suggests biological reproduction, scientific prediction, and linguistic diction in a single word. The text thus alludes to its looping form at the microlevel of the sign while also enacting that same form in its macrostructure.

As in *Ulysses*, where minds often blend with others, minds in the *Wake* unite through their interaction, an instance of conceptual blending between self-symbols: “Closer inspection of the *bordereau* would reveal a multiplicity of personalities inflicted on the documents or document” (107). On one level, this describes the palimpsests of medieval manuscripts such as the *Book of Kells*, where layers of text were added overtop prior ones. But the “multiplicity of personalities” also implies both conceptual blending and the entwining of strange loops. Conceptual blending is an apt cognitive term for the sort of interaction we find in the *Wake*. Certainly Joyce’s portmanteaus exemplify this process in words, but he also suggests a similar process in the cognitive symbiosis of his characters, whose very identities are always entwined.

After all, the consciousnesses that exist symbiotically in others are, in effect, conceptual patterns formed through the interactions with those others, and thus human consciousness seems to actually be a blend rather than a discrete entity. It is this constant process of blending that underlies the dynamic nature of the self qua strange loop, a process that Joyce captures with the indeterminacy of both character and language in the *Wake*. Furthermore, this type of conceptual blending is rooted in recursion, as demonstrated in the constant self-reference in both of Joyce's major novels.

Introspection, either waking or dreaming, forms one means of accomplishing this sort of reflection, as when "entrenched up contemplating of myself, wiz my naked I" (*FW* 357). But there is a strange out-of-body experience involved in such introspection, one that is not so much spiritual as mystical, a sense that the individual consciousness is not necessarily trapped by its own embodiment but merely defined by it. The mind constantly "exteriorises on this ourherenow plane in disunited solod, likward and gushious bodies with (science, say!) perilwhitened passionpanting pugnoplangent intuitions of reunited selfdom (murky whey, abstrew adim!) in the higherdimensional selfless Allself" (395). Here the self is both "outherenow" embodied, yet exhibits a higher dimensionality, being both itself, nothing, and everything. This is the language of the mystic, but it is also the language of science, for which the conscious mind is merely a part of the cosmic whole; as Donne reminds us, no man is an island.

The mutable and symbiotic nature of consciousness in Joyce's novels is accordingly an excellent analogue for Hofstadter's notion that consciousness is not an isolated unity or "caged bird," but an interacting gestalt. Joyce develops this trend further in the *Wake*'s refusal to allow its characters to achieve anything approaching stability. Throughout the novel, characters fuse

and dissipate, so unstable that it is difficult to posit the existence of characters at all. Certainly this is in part a symptom of Joyce's "drama" attempting to capture the infinite fluidity of the mind during dreaming. There is no distinct self in the *Wake*, no discrete identities because, as in Hofstadter's theory of cognitive symbiosis, the self is not a discrete entity, but rather a confluence of many different braids realized through language.

The notion of cognitive symbiosis or "entwinement" reappears throughout the *Wake*. For example, often one or another of the nebulous characters insists that they are defined through others as much as through themselves: "if so be you may identify yourself with the him in you" (*FW* 496). There is certainly a meiotic aspect here, as if the union of two consciousness entities produces a more complex third, much as the strands of a Borromean knot interlace to weave more intricate patterns. But there is also the question of "[t]hat letter selfpenned to one's other, that neverperfect everplanned" (489), suggesting the singularly powerful sort of cognitive exchange that occurs in a marital relationship. Indeed, Hofstadter's own loss of his wife formed the personal basis for his expanded theory in *I Am a Strange Loop*, and it seems appropriate that mates would provide the strongest example of cognitive symbiosis. For Joyce, as for Hofstadter, love therefore seems to be a cognitive as much as a physical process, one in which "mind you twine the twos noods of your nicenames" (*FW* 468). Here I see both the splicing of two minds as well as the appropriate metaphor of the braid. Similar mergings occur with Shaun the Penman and his brother Shem throughout the novel.

However, the *Wake* extends cognitive symbiosis beyond couples or brothers to include all of humanity in one giant, symbiotic cognitive architecture, one perhaps approximating Jung's collective unconscious, Tielhard de Chardin's noosphere, or Lovelock's Gaia principle in cybernetics. Indeed, in such a collective unconscious, "[t]he sould of everyelsesbody rolled into

its olesoleself” (*FW* 329) results in an oversoul that suggests Koestler’s holons, where part contains whole and whole contains part. In Joyce’s case, the holon is both human and humanity. This notion of all cognition existing in some sort of union with each other above and beyond is unique to dreamspace, and certainly it rings a little too Platonic to agree with Hofstadter’s model. What it does point out is that consciousness is not isolated, but contingent:

. . . the first till last alsemist wrote over every square inch of the only foolscap available, his own body, till by its corrosive sublimation one continuous present tense integument slowly unfolded all marryvoising moodmoulded cyclewheeling history (thereby, he said, reflecting from his own individual person life unlivable, transaccidentated through the slow fires of consciousness into a dividual chaos, perilous, potent, common to allflesh, human only, mortal) . . . (*FW* 185-86)

This passage is rife with all the ingredients that compose Joycean consciousness: embodiment, fluid selfhood, cognitive symbiosis, and especially the recurring theme of chaos. The state of the self is always already indeterminate for Joyce.

This indeterminacy, another characteristic of strange loops, is present throughout the *Wake*, and “from spark to phoenish” (322) readers constantly wonder where in the hierarchy they stand. These often infuriating convolutions of the strange loops in the *Wake* are symptoms of its “[i]nfernal machinery” (320), purposefully designed to replicate patterns inherent in the self as a narrative construct. In Book II, when Joyce remarks in a footnote, “I’ve lost the place, where was I?” (*FW* 307), he is emphasizing this aspect of the text as a labyrinth, but one where even in the act of writing (and we in the act of reading) Joyce has slipped from the text proper into another level, that of the footnote. This is a version of the nested narratives that form the focus

of my discussions of Borges, Calvino, and Flann O'Brien, but I would like to note here that the indeterminacy here in Joyce's text points to a certain instability inherent in the strange loop.

This instability is analogous to fluidity in many respects. The water metaphors throughout the *Wake* are fitting because "[f]luid concepts are necessarily . . . emergent aspects of a complex system" (Hofstadter, *Fluid* 305). Joyce's choice of water as the primary element in the *Wake* is thus perhaps more appropriate than he could have guessed, given the remarkable similarity between fluid dynamics and the complex systems theory currently used in neuroscience, particularly in non-invasive brain imagery, to model how the mind operates. For my purposes here, it is important to note that this emphasis on fluidity necessitates a brief discussion of chaos theory in the *Wake* and how it reflects the strange loop patterns in the novel.

In my introduction, I briefly discussed chaos as a concept intimately related to the strange loop, a connection I developed earlier in this chapter. The *Wake* fleshes out this comparison, taking the occasional chaos of *Ulysses* and making it a guiding principle of the text as a whole. Critics have long discussed *Finnegans Wake's* nonlinearity,<sup>41</sup> yet this textual feature tends to produce, or perhaps is produced by, the strange loops that constitute this "gyrographically" spiraling novel (*FW* 292). Indeed, the *Wake* cannot be understood with linear logic in part because "Joyce wrote his book with no regard for the boundaries imposed by Cartesian analysis" (Gillespie 29). Rather than the security of Cartesian linearity, the *Wake* revels in the playful irregularity of chaos. In one sense, the *Wake* is indeed a "Pure Yawn" (*FW* 474), not because it is tedious reading but because "chaos" (χάος) shares a philological root with the English "yawn."

Still, critics often fail to mention that chaos is only apparent disorder: in actuality it resolves into highly ordered patterns. Chaos in this sense is best illustrated by fractal patterns,

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<sup>41</sup> One of the more comprehensive examinations of nonlinearity in the critical literature is Michael Patrick Gillespie's *The Aesthetics of Chaos*. See also T. Rice.



created by the infinite repetition of self-similar units such as those comprising the Koch curve, a classic example of a simpler fractal. In other words, their disorder is in fact based upon highly ordered microstructures such as those explored by cybernetics. They seemingly give rise to erratic, stochastic systems but are in fact highly organized. Joyce's novels are similarly complex in this sense, and the *Wake* itself is a particular fractal novel.

Given the tension in the novel between self and other, order and chaos, language and thought, it is no surprise that there is also a similar tension throughout *Finnegans Wake* between form and formlessness, between the harmonious geometry of Euclid and the unpredictable forms of Lorenz's strange attractors and Mandelbrot's fractals. The geometries in the *Wake* invite comparison to the graphic strange loops of Escher, as well as to Lobachevsky spaces and the various patterns explored by Henri Poincaré. This connection draws me close to the borders of theoretical mathematics, but more importantly it shows that strange loops are a pattern related to various other complex geometries, especially depictions of non-Euclidean space.

Certainly, Joyce was interested in a mathematical basis for *Finnegans Wake*, extending the spirals of *Ulysses* to a more technical level of sophistication. For example, the entire ALP section aptly takes mathematics as its subject.<sup>42</sup> The notion of infinity particularly interested Joyce, a notion which is implicit in the strange loop pattern. Indeed, Joyce overtly inserts a lemniscate<sup>43</sup> in Book II: "samething is rivisible by nighttim, may be involted into the zeroic couplet . . . noughty times  $\infty$ " (*FW* 284). At this point, Joyce's text inhabits a realm determined by (and playing with) mathematical relationships, and Joyce explores "how minney combinaisies

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<sup>42</sup> In the "Ithaca" chapter in *Ulysses*, Joyce likewise wrangles with mathematics. For a brief but thorough treatment of mathematics in Joyce, see Mario Salvadori and Myron Schwartzman's "Musemathematics: The Literary Use of Science and Mathematics in Joyce's *Ulysses*."

<sup>43</sup> This term for the symbol for infinity is sometimes called the lemniscate of Bernoulli, a shape formed when one navigates a line around two equidistant points. It is interesting to note the affinity between this shape and the Ouroboros common in alchemical texts. Not coincidentally, it also resembles a Möbius strip.

and permutandies can be played on the international surd! pthwndxrcelp!, hids cubid rute being extracted, taking anan illitterettes” (284). He is, in other words, concerned with exploring the fringes of mathematics, places where surds and imaginary numbers reign supreme, places where mathematics—itsself just another sort of language—begins to break down into the dream-like speculation characteristic of Joyce’s own literary language.

Mathematics for Joyce obeys the rules of Lewis Carroll rather than those of Descartes; and Carroll exerts a tremendous influence throughout *Finnegans Wake*, not only as a nonsense writer but also as a mathematician.<sup>44</sup> The uncertainty of reality in a dream-text like the *Wake* forces readers to ask questions “from tweedledeedums down to twiddledeedees” (FW 258) about the levels of reality betrayed by the text and what such a mathematical heterarchy might say about strange loops. Early in the novel, Joyce reinforces this uncertainty, situating readers into a different type of space, one that is dynamic and nonlinear: “I can easily believe heartily in my own spacious immensity as my ownhouse and microbemost cosm when I am reassured by ratio that the cube of my volumes is to the surfaces of their subjects as the sphericity of these globes” (150-51). Geometry is crucial here—and moreso in the much-discussed ALP diagram in Book II (293)—but it is not Euclidean; it is the nonlinear geometry characteristic of strange loops. As I noted before, edging toward the brink in such a fashion Joyce denies the linear, absolute universe of Newton, as he makes explicit by parodying “Sare Isaac’s universal of specious arismystic unsaid” (293). In a post-Einsteinian world, Newton’s tidy physics no longer apply; we are left

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<sup>44</sup> For several excellent treatments of the many allusions to, and borrowings from, Lewis Carroll’s work in Joyce, see “Lewis Carroll in *Finnegans Wake*” by Ann McGarrity Buki in *Lewis Carroll: A Celebration*, as well as Roberto Baronti Marchiò’s “‘All Old Dadgerson’s Dodges’: Language and Meaning in Lewis Carroll and James Joyce” in *Joyce’s Victorians*. Another briefer, but no less instructive, note is John A. Rae’s “A Bit of Lewis Carroll in *Ulysses*.”

instead with a preponderance of strange loops and geodesics, a world better represented by Escher or Magritte than by Da Vinci or Rembrandt.

In fact, the connection between Joyce and Escher is much more explicit in the *Wake* than in *Ulysses*. As Federico Sabatini has noted, there are many references to Escher imbedded within the novel itself, and Joyce greatly admired Escher's work.<sup>45</sup> There are several deliberate references to Escher in *Finnegans Wake*, although as with much of the novel they are somewhat cryptic. In Book III, Joyce makes several allusions to Escher, most notably "Meschiameschianah" (358), a blend of Escher's name and the Hebrew "מָשִׁיחַ" or "Mashiach" (Anglicized as "messiah"). In some ways, Escher's geometric experimentation becomes a divine model upon which Joyce was patterning his own literary experiment, a liberation from the linear tyranny of Newtonian mechanics. Later in Book III Joyce inserts other allusions, such as the exclamation "msch! msch!" (459) and "Esch so eschess" (588). Clearly, Escher and his strange looping artwork had deeply impressed Joyce. Indeed, Joyce's editor and friend Eugene Jolas calls the *Wake* "a pansymbolic, panlinguistic synthesis of a 4D universe" (qtd. in Kuberski 82), as if Joyce sought to achieve in literature the hyperspace that resisted Escher's two-dimensional medium. Joyce's geometric form for the *Wake* therefore attempts to replace the limited Euclidean modes of past ages with the non-Euclidean "joyclid" (*FW* 302) modes that characterize the modern, scientific understanding of space and form. Although he does not achieve this lofty goal, largely due to the limits inherent in his own medium, he does give us a glimpse of what an Escherian literary work might look like.

A similar geometry, and one with a certain graphical connection to Escher's strange loops, is the tesseract, a higher-dimensional figure that bears many similarities to a strange loop.

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<sup>45</sup> Sabatini addressed Joyce's connection to Escher—and also to Poincaré—in a paper presented at the 23<sup>rd</sup> International James Joyce Symposium in Dublin, Ireland on June 14<sup>th</sup>, 2012. However, he neglected to discuss the connections with Einstein or with Hofstadter's strange loop idea.

When Joyce mentions “the canonicity of his existence as a tesseract” (*FW* 100), he is drawing upon the tesseract as a hypercube, a non-Euclidean geometry that, when rotated in four dimensions along various axes, always returns to its original configuration. This non-Euclidean space is again post-Einsteinian space; but in some sense Joyce also seems to be alluding to the multidimensionality of the self as a series of looping networks.

Here I should note a convergence between Joyce, Escher, and mathematician Henri Poincaré. There is evidence that Joyce was familiar with Poincaré’s work—as with Escher, he even alludes to the mathematician in the *Wake* when he writes “Pointcarried!” (304)—but it is Poincaré’s notion that a loop can be contracted to a point on any sphere that connects him with Escher, Joyce, and Hofstadter. Both of these models—Poincaré’s loop and Escher’s use of such loops—echo the theories of Giordano Bruno, for whom “universe is all center, or that the center of the universe is everywhere and the circumference nowhere” (qtd. in Borges, *Non-Fiction* 352). Bruno exerted a tremendous influence on the always heretical Joyce, and it is thus no surprise that his notion of an infinite universe of possible worlds would attract the author’s attention. A similar observation might be made of a strange loop, wherein there is neither center nor circumference because it lacks the necessary stability to pinpoint such benchmarks. Also, I should briefly note here that the non-Euclidean forms explored by Poincaré hint at the geodesic geometry investigated by Einstein, a geometry that underlies spacetime, as I will address in Chapter Seven.

Via the strange loop geometry of the *Wake*, Joyce is commenting on space itself, an observation I shall develop in my readings of Kafka and Beckett. This modernist space, a field twisting upon itself, is a Lobachevsky space, and Hugh Kenner rightly points out the prominent similarities between this type of space and space in *Ulysses* (*Stoic* 96). Similarly, *Finnegans*

*Wake* presents space as a strange loop, possibly because space itself is rendered through the optic of the conscious mind, also a nonlinear loop. One need only think of the early modern work of Van Gogh or the high modern spatial experiments of Picasso to get a visual picture of this sort of space, which approximates the grand Einsteinian revolution in modern physics.<sup>46</sup> To a degree, Joyce is obsessed with “[p]utting Allspace in a Notshall” (*FW* 455), just as Poincaré sought to encapsulate all space in a point, or as Escher sought to visualize infinity with his strange loops. One can certainly traverse space in Joyce, but it is a geodesic sort of space, epitomized visually by Escher’s *Relativity*. This strange loop might also be illustrated by the spirals formed by the Fibonacci sequence, itself one of the simpler recursive functions in mathematics that resonates with one of the more telling descriptions of Anna Livia Plurabelle: “the infinissimalls of her facets becoming manier and manier as the calicolum of her undescribables . . . shrinks from schurtiness to scherts” (*FW* 298-99).

So what do the strange loops in *Finnegans Wake*—a novel blatantly obsessed with the medium of its very telling—tell us about language? For one, language itself is an infinitely self-referential system that, although referring to an external world, creates its own internal world that can only ever hope to define itself with itself, ad infinitum. One might ask whether this aspect of language is not somehow a byproduct, or even result, of its status as a conscious technology. This leads to a question proposed by Dennett: “One prospect to consider, whether or not in the end we rule it out, is that perhaps language is not so peripheral to minds after all. Perhaps the kind of mind you get when you add language to it is so different from the kind of mind you can have without language that calling them both minds is a mistake” (*Kinds* 17). This raises another question that reappears throughout both *Ulysses* and *Finnegans Wake*, because both novels seem

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<sup>46</sup> It is worth noting that Poincaré developed a version of relativity contemporaneously with Einstein, although neither man acknowledged the other’s discovery during their lifetime. Poincaré’s theory of relativity is notable for its refusal to abandon the antiquated concept of ether.

to emphasize the language-boundedness of consciousness: Does consciousness exist without language? Can a self exist without language? I don't believe we are yet capable of answering either question, but Damasio answers the latter by reminding us that the sense of self is not contingent upon language, but certain aspects of it are: "Language may not be the source of the self, but it certainly is the source of the 'I'" (*Descartes*' 243). Damasio's assertion that self does not equal language contradicts both Freud and Lacan, for whom the self and language cannot be understood independently of one another. But what Damasio seems to be positing, in accordance with both Dennett and Hofstadter, is that our sense of "I" is indeed linguistically constructed, although not exclusively. There are other, non-linguistic factors that contribute to the matrix of the self, particularly social, environmental, and biological ones. Joyce's work seems to uphold a similar notion of the self as a network across several domains, language being one—even if it is the most important domain for Joyce.

In a way, Joyce's project in both the *Wake* and *Ulysses* is to capture what some cognitive scientists call "mentalese." Cognitive psychologist Jerry Fodor first proposed this idea in *The Language of Thought* (1975) to describe internal mental language that precedes language proper and is translated into our native, socially conditioned language. But, as Dennett notes, positing mentalese requires us to formulate another language to translate it, then another to translate that, into a dreaded vicious infinite regress. Mentalese is, as Dennett's puts it, a "hopeless answer" (*Kinds* 51). Thus, rather than a language *of* thought, Joyce seems to be proposing language *as* thought—certainly not the only kind, but one of the most salient to experience.

These considerations raise another crucial question: Is Hofstadter's notion of consciousness therefore linguistic, or is the "speechform . . . a mere surrogate" (*FW* 149) for prelinguistic thought? It would seem that, for Hofstadter as for Joyce, consciousness is indeed

bound to language, at least in part. In agreement with Dennett, consciousness in these texts seems to be a Joycean machine, a center of narrative gravity where the center is a convincing illusion (“I”-llusion?); but one that is nevertheless constructed by its own autopoietic processes, themselves rooted in the language faculty. Rather than expressing consciousness and unconsciousness as alinguistic babble, Joyce presents a mental world that emerges “[a]b chaos lex” (518), literally “from the chaos of words.” In this way, the strange loops of the text point to a larger tangled hierarchy, namely language itself.

Of course, one cannot read *Finnegans Wake*—as Samuel Beckett reminds us in his essay “Dante . . . Bruno . Vico . . . Joyce”<sup>47</sup>—in any normal sense of the term, but it nevertheless demonstrates some vital aspects of language. Because the *Wake* is more Zen mantra than novel, something like an atheist speaking in tongues, it seems to point to some primitive aspects of language that underlie our conscious use of it. The babbling (or “babeling”) of the *Wake* is in some ways the pre-linguistic babble of self-formation and development,<sup>48</sup> the every- and no-language of a “mindself” (*FW* 161) seeking to stabilize its identity through language. Out of a chaosmos of potential, a unique mindself emerges, never complete, always in flux. In this sense, Joyce’s novel seems to unite Hofstadter’s strange loop concept with Dennett’s Multiple Draft Model of consciousness in a particularly instructive way.

The sheer scope of the *Wake* is frighteningly encyclopedic, but despite its variety it holds up especially well as an example of a literary strange loop. Yet we must not forget, as William York Tindall notes, “*Finnegans Wake* is about *Finnegans Wake*. That is this: not only about everything, the book is about putting everything down in records and interpreting them . . . To

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<sup>47</sup> This well-known essay was originally published in *Our Exagmination Round His Factification for Incamination of Work in Progress* (1929); see Beckett et al. It was later collected in Beckett’s *Disjecta* (19-33).

<sup>48</sup> Babbling is the focus of a massive amount of cognitive research, especially in developmental psychology. See Hoff.

say, then, that *Finnegans Wake* is about itself is to say that, including our reality, *Finnegans Wake* is about our ideas about it and they are *Finnegans Wake*” (237). Tindall’s remark echoes Beckett’s oft-cited but highly instructive remark in his own critical essay on the *Work in Progress*, as *Finnegans Wake* was known in the years before its publication. Beckett writes of the *Wake*: “Here form *is* content, content *is* form. You complain that this stuff is not written in English. It is not written at all. It is not to be read—or rather it is not only to be read. It is to be looked at and listened to. His writing is not *about* something, *it is that something itself*” (*Disjecta* 271, emphasis his). For this reason, the various geometries I have pointed out manifest in both the content and the form of the *Wake* because essentially they are consubstantial.

One byproduct of this obsession with form is that *Finnegans Wake* never lets readers forget that they are reading (if that is even what one does with it), in part because it constantly emphasizes its own artifice, and in part because it frequently refers to itself with itself. This sort of metafiction is markedly self-referential because the text imbeds itself, rather than fictional intertexts, within itself—something I explore in more detail in Chapters Four, Five, and Six. But if Joyce is not undermining the ability of language to uphold itself independently as transcendent, then he is at least emphasizing its incompleteness. Richard Ellmann once remarked that “*Ulysses* is one of the most concluded books ever written” (Preface xiv), but its circularities—and its seemingly endless interpretive possibilities—seem to subvert this assertion. Moreover, the very existence of the *Wake*, even more circular and hermeneutically rich than *Ulysses*, in some sense contradicts Ellmann’s argument—there is always more to be said. Joyce could not exhaust consciousness with *Ulysses* and, consequently, he crafts a model of consciousness in his final novel that takes Hofstadter’s strange loop concept even further. By their very incompleteness as potentially infinite objects, Joyce’s novels refuse semantic stasis



and call our attention to language—and therefore consciousness—as incomplete, in the sense that Gödel said all systems are. As a recursive, autopoietic system, language relies upon itself to define itself with the only system available to it to do so: itself. This echoes Peirce’s notion that the sign is “[a]nything which determines something else (its *interpretant*) to refer to an object to which itself refers (its *object*) in the same way, the interpretant becoming in turn a sign, and so on *ad infinitum*” (Peirce 239, emphasis his). Joyce’s novels foreground this strange loop property of language and draw us closer to its fascinatingly paradoxical nature.

*Ulysses* and *Finnegans Wake* are novels that revel in their own circularity, delight in the strange incompleteness of language, and in many ways present a theory of consciousness that agrees with Hofstadter’s strange loop concept. Joyce’s descriptions of the “patternmind” (*FW* 70) seem to foreshadow what cognitive science is revealing about the mind. Indeed, T. S. Eliot may have been more prescient than he intended when, speaking of Joyce’s “mythical method” in *Ulysses*, he contended that “[i]t has the importance of a scientific discovery” (*Selected* 177). As such, Joyce’s novels serve as valuable examples of how literary strange loops might contribute to a cognitive literary theory. Of course, they are neither the first nor the last novels to do so, and I show in Chapter Two that Kafka places different emphases on his fictional strange loops, enriching the literary possibilities of this concept and exploring the self in new ways.

## CHAPTER TWO

“YOU MEAN THERE’S A CASTLE HERE?”:

### STRANGE LOOPS AND AUTOGRAPHESIS IN KAFKA’S *THE CASTLE*

*I am not what I am*

—Iago, *Othello*

If the strange loops in *Ulysses* and the *Wake* spiral outward to encompass the totality of existence within their encyclopaedic swoop, then Franz Kafka’s project is in some ways antithetical to Joyce’s; Kafka’s winds inexorably inward in search of a center that does not seem to exist at all. Indeed, Hofstadter’s notion that the self is ultimately an illusion, an absent center, is apparent in Joyce, but it aligns even more explicitly with Kafka’s work. It is perhaps a truism about Kafka that “[n]o writer illustrates more hauntingly the disintegration of the self and the loss of the sense of reality that accompanies such a process” (Glicksberg xvii), yet this comment is appropriate for contrasting the strange loops in Kafka with those in Joyce.<sup>1</sup> As I mentioned in my introduction, the self is neither essence nor Cartesian cogito in Hofstadter’s model; it makes and is made by its interactions with others, its environment, and itself. But in order to explore the nuances of these suggestions, it is necessary to see how Kafka plays with these tendencies, some of which might seem characteristic of modernist fiction as a whole.<sup>2</sup>

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<sup>1</sup> There are a massive number of critical comparative studies of Joyce and Kafka, especially in studies concerned with modernism in general. For a brief but lucid treatment, see Mark Harman’s “Joyce and Kafka.”

<sup>2</sup> I’ve tended to group texts together under monolithic descriptors like modernist or postmodernist more for historical periodization than for any absolute typology, especially in light of Declan Kilberd’s call for a “discrimination of modernisms” (247).

It is no secret that Kafka was fascinated with the self.<sup>3</sup> Various critics (such as Glicksberg and Corngold) have noted that Kafka is almost obsessively concerned with the self in several ways, and one might characterize his as an artistic struggle to describe the self in the face of modern alienation. In addition to this widely held position, cognitive literary theorists have noted that “Kafka’s literary writing provides data about the structure of the human self” (Mishara 107). Indeed, cognitive readings of Kafka such as Aaron Mishara’s emphasize how his writing reflects various aspects of the self, particularly its formation through doubling and reflection, its relationship to dreamstates, and its dynamic nature.

In addition to these focuses, much of the attention to the self in Kafka criticism has taken up the onerous task of teasing out the autobiographical elements in Kafka’s fiction.<sup>4</sup> Certainly one can never completely sever an author from his text, but this unfortunate persistence among critics neglects the fact that much of Kafka’s work is often not about *his* self but about *the* self. There is a tension between these two quests, and some critics have gone in the opposite direction, noting Kafka’s biographical absence from his writing. In *The Fate of the Self*, Stanley Corngold argues that this absence—even in the midst of Kafka’s quest to inscribe himself in everything he wrote—is an indication that Kafka both epitomizes and frustrates the Barthesian *mort d’auteur*. Similarly, Walter Sokel notes that Kafka’s search for the self is partially a quest to reconcile his life with his literary work, something that I will discuss later in this chapter as the strange loop that exists between Kafka and his lifework.<sup>5</sup>

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<sup>3</sup> In addition to the criticism I address here directly, there are several helpful, if brief, studies on Kafka and the self, notably by Grimm and by Politzer.

<sup>4</sup> Recourse to Kafka’s letters and diaries is perhaps more common in criticism of his work than of most authors. See Max Brod’s *Franz Kafka: A Biography* (1937), an early examination of the man and his work by Kafka’s friend and literary executor.

<sup>5</sup> Sokel also notably points out, as do many critics, that Kafka’s insomnia and hypnagogic hallucinations were highly influential in his processes of self-formation, particularly through the act of writing itself.

Of all of Kafka's novels, *The Castle* (*Das Schloß* [1935]) is perhaps his best exploration of the self, and it is fittingly rife with strange loops. Throughout the novel—itsself largely a search for a plot—we encounter a variety of strange loops generated by a lone man's quest to find his place as land surveyor in an endlessly labyrinthine village in some unidentified everywhere-and-nowhere. The protagonist K. seeks entry to the castle in order to fulfill the surveying duties for which he was allegedly summoned, but through a series of miscommunications and deferrals, he fails to make any progress. He winds up falling in love with a barmaid, Frieda, being betrayed by the assistants purportedly assigned to him by the castle bureaucracy, and eventually failing—at least one can assume he fails, though the novel remains unfinished<sup>6</sup>—to secure any information about his assignment. The novel's system, fitting of Gödel's Incompleteness Theorem, is necessarily incomplete, breaking off mid-sentence just as we might think K. (and we as readers) are actually getting somewhere. Like Parzifal,<sup>7</sup> K. is unable to enter the Grail Castle and must instead twiddle his thumbs for eternity. K.'s quest takes him on a circuitous path to nowhere, and it is no wonder that the patterns created by the text are a series of strange loops.

Kafka erects a particularly Gödelian reality in the novel. The connection between these two men has been made before: at his memorial service, Gödel was explicitly compared to Kafka.<sup>8</sup> In part, the affinity between the two thinkers resides in Gödel's insistence that formal systems necessarily fall apart because even axiomatic ones must rely on an infinite regress of proofs to sustain themselves. As Rudy Rucker notes, "The Kafkaesque aspect of Gödel's work

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<sup>6</sup> In a letter to his friend and literary executor Max Brod, Kafka revealed that he intended K. to die without ever reaching the castle (250).

<sup>7</sup> K. was first compared to Parzifal by Brod. This connection is developed by Winkelman.

<sup>8</sup> See Wang's "In Memoriam Kurt Gödel."

and character is expressed in his famous Incompleteness Theorem of 1930” (165). Just as systems can never be fully complete for Gödel, neither can they achieve either stasis or finitude for Kafka.

*The Castle* presents several strange loops to this effect. First, the novel poses many paradoxes, especially in its vertiginous conception of space that twists around itself like an Escher print. The spiraling architecture in the novel emphasizes this weird spatiality. Second, the novel epitomizes Hofstadter’s notion that the self is, ultimately, a non-entity, an absent center. As such, *The Castle* is “a novel whose central conceit is the quest for a center” (Burnett 110). This theme is, of course, ubiquitous in Kafka’s work, but I believe it gains something valuable when we realize that the novel’s very geometry contributes to this sense of centerlessness. Lastly, the novel demonstrates a process I call “autographesis,” a special case of the autopoietic strange loop wherein author and text create each other, a circuit best illustrated by Escher’s *Drawing Hands*. This process is not merely the incorporation of autobiographical material into an author’s text but rather a more theoretical conception of the author and text participating in a sort of semiotic symbiosis.

To date, strange loops in Kafka’s work have garnered little scholarly attention. One notable exception is Jacob Burnett, who makes a compelling argument for the presence of strange loops in *The Castle*. Burnett traces the novel’s many logical paradoxes, especially the way the novel incessantly refers to itself even in the process of its own making.<sup>9</sup> Burnett finds similar strange loops in Kafka’s parables, and it is the absent center which connects these strange loops with those in Kafka’s novel. In a particularly intriguing suggestion, Burnett insinuates that “[t]he act of reading a narrative as rich in strange loops as *The Castle* creates, via a substrate of

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<sup>9</sup> Burnett does this mainly through a somewhat radical suggestion to substitute “the castle” with “*The Castle*” throughout the novel, a reading which seems to force self-referentiality where it may or may not exist. Certainly his argument does strengthen the strange-loopiness of the novel, but his method is perhaps too deconstructionist.

neurobiological isomorphism, the real presence of a parable in our brains” (116). This is a suggestive allusion to the cognitive aspects of strange loops, but it raises more questions than answers. Indeed, as Hofstadter notes, the patterns created by our interactions with other consciousnesses—including novels—leaves a physical trace in our neural architecture, quite literally embodying the work within us. Burnett does not take up this thread, but it is perhaps no stretch to take Burnett’s comment as an acknowledgement that when we as readers engage with literary texts, they become part of us in more than merely metaphorical ways: They are quite literally inscribed into our brains, strange loops and all. Consequently, Burnett provides at least a germ from which a cognitive reading might sprout.

Although he fails to develop his cognitive considerations, Burnett convincingly expands Stanley Corngold’s suggestion that helical structures underscore the labyrinthine qualities of *The Castle*. Indeed, the Kafkan “double helix” often discussed by Corngold bears a striking resemblance to a strange loop.<sup>10</sup> Nevertheless, the strange loop is only partially helical; it is more properly a helix that loops back into itself. In a particularly cogent comment, Burnett notes that “*The Castle*’s ‘strange loop’ narrative leads us ever upwards, ever downwards, and always back to ourselves” (104). It is, in other words, a recursive search for self-identity. Along his labyrinthine path, K. attempts to solidify his self-concept, but he also seems trapped in a hypnogogic state—one that is dream-like, delirious, and paranoid. Consequently, there are no certainties in the novel, only incomplete suppositions. In fact, I read the unfinished status of both *The Castle* and *The Trial* as potent symbols of autopoiesis as a process that is never quite complete. The novels must be incessantly reread and rewritten, and the reader never finds any semblance of escape from such a recursive labyrinth. There is, as Sartre said, no exit.

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<sup>10</sup> See “Kafka’s Double Helix” in Corngold’s *Franz Kafka: The Necessity of Form* (105-36).

## Strange Loops and Paradoxes of Logic, Space, and Time in *The Castle*

There is a strange logic at play throughout *The Castle*. Normal perceptions are regularly (or irregularly) inverted until readers are, like K., quite lost in the novel's contortions and digressions. It is pertinent that "K. travels in circles and feedback loops of revision and consolidation rather than in any linear or evolutionary path of progression" (Sussman, "Phenomenology" 1033). Instead of the reason of formal logic, the text is riddled with nonlinearities and paradoxes. For example, instead of toiling on fruitlessly, why doesn't K. merely give up and return home? For that matter, where did he come from? And where is the proof of his appointment? John Winkelman suggests that, from the outset, K. is lying about his circumstances. Taken in this light, the novel's overall conceit is the Liar Paradox: "This statement is false." As Hofstadter repeatedly mentions, it is this very paradox that underlies the strange loop because it is endlessly self-referential. Of course, to some extent, all fiction draws us into this sort of a loop by virtue of its very fictionality, but Kafka's focus is on the juxtaposition of seemingly irreconcilable opposites that characterize a strange loop. There is, in other words, a paradoxical logic at work in his novel.

The strange loops in the novel are especially evident in its insistent blurring of hierarchical levels. As Borges notes, "Two ideas—or more exactly, two obsessions—rule Kafka's work: subordination and the infinite. In almost all his fictions there are hierarchies, and those hierarchies are infinite" (*Non-Fiction* 502). An example of this paradoxical logic is K.'s assertion early in the novel that he must become a worker in order to gain any authority in the village (23), an inversion of the Hegelian master/slave dialectic. Throughout his quest to gain admission to the castle, K. is constantly aware "of the indestructible circles that, viewed from down where K. was, he traced in the air according to incomprehensible laws" (104). These

incomprehensible laws are in part the rules of paradox that guide the castle and its bureaucratic web. We empathize with K. because he cannot understand the rules of this new game<sup>11</sup> into which he has been thrust (or joined since the conditions of his arrival are never made explicit). Similarly, later in the novel Kafka's narrator notes that "the servants are reckoned to be the real kings of the castle" (198). The world of *The Castle* is one where the linear logic of everyday life is replaced with a sort of vortex, the same fluid nonlinearity that governs both conscious thought and indeed language itself. It is no wonder that K. is so often confused; he does not understand that he must think outside the confines of his prior quotidian existence in his new metaphysically bizarre habitat. He is a victim of the very pattern that governs his consciousness, wherein "K.'s entire store of recent memory . . . loops around in a Moebius strip to haunt him" (Sussman, "Phenomenology" 1033). Stranded within the tangled hierarchy of the castle, he fails to deduce his place within it. In his myopia, he cannot see the broader strange loop patterns at work.

The confusion that suffuses the novel is not merely farce. Indeed, after the Mayor explains (or fails to explain) the castle's tangled bureaucracy of correspondence, K. replies: "I'm entertained by it only in the sense . . . that it gives me an insight into the ludicrous confusion that may possibly determine the existence of a human being" (57). It is this sort of bizarre logic that, for K., ultimately becomes a means of testing the purviews of the self. *The Castle* becomes a labyrinth that cannot be solved, a paradoxical strange loop without end. The bureaucratic web that entangles K. is an almost pathological magnification of the metastable Joycean mindself, an

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<sup>11</sup> My use of "game" here intentionally invokes Wittgenstein's "language games," but it is worth noting that, for Kafka, language is futile in its ability to mean anything, or else it means something besides what it says, whereas for Wittgenstein there is some firm expression of meaning in how an utterance is used. This pragmatic understanding of meaning is somewhat at odds with Kafka's general philosophy of language, but resonates with the philosophy of language and consciousness found in Dennett and Hofstadter.



instability reflected in the modernist anxiety about a *Sprachkrise*, or “crisis in language.”<sup>12</sup> This rupture is often rendered as a symptom of modernism as a whole (although speaking of modernism as a coherent movement poses several problems), but in Kafka it might further be represented as a Borromean knot or Escherian knot where if one link is broken the entire structure collapses. I noted in my discussion of Joyce that the Borromean Knot is analogous to a strange loop because it toys with hierarchical levels, and Kafka’s novel approximates this form as well. I would also liken such a knot to Gregory Bateson’s idea of “Mind” as a tripartite system of individual (self), society (including political structures and culture), and ecology (environment), expanding the strange loops in Kafka’s novel to include these broader categories as ones that define the self through its reflexive, social, and ecological interactions. In *The Castle*, all three links in the knot are deteriorating from the outset: K. the individual, whose mental stability crumbles throughout the novel; the Castle-Village system of dysfunctional hierarchies; and even the novel’s setting with its dilapidated central castle, its ruinous town, and its wintry, ever-darkening environs.

Is this breakdown schizophrenic or merely symbolic of Kafka’s recognition that the self is a multiplicity rather than a unity? Certainly the paranoia is there, as are spatiotemporal disjunction, punding,<sup>13</sup> hallucinatory suggestions, and inversions in reason and causality. But rather than a pathology (something I explore in Chapter Nine), Kafka is exploring the workings of consciousness as normal mental process, as a meandering stream in search of a center. In some ways, these inversions remind us of Bakhtin’s notion of the carnivalesque, whereby

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<sup>12</sup> This is a common theme in modernist literature, where disillusionment with the essential qualities of language, largely via a recognition of their socially mediated value, leads to doubt about the ability of language to communicate.

<sup>13</sup> “Punding” refers to repeated, mechanical behaviors. The term comes from addiction research to describe similar behaviors among amphetamine addicts.

inverting normal expectations in fact reinforces normalcy. It is through similar manipulations of everyday perception that Kafka is attempting to excavate the self as a pattern, one that strikingly resembles a strange loop.

Another persistently strange inversion of logic throughout the novel is Kafka's contortion of space. Space in *The Castle* is more like Escher's *Ascending and Descending* than one might notice at first glance. For one, it is a warped space where movement seems to defy commonsense perception. For example, when K. dispatches Barnabas back to the castle, he is astonished to see just how quickly the messenger has traversed an otherwise impossible distance (26). Kafka seems to suggest that space and time in the novel do not obey the linear logic of "normal reality." This strangeness again becomes apparent when K., heading toward the other inn, does not feel as if he and his guide Barnabas have ascended, even though they clearly have (28). Again, Escher's *Ascending and Descending* provides a valuable visual analogue here: There is little actual progress in the novel, yet there is the illusion of motion. K. and the novel's readers are trapped in the regress of an impossible Penrose staircase.<sup>14</sup>

In "Kafka and His Precursors," Jorge Luis Borges<sup>15</sup> equates *The Castle* with Zeno's paradox, an important comparison tying the strange loops in Kafka's novel to the paradoxical space that so perplexed the Eleatic philosophers. Zeno's paradox is implicit in *The Castle* insofar as, within its fictional microworld, motion is impossible. As Glicksberg notes, "as in the fiction of Samuel Beckett, there is no 'forward' movement in Kafka's stories, no logical 'plot'" (xvii). Kafka's characters are, like Zeno's Achilles and the Tortoise, unable to achieve any motion toward any goal. That is, they are trapped in a paradoxical loop. As Borges notes, "the moving

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<sup>14</sup> Roger and his father Lionel Penrose changed W. W. Rouse Ball's tribar—an impossible object—into the Penrose staircase, a strange loop most famously used by Escher in *Ascending and Descending* and *Waterfall*.

<sup>15</sup> The connections between Borges and Kafka are legion. Borges was, for example, the first to translate Kafka into Spanish. The similarities in their fiction are also numerous.

body and the arrow and Achilles are the first Kafkesque characters in literature” (*Non-Fiction* 363). In Chapter Three, I argue that these paradoxes similarly infuse Beckett’s work, but this connection is not spurious: As I have suggested, paradox is an integral aspect of the strange loop, and upon closer inspection *The Castle* seems to be a tangled hierarchy wherein paradoxical strange loops abound.

Several strange loops in Kafka’s novel further symbolize this space, most noticeably the castle’s architecture. K. describes the castle as “a uniform, circular structure . . . there was a crazy quality about this” (9). Clearly, this is not a normal edifice; instead, it seems to defy the senses with its “crazy quality.” One might read “crazy” as “strange” or even “funny,” and it certainly seems that the awkward feeling K. gets when he beholds the castle is amplified because it does not seem to differ significantly from the village itself. It is quite likely they are indeed identical, part of the same whole: “The Castle is no different from the village; in fact it is in the village—individuals and their daily lives—where most power lies” (Smetana 48). K.’s inability to distinguish them suggests that he is already inside the castle, already trapped within its strange loop as part of an elaborate joke. K. is lost among a monotonous tessellation, a term often used to describe Escher’s experimental tile patterns, but one that does not seem to proceed anywhere except inward toward no center. It is therefore telling that on the night of K.’s arrival “Nothing could be seen of Castle Hill, it was wrapped in mist and darkness, not a glimmer of light hinted at the presence of the great castle” (3). The reason K. cannot see the castle is because he is already inside. Like an ant on Escher’s *Möbius Strip*, he cannot jump outside of the system (or “joots” in Hofstadter’s terminology) to see the whole structure. He can only express confusion when, on his first night, the governor’s son says to him, “This village belongs to the castle,

anyone living or spending the night here is in a sense living or spending the night in the castle”  
(3).

The castle at the center of the village therefore resembles a strange attractor, with an absent center toward which K. finds himself hopelessly navigating along an impossible staircase. It is analogous to K.’s own self, the terrain through which he seeks his own identity. In contrast to Descartes, for whom the self was knowable to itself, true self-knowledge is in part impossible from this perspective because subjects striving for such knowledge can never absolutely extricate themselves from the system. K.’s quest is similarly futile because, trapped inside the very strange loop he is trying to describe, he cannot but assume a subjective perspective as he tries to define both his individual “I” and his social “me.”

Indeed, the Penrose staircase is an apt analogue for the novel as a whole, and its various settings reflect similar contorted spaces. For example, when K. enters the inn to meet with the bureaucrat Erlanger, this twisted space is more like a labyrinthine, Carrollian underground passage than any normal inn (*Castle* 127). No angle anywhere in Kafka seems to meet at ninety degrees. The maze-like structure even prevents K. from finding the room where he is to meet Erlanger after what seems like an imponderable wait (even though he has only been in his predicament for a matter of days because time has been dilated): “all the doors were identical, he could not find it” (228). In other words, we are in a strange hall of mirrors, the fractalic space of non-Euclidean geometry that dominates *Finnegans Wake*—a type of space that becomes especially prominent in later postmodernist works such as Vonnegut’s *Slaughterhouse-Five* and John Barth’s *Lost in the Funhouse* (1968).<sup>16</sup>

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<sup>16</sup> I discuss these connections further in Chapter Seven.

Such vertiginous architectures also emphasize the pervasive hypnagogic<sup>17</sup> space in the novel, always reminiscent of the altered perceptions that Lewis Carroll explores in the *Alice* books. Of course, the connections between Carroll and Kafka, like those between Kafka and Beckett, are not superfluous;<sup>18</sup> but more importantly for my argument here, Hofstadter's notion of strange loops was directly informed by Lewis Carroll's work, both literary and mathematical. In a sense, K's assistants remind us of the infuriatingly illogical Tweedle Dum and Tweedle Dee, beings (I hesitate to call them men) whose bizarre thinking is a symptom of the topsy-turvy reality they inhabit. As in Wonderland, where size and shape are mutable properties, space in *The Castle* is likewise warped and ambiguous. But it is how this space folds back upon itself, how it forces K. to repeat his motions, that likens the novelistic space to a strange loop.

This spatial ambiguity is further highlighted by the fact that, according to the villagers and Castle bureaucrats, the Village has no need of a land surveyor at all (54). Although on one level this is yet another symptom of the novel's bureaucracy of tangled hierarchies, it seems that this is not a practical matter but a metaphysical one: a land surveyor would be worthless in a place where space and measurement break down. What could he possibly survey if there is no metric by which to do so? If everything in the village is self-similar—its denizens, its architecture, the space that defines it—then it would seem that the village is a strange-looping fractal. I briefly mentioned fractals in my discussion of how strange loops and chaos theory complement each other in *Finnegans Wake*, and in a similar vein such fractals partly define *The Castle*.

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<sup>17</sup> "Hypnagogia" is an increasingly important term in Kafka criticism, especially cognitive literary criticism. The novel's hypnagogic feel is a symptom, in part, of Kafka's own frequent experiences with hypnagogia. For an elucidative exploration of hypnagogia and its relevance in Kafka, see Mishara's essay in Jaén and Simon's *Cognitive Literary Studies*.

<sup>18</sup> To my knowledge, there has yet to be a full-length study on the relationship between Carroll and Kafka, a worthwhile project given the similarities between their fictional universes. For a briefer examination of parallels between these two authors, see Bridgwater (98-101).

Because they foreground “self similarity” (Mandelbrot 41), these fractals highlight doubling in the novel, itself a deeply Kafkaesque theme. Images are duplicated to create a hall of mirrors within the novel, but also a series of doppelgängers. These doubles produce a strange effect but one that speaks to the importance of doubling as a means of configuring the self. As neurophenomenologist Aaron Mishara notes, “The structure of the self is organized in terms of its relation to other (intersubjectivity) . . . *Intersubjectivity is a doubling process*” (115-16). The self defines itself, as I suggested in my discussion of Joyce, both within and against the other. But in a very real sense, “the structure of the self is vulnerable to doubling” (117) and constitutes itself through self-representation. In some ways, Kafka’s frequent use of doubling recalls Lacan’s mirror-stage, wherein the self constitutes itself during development through self-recognition. More accurately, the self reinforces its identity through various doubling processes, all of which are strangely fractal.

Perhaps the best illustration of self-similar fractals such as the ones found in the novel is the Sierpiński triangle.<sup>19</sup> This image generates a dizzying, involving geometry that is nevertheless autopoietic because it creates itself with itself in a *mise-en-abyme*. Several instances of this occur in the novel. For example, both inns in the village are, from an exterior perspective, so indistinguishable from one another that K. wonders whether he has gotten anywhere at all (30). Likewise, as with the *Wake*, *The Castle* frustrates attempts to determine whether each character is a discrete person or some sort of doppelgänger. The doppelgänger theme pervades Kafka’s entire oeuvre, but as a marker of selfhood this phenomenon complements a model of consciousness such as Hofstadter’s that relies on a similar dialectic

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<sup>19</sup> The Sierpiński triangle or gasket or sieve was named after Waclaw Sierpiński, a Polish mathematician who first described this type of fractal in 1915. This fractal exhibits a Hausdorff dimension between 1 and 2, existing between second- and third-dimensional space. A more complex form can be seen in the Apollonian gasket, a fractal of triple circles I explore further in my discussion of Pynchon in Chapter Eight, and in the *tetrix*, a three-dimensional Sierpiński gasket.

process. Like fractals, the characters in the novel are themselves doppelgängers of one another in a tapestry of self-similarity. Thus K. has difficulty distinguishing his messenger Barnabas from his assistants (21). Likewise, K. questions whether the bureaucrat Klamm is the same person as another bureaucrat, Momas (163). Indeed, we as readers can barely distinguish the characters by appearance because we can never visualize them in the novel, as if exteriority is secondary to their psychological motivations. What these motivations are is never quite clear, but Kafka's characters seem to exist in an experimental space, a Skinner box<sup>20</sup> if you will, where the author tests their reactions to his experiments with space in order to get a better sense of how the self reacts in such a maze.

As I mentioned in my discussion of Joyce, when time is warped, space usually follows suit. Although this is my focus primarily in Chapter Eight, there are several points about strange loops and time that should be made here. For example, just as we are never quite sure where we are, we never know *when* we are in Kafka's novel. The historical period in which *The Castle* is set is indeterminate. Despite the seemingly medieval flavor of the setting, there is a telephone, to which K. reacts as if it were either out of place or unfamiliar to him. This temporal uncertainty reflects the novel's spatial indeterminacy and lapses in time are as warped as those in space. From the novel's outset, time passes in an almost hypnagogic manner, suspended between waking daylight and the dream of twilight (16). There are no objective metrics by which to mark its passing. It seems as if K. is trapped within the castle's labyrinth for an extended period of time, but if one counts the actual passages of day and night, he is only there for a matter of six

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<sup>20</sup> Skinner boxes refer to the mazes used by behaviorist B. F. Skinner for his conditioning experiments, usually on rats. I discuss their relevance for cognitive science and their relationship to labyrinths in more detail in my discussion of Pynchon in Chapter Eight.

days (227). This indeterminate timespan has been discussed by critics,<sup>21</sup> but it is the indeterminacy that is important: We are never sure in a strange loop exactly where in the hierarchy we are. Likewise, when K. asks Pepi the barmaid about the arrival of spring, she never delivers a straight answer (277). K. is trapped in a temporal limbo, likened in a sense to Escher's strange loop *Day and Night*, where the liminal space between metamorphoses is indeterminate.

Time fluctuates in part because Kafka's plot (or lack thereof) does not require much attention to it. True to the novel's psychological nature, time seems to be more like a mind-dependent Kantian concept than an independent and absolute Newtonian reality. Appropriately for a post-Einsteinian fiction,<sup>22</sup> both space and time are warped in the novel because they are two sides of the same Möbius strip. This comparison with Einstein draws me to two points about the relationship between Kafka's novel and science more broadly. First, time as expressed in *The Castle* reflects Einsteinian spacetime to a startling degree. Second, the novel's bureaucratic tangled hierarchy represents on some level the epistemological problems of science as a social practice rooted in language (including that universal language, mathematics). As Rudy Rucker notes, "Scientists are thus left in a position somewhat like K. in *The Castle*. Endlessly we hurry up and down corridors, meeting people, knocking on doors, conducting our investigations. But the ultimate success will never be ours. Nowhere in the castle of science is there a final exit to absolute truth" (165). This reflects a Popperian, or even Pragmatist, vision of science as an endeavor that can only ever refine its knowledge, its quest ever incomplete. As Katherine Hayles notes of this aspect, "If science approaches truth, it does so asymptotically, coming incrementally near but never quite arriving" (*Chaos Bound* 71). This parallels K's dilemma in *The Castle*. Indeed, Rucker points out that the only way to solve such double-binds is to step

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<sup>21</sup> See Winkelman.

<sup>22</sup> See Kwinter for an insightful elaboration of Kafka's connection with Einstein.



outside the system, because “to understand the essentially labyrinthine nature of *the castle* is, somehow, to be free of it” (Rucker 165, emphasis his). This is precisely the solution offered by Hofstadter.

### **Autographesis: Author and Text as Strange Loop**

The instabilities in time, space, and identity throughout *The Castle* bring me to a tantalizing sort of strange loop that Kafka typifies: the notion that Kafka is writing himself. This might seem like speculative territory—and in part it is due to its theoretical nature—but I hope to show that, as with Joyce, in Kafka’s work the distinction between author and text begins to blur. Both authors’ autopoietic texts are self-making in two senses, because they are self-referential systems *and* systems concerned with making a self. Of course, in many ways the tendency to tangle autobiography and fiction is a widespread symptom of writing as an expressive human process. But I am not merely talking about autobiography, a historically rooted process aimed at outlining life events in roughly chronological order; rather, I am talking about the symbiotic relationship between author and text, where each begets and is begotten by the other in a perpetual act of autopoiesis. As in Escher’s quintessential strange loop *Drawing Hands*, author and text form a strange loop with each other through the process of autographesis.

My term “autographesis” is an adaptation of a similar concept called “autographical action” or “autography.” H. Porter Abbott introduces this term in *Beckett Writing Beckett*, where he posits that Beckett’s project as a whole is a procedure of self-writing, not in the autobiographical sense, but more in the sense of the mutualistic relationship one sees between organisms in nature. For Abbott, autography “avoids not only the implications of historical narrative in ‘bio’ but also the semantic baggage of ‘self,’ a term as problematical for Beckett as

the term ‘story’” (x). Where my term differs from Abbott’s is in my insistence that, rather than avoiding the self, authors such as Joyce, Kafka, and Beckett are primarily concerned with excavating its paradoxical form, with stripping it bare to see what makes it tick. For this reason, it is fortunate that autographesis shares a certain ring with the autopoiesis that I’ve compared to Hofstadterian strange loops.

Autographesis describes a particular type of self-portrait. Of course, the self-portrait possesses a long and rich history in the arts and likely traces its origins ultimately to our inherent fascination, compared with other animals, with our own image. But autographesis takes this human obsession with mirrors and applies it to writing so that the author inscribes himself in the text in order to define himself to himself, or indeed *as* a self. One might see here hints of Roland Barthes, for whom the author fuses with the text as he composes it; but, in contrast to Barthes, Kafka “denies the implication of fusion . . . denies that the writer’s self . . . could vanish into the inscription, be identical with the inscription” (Corngold, *Fate* 167). Corngold is correct to point out that Kafka is not dissolving into his text, and that is not the sense that I want to convey. Rather, during the writing process the author inscribes himself *as* text, imparting elements of his consciousness into his work such that after his organic death, traces of his semiotic self somehow survive in the work. In this sense, the author is quite literally writing himself: He produces his texts just as they (re)produce him.

Furthermore, if the self conforms to Dennett’s Multiple Drafts Model, in which the self is a group of parallel processes producing a series of narratives, then autographesis serves as a process analogous to how consciousness gives rise to the self. As the author creates the text, the conscious mind creates the self. As Hofstadter notes in *I Am a Strange Loop*, the artifacts created by artists—he uses Chopin’s études and Austen’s novels as examples—actually contain

their authors' selves, albeit in a less robust form. I have already intimated this in my discussion of Joyce's presence in his works, but I would like to develop the idea further here. As Gadamer writes of this connection between writing and cognition, "Nothing is so purely the trace of the mind as writing, but also nothing is so dependent on the understanding of the mind" (145). Since texts are the products of an authorial mind, they are living fossils of those very processes. Seeing this pattern as a strange loop helps one visualize what might otherwise remain a theoretical abstraction.

Kafka's personal correspondence offers evidence that the author himself believed that he was not merely producing texts, but was in fact creating objects that were ontologically inseparable from himself. He is explicit about this reciprocal relationship between text and author in his letters to his love interests Felice Bauer and Milena Jesenká. He writes in a letter to Felice, "The novel is me. I am my stories" (qtd. in Perry xii). For Kafka there is no distinction between writer and written. This union between language and life is not without a concomitant anxiety, however. "I am always trying to convey something that can't be conveyed," he writes in a letter to Milena, "to explain something which is inexplicable, to tell about something I have in my bones, something which can be experienced only in these bones" (xi). Kafka is referring to the constant struggle of the artist to describe his own subjectivity, a struggle to delineate the swirling strange loops that constitute a self in all of its multifarious dimensions. This is the limit of language recognized by the early Wittgenstein. Part of this frustration also stems from the likelihood that, like Hofstadter, Kafka has realized that the self is a Gödelian system, endlessly self-referential and autopoietic. It defies the very logic which the mind musters to describe it, always eluding strict definition. Nevertheless, Kafka always tries anyway, taking up the task of Sisyphus in full awareness of its futility—and often laughing at its absurdity in the process.

Kafka's personal expressions of his entire being-as-literature are extreme, perhaps even hyperbolic, examples of the autographic strange loop; but they point to an extension of Hofstadter's ideas to texts as traces of their author's consciousness in a very concrete sense, an idea he suggests but does not develop in *I Am a Strange Loop*. Envisioning Kafka as both historical personage and literary fiction is not merely a theoretical idea, but one rooted in the cybernetic principles and information theory beneath cognitive science. Kafka's personal philosophy is not merely the exaggerations of a compulsive hypergraphic writer, but an expression of his understanding that, from a cognitive perspective, he quite literally extends his mind into his texts. As Corngold suggests, one must recognize "the intensity and single-mindedness of Kafka's devotion to literature, indeed the degree to which he considered his being entirely literature" (*Fate* 161). For Kafka, as for Hofstadter, texts are not merely dead artifacts, but autopoietic extensions of an autopoietic self. Again, Escher's *Drawing Hands* provides an apt visual metaphor, where one part creates and is created by the other in a strange symbiosis. As Kafka writes in his letters, "It is not that I am interested in literature. I am made up of literature. I am nothing else and can be nothing else" (qtd. in Corngold, *Fate* 161). Kafka's words echo a remark by Buffon: "*Le style c'est l'homme même,*" literally "[t]he style is the man himself."<sup>23</sup>

In addition, the novel's manuscripts themselves evince Kafka's intention to make the self (and specifically his self) his primary subject matter. While composing *The Castle*, Kafka changed the original first-person narrative to a third-person narrative, as if to conceal this intention, although it remains overt. As many critics have suggested, K. is certainly (although note exclusively) a reference to Kafka himself. Corngold notes that Kafka changed "I" to "K."

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<sup>23</sup> Wittgenstein discusses Buffon's statement in *Culture and Value* (78e). It has been adapted many times, its most well-known English version being Matthew Arnold's "The style is the man" (qtd. in Weinrich 139).

forty-three pages into *The Castle* manuscript, and then retroactively changed all previous first-person pronouns in the draft (*Fate* 172). One might disregard this as a mere stylistic choice, but it reinforces my argument that Kafka and his texts form an autographetic strange loop.

Although autographesis resonates with French literary theorists such as Barthes and Gérard Genette, it also finds remarkable parallels in the cognitive research. As Mark Turner notes, “the author’s mind is an endless paper on which he writes, making mind internal writing; and the book he writes is external mind, the external form of that writing . . . The self is understood as an author writing in the mind” (*Reading* 246). As we saw with Dennett’s notion of the Joycean machine and with Damasio’s notion of the autobiographical self, the self-function is an author-function.<sup>24</sup> Not merely a metaphor, autographesis as a self-making process reifies the otherwise abstract patterns that define a self. Montaigne suspects as much when he writes in “Of Giving the Lie” (1580), “Painting myself for others, I have painted my inward self with colors clearer than my original ones. I have no more made my book than my book has made me—a book consubstantial with its author, concerned with my own self, an integral part of my life” (281). Like Montaigne, Kafka—in many ways representative of all authors—is always already writing himself in the texts that he produces, texts that inevitably constitute his own self.

However, the semiotic-organic self woven by Kafka is, as Hofstadter suggests, ultimately a non-entity, a sort of illusion of coherence: “If Kafka, the man, embodies literature, if, indeed literature inscribes Kafka, then it would seem, in a strict sense, that no such thing as Kafka’s self exists” (Corngold, *Fate* 162).<sup>25</sup> Again, I would emphasize the absent center, and posit that *The*

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<sup>24</sup> To my knowledge, “self-function” is my own coinage. “Self-function” intentionally mimics Foucault’s notion of the “author-function” in order to point out some points of contact between poststructuralist notions of authorship and autographesis as a version of Hofstadter’s strange loop concept.

<sup>25</sup> Compare this with Borges’s statement about Joyce: “Like Shakespeare, like Quevedo, like Goethe, like no other writer, Joyce is less a man of letters than a literature. And, incredibly, he is a literature within the compass of a

*Castle* might be read as a metaphor for selfhood, for the quest of the modern self to find something to bind together an otherwise schizophrenic array of personal histories, social interactions, and cultural memes. If modernism tells us anything about the self—and this is an observation continued in the subsequent postmodernist movement—it is that we can no longer rely upon the transcendent center that constitutes a self in the organized, Aristotelian systems underlying dualist philosophies of mind, especially the seemingly unified homunculus proposed by Descartes.

In part, Kafka's project represents an attempt to cope with "the disappearance of the millennia-old Transcendent Center from European consciousness" (Burnett 104), a task that inevitably leads to failure. But as Deleuze and Guattari remind us in *Kafka: Toward a Minor Literature*, this failure is more akin to laughter than to sorrow. This is the reflex of an existentialist laughing at the universe's absurdity. As Corngold's remark affirms, Kafka is nothing but his texts because, in essence, he is not an essence. Again, the existentialist overtones here are difficult to avoid, and indeed Kafka is often heralded as a proto-existentialist; but what is more important is that his notion of the self predicts in many crucial ways the same escape from essence that we encounter in the modernist existentialists, from Heidegger through Sartre, as well as in Hofstadter's phenomenology.

K.'s quest for a center in *The Castle* parallels Kafka's own recognition of the Absurd. As Camus reminds us, the "divorce between man and his life, the actor and his setting, is properly the feeling of absurdity" (6). It is the inherent strangeness of this divorce that connects the strange loops inherent in Kafka's work with the acknowledgement, after a long and valiant struggle, that the universe is inherently and laughably meaningless, that we can only generate

single volume" (*Non-Fiction* 221). Similarly, identifying Joyce with Stephen Dedalus in *A Portrait* has become a commonplace in Joyce criticism, which reinforces Borges suggestion that Joyce and his texts are inseparable.

meaning through our social and semiotic interactions. We are, as postmoderns, doomed to realize that the unity lauded by the Enlightenment is in some ways a myth because the world is indeed a series of fractured realities, all interacting but never quite cohering. It is this strangeness that Kafka uncovers, and it aptly describes the self's condition as expressed in the modernist and postmodernist projects. But the incongruities between the human desire for meaning and order and the human experience of absurdity and chaos elicit in Kafka laughter, the only worthwhile response.

This reading of Kafka points to one final topic of contact between his fiction and Hofstadter's strange loop concept: both rely upon a method akin to that used by the Zen masters in their kōans. As Dennis McCort notes, "All of Kafka's fictions are remarkably koan-like in their style and spirit" (52). Of course, Kafka's parables aren't the only result of this Zen logic; it is indeed the way that his entire sense of self is resolved, if one can consider his existential shrug a resolution at all. For Kafka, there is no answer to the question of Being because, in true Zen fashion, the answer is indeed the question itself. This is the quirky logic of the strange loop, but that is just the point with Kafka: one can only discern the self through the very phenomenological experience of *being* a self. His inability to express any satisfactory center, indeed his insistence that he exists only in and through his literature, emphasizes a crucial point of strange loops, namely their elusiveness.

In light of this absent center, it seems appropriate that truth always eludes K., in part because there is no "true" or essential self which an authoritative castle-hierarchy, let alone a religio-philosophical system, might reinforce. K.'s journey toward the castle is strange precisely because the hierarchy he believes necessary to vindicate his social status, his very identity, does not exist except as a heterarchy with no center. As he tries to piece together some coherent

narrative with which to make sense of this jumble of levels, “the result is a tangle of made-up stories” (*Castle* 164). “Tangle,” of course, is a more appropriate word choice than Kafka might have realized, for it draws our attention to the castle’s arrangement as a tangled hierarchy, one where K. must incessantly navigate levels that fold back upon themselves. Furthermore, they are narratives, bound to the elusiveness of language. Consequently, like Joseph K. in *The Trial*, K. fruitlessly struggles against “authority in its inextricably complex magnitude” (165). To some extent, this authority is an *author-ity*, namely Kafka in the role of a tyrannical Author-God plaguing his characters with the same sort of absurd uncertainty that he himself faces in his extra-textual *Lebenswelt*.

The tortuous, serpentine passages of *The Castle*, always leaving the reader (like K.) half in the dark, lead me to ask: Where is the authority? What is real? Who is authentic? All of these questions remain unanswered as K. swirls around the center, approaching but never reaching the Castle as if it were some sort of mathematical limit or elaborate prank. Again, the Castle functions as a strange attractor, which I discussed in *Ulysses* as a map of a complex system corresponding to the strange loop. In *The Castle*, the patterns likewise spiral inexorably around the absent center of its own semiotic galaxy. As in a panopticon, there is no authority, no essence at the center. *The Castle* is “a godless, groundless art that survives the vanishing of the Transcendent Center” (Burnett 110), but one that is remarkably successful as a narrative that attempts to divest a human self of its everyday entrapments to deduce, once and for all, what is at the heart of the matter.

Kafka is, after all, “the poet of alienation” (Glicksberg 51), always concerned with defining exactly what the individual self can preserve in the face of inhuman authority and absurdity. But he is also the poet of absurdity in its sense as a humorous response to this



otherwise bleak outlook. Throughout *The Castle*, the Sisyphean drudgery inherent in the clerical work of the castle-system's employees not only exacerbates our frustration at the inefficiency of bureaucracy, but also makes us laugh at how ridiculous such systems really are. Barnabas's job is "always starting again from scratch with no prospect of change" (204), and this sort of illusory progress also characterizes the novel as a strange loop. K. is always caught in an existential treadmill, like Beckett's "Waiting for Godot" meets Camus's *The Myth of Sisyphus*, an anti-teleological progress toward no goal. On the surface one might read Kafka's as "the Morton's Fork of existentialism or nihilism—absurdity or self-destruction, twin parodies of priesthood and kenosis" (Burnett 104), but it seems more appropriate to see the paradoxes and nonlinear vortices in his novel as evidence that, despite the ultimate failure of his quest, he did unearth something about consciousness and the self—its pattern resembles a strange loop. This connection between the strange loop and certain existentialist ideas is not coincidental. If consciousness is a strange loop function as Hofstadter suggests, then the absurdity that emerges from Kafka's novels might be a product of the process's incompleteness, its strangeness, its self-referentiality. A similar concern arises in Samuel Beckett's fiction, to which I turn next.

### CHAPTER THREE

“IT WAS NOT MIDNIGHT. IT WAS NOT RAINING”:  
STRANGE LOOPS, EMBODIMENT, AND ELEATIC PARADOXES  
IN BECKETT’S TRILOGY

*Nothing is more real than nothing*

—Democritus

*Nothing will come of nothing*

—King Lear

Perhaps no author writes so firmly within and against the anxiety of Joyce’s influence as Samuel Beckett. As Hugh Kenner notes, “Beckett took [the novel] up at the point to which James Joyce had brought it” (*Stoic* 70), and behind Beckett’s work there always lurks the suspicion that, in some ways, Beckett is the scion of Joyce, Proust, and Kafka—all of whom certainly weave texts where strange loops abound.<sup>1</sup> Yet Beckett takes these strange loops in a different direction than his predecessors, and his emphases allow me to develop a few different points about literary strange loops before moving on to consider their role in metafiction in my next three chapters.

Beckett picks up many of the strange loop patterns in Joyce: non-Euclidean space that folds into itself, feedback loops between the self and its body/ecology, and the central role of

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<sup>1</sup> I have not treated Proust directly in part because of the sheer scope of his work. A discussion of strange loops in Proust would reveal, however, many of the same concerns explored in this study. It is worth noting that Beckett’s first published work was *Proust*.

self-referentiality in consciousness, to name a few. But Beckett develops various strands left somewhat untapped by the otherwise encyclopaedic Joyce. Specifically, Beckett emphasizes the traces of paradox found in Joyce, and in doing so he also reverse-engineers Joyce's exploration of embodiment: Whereas Joyce demonstrates human consciousness embodying its environments and others to the point of consuming them, Beckett attempts to strip the body and its environment away from his characters only to find, even in the end, that consciousness is necessarily embodied, never truly free of the flesh. Beckett seems to follow Plato's dictum from the *Phaedo*: "It has been proved to us by experience that if we would have pure knowledge of anything we must quit of the body—the soul in herself must behold things in themselves . . . for if while in the company of the body, the soul cannot have pure knowledge . . ." (204). And in attempting to strip away the body, Beckett reveals an aspect of Hofstadter's model that I expounded upon in Kafka, namely that the self is essentially a non-entity, a hallucination hallucinating itself.

These preoccupations lie on the periphery of Beckett's early novels *Murphy* (1938) and *Mercier and Camier* (1946), and one certainly finds similar patterns in his drama; but they mature in Beckett's trilogy, *Molloy*, *Malone Dies*, and *The Unnamable*.<sup>2</sup> In the trilogy, Beckett develops a model of consciousness patently similar to Hofstadter's, and ever-shifting self-referential loops become one of Beckett's central tropes. His characters exist in contradictory worlds, unable to be certain about anything, much as, when experiencing strange loops in art and consciousness, we can never be certain of precisely where we are in the system. Again, as in Joyce and Kafka, there is a labyrinth here; but for Beckett, the formation of a self-identity must

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<sup>2</sup> *Molloy* was published in 1951, followed soon after that same year by *Malone Dies* and, in 1953, *The Unnamable*. Strange loops such as those in these novels also feature prominently in *Watt* (1953). Many critics have drawn comparisons between *Watt* and Kafka's *Castle*. See Ruby Cohn's "*Watt* in the Light of *The Castle*" and Bernheimer's "*Watt's* in *The Castle*: The Aporetic Quest in Kafka and Beckett."

be infinitely recursive if it hopes to contend with the infinitely fractured reality that exists outside the self. Again, strange loops exhibit circularity, but a circularity through which recursion engenders change.

The critical literature is replete with comparative studies of Joyce and Beckett, but for my purposes here it is important to note that their projects approach tangled hierarchies from somewhat opposite directions: “Beckett’s is an implosive imagination at odds with its own premises; Joyce gives us the feeling of infinity” (Adams 93). Hence Joyce and Beckett create inverted gyroscopes, the former spiraling outward into “Allspace” only to return to the ineluctable modalities of consciousness; the latter involving ever inward only to find itself in the infinite, inherently meaningless chaos that constitutes reality. Either direction ultimately leads to a realization that humor is the only means available to us for coping with either Pascal’s terrible, infinite sphere or with the opposite (but no less absurd) prospects of nothingness. Additionally, both Joyce and Beckett use Homeric and Dantesque trajectories to show how the embodied mind, lodged in its cultural habitus and physical limitations, is a cognitive hamster wheel—one capable of rolling free of its cage only to find itself in a series of more advanced wheels, be they spatial, temporal, or social. What distinguishes Beckett from Joyce is that, whereas Joyce tries to expand the self ever outward to encompass everything and anything within its circumference, for Beckett the mindself contracts into a singularity.<sup>3</sup> In this respect, I would compare him to Kafka or Knut Hamsun, inheriting from the former his “aporetic quest” (Bernheimer 278) and from the latter his extreme minimalism. This aporia is the absent center Beckett strives to discover through the miasma of conscious existence. Of course, Beckett’s wry comic voice emphasizes

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<sup>3</sup> I use “singularity” purposefully to evoke the term in physics, which refers both to the Singularity that was the ultra-condensed point of all matter and space that preceded the Big Bang and the singularities that form the paradoxical centers of black holes where time and space (and indeed the laws of physics as we understand them) break down. This must not be confused with the use of “singularity” in AI research, where the term refers to a point in the foreseeable future when human and machine intelligences will be indistinguishable from one another.

the absurdity of our tendency as human subjects to exaggerate both our agency and our importance in a bleakly hilarious universe that cares little for presumably intelligent primates who are particularly good at asking questions—but not at discerning concrete answers.

All of Beckett's work takes consciousness as its subject to one degree or another, but it is the human condition as a suffering subject that ennobles his project: "Isolation, alienation, lack of identity—the latter intensified to an extent perhaps equaled only by Kafka's characters—are the common stuff of the trilogy" (Karl 668). I would add that this otherwise hopeless outlook is always tempered with humor in Beckett, an aspect of his work that is often overshadowed by his stark landscapes and doomed characters. The strange loops throughout his work reinforce this humor.

As a whole, the trilogy is an archaeology<sup>4</sup> of consciousness, digging through its strata to unearth some semblance of a core or essence. By the end Beckett discovers, as Joyce and Kafka did before him, that there is no essential self, only various interacting and fractured components creating an illusion of unity. For Beckett, this fragmentation provides the litany of paradoxes that accompanies the human condition, paradoxes that, while ridiculous, also suggest serious philosophical issues. But, despite the apparent chaos that comes along with this condition, Beckett sees a familiar pattern emerge—self out of non-self, order out of disorder.<sup>5</sup>

It is somewhat serendipitous that Douglas Hofstadter, in an interview for the *New York Times Book Review*, admitted to reading *Waiting for Godot* during the period when he first stumbled upon Gödel's Incompleteness Theorem, even drawing comparisons between Beckett's

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<sup>4</sup> Archaeology in this context is somewhat derived from Foucault's use of the term in *The Archaeology of Knowledge*, but I find Foucault's position on the mind, particularly his dismissal of human nature, contrary to the fundamental tenets of my argument. For an intriguing example of Foucault's worldview pitted against the more scientific one that I am espousing here, refer to his famous debate with Chomsky.

<sup>5</sup> This is a common description of chaos adapted from Gleick's popularization of chaos theory.

eponymous, never-arriving fictional character and the eminent mathematician's names ("Douglas Hofstadter" 18).<sup>6</sup> Fittingly, paradoxes are rife in Beckett, and they are of a kind integral to a Hofstadterian theory of consciousness. In my introduction, I explained that the Liar Paradox—and its variations in the Epimenides and Eubulides paradoxes—propelled Gödel to develop the Incompleteness Theorem that undergirds all strange loops. Consequently, it is no surprise that this and other paradoxes appear endemically in Beckett's work, his projects always aimed at describing consciousness. I have already elaborated some strange loop paradoxes in both *Finnegans Wake* and Kafka's *The Castle*, but Beckett "develops the identity of progression and retrogression in the direction of the identity of beginning and end" (Breuer 572). In Beckett's texts, one encounters the coexistence of opposites, the reconciliation of antipodes characteristic of paradox. Reading Beckett, we are firmly in the presence of an author who repeatedly admits, "This statement is false," drawing us into an internal world replete with strange loops.

The ubiquity of such paradoxes in Beckett's work has not gone unnoticed by critics. Early in Beckett criticism, Hugh Kenner recognized the Epimenides paradox in the trilogy, noting that Beckett integrates "quite explicitly, the paradox of the Cretan liar: all Cretans are liars, said the man from Crete. It has always been inherent in the novel, the supposed narrator of which is part of the narration" (*Stoic* 69). In addition to Kenner's observation, H. Porter Abbott notes that Beckett's dual use of "I" as subject and object is both new and paradoxical: "It is a grammatical version of the effect one has viewing some of the etchings of Escher in which people seem to be inhabiting different gravitational fields in the same visual space . . . from subject to object, from object to subject, over and over again" ("Grammar" 46). Abbott's comment is particularly insightful for its comparison between Beckett and Escher, insinuating

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<sup>6</sup> This interview appeared in December 1980; see "Douglas Hofstadter." Hassett also notes this connection in "Godel, Hofstadter, Beckett" (311).

another connection between strange loops and Beckett's fiction. Elsewhere, Abbott also suggests that strange loops might underlie Beckett's insistent reflexivity (*Beckett* 156-58), although he does not fully tease out the cognitive implications of this suggestion.

In addition to these early comments, Rolf Breuer offers the most comprehensive study of paradox in Beckett, and he notes a similarity between Beckettian double-binds and Hofstadter's notion of the strange loop. As Breuer notes, the point of the Liar Paradox is not to confound or evade, but "to recognize sameness in difference and difference in sameness" (Breuer 578).<sup>7</sup> There is, in other words, a confusion of levels within the paradoxical structure of Beckett's work, a confusion that (perhaps unexpectedly) makes suggestions about how the mind, and more specifically the self, might work. Indeed, Breuer cogently says of "Beckett's paradoxes of logic" that "the (con)fusion of logical levels developed from circular, recursive, and self-reflexive structures, are the correlate of the failure of all attempts at self-foundation in discourse and of self-generation in art" (579).<sup>8</sup> Certainly any attempt to encapsulate consciousness given the dearth of our technical understandings of it in the cognitive sciences is bound to fail, but Beckett knows that "to be an artist is to fail" ("Three Dialogues" 125). And he meets this realization with humor as much as with despair.

Lastly, Joseph M. Hassett, in a brief note aptly entitled "Godel, Hofstadter, Beckett," makes the most explicit connection between strange loops and Beckett's fiction, specifically between Hofstadter's work and the trilogy. Hassett notes the strange loops in *Molloy*, where the novel's beginning contradicts the ending outright, and he points out the Liar Paradox in *Malone*

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<sup>7</sup> Breuer takes this idea directly from Hofstadter and it is itself a modification of Bateson's definition of information as "differences that make a difference" (*Mind and Nature* 105). Indeed, Breuer alludes to Hofstadter's idea of strange loops (565), but does not develop this connection except for noting that he draws his notion of self-reproduction specifically from *GEB*. Interestingly, Breuer suggests that this relationship underlies metaphor and metonymy, which would become central to cognition in Hofstadter's thinking after *GEB*, especially its connection with conceptual blending.

<sup>8</sup> At this point in his essay, Breuer also briefly alludes to autopoiesis, although he does not develop this connection.

*Dies*. Indeed, Hassett poses some interesting points of departure that have yet to be taken up by scholars. If, as Kenner reminds us, Beckett “has realized, and dramatized for us the realization, that the novel itself is a construction of the laws of thought” (*Stoic* 106), then it seems from both the form and content of the trilogy that one or more of these laws might be described by the strange loop concept.

All three novels in the trilogy are replete with strange loops, but they must be read as a single novel to fully appreciate Beckett’s psychology. The first novel, *Molloy*, wrestles with identity as a function of a fundamentally unstable self-concept, deals with problems of embodiment, and begins to ask the sorts of recursive questions that underlie tangled hierarchies. Of all three novels, *Molloy* takes place in what one might call a recognizable reality, one where characters move through a world that seems to correspond to a normal possible world. Also, unlike its two sequels, *Molloy* has a discernible plot, albeit not a substantial one. But the disintegration that permeates *Malone Dies* and *The Unnamable* is already germinating in this first installment. These three novels together form a sort of Borromean Knot such as the ones I pointed out in Joyce and Kafka—where if one link is cut, the entire structure collapses. From the outset, Beckett is also beginning his own attempt at the Cartesian method, stripping away everything to get at some core of being, some cogito. He attempts this in two ways: by gradually dismantling the body and by depicting his characters’ thoughts as paradoxical strange loops. I will explore both modes in all three novels, albeit to varying degrees.



## Strange Loops and Embodiment in *Molloy*

*Molloy* is a novel constantly undermining itself. A bipartite novel, it consists of two narratives that may or may not describe the same individual.<sup>9</sup> The first half recounts the story of a vagrant named Molloy, who embarks on a quest to nowhere only to end up completely crippled and alone in the wilderness. The second half follows Moran, a police detective who sets out with his son to find the elusive Molloy and ends up sharing Molloy's detestable fate. True to Beckettian uncertainty, the novel poses questions to which the answers are only more questions: What is real? What is an "I"? What constitutes the self? To these questions the only response resembling an answer is Beckett's silence, in a manner befitting a Zen master—as Robert Adams notes, "Beckett's vision is the last step this side of Zen" (112).

Beckett's method is, as critics have noted,<sup>10</sup> essentially Cartesian, but it is perhaps more akin to my earlier metaphor of archaeology. Archaeology as a science pitted against the entropic processes of decomposition makes it a fitting metaphor here. "It is in the tranquility of decomposition that I remember the long confused emotion which was my life," Molloy confesses (25). There is, of course, hints of both un-writing and death here, but it seems that Molloy and Moran are both fundamentally concerned with the workings of their consciousness, how it defines them as selves, and how they might understand it by baring its inner machinery.

We know from *Molloy*'s outset that characters' identities are unstable, a trend that amplifies with each successive novel in the trilogy. As Molloy states while contemplating the disappearance of his mother, "I have taken her place. I must resemble her more and more" (3).

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<sup>9</sup> The identity of Molloy and Moran has endured ceaseless argument among scholars. For an early expression of this ambiguity, see Kenner's *Samuel Beckett*.

<sup>10</sup> There are many discussions of Beckett's relationship with Descartes, but see especially Kenner's *Stoic Comedians*. It is also interesting to note that Descartes is Beckett's narrator in "Whoroscope," his first published poem.

He proceeds to note that everyone he passes is “hard to distinguish from yourself” (4), likewise signaling the disintegration of Molloy’s individuality. This tension is made more explicit by Molloy’s need to reassure in parentheticals that he is talking about himself and not the mysterious man he remembers encountering on a road sometime before the narrative proper begins (7). Already one sees an instance of the cognitive entwinement evident in the *Wake*, only not within a dream (although this too might be possible). Instead, readers remain firmly inside Molloy’s head, inspecting his consciousness, “the within, all that inner space one never sees, the brain and heart and other caverns where thought and feeling dance their sabbath” (6).

The lack of stable identity finds its epitome in the central question of the novel: what is the connection between Molloy and Moran? Are they two halves of the same person? Inventions of each other? Doppelgängers? The answer, even if one existed, is not nearly as important as the relationship between the two men. Their reciprocal relationship forms a tangled hierarchy where levels are blurred. *Molloy* is thus like a Necker cube, one of the simpler examples of a strange loop. It’s confounding because Molloy and Moran, the two ostensibly discrete consciousnesses in the novel, converge at so many points while simultaneously resisting any one-to-one identification; as with the faces of a Necker cube, just as a viewer thinks they’ve put it in perspective, they lose sight of the other configuration. Consequently, if one considers each man a fiction of the other, they enter into a strange dialogism; and one might argue that “Moran, in setting out to find Molloy, is perhaps seeking to find himself” (Glicksberg 125). This connection is best illustrated by James Meriwether, who reads Beckett’s as an attempt to come to grips with scientific-philosophical modernism (that is, the tradition of Descartes, Galileo, and Bacon) by developing a postmodern theoretical system that is critical of this sort of modernism while nevertheless incorporating its elements into itself (95-96).

Meriwether also notes connections among chaos theory, nonlinear dynamic systems, and strange loops similar to those that I've already noted in my discussions of Joyce and Kafka. Central to Meriwether's argument is the link between what he calls "strange chess" (a game proposed by Hofstadter in which the moves change the rules which in turn change the moves) and Beckett's novels. In particular, Meriwether sees Molloy and Moran interacting as two parts of a coherent whole: "the relation between Molloy and Moran is paradoxical, blurred, both oppositional and mutually supportive, one of both radical difference and fundamental similarity, perhaps even numerical identity" (105). It is therefore a matter of multiplicity, a fractal pattern that is the first of a series of Sierpiński gaskets in the trilogy. As Molloy remarks of this multiplicity, "In my head there are several windows, that I do know, but perhaps it is always the same one, open variously on the parading universe" (51).

A precursor to the circular regression that ends *The Unnamable* appears soon after when Molloy, in a particularly funny scene, frets over his tangled system of rearranging sucking stones in his pocket. He asks, "Do I have to go on? No, for it is clear that after the next series, of sucks and transfers, I shall be back where I started" (73). His bewildering recursive system suggests the irrational mathematics that guides Beckett's work. Molloy's system is in fact a metaphor for the novel as a whole, indeed for the entire trilogy, as a system of constant rearrangement and contradiction, producing a result that is both existentially frustrating and comical. The recombination of sucking stones in Molloy's pockets is an analogy of self-permutation, its different combinations resulting in effectively returning us to the point of departure as in a strange loop. But it is important to note of both the system and the novel that "[t]his is circularity with a difference, the cycle undermining rather than completing itself. For in *Molloy* nothing happens, or rather nothing happens in the way it used to in the novels written up to then.

This is a circle, alas, whose circumference never meets” (Brater 52). But a circle whose circumference never meets is not a circle at all. Instead we have a recursive system in *Molloy*, a journey toward an ever-retreating horizon.

If one interprets his counting system as a symbol for the workings of Molloy’s mind, two interesting observations surface. First, Molloy seems to think in combinatoric ways, rearranging thoughts as if they were the stones in his pockets. This suggests the rule-based theory of cognition upon which Hofstadter builds, one also manifest in Chomskyan linguistics and conceptual metaphor. But Beckett, always skeptical of overly restricted systems, parodies this also, perhaps pointing out that language is both a symbolic system with mathematical features and a playful medium that can never be reduced to strictly formal logic.

Second, Molloy seems to be suffering from a version of Zeno’s paradox. In a way, Molloy is trapped in the vicious infinite regress of his own self, and, although his trajectory is explicitly nonlinear, it is not strictly circular either, as some critics such as Brater suggest. As Molloy proceeds on his journey, both physically and mentally, he “turn[s] then methodically to face the radiating paths in turn, hoping for I know not what, I described a complete circle, or less than a circle, or more than a circle, so great was the resemblance between them” (83). Molloy cannot tell in which dimension he operates, first or second, but rather moves somewhere in between, precisely in the sort of interdimensionality that characterizes a strange loop. This liminality combines both line and circle, almost helical in a way, but certainly strange and chaotic. As Molloy states, “when a man in a forest thinks he is going forward in a straight line, in reality he is going in a circle, I did my best to go in a circle, hoping in this way to go in a straight line” (85). This complex geometry resembles a strange loop, a bizarre inversion of Dante’s *Inferno* reinforced by dark woods in which both Molloy and Moran end their respective

journeys. Furthermore, this fusion of linearity and circularity approximates recursion, where forward progress is achieved when a function operates (in the mathematical sense) upon itself.

The result is a spatial *mise-en-abyme* that cycles back upon itself. Space in the novel is, as in *The Castle*, a nonlinear, Zenoid space. It is the visual space of Escher's *Ascending and Descending* and the auditory space of Bach's endlessly rising canon. The novel's heterarchy, like these strange loops, results in Molloy's inability to determine either where he is going or from whence he came. Molloy operates in an almost algebraic geography, one where his unnamed hometown remains an unknown variable because space itself is unreliable and indeterminate. In some sense, space remains a fiction of his mind, created by his distorted cognitive awareness of the world. He cannot locate either himself in the labyrinth of his thoughts or his origin in the labyrinth of space, unable even to remember the name of the town he has just left "perhaps because of its falsity" (31). In effect, lost amid his own speculation, he is uncertain even about his own fictionality, a concern that takes center stage in the trilogy's last two novels. Faced by such unstable spatialities, both Molloy and Moran are constantly lost along their journey, both physically in the strange loops of their respective trajectories and, more importantly, in their thoughts.

Already in *Molloy*, Beckett approaches the inner space of the last two novels in the trilogy. A series of labyrinthine and merging spaces results, with "all things turning and twisting confusedly about me" (44). Significantly, the circumambulations of Molloy are both mental and physical. When he says, "Then I resumed my spirals" (68), he is likely referring both to the tangled path of his physical journey and to the vortices of his own consciousness. These nonlinear paths are, as I noted earlier, approximations of complex systems, but they also point to the discombobulating effects of tangled hierarchies. When Malloy complains that "I confuse

east and west, the poles too, I invert them readily” (15), he is admitting that space, again perhaps a reflection of his own mind, is a labyrinth, topsy-turvy to an almost comical degree. Indeed, in some sense, he is lost because the physical space described in the novel is dependent upon his mental space, a tangled hierarchy of internal and external realities. He is, in other words, trapped in a paradox, a double-bind caused by his inability to reconcile opposites, experiencing what cognitive scientists describe as cognitive dissonance.

Beckett attempts to solve these paradoxes by eliminating any and all levels that are not essential to the structure of the self. The paradoxes introduced in *Molloy* and developed in its sequels are the ultimate step, the ostensible removal of reason which was, for Descartes, the crucial aspect of the *res cogitans* constituting the thinking subject. But removing reason is for Beckett the first step whereas for Descartes it is a forbidden last resort. Indeed, it seems easier to dispel reason than it does to remove the body, and Beckett struggles with this throughout the trilogy.

Like Joyce, Beckett cannot extricate the mind from the body. His characters are always “dreaming and farting” (*Molloy* 8), a comical remark by Molloy at the outset which points to a constant tension in Beckett’s work between mind and body. Beckett juxtaposes the loftiest Romantic mental process with the basest physical ones, wrestling with embodied notions of consciousness. Unlike his subsequent novels in the trilogy, Beckett largely retains the body in *Molloy*, and both Molloy and Moran, for all their existential musings, remain agents capable of affecting their physical surroundings. Furthermore, their concerns are often corporeal. Molloy’s thoughts constantly circulate back to his infirmed condition, to the concerns of the body: “[f]or all things run together, in the body’s long madness, I feel it” (56). Despite Kenner’s insistence that Beckett progressively strips away the machinery of the body to get at the Cartesian *cogito*,

consciousness does not seem possible without the body in Beckett, echoing the perspective from cognitive linguistics that there is no metaphor without the body, as Lakoff and Johnson argue.<sup>11</sup> Certainly Beckett continues to wrestle with Descartes throughout his oeuvre, but like Joyce, he does not seem to unquestioningly embrace the Cartesian belief that mind supersedes matter. Rather, he propounds what seems to me to be a monist understanding of consciousness as a process emerging from the body's engagement with the world, a process expressible only through the insufficient, impoverished language we humans have evolved to render this experience somehow meaningful. "The mind had to be first about the body," Antonio Damasio notes, "or it could not have been" (*Descartes*' xvi). Beckett remains intimately aware of this fact.

Even so, Molloy is trying to get past "[a]ll that glittering dust, and soon through that mist too which rises in me every day and veils the world from me and veils me from myself" (29) in order to get a better picture of what the self is, what it looks like. But he is running up against what both Wittgenstein and Heidegger understood as the limits of language in part because language does not emerge without the body—they are inextricably bound together. In order to accomplish this introspective quest, Molloy consistently finds himself trapped by his own logic. For Descartes, it was rationality that defined the cogito as a thinking subject, but Beckett's novels suggest that even reason is insufficient. On the contrary, given that the human comedy often rests upon illogic, Beckett seems to define the human as an *irrational* animal. Hence the constant collapses of Molloy's logic—for example, the infinite regress of his rearranging stones or his refusal to accept his own being without qualification—are both comical and metaphysical. Inevitably, this leads to a discussion of some of the novel's other paradoxes.

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<sup>11</sup> See *Metaphors We Live By*.

From the novel's beginning, Epimenides's paradoxes proliferate. Describing the mysterious man he encounters on the street, Molloy notes of his observations that "all that proved nothing, refuted nothing . . . A little dog followed him, a pomeranian I think, but I don't think so" (7). Similarly comical, paradoxical statements abound throughout the text. The most well-known example of such a logical strange loop is the first and last lines of the book's second part. When readers first meet him, Moran states, "It was midnight. It was raining," (87) only to end the novel with the statement that "[i]t was not midnight. It was not raining" (170). As Breuer notes, this is a variation of the Liar Paradox (567). In its apparently contradictory reasoning, Moran's statement forces us into a strange loop quite reminiscent of a Zen anecdote: "Question: 'I am told that one reality moistens all beings. What is one reality?' Answer: 'It is raining'" (Suzuki 37). Such strange loops are "the laws of the mind perhaps, of my mind" (Beckett, *Molloy* 9), and similar strange loop patterns infuse the novel as a whole.

As in *Finnegans Wake* and *The Castle*, there is a certain dreamlike quality throughout *Molloy*, perhaps partially a result of Beckett's realization that consciousness is really just another sort of dreaming. Dreaming is both the place where the self dissolves and where, upon waking, it reorganizes itself into an apparent unity. As Molloy notes, "You don't remember immediately who you are, when you wake" (38). Similarly, the irreality of the mindself gives it a dream-like quality, where "waking was a kind of sleeping" (53). One might be reminded of Kafka's oft-cited statement that "waking is the most dangerous part of the day," but this is also an instance of a well-known idea of Schopenhauer's that waking and sleeping are two sides of the same page. I would extend this idea and speculate that waking and sleeping are two sides of the same Möbius strip in Beckett.



However, consciousness for cognitive scientists such as Hofstadter is (at least proximately) not a dream per se, but a highly organized and generally reliable representation of physical reality—even if it is ultimately hallucinatory. This emphasizes the non-essential nature of the self, how as a Joycean machine it must constantly remind itself of itself. “Yes, there were times when I forgot not only who I was,” Molloy states, “but that I was, forgot to be” (49). In other words, he fails to articulate himself, and without language he cannot exist as a conscious subject, if only because consciousness as we understand it appears bound to language (or to semiotic systems more broadly). Our subjective experience is, as Jerome Bruner’s psychology reminds us, structured by and through narrative. “What I need now is stories,” Molloy laments, “it took me a long time to know that, and I’m not sure of it” (9). Again, Molloy speaks in a droll Liar Paradox of uncertainty, but his comment situates him as a semiotic being nonetheless, a fact that holds true for Malone and the Unnamable as well. Indeed, all of Beckett’s narrators in the trilogy reinforce their being through their utterances, tell themselves stories in order not only to live but *to be*.

### **Strange Loops in *Malone Dies*: Embodiment and Paradox**

Beckett continues to excavate consciousness in *Malone Dies*, where he deprives his narrator of physical mobility in an attempt to discern what a disembodied consciousness might look like. A disintegration of identity results that rivals *Finnegans Wake*, frustrating readers’ attempts to distinguish discrete characters as selves. There are only multiplicities of selves, seemingly nestled within a single body. Through his narratives about Saposcat, who later becomes McMann, Malone creates fictional narratives in order to keep track of the strands in this tangled hierarchy—narratives that occasionally blur the line between subject and object. As he

recalls a story about the Saposcat family, Malone wonders, “if I am not talking yet again about myself” (183). In a sense, all of Malone’s characters are aspects of him, just as he is an aspect of Beckett. Narrator and narratee are never distinct here and, as Molloy and Moran often appear to reflect each other so thoroughly that they might possibly be the same person, so too does Malone narrate stories about others that lapse into ambiguous autobiographical notes.

The Epimenides Paradoxes explored in *Molloy* are exploited in *Malone Dies*; indeed, they become its central preoccupation. In many ways, Malone embodies the Liar Paradox. For example, as he muses about the reliability of his own statements, Malone asks “shall I be incapable, to the end, of lying on any other subject” (183) because he is beginning to uncover the fictionality of his own narrative, its necessary constructedness, and hence his own paradoxicality as a Gödelian incomplete system. Like all consciousnesses, he is a signifier in search of a signified, a process that leads to Peircean unlimited semiosis.<sup>12</sup> All Malone can do is keep telling his story.

Malone wrestles with these self-referential paradoxes throughout the novel: “The last word is not yet said between me and—yes the last word is said. Perhaps I simply want to hear it said again. Just once again. No, I want nothing.” (193). He is paralyzed by his own question—who am I, or what is “I”?—by the very logic of that which is doing the asking. This paralysis forces Malone to avoid direct answers, preferring instead to answer with the uncomfortable silences between his reversals of logic. In his attempt to conduct this anatomy of sound and silence, Malone notes that the “noises of nature, of mankind and even my own, were all jumbled together in one and the same unbridled gibberish” (201). Again, his mind is a tangled hierarchy:

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<sup>12</sup> “Unlimited semiosis” was coined by Umberto Eco in *The Limits of Interpretation* but comes from Peirce’s notion of the interpretant, whereby a sign refers to an interpretant which in turn refers to something else, ad infinitum, resulting in an endlessly recursive system of meaning. In fact, the parallels between this idea and the strange loop are tantalizing, and it seems that Eco’s notion of language as a labyrinth, which he shares with Georges Bataille and philosopher Max Black, is tantalizingly compatible with the theory of language I am building here.

Malone is immersed in paradox in part because the very tools he is attempting to use to illuminate his own mindself, namely language, are themselves paradoxical strange loops.

The most explicit example of this type of strange loop comes when Malone states, “Misfortunes, blessings, I have no time to pick my words, I am in a hurry to be done. And yet no, I am in no hurry. Decidedly this evening I shall say nothing that is not false, I mean that is not calculated to leave me in doubt as to my real intentions” (201). Here another strange loop is at work in the statement “this evening I shall say nothing that is not false.” In fact, this is a clear adaptation of Epimenides’s paradox. If Molloy says nothing that is not false, is he only speaking truth? Or, on the contrary, given the double negative, is Malone confessing that he is always lying? Round and round the mulberry bush he goes, as Lewis Carroll might say, and he takes us along for the ride on this logical carousel.

This Zen-like statement upsets Malone enough so that later in the novel he amends it: “But I tell myself so many things, what truth is there in all this babble? I don’t know. I simply believe I can say nothing that is not true, I mean that has not happened, it’s not the same thing but no matter” (229). Again, the workings of a self-referential paradox arises here, one that revels in undermining itself. Malone seems on the verge of solving Gödel’s Proof, namely that in order to justify a self-referential statement, one merely has to change “This statement is false” to “This statement is not provable.” Malone states that he “can say nothing that is not true,” but he is, unlike Gödel’s solution, just rephrasing his prior dilemma. If he says nothing that is not true, does he only speak truth? Or, as with his first version of the statement, can he only preach falsities? This chain of self-referential reasoning seems endless, as Hofstadter points out, and readers are seemingly trapped in a logical strange loop. Yet by considering infinity, the dying narrator finds some respite from this vortex. Malone continues: “And if I ever stop talking it

will be because there is nothing more to be said, even though all has not been said, even though nothing has been said” (229). He is beginning to approach the Zen mantra that the answer to the question is not merely silence but pure being. He begins to recognize the strange loops of his consciousness and, through their paradoxicality, comes to an understanding that they defy rationality but not ontology.

In manifold ways, this logic is that of the irrational number. As Kenner points out, Beckett was fascinated by surds, and we can see that this mathematical anomaly finds a literary expression in *Malone Dies*. As Malone notes, “Everything divides into itself, I suppose” (176). There is recursion, and therefore infinity, here—but there is also a regress. Like irrational numbers, Beckett’s characters divide themselves into themselves further and further until somehow they inexplicably rise back to the level of the whole number, the apparent “I” beneath all the noise.

These logical games reinforce—and are reinforced by—the spatiotemporal aspects of the novel. The novel’s layered narratives form a Penrose Staircase which disorients its narrator, who can never quite ascertain his position in time or space, unable to extricate himself from the very processes of his own making. “Beckett composed a text that seems to create itself as it reports its own composition” (Breuer 569), but it is its infinitely recursive structure that I would like to stress here. As he questions his circumstances, Malone comes to the conclusion that “there is nothing more like a step that climbs than a step that descends or even that paces to and fro forever on the same level, I mean for one not only ignorant of his position” (213). This is an apt description of the strange loop seen in a Penrose Staircase, a form I previously pointed out in Escher’s *Ascending and Descending*. Malone does not know where he is in the building where

he's trapped like an invalid; time dilates<sup>13</sup> around him; and he might be either alone or in a building housing others. Like Molloy and Moran, he can never be certain of who he is, in part because the autopoietic processes underlying his formation as a mindself are Gödelian—and therefore perpetually incomplete.

These processes also confound any attempt to partition the world into binaries. The limbo Malone inhabits is, significantly, grey rather than black or white (either of which might express various types of emptiness). Molloy's room is filled only with "leaden light" and "grey incandescence" (214), neither light nor dark. And it is only through this grey fog of self-reference that Malone finally identifies himself as the title's subject: "I mean the business of Malone (since that is what I am called now) and of the other, for the rest is no business of mine" (216). The greyness pervading Malone's cerebral grail quest might suggest the greyness of lead, his only possession being a pencil, but it might also suggest the brain's grey matter that underlies the dynamic functions giving rise to the self-system Malone futilely seeks to define. One can imagine a strange loop such as Escher's *Waterfall* where, instead of water, the impossible levels are streams of "my particles" (218), elusive and uncapturable. As Beckett writes in a letter, "the real consciousness is the chaos, a grey commotion of mind, with no premises or conclusions or problems or solutions or cases or judgments" (*Letters* 546). It is this chaotic flow of consciousness that negates any attempt to posit a cohesive, stable self in Beckett's fiction.

Beckett's argument with Descartes also touches upon what Dennett calls the Cartesian Theater and the fallacious homunculus that processes all the percepts broadcast on its inner screen. At one point, Malone mourns his "want of a homuncule" (219), as if only the infinite

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<sup>13</sup> I use "dilate" here to draw attention to the connection between the time dilation effect observed by Einstein and time in Beckett's non-Euclidean fictional universe.

regress of spectators in an infinite regress of Cartesian theaters could possibly help him make sense of the conscious condition:

But what matter whether I was born or not, have lived or not, am dead or merely dying, I shall go on dying as I have always done, not knowing what it is I do, nor who I am, nor where I am, nor if I am. Yes, a little creature, I shall try and make a little creature, to hold in my arms, a little creature in my image, no matter what I say. And seeing what a poor thing I have made, or how like myself, I shall eat it.  
(219)

On the one hand, Beckett is parodying Descartes here, and his skepticism of the homunculus echoes similar skepticism in Dennett's theory of the Joycean machine. As Dennett points out, the homunculus theory fails because if one posits a homunculus—some sort of viewer who makes sense of the input that is projected in the Cartesian theater—then one must proceed to posit another homunculus for it, and so on in an infinite regress.

On the other hand, the regress of the homunculus that emerges in Malone's meditation results in an image of the Ourobouros, the mythical self-devouring serpent: "And seeing what a poor thing I have made, or how like myself, I shall eat it" (219). This passage recalls not only a filiofagic tendency in creation myths—Kronos devouring his Olympian children springs to mind—but more exactly it calls to mind the Ourobouros image. I will discuss this image's importance shortly in my reading of *The Unnamable*, but here it is sufficient to note that the novels in Beckett's trilogy are all ouroborrean in the sense that—if you'll pardon the pun—they are narratives that eat their own tales.

Before turning to *The Unnamable*, I would like to briefly discuss Malone's atrophying body. When he bemoans "my decomposition" (247), he is always speaking about both his

physical deterioration and his act of (un)writing. As with Molloy and Moran, Malone is constantly concerned about the decay of his body, where all that matters to him is “to eat and excrete” (179). The dialectic that develops between Beckett and Descartes arises again because Malone cannot quite admit that he is nothing but an emergent property of a physical body/brain: “My body does not yet make up its mind,” he asserts, hinting at his resistance to monism (192). Statements such as this have led critics such as Kenner to see Beckett as embracing Descartes’s philosophy, whereas Beckett’s characters do not appear to embrace Descartes as firmly as Kenner suggests; rather, Beckett’s fiction is a dialogue that ceaselessly engages Cartesianism, parodying and inverting it.

Although it seems that Malone, like Beckett, cannot entirely separate mind from body, neither can he convince himself that the mind *is* the body (or at least a constituent of it). Unlike the relatively monist Joyce, Beckett clings to the possibility that the mind just might transcend the body with enough disciplined introspection. This effort is, of course, doomed, but it confers the proper amount of doubt on what might otherwise decay into a fundamentalist materialism. This contrast reaffirms a stubborn but necessary doubt: one cannot entirely reject dualism no matter how convinced that physicalism is true because, if one upholds any version of Popperian falsificationism, there is no such thing as verification.<sup>14</sup> Only when dualism has been entirely falsified—a task Beckett strives to accomplish and fails, albeit with a good-humored, sarcastic resignation—can we absolutely embrace dogmatic physicalism. Beckett’s is a healthy skepticism, a species of humility that reminds us just how pervasive Cartesian dualism remains, even with the overwhelming evidence against it continually emerging from cognitive science.

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<sup>14</sup> Popper’s approach is widely held by scientists, and it replaced the verificationist tendencies of logical positivism. See Eco’s *The Limits of Interpretation* for an application of this idea to literary interpretation.

## Strange Loops and Paradoxes of Non-Self in *The Unnamable*

*The Unnamable* completes (or renders incomplete) Beckett's trilogy, "presenting a vision of life stripped to its bare, degrading essentials" (Glicksberg 124) by shedding the last vestiges of traditional narrative, such as plot, characters, and setting. In the wake of this process, the strange loops that characterize consciousness are more evident in this final installment than in its prequels. *The Unnamable* is a work where the paradoxes of Zeno, Epimenides, and Eubulides become the scaffold upon which Beckett attempts to hang the rags of consciousness that remain after his attempted de-compositions in *Molloy* and *Malone Dies*. As the trilogy evolves, "the flight from self now becomes an obsession with self" (E. Cornwell 45) in *The Unnamable*, and more than its predecessors the novel represents a quest to "understand the mystery of the I" (Glicksberg 133). In its quest the novel pushes the anxieties of its predecessors to their extremes.

The overall conceit of the book is expressed cogently by Abbott: "something is at once trying to 'be' and know that it 'is,' something whose commonest pronominal replacement is 'I.' We call it the self, understandably, for language abhors a vacuum; but the word 'self' is already too clotted with concepts to allow us to get at what it is with any degree of freshness" ("Grammar" 41). I disagree with Abbott about the term "self," because neither literary criticism nor cognitive science provides a viable alternative, although I have sporadically substituted the Joycean neologism "mindself" for the more specific schema I've been referring to; but otherwise Abbott is correct that Beckett's search for the self-pattern reaches its apogee in *The Unnamable*.

The uncertainty characteristic of the first two novels appears immediately in the *The Unnamable*'s opening lines: "Where now? Who now? When now? Unquestioning. I, say I" (285). I see this as the core of Beckett's project, an attempt to explore the connection between processes of self-reference inherent in a statement such as "I, say I" and human consciousness.



Here I suspect echoes of Joyce's Stephen Dedalus, whose stream-of-consciousness always navigates back to reasserting itself with the first-person pronoun. But in Beckett what served in Joyce to solidify Dedalus's awareness of himself as an "I" becomes a hopeless, yet humorous, tautology. Who, after all, is speaking? The Unnamable (as critics conventionally call him) speaks as if the Malone of the previous novel is the abandoned subject (or object) of his narrative, although the Unnamable himself might be Molloy or Malone or neither or both (286). At this stage, the answers become questions, the questions answers, in a progressing/regressing strange loop.

Proceeding through the text, one notices that Zenoid and Epimenidean paradoxes abound. "Here all is clear," the Unnamable murmurs to himself, "No, all is not clear. But the discourse must go on" (288). Here is both the illusion of movement reminiscent of Zeno and the incessant self-referentiality of Epimenides. In other words, Beckett draws us deeper into the world of the absurd, of the paradox. The Unnamable suggests as much: "Or by the absurd prove to me that I am" (340). Here, the Unnamable struggles with his own subjectivity, unable to define, or even verify, his existence. The Existentialist undertones that seem to accompany literary strange loops are, as I discussed in my previous chapter, not coincidental; after all, the basic tenet of Existentialism is that man exists only insofar as he creates himself and thus is a philosophy inherently rooted in the sort of autopoiesis represented by strange loops.

The angst that accompanies this worldview is particularly evident in the Unnamable's inability to determine any certainty. The novel's final lines have garnered much critical attention, in part because they encapsulate so much of this aspect of Beckett's project as a whole. They are worth quoting in full:

. . . it will be I, you must go on, I can't go on, you must go on, I'll go on, you must say words, as long as there are any, until they find me, until they say me, strange pain, strange sin, you must go on, perhaps it's done already, perhaps they have said me already, perhaps they have carried me to the threshold of my story, before the door that opens on my story, that would surprise me, if it opens, it will be I, it will be the silence, where I am, I don't know, I'll never know, in the silence you don't know, you must go on, I can't go on, I'll go on. (407)

In the end, the shape of consciousness for Beckett becomes clear, a strange loop where position is indeterminate, repetition inevitable, and the narrative returning to its origins even as it consumes itself. He constantly undermines anything that might be construed as a declarative statement, resisting the dreaded copula that plagues the many binaries propounded by Western metaphysics. Instead, he delights in the often hilarious, liminal space between knowledge and ignorance, the very space inhabited by the Liar Paradox and its descendant, the strange loop.

If *The Unnamable* seems to be the trilogy's bleakest book, there is nevertheless a stubborn and refreshing hope in its final words, a refusal to submit even as the infinite introspection of the self is threatened by its own inevitable terminus in death. Beckett's narrator does, after all, vow to go on. The "strange pain, strange sin" can be read as the burden of consciousness, constantly reflecting upon its own existence—which entails, as I've suggested, strangeness in several senses. Furthermore, the Unnamable reinforces himself with his mantra to "go on," but he recognizes that this path is neither linear or cyclical but "strange," because after all is said and done (which, for Beckett, is never the case) it will have taken him back "to the threshold of [his] story" (407). This recursive property of narrative thought marks the Unnamable's infinitely nested self-system as a strange loop, Escherian on many levels, but also

thoroughly Gödelian in its incompleteness, its illusory wholeness. Beckett designs an architecture that has been spiraling inward upon itself until the only thing that the Unnamable—and indeed Beckett himself—knows is that he exists; and even that existence is tenuous, defining the mindself against everything that it is not (what Hegel calls “negative identity”) rather than positive identification with that which it is.

If anything seems to cohere throughout *The Unnamable*, however, it is the strange loop pattern, the one stable form remaining after the proverbial lights go out. This geometry might be described as “unending, it will be unending . . . for your turn to go again, and so on, a whole people, or I alone, and come back, and begin again, no, go on, go on again, it’s a circuit” (403). In his depictions of the autopoietic functions of consciousness, Beckett finds the closest equivalent to a reliable structure in the strange loops that hold together the various circuits of consciousness and the tragicomic circumstances for which it evolved to cope.

One of Beckett’s most explicit statements of this pattern comes near the beginning of *The Unnamable*, where the narrator states that his thoughts circulate “not in a straight line I need hardly say, but in a sharp curve which, if I continued to follow it, seemed likely to restore me to my point of departure, or to one adjacent. I must have got embroiled in a kind of inverted spiral” (310). This strange loop evokes the fractal images of the Mandelbrot set I compared with elements in Joyce’s and Kafka’s works. Beckett refines this geometry later in the novel: “And my course is not heloidal, I got that wrong too, but a succession of irregular loops, now sharp and short as in the waltz, now of a parabolic sweep that embraces entire boglands, now between the two, somewhere or other, and invariably unpredictable in direction, that is to say determined by the panic of the moment” (320). This Beckett’s clearest description of a stochastic strange loop, and while Beckett’s choice of “loop” is coincidental, it suggests that there is an

isomorphism here between the form attributed by the Unnamable to his cogitations and the strange loop pattern. Even when the Unnamable, in an allusion to Henry James's short story, describes "my turn of the lifescrew" (405), the image is reminiscent of a strange loop, like a barber pole, where, no matter how many revolutions it undergoes, never actually gets anywhere tracing the stripes in its revolutions.

The Unnamable's utterances are in part a form of echolocation, an attempt to reify himself through his voice. And although his uncertainty about nearly everything persists unabated, he does come to a realization—in what might be read as a metacommentary about what I am writing right now—that "it's myself I hear, howling behind my dissertation" (308). In some ways, the novel presents a pure intentionalism such as that described by Thomas Nagel in "What is it Like to be a Bat?" where the only means of understanding subjectivity is through experience.<sup>15</sup> The comparison between echolocation and the Unnamable's quest to define himself is instructive: he utters in the dark as if the very act of utterance will somehow clarify what might otherwise remain undefinable. He is babbling in order to actualize himself, similar to the babbling I pointed out in *Finnegans Wake*.

This answer does not alleviate the consistently unstable identities that populate the novel. The Unnamable, like Molloy/Moran and Malone, suffers an identity crisis, identifying himself with and against Mahood and, later in the novel, Worm. As Abbott writes, "We are listening to a noise which is at once voice and auditor or, more precisely, a voice and the voice of an auditor of that voice or, more precisely still, a voice responding to a voice which is the same voice making the same response, and so forth" ("Grammar" 45). This recursive feedback loop which leads to a *mise-en-abyme* describes the Unnamable—who may very well be Beckett, after all—being

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<sup>15</sup> This is a markedly phenomenological perspective. Hofstadter and Dennett include Nagel's essay in their collection *Mind's I* and offer an interesting reflection afterwards (391-414).

created by his voice. It is the involution of consciousness attempting to understand itself with itself.

In turn, the Unnamable's narratives are creating characters "who told me I was they" (319). Beckett's metafictional comment prefigures the focus of my next three chapters, but I should note here that *The Unnamable* presents a more complex loop than *Molloy* because it refers not only to characters in its own narrative, but also to those in Beckett's other texts: "All these Murphys, Molloyes and Malones do not fool me. They have made me waste my time, suffer for nothing, speak of them when, in order to stop speaking, I should have spoken of me and me alone. But I just said I have spoken of me, am speaking of me" (297). Again, the Unnamable is asserting his individuality in a way analogous to the self-referential processes Stephen Dedalus describes in *Ulysses*, namely generating a self-symbol, an "I," through incessant self-reference. But as with Bloom and Stephen, the Unnamable's conscious self blends with others, both real and imagined, in a way that forces me to question whether he is a unity at all.

In some sense, the entwinement between consciousnesses expounded by Hofstadter manifests in Beckett to a far lesser degree than in Joyce, though as in *Finnegans Wake*, the self is a composite in the trilogy. But for Beckett, this aspect of the self is explicitly bound to the process of creating fictional characters. The Unnamable, when considering that he has himself entered into his own fictions, cannot believe that he could speak of "[m]e, utter me, in the same foul breath as my creatures?" (294). As with Kafka's symbiotic relationship with his literature, I see here another instance of autographesis, where an artist's self is generated in the process of its art. Abbott sees this autography as a defining feature of Beckett's oeuvre, and he repeatedly sees this process of constant revision as contradicting any possibility of a unified self. Beckett's

novel expresses in fiction the multiple drafts of Dennett's model, presenting the self as decentralized, incomplete, and dynamic.

With the introduction of Worm, the Unnamable's unstable "I" becomes even more evident. Of particular interest is the reappearance of the Ourobours image, itself a sort of strange loop. As I mentioned earlier in my discussion of *Malone Dies*, Beckett already had this image in mind, but it finds its full manifestation in *The Unnamable*. The Unnamable and the character Mahood,<sup>16</sup> who may or may not be identical with him, are forming and formed by Worm (331). If one reads Worm's name as a reference to that other worm, the Ouroboros,<sup>17</sup> the Unnamable is on the right track, beginning to discern the recursive patterns underlying the formation of his self. He declares, "Perhaps it's by trying to be Worm that I'll finally succeed in being Mahood, I hadn't thought of that" (333). This image also reminds us of the amphisbaena, the double-headed snake that frequently symbolizes consciousness for the Romantics.

As one critic points out, the "W" in "Worm" is an inversion of the many M's that begin the names of Beckett's characters.<sup>18</sup> Inversion takes over the novel at this point: "We must first, to begin with, go back to his beginnings and then, to go on with, follow him patiently through the various stages taking care to show their fatal concatenation, which have made him what I am" (345). The Unnamable then vows to avoid first-person pronoun, calling it "farcical," only to indulge it: "Where I am there is no one but me, who am not" (348). This is yet another self-

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<sup>16</sup> Mahood, the narrator's alter ego (indeed one of many) might be read as "Manhood," insofar as he can only formulate his identity (viz., manhood) through a doppelgänger. Another consideration is that Mahood might be read as Mood, that is, etymologically as "mind" (compare with the Old English *mod*).

<sup>17</sup> The ouroboros has a deep and varied history, and while I am using it primarily as a visual image, the text suggests more connections. For example, it is important to note that "Worm is the first of his kind" (*Unnamable* 331), echoing Plato's belief that the Ourobours was the first being in the universe.

<sup>18</sup> See Critchley. Beckett notes in *Company* "Is there anything to add to this enquisse? His unnamability. Even M must go. So W reminds himself of his creature so far created. W? But W too is a creature. Figment" (*Nohow On* 37). It is also worth noting that there is a connection perhaps between this inversion and Hofstadter's "ambigrams," figures that can be read the upside down.

referential statement where the Unnamable contradicts himself contradicting himself. The strange loop of the Liar Paradox has trapped him in its dreaded regress, forcing him to ask whether he exists or not. This is Zeno's domain, a realm of contradiction. There is no motion, no progress, and no time in the novel except that which is experienced subjectively. I have already insinuated a suspicious connection between strange loops and certain types of temporality—indeed this will be the focus of Chapter Seven—but it is worth pointing out that time in Beckett's trilogy, like space, is warped in part because they are mental categories à la Kant rather than objective realities.

At this point, the Unnamable has reduced himself to nothing but an ear, a tympanum, which paradoxically speaks (or at least is convinced he is speaking). His description of his condition evokes a Möbius strip: "I'm neither one side nor the other, I'm in the middle, I'm the partition, I've two surfaces and no thickness, perhaps that's what I feel, myself vibrating, I'm the tympanum, on the one hand the mind, on the other the world, I don't belong to either" (376). As an infinitely regressing tympanum, the Unnamable at this point resembles the subject of Magritte's untitled painting known as *Shell in the Form of an Ear*, a Surrealist painting of a series of ears regressing to infinity that simultaneously evokes the spiraling form of a conch shell.<sup>19</sup> I would compare Magritte's image to the Unnamable's situation, albeit it more exactly if the retreating parade of ears somehow looped back upon itself. That said, the autopoietic, recursive processes that give rise to spiraling forms such as the shell are the same as those underlying the strange loop, and the comparison is useful for imagining the type of cognitive reality the Unnamable is describing. On one level, his description of himself as purely auditory

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<sup>19</sup> There is an intimate connection between Beckett and the Surrealist movement, as explored by Daniel Albright in *Beckett and Aesthetics* (2003). The prevalence of strange loops in Surrealist graphic art in part reflects the movement's interest in the mind and dreams, phenomena intricately bound to strange loops. In addition to Escher and Magritte, the work of Salvador Dalí is notable for its many recursions and helices.

reflects his purely linguistic existence. On another, he draws attention to the infinite regresses of his mind. If one considers the root of “absurd” (literally, “from deafness”), this connection becomes even more robust. In both ways, the Unnamable occupies the liminal space between being and non-being that is the province of the self. This is where autographesis emerges as an attempt to reconcile these opposites, but in the process the narrative tangles itself so tightly around itself that it begins to implode under its own gravity, the mindself so denuded that we ultimately realize that there is no essence, no center—just the strange loop.

Having eliminated the Other, space, and time, what is left? It seems only the body remains. Here in the novel, Beckett finally attempts to dissect consciousness by divorcing it completely from its biological substrate. The Unnamable exists like a consciousness suspended in ether, apparently paralyzed, but nevertheless embodied: “here I can count on my body alone, my body incapable of the smallest movement” (294). Kenner argues that Beckett’s theory of consciousness is thoroughly Cartesian, that the decay of the body somehow defines the mind as a separate entity. However, like Joyce, it seems that Beckett is more properly arguing that the conscious mindself cannot exist distinctly from the body: it is bound to it. Similarly, Molloy is a prisoner of his body, as is his doppelgänger Moran. Indeed, Beckett’s characters are never truly disembodied, despite his ambitious archaeology of consciousness in the trilogy. Certainly Beckett systematically strips his human being of his bodily faculties, crippling him, punishing him with brutal, naked existence, but he is never able to completely denude the mind of its body—they are inseparable.

Nevertheless, after all is said and done, there is something left: language. Indeed, as in Hofstadter and Dennett’s theories, one cannot completely separate consciousness from language. “It all boils down to a question of words,” the Unnamable observes, “a question of voices” (329).



Again, the metaphor of echolocation is instructive, because “[t]he paradox of a silence made possible through speech is an aporia that animates much of Beckett’s work” (Tubridy 30). Beckett’s project attempts to express the unsaid but often produces narratives of a man shouting in the dark, trying to create himself with nothing but his words. Just as Kafka was embodied literature, so too is the Unnamable, and perhaps Beckett, a being of pure language: “I’m in words, made of words, others’ words, what others, the place too, the air, the walls, the floor, the ceiling, all words, the whole world is here with me” (379). And this is part of the latent hope in Beckett’s oeuvre: no matter how turbulent the world might get, in spite of our inevitable organic disintegration, language survives us. It autopoietically reproduces itself through itself—and through us.

What lies behind this chaotic “core of murmurs”? Like Joyce and Kafka, Beckett comes to the same conclusion as Hofstadter: that only patterns remain. For Beckett and Hofstadter both, the self is essentially a non-entity, a wishful fantasy of coherence that is in fact illusory. Of course, when the Unnamable states that “I like to think I occupy the centre; but nothing is less certain” (289), I do not assume that he has come to this conclusion without any doubts—nothing is ever certain in Beckett—but I am arguing that Aristotelian notions of an essential self are, indeed have already been, exploded in the course of the trilogy. The Unnamable states, “I say I, knowing it’s not I” (398), revealing his understanding of the absent center that I described in Kafka. Beckett takes this idea to its terminus, as the Unnamable admits that “it was never I . . . I deny nothing, I admit nothing” (405). There are, of course, paradoxical elements here yet again, but the Unnamable’s infinite monologue with nothingness has left him “in the blissful knowledge you are nobody for eternity” (332). This seems quite existential, maybe even nihilistic, but I see it also as both a comical admission of humility and a comment about selfhood. It is a liberating

statement to be sure, the sort of liberation achieved when one shrugs off the dogmatism of essentialism and embraces what both Beckett and cognitive science suggests about the self: It is not a unified reality but a process unfolding in time, more like a symphony than a soul. This allows one to appreciate the manifold processes that contribute to the autopoiesis at work within an individual while resisting the illusions propounded by Cartesian mind/body dualisms.

In an interesting intertextual parody of T. S. Eliot, the Unnamable contemplates his own final moments, saying “that’s how it will end, in a chuckle” (401). Here Beckett’s humor comes to the fore. I am perhaps venturing uncomfortably close to the deconstructionist notion that the self is merely a “structure of tropes” (de Man 186), an entirely linguistic entity, and this is partially true if one takes Hofstadter (and Beckett) at face value. But there are many aspects of the self that are not linguistic—specifically, what Damasio calls the protoself and the core self<sup>20</sup>—and thus I would qualify this interpretation as referring not to the self in general, but to the autobiographical self as a narrative construct. There are, as Beckett’s terseness reminds us, a panoply of dimensions of the self that simply elude expression in language. In trying to explicate consciousness, Beckett runs up against the boundaries of language posited by the early Wittgenstein: “*The limits of my language mean the limits of my world*” (*Tractatus* 119, emphasis his). Beckett encounters language’s ultimate inability to express the manifold, parallel, and entangled streams that constitute the self. The Unnamable is unnamable in part because he cannot define himself as an essence, only as process. More precisely, he is unnamable insofar as he is incapable—in the sense that all human consciousnesses are incapable as embodied patterns—of expressing his subjective experience sufficiently to anyone else. He must satisfy himself with language, but as he constantly runs up against its limitations, that simply will not do; but it must do, all the same.

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<sup>20</sup> See *Self Comes to Mind*.

Reading Beckett against Hofstadter elucidates an aspect of strange loops that has hitherto remained largely tacit, namely the concept's effectiveness in synthesizing diverse philosophical ideas. Hofstadter is firmly rooted in the Analytic tradition, and yet it is perhaps not surprising that some of his conclusions should resonate with Continental alternatives. Part of this convergence rests on the peculiar way strange loops articulate ideas from the Continental tradition in Analytic terms, a fortunate side-effect that is more apparent in Beckett than in perhaps any other author treated in this study. Beckett is, given both his biography and his oeuvre, situated between these traditions, and the strange loop provides an interesting point of dialogue between these often conflicting and contradictory philosophical poles. For my purposes here it is sufficient to note that there exists "a productive tension in Beckett's work between the empiricist underpinning of Anglo-American analytic philosophy and the more phenomenologically orientated philosophy characteristic of the European continent" (Tubridy 24). In a manner more phenomenological than analytical, *Molloy*, *Malone Dies*, and *The Unnamable* both answer the Shakespearean question of "To be, or not to be" with a resounding laugh and a shrug, as if the self which Beckett is attempting to dissect oscillates somewhere in the paradoxical, liminal space between being and non-being. Similarly, Hofstadter's model explains the self as a non-entity constantly reasserting its own being, a sort of evolutionary adaptation toward coherence that is, ultimately, an illusion. The trilogy therefore focuses more on the process of becoming than with any static sense of being, and this leads to its playful paradoxes.

There is a final point that must be made here, one that leads into my next three chapters. As I have tried to show, Beckett's trilogy is highly self-referential, not only in the sense that it is obsessed with the self-concept but also as a work of metafiction. Beckett's works, as early

examples of postmodernism, always flaunt the process of their own making. This is, as both Brian McHale and Patricia Waugh remind us, one of the distinctions between the modernist and postmodernist text: The former demonstrates an awareness of its own artifice, whereas the latter vaunts it. Beckett's "dirty pack of fake maniacs" are constantly aware of both their own status as literary characters and their own process of creating other characters in the text (*Unnamable* 361). As Kenner notes of this constant literary self-consciousness, "We attend to the buttons on the coat of a fictional character created by a fictional character who is himself perhaps an ingredient in a fiction of his own devising" (*Stoic* 101).

In this way, Beckett's novels are fictions of self-creation not only as explorations of consciousness but as explorations of art as a sort of consciousness itself. As such, the paradoxes in Beckett are not merely syntactic but "are the result of a confusion, or fusion, of logical levels: more precisely, of a confusion or fusion of the object-level *literature* and the meta-level *literature about literature*" (Breuer 562, emphasis his). This leads to the next section of this dissertation, in which I will discuss how strange loops describe fiction that transgresses the boundaries between levels in the text—and between text and world. These strange loops emphasize the concept's level-crossing aspect. I will begin with the fictions of Jorge Luis Borges, who incidentally shared the 1960 World Publisher's Prize with Beckett, before moving on to discuss tangled hierarchies in the work of Calvino and Flann O'Brien.

CHAPTER FOUR  
EVERYTHING AND NOTHING:  
INFINITY, SET THEORY, AND METAFICTIONAL STRANGE LOOPS IN  
BORGES'S *FICCIONES*

*Songe, mensonge.*<sup>1</sup>

—French proverb

Thus far I have focused on literary strange loops as patterns defined by their reflexivity, but strange loops also confound one's ability to determine discrete levels within the system they describe, whether mind or text. Particularly with the autographesis discussed in Chapter Two, I've begun to suggest that texts, like conscious minds, are not merely homogeneous surfaces: They are complex tapestries composed of various interacting levels. Yet the interplay between the reality of the author and the reality of the text is but a single example of the level-crossing elaborated by Hofstadter. Perhaps the clearest example is an exercise from *Gödel, Escher, Bach* entitled "Little Harmonic Labyrinth." In this exercise Hofstadter attempts to render in a dialogue what Bach achieved in "Kleines Harmonisches Labyrinth," a musical piece that subtly modulates between keys in an almost circular manner, ending just shy of its original key. Furthermore, the notes B-A-C-H repeatedly intrude as part of the composition, an instance of the composer composing himself within the work.<sup>2</sup> Hofstadter's dialogue, itself modeled after Bach's musical labyrinth, follows Achilles and the Tortoise as they navigate through the fictional worlds of

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<sup>1</sup> Lit. "Dreams, [they are] illusions"

<sup>2</sup> American students of music might ask where in the contemporary octave system we might find an H note. It designates B natural in the German notation used by Bach.

various Escher prints, “popping” and “pushing” between levels as in Escher’s *Reptiles*, one of the prints through which they pass.<sup>3</sup> In addition to this violation of frames, Hofstadter’s dialogue introduces a specific type of embedding, another strange loop where one narrative is embedded in another until the boundaries between hierarchical levels blur. Through various ways of embedding narratives within narratives, one begins to see how literature can exhibit strange loop tendencies through this sort of recursion.<sup>4</sup>

Such narratological strange loops are particularly prominent in the work of Argentinian fabulist Jorge Luis Borges. In his well-known essay “The Literature of Exhaustion” (1967), John Barth lists Borges with Beckett as two authors that he considered to be the technical successors of Joyce and Kafka.<sup>5</sup> Borges’s is a world where the traditions of European philosophy, which might be symbolized as the labyrinth of the library, meet the feverish dream-worlds of the South American wilderness, which might be symbolized as the labyrinth of the jungle. In some ways, his fiction supplies a middle-ground between the computational metaphor of mind espoused by Hofstadter and the jungle metaphor of mind proposed by neuroscientist Gerald Edelman.<sup>6</sup> His are fictions concerned with both rigorous logic and irrational dream. Situated in this liminal space between literature and philosophy, Borges develops many Joycean preoccupations,<sup>7</sup>

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<sup>3</sup> Hofstadter takes “popping” and “pushing” from the vocabulary of computer science.

<sup>4</sup> For comprehensive discussions of framing, embedding, and Chinese Boxes in narratives, see Marie-Laure Ryan’s “Stacks, Frames, and Boundaries, or Narrative as Computer Language.” See also Todorov; Bal; and McHale.

<sup>5</sup> As I mentioned briefly at the end of my last chapter, Beckett also shared the 1961 International Publishers’ Prize with Borges, an event which Barth’s notes is “a happy exception” in “the unexciting history of literary awards” (73).

<sup>6</sup> See *Bright Air, Brilliant Fire* for an accessible overview of Edelman’s theory of consciousness.

<sup>7</sup> The connection between Joyce and Borges is the subject of much literary critical debate. See Thomas Jackson Rice’s “Subtle Reflections of/upon Joyce in/by Borges” for insightful commentary on Borges’s ambiguous anxiety with Joyce and attentive readings of Borges’s “Joyce” poems. Borges himself remarks on what he calls “this infinite conversation with Joyce” (S. Levine 357), and a recent work by Patricia Novillo-Corvalan, *Borges and Joyce: An Infinite Conversation* (2011), makes the interplay between these two authors its central thesis.

including metafictional meditations on time, space, and language that invite comparisons with Hofstadter's strange loop concept. Borges is also an extremely mathematical author,<sup>8</sup> concerned with the infinitely recursive systems that undergird strange loops. All of these aspects contribute to the many labyrinths in his fiction. In fact, the labyrinth trope common in Borges—which also features prominently in Joyce and Kafka—itself approximates a strange loop: no matter how far we proceed through its strange and entangled corridors, we always return to the entrance.

Of all the writers addressed in this study, Borges is the one who most frequently arises in discussions of literary strange loops and, in a broader framework, autopoiesis. Borges is one of the great twentieth-century metafictionists; and it is through this sense of metafiction as strange loops that Brian McHale discusses Borges at length, especially noting the Chinese-Box structures in his stories. The various narratives-within-narratives that are so common to postmodernist fiction find their genesis, according to McHale, in precisely the sort of literary strange loops deployed by Borges. Similarly, Katherine Hayles teases out the strange loops in Borges's fictions in *The Cosmic Web*, a study that demonstrates parallels between field models and certain postmodern literary theories. For Hayles, Borges's use of the strange loop is integrally related to his fascination with Cantorian set theory and with Zeno's Second Paradox, the latter of which I explored in my first three chapters. In addition to Zeno, Hayles rightly notes Borges's fascination with Georg Cantor's work on infinity, an idea inherent in the strange loop pattern;<sup>9</sup> but more importantly, in her discussion of Borges's list of those mathematical concepts that most fascinated him, Hayles states that "Strange Loops are the essence of this list" (142).

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<sup>8</sup> For an excellent exploration of Borges and mathematics, see Bloch.

<sup>9</sup> See David Foster Wallace's *Everything and More* for an excellent discussion of Cantor and his place in the mathematics of infinity. Hayles also makes an intriguing point by suggesting that Borges subjects Cantor to a Bloomian "strong reading," changing his subject matter in the interpretation and deploying it in an altered form. This application of Bloom's theory to non-literary texts is promising, although few critics or theorists have developed it. For an exploration of set theory and Borges's "The Book of Sand," see Guillermo Martinez's *Borges and Mathematics* (2003).

Indeed, Hayles notes that Borges “suggests that he was drawn to Cantor’s work because he saw in it possibilities for creating new kinds of Strange Loops” (142-43). But both Hayles and McHale focus more on how these effects are accomplished formally than on what they signify in a broader cognitive context, although Hayles does deftly situate Borgesian strange loops within the broader context of science and mathematics.

For Hayles the strange loops in Borges are a product of both repetition and what she calls Borgesian “seduction”—Borges’s tendency to present a sequence and extend it to infinity until “the sequence is folded back on itself, so that closure becomes impossible because of the endless, paradoxical circling of a self-referential system . . . The final step is to suggest that our world, like the fiction, is a self-contained entity whose connection with reality is problematic or nonexistent” (*Cosmic* 143). Through this process “[t]ext metamorphoses into context, context into text, text into context, in a Strange Loop that makes the distinction between ‘fiction’ and ‘reality’ an undecidable question” (146). Questioning the levels of reality in order to ascertain which of them, if any, is genuine is an integral part of Borges’s oeuvre as a whole. But, although he inherits this skeptical playfulness from Schopenhauer and Berkeley, Borges is not so radically idealist as to deny objective reality altogether as these philosophers often do. Rather, the fuzzy sets of reality and ideality are called into question by Borges, and Hayles, like many other critics, rightly notes that reflexivity and infinity—two fundamental criteria of strange loops—permeate Borges’s fictions. However, as with the other critics I have mentioned who have identified literary strange loops, Hayles has little to say about the cognitive significance of these structures in Borges’s fiction. Indeed, one is left wondering whether Borges’s use of strange loops is more suggestive than the field model proposed by Hayles, which focuses on the concept’s structural rather than cognitive implications.



The suggestion that strange loops might be relevant to Borges's notions of consciousness has to date been developed only by Allene M. Parker, who compares Borges's fiction with Escher's graphical work.<sup>10</sup> Parker focuses on four Borges fictions as examples of strange loops: "The Circular Ruins," "The Secret Miracle," "The Library of Babel," and "Tlön, Uqbar, Orbis Tertius." As Parker notes, all of these fictions "are constructed around the themes of dreams and infinity" (14). The hypnagogic and nonlinear aspects of Borges become, in Parker's reading, evidence that labyrinths are indeed a type of strange loop. To clarify this point, Parker rightly distinguishes a maze, which may have more than one entrance and exit, from a labyrinth, in which there is only one way in or out. A similar, more precise typology was made by Eco in *Semiotics and the Philosophy of Language*, where he distinguishes three types of labyrinth: the classical (linear), the mannerist (maze), and the net (network or rhizome). The latter he likens to Deleuze and Guattari's notion of the rhizome, but what is important here is that Eco's labyrinth of language shares many similarities with Borges's labyrinths.<sup>11</sup> Parker similarly notices these affinities. In addition, as I have tried to demonstrate thus far, comparative studies such as Parker's between Escher's work and certain literary texts are helpful means of visualizing literary strange loops; but they rarely make the cognitive aspects of strange loops explicit, tending to focus on structural isomorphisms without considering what these isomorphisms might mean in a cognitive context.

Surprisingly, despite the cerebral nature of his work, Borges is rarely discussed in cognitive literary criticism, in part perhaps because of his own skepticism about psychology as it was practiced during his lifetime. Borges tends to avoid psychology and psychologizing (Stark

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<sup>10</sup> There are several dissertations in Spanish comparing Escher and Borges. See Lopez and also Badio.

<sup>11</sup> This is no surprise given Eco's debt to Borges. See Gracia, Korsmeyer, and Gasché for several perspectives on the relationship between these two literary philosophers.

21); but, for most of his writing career, Borges would have seen psychology as Skinnerian behaviorism, with its notions of the mind as a tabula rasa that is shaped by conditioning instead of the currently accepted paradigm that the mind is a series of organic algorithms enacted by the brain, algorithms that are partially hardwired and partially ecologically conditioned. Rather than Skinner's now out-of-favor behaviorism, Borges prefers to ponder consciousness via philosophy of mind, particularly through thinkers such as Schopenhauer and Kant, although whether he does so because they offer the most valid theories or merely the most literarily interesting is a matter of debate. Nevertheless, we know that Borges was interested in psychology and neuroscience,<sup>12</sup> and his fictions lend themselves particularly well to cognitive readings.

As L. A. Murillo notes of Borges, "the labyrinth, with all its multiple associations, symbolizes the consciousness of man in our time" (qtd. in Dauster 142). It is thus not surprising that the various symbols favored by Borges—the mirror, the book, and, of course, the labyrinth<sup>13</sup>—are all symbols of the mind and are each capable of producing strange loop patterns. Of these, it is the labyrinth which is most often identified with Borges, although post-Joycean authors often "define the world as maze or labyrinth" (Adams 50). Even the physical architecture of the brain evokes the image of the labyrinth,<sup>14</sup> but for my purposes it is important to note that the labyrinth is itself another variety of strange loop. Like a strange loop, "the word *labyrinth* or the description of a labyrinthine structure serves as a symbol for a forest, a city, a mind, or a text" (Faris 10). In addition to being a symbol for complexity, cognition, and

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<sup>12</sup> As Rodrigo Quian Quiroga notes, Borges's personal library contained an annotated copy of Gustav Spiller's *The Mind of Man* (1902), although he sees Borges's cognitive interests generally directed toward memory.

<sup>13</sup> These three Borgesian symbols are discussed at length in Irby (270-85).

<sup>14</sup> Penelope Reed Doob, in her comprehensive historical survey of the labyrinth, notes this: "The brain itself has a labyrinthine structure of convolutions or *gyri*, their very complications reflecting the high level of human intelligence according to Erasistratus" (84). It is also worth pointing out that although Hofstadter uses a labyrinth image in *GEB* (119) and alludes to Bach's musical labyrinths, he never explicitly identifies strange loops with labyrinths, although I agree with Parker that the similarities are legion.

language, the labyrinth also signifies the ultimate strangeness for Borges. As he mentions in one interview, the labyrinth is “the most obvious symbol of feeling puzzled and baffled” (“Interview” 317). This symbol is not necessarily a negative one either, as Stark notes (48). Borges’s belief that the labyrinth represents possibilities rather than imprisonment also speaks to strange loops as a means of seeing tangled hierarchies positively, a perspective he shares with chaos theory and poststructuralist appropriations of it.

I will focus on four stories by Borges to explore his particular use of the strange loop concept. The first, “The Library of Babel,” describes an infinite library that contains the permutations of all possible books. Told by a librarian imprisoned in this infinite system, the story makes several interesting suggestions about language and mind that are similar to the strange loop concept. The second story, “The Aleph,” describes an object through which one can see the entire universe. This is the first of many Borgesian Chinese boxes, objects contained within themselves infinitely. The third story, “The Circular Ruins,” tells the tale of a mysterious man who arrives at a ruined temple in order to dream another man into being. In doing so, he ultimately realizes that he himself has been dreamt, leading to an ontological strange loop. Lastly, “Tlön, Uqbar, Orbis Tertius” follows Borges’s quest for a mysterious land he discovers in an encyclopedia, only to find that this apparently fictional world begins to fuse with the extra-textual worlds it comes in contact with. In each of these stories, one sees how strange loops might describe the metafictional properties of certain narratives, as well as what these strange loops might say about consciousness.

## Strange Loops in “The Library of Babel”

The story that best draws these ideas together is “The Library of Babel.” Borges explicitly likens the Library to the universe as a whole in the opening line: “The universe (which others call the Library) is composed of an indefinite, perhaps infinite number of hexagonal galleries . . . Through this space, too, there passes a spiral staircase, which winds upward and downward into the remotest distance” (*Fictions* 112). These galleries are identical to each other in structure, though not in content, and it is easy to see that “the first strange loop we encounter is the architecture of the library itself” (Parker 17). The Library appears to be an infinite system. As Borges’s narrator boldly asserts, “the Library is endless” (*Fictions* 113). There is a particular type of infinity<sup>15</sup> at work here because “the library, like the moebius band, is a closed cycle” (Parker 18). The library thus exhibits recursive infinity rather than the “Basic Metaphor of Infinity” described by cognitive linguists; the infinite outwardness one usually associates with the concept is inverted. This inversion does not, however, make it any less perplexing. Indeed, infinity largely fascinates Borges because the human mind can never fully conceptualize it as a single domain. The very limitations of our human cognitive systems seem to preclude our ever conceptualizing it in its totality.

In his essay “The Total Library,” Borges imagines a similar scenario about a library that contains all permutations of all possible books (*Non-Fiction* 214-16). But there’s a slight difference between these two hypothetical structures: while the Total Library<sup>16</sup> is infinite because it contains an infinite number of products of an infinite combinatorial system, the Library of Babel is confined by the limits imposed upon its chambers and books. “Each wall of

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<sup>15</sup> For excellent discussions of infinity in Borges, see Bloch and also Rucker.

<sup>16</sup> Borges derives the idea from Kurd Lasswitz in “The Universal Library,” a debt he acknowledges in his essay.

each hexagon,” Borges’s narrator tells us, “is furnished with five bookshelves; each bookshelf holds thirty-two books identical in format; each book contains four hundred ten pages; each page, forty lines; each line, approximately eighty black letters” (113). In strict numerical terms, there are about  $10^{2,000,000}$  books in the Library of Babel, not an infinite number.<sup>17</sup> Nevertheless, in *Infinity in the Mind*, Rudy Rucker makes extensive use of Borges to describe various aspects of infinity. For example, Rucker likens the Library of Babel to Richard’s Paradox, which describes the problems that arise when mathematics attempts to talk about itself, a paradox related to the double bind in the Liar Paradox (126).

Both Borges’s stories and the paradoxes outlined by Rucker unsettle us. However, Borges’s narrator ironically inverts our normal neurosis about infinity because, rather than squirming like us at our inability to conceive infinity, he’s unsettled by the suggestion that the library might be limited or finite: “Those who believe it to have limits hypothesize that in some remote place or places the corridors and staircases and hexagons may, inconceivably, end—which is absurd” (*Fictions* 118). It is the incomprehensibility of finiteness that troubles the librarian, not the Library’s potential boundlessness, which he finds perfectly natural. This is even more perplexing when one considers, as I demonstrated above, that the Library is in fact *not* infinite by virtue of the limits described by the narrator himself. This denial suggests the narrator cannot conceive limits because everything is recursive in the strange loop he inhabits—even the hexagonal rooms that comprise the Library have one wall that is a mirror, multiplying this recursion even further. If the Library is, as the opening line suggests, coextensive with the universe, then the librarian dwells in a particularly expansive labyrinth reminiscent of

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<sup>17</sup> Pinker uses Borges’s Library of Babel to demonstrate the combinatorial strength of complex linguistic systems, though he apparently neglects the “approximately” that qualifies the number of letters per line and thus arrives at a definitive count of  $10^{1,800,000}$  rather than Rucker’s more careful approximation. This goes to show that Pinker, a scientific expert on language, misreads the text whereas Rucker, a science fiction writer himself, is more sensitive to nuance.

Baudelaire's notion of the world as labyrinth, not the limited (albeit expansive) one we might deduce when taking into account the Library's limitations.

The narrator goes on to say that the Library is not only infinite but periodic: "If an eternal traveler should journey in any direction, he would find after untold centuries that the same volumes are repeated in the same disorder—which, repeated, becomes order: the Order" (118). Here again there's a distinction between infinity as endless outwardness and that special infinity encapsulated by strange loops. The infinity of the Library is a recursive infinity such that, if one proceeds in any given direction for some indeterminate amount of time, one will encounter the same pattern interminably. The Library quite literally folds back upon itself. There is also the suggestion that a certain order emerges out of the Library's apparent chaos, an insinuation of the chaos that often accompanies literary strange loops. There are hints of mysticism to be sure—the topic always fascinated Borges—but there is also a sophisticated attention to mathematical infinity.

In her essay, Parker suggests that the Library is analogous to Escher's architectures in *Ascending and Descending*, which I discussed in Kafka, and similar paradoxical prints; however, it also represents another geometry related to the strange loop, the Poincaré disk. I mentioned this geometry in my discussion of *Finnegans Wake*, noting that Joyce attempts to achieve a literary approximation of a Poincaré disk in his novel's form. In "The Library of Babel," I believe Borges gives this form its best conceptual expression: "*The Library is a sphere whose exact center is any hexagon and whose circumference is unattainable*" (113, emphasis in original). This accurately describes a Poincaré disk, where approaching the circumference only produces more iterations of the image. Escher applied a similar technique in his many parquet transformations, such as the tessellation in *Reptiles* at the beginning of this chapter. These forms

might likewise describe Borges's Library. The library's infinite arrangement of hexagonal chambers is also a version of a Coxeter network, a strange-looping geometry that fuses Escher and Poincaré. If one extends this pattern in three dimensions, as the Library of Babel does, this becomes hyperspherical space also. Doing so creates an interesting closure in the system: "The curious thing is that if one lets a sphere expand in hyperspherical space, there comes a time when the circumference of the sphere turns into a point and disappears" (Rucker 17). Like certain strange loops, such a structure spirals outward toward infinity only to find itself collapsing back upon itself to start all over again.

In addition to these strange loop geometries, there are other two major aspects of "The Library of Babel" that no critic has yet developed. First, Borges introduces a logical paradox in the story by suggesting a hypothetical book in the library that contains the key to all other books. If such a textual skeleton key—what the narrator calls "the catalog of catalogs" (*Fictions* 112)—exists there must in turn be a book that includes or deciphers it in turn. But this poses a problem related to set theory. The existence of "a book that is the cipher and compendium of *all other books*" (116) is a literary expression of Russell's Paradox, which asks whether a set can be a member itself. A related paradox is the so-called Barber Paradox, which postulates a village barber who shaves everybody in the village who don't shave themselves, a situation likewise leading to an infinite regression due to the uncertainty in Cantor's Set Theory as to whether a set can properly contain itself within itself.<sup>18</sup> The eventual result in the latter scenario is a barber with an absurdly long beard because he cannot shave himself, since he shaves only those who don't shave themselves. (There are other versions, of course, but you get the picture). These paradoxes were favorites of Gödel, and inherently part of the strange loop pattern when applied

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<sup>18</sup> We must assume the barber is the only barber in the village and also unable to leave it for this paradox to operate properly.

to its heterarchical nature.<sup>19</sup> They are, in this sense, versions of the Liar Paradox, but ones broadened beyond language to include sets. In light of these paradoxes, if Borges's compendium exists, does it also contain the key to itself, a compendium's compendium? Doesn't this result in an infinite Chinese box (or, better yet, a "Chinese book")? Also, given the limits placed upon the lengths of the books in Borges's Library, is such a compendium even possible?

There is really no answer to these paradoxes, but that's the effect of Borgesian fictions: They always force readers to think outside the Chinese box, to joots (jump out of the system) in Hofstadter's terms. In doing so, Borges arrives at a solution similar to Gödel's, but his medium is fiction rather than mathematical proof. Instead of a logical string that states "I am not provable," Borges creates texts that say "I am a fiction" and solves Russell's paradox "by positing the set of all sets that can also be a member of that set: a fiction" (Thiher, "Theory" 344).

But what, you might ask, does all this have to do with consciousness? Part of the connection lies in the pattern that undergirds both patterns. Also, Borges's literary experiments draws our attention to a problem of consciousness related to this sort of embedding, namely how consciousness could conceive itself with itself. Russell's Paradox, like Borges's infinite compendium, would seem to pose the same problem as an infinitely nesting matryoshka doll: Where, if anywhere, is the bottommost level? Typical of Borges, there is seemingly no bottom to this vortex.

This leads to the second point that no critic has yet mentioned: the possibility that the library's strange looping architecture and its recursive information system are in fact symbols of

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<sup>19</sup> Another paradox of this type particularly interesting for students of language is Grelling's paradox. It deals with words that are self-referential, or "autological," such as "word" or "pentasyllabic." The paradox crops up in words where the distinction breaks down, for example, "heterological." The term designates words that are not autological. The paradox crops up when we ask whether "heterological" is itself heterological.



the human mind/brain. The Library appears to be an infinite computer<sup>20</sup> from which data can be retrieved and interpreted. It is no coincidence that cyberneticists such as Herbert Simon claimed Borges as an influence on their developments in information theory, developments which themselves form the philosophical underpinnings of cognitive science. There is the interesting prospect that Borges deals with the same sorts of problems that faced early cognitive scientists, such as discerning how the language-learner could possibly acquire language given both the poverty of the stimulus and the infinite grammars consistent with any finite sample-text.<sup>21</sup> Furthermore, the Purifiers in the story who during the Library's history once sought to rid it of all nonsensical texts resemble the cognitive "quality control inspectors" in generative grammars, operations that attempt to prune away those language artifacts—words, sentences, but in Borges case, even literatures—that do not conform to the rules of their particular language.

From this perspective, the Library as a whole is akin to Charles Babbage's primitive calculation machines or the rudimentary choice engines of Ramon Llull, the latter discussed in Borges's essay "The Total Library" (*Non-Fiction* 214). As Henry Sussman notes, "The ultimate system lending the *Ficciones* their sublime, spacy, labyrinthine quality is, of course, the system of language itself, understood, in keeping with surrealism as well as structuralism, as an impersonal combinatorial matrix at the level of Chomskyan deep structure, on a level that would have to be described as subpsychological" ("System" 157). Sussman's juxtaposition of surrealism and structuralism is particularly insightful given that Hofstadter's model also seems to

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<sup>20</sup> There are several excellent studies of Borges's relationship with Artificial Intelligence. See especially Lapidot and the collection *Cy-Borges*, edited by Herbrechter and Callus. In "Ramon Llull's Thinking Machine," Borges states that "[a]s an instrument of philosophical investigation, the thinking machine is absurd. It would not be absurd, however, as a literary and poetic device" (*Non-Fiction* 159).

<sup>21</sup> See Chomsky for discussions of these problems from a technical cognitive linguistic perspective.

unite these ostensibly distant modes of thought.<sup>22</sup> I see a similar instance in Calvino's fiction. Yet both systems are capable of producing infinite novelty from fixed sets of rules through complex patterns of recursive manipulations.

But again, you might ask, isn't the Library *finite*? And haven't we been seeing some tacit connection between *infinity* and consciousness, such as that proposed by Rucker? Yes, on this point the comparison between the Library of Babel and consciousness frays a bit. Nevertheless, if nothing else it does suggest an interesting parallel between the strange loops in the Library and the strange loops in the mind. "The totality ascribed to the Library is not the unimaginable amalgam of human creativity, and its metaphysics," Sussman writes of this connection, "but a mathematical sum or reckoning of all the combinations in the signs" (156-57). One might perhaps conceive a better comparison by concatenating both of Borges's libraries into the more inclusive Total Library of Babel. Such a system would combine the Total Library's infinite combinatorial possibilities with the Library of Babel's recursive calculus. Better yet, one might recall "the principle of the hermeneutic infinite" (Krysinski 192), and argue that the Library of Babel is infinite because its interpretive possibilities are unlimited.<sup>23</sup>

Despite these minor discrepancies, Borges's Library does invite comparison with models of mind and language based upon both formal systems and recursion. If Borges's "Library contains all verbal structures" (*Fictions* 117), then it also seems to contain the rules for organizing such structures. As Lois Parkinson Zamora notes, "the combinatory potential of language *is* the Library of Babel" (68). Although Zamora is correct, one must also avoid falling

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<sup>22</sup> The connection between Borges and surrealism is contentious. He distanced himself from the movement, yet many of his works incorporate traditionally surrealist themes and *trompe-l'œil*. His clear style, however, is largely at odds with surrealist form.

<sup>23</sup> This conclusion is dangerously reminiscent of poststructuralist notions of infinitude, many of which logically result in language becoming meaningless. See Eco's *The Limits of Interpretation* for an excellent counterargument to this. Eco establishes a somewhat Darwinian, Popperian approach to limiting hermeneutic possibilities.

into the trap of equating the Library with nothing but this combinatorial potential. Furthermore, the strange loops in Borges's story reflect the possibility that Borges envisioned the mind as a computational organ reliant upon feedback information processing to produce the wonder of consciousness, a prescient argument for artificial intelligence that has not gone unnoticed by critics such as Hayles.<sup>24</sup> While Borges's affinity for thinking machines requires discussion beyond my scope here, it is important to note that if one considers "The Library of Babel" to be an allegory about the nature of mind and language, as I am suggesting, then Hofstadter's model—one heavily invested in the belief that consciousness is a rule-based, symbolic process possible in substrates other than our neural ones—fits even more snugly with Borges's speculative fiction.

### **Strange Loops in "The Aleph"**

Infinite regress clearly fascinated Borges, but the mind's frustration with infinity finds perhaps its best manifestation in "The Aleph," in which a man finds an artifact that encompasses all reality within its optic but must therefore also include itself. This leads to the *mise-en-abyme* familiar in Borges's work, a reflection of his fascination with Zeno<sup>25</sup> and his "personal metaphysics" of paradox (Merrell xiii). Yet "The Aleph" depicts a specific type of *mise-en-abyme*, one that loops back upon itself rather than retreating into infinity. As Hayles notes, "When the narrator's egoistic eye ('I') attempts to establish bounds around the Aleph by looking at it from 'every point and angle,' he sees . . . a progression that circles back on itself to form a

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<sup>24</sup> See *How We Became Posthuman*.

<sup>25</sup> Stark notes that Borges's had an affinity for Zeno's paradox (17). Borges discusses the paradox explicitly in his essay "The Perpetual Race of Achilles." See also Hayles's *Cosmic Web*.

Strange Loop that includes the narrator within its circumference” (*Cosmic* 160). This artifact contains itself within itself indefinitely, yet another infinite Russian nesting doll.

Accordingly, “an Aleph is one of the points in space that contains all points” (Borges, *Fictions* 280), a locus in space ““where, without admixture or confusion, all the places of the world, seen from every angle, coexist”” (281). Later the narrator describes the artifact as “the disk of my tale,” suggesting a Poincaré disk not unlike the fractals I described in “The Library of Babel” or the Lobachevsky spaces of *Finnegans Wake*. Here, the disk of the Aleph might be read as the story itself, but Borges creates a small fiction in order to represent the small artifact that, despite its size, encapsulates all things. Here Borges raises Wallace Stevens’s jar in Tennessee raised to an infinite exponent, a mind-artifact capable of containing the entire universe.

In addition, “The Aleph” draws attention to the limits of language. I have been suggesting that consciousness and the self are largely linguistic processes, as both Hofstadter and Dennett insinuate, but Borges’s story makes an important point about the limits of language. Obviously there is much in subjective experience that is pre-linguistic, such as raw perception, proprioception of the body in space, or kinesthesia. But there is also the inability of language to truly express being *in toto*, a fact that Wittgenstein frequently noted. As Borges’s narrator asks, “How can one transmit to others the infinite Aleph?” (282). The incommunicability of the Aleph experience stems from the paucity of language to capture such infinitude, as well as our limited conceptual capacities. As Zamora contends, “If modernist writers (Woolf, Forster, Faulkner, Fuentes) have often held their art up against an unruly reality, Borges does something very nearly its opposite [describing] . . . a world in which signification always exceeds the capacity of signifiers to express it” (63). Borges’s parable thus describes the ultimate incommunicability of mystical experience on one level, of consciousness in general on another.

If an experience with the Aleph is ultimately inexpressible, what can one say about it? Is language entirely helpless in the face of such a transcendent experience? The narrator considers that language might provide an “equivalent image” but admits that if this is done, “then this report would be polluted with literature, with falseness” (282). Borges playfully equates literature with falseness here, but in some ways he is making a comment on both the purview of language and the ways it enriches what otherwise might escape expression. Perhaps this is why the narrator believes “that the Aleph of Calle Garay was a *false* Aleph” (285, emphasis in original), in part because it is merely optical and in part because it is “merely” literary. Its falseness primarily rests on it not being sufficiently linguistic because it offers only a visual encapsulation of the universe. And yet, the Aleph is *only* linguistic because it is an object that on another level—viewed outside the system—exists for the reader in the text alone. The Aleph is limited by that very languagedness and yet is nothing without it. Additionally, although the artifact allows the user to see all of creation, there is no evidence in the text that it offers any other sensory data to the experiencer. The Aleph is, as far as we can tell, merely an infinite lens. I see an excellent analogy in Escher’s *Print Gallery*, one of the tightest visual realizations of a strange loop. Following the gallery patron’s gaze we find ourselves right back where we started, looking back at him looking out. Reading Borges’s story beside this print, I suspect that the Aleph might also symbolize art itself in its capacity to open new perspectives through imagination. More specifically, it might symbolize literature as a whole, the text as a mind, or the strangeness of perception.

What the narrator actually sees through the Aleph draws attention to story’s strange loop geometry. When he looks into the artifact, the narrator “saw the Aleph from everywhere at once, saw the earth in the Aleph, and the Aleph once more in the earth and the earth in the Aleph, saw

my face and my viscera, saw your face” (*Fictions* 283-84). The infinite regress here is obvious, and indeed if the narrator sees all things from all angles then one of his perspectives is that of him looking through the very Aleph through which he sees himself. A similar scenario is depicted in René Magritte’s surrealist painting *Le Reproduction Interdite*, in which a man looking into a mirror sees not his face but the back of his head as if looking at himself from behind. The strange loop results because our expectations are compromised, and we find ourselves unsettled by this visual-logical paradox. This cybernetic “observer paradox” results because “[t]he operation of observing . . . includes the exclusion of the unobservable, including, moreover, the unobservable par excellent, observation itself, the observer-in-operation” (Luhmann 44). This paradox suggests one of the primary tenets of autopoiesis inherited from cybernetics, namely that the conscious self is part of a larger system. Both Magritte’s painting and Borges’s story are strange loops in this sense.

As Shelley reminds us, “The everlasting universe of things flows through the mind.”<sup>26</sup> Read as such, the Aleph is in some sense a metaphor for the mind as an infinitely recursive set of reflexive processes that are nevertheless inextricable from the material reality they inhabit and construct. It is also a metaphor for the attempts of consciousness to encapsulate the infinite reality of which it is a part as if it were distinct from it. Frank Dauster calls the story’s theme “man’s hallucinated search for the center of the labyrinth of his existence” (144), an impossible quest because the self is always part of systems larger than itself. The strange loop of the infinite Aleph captures this Shelleyan aspect of consciousness while taking this pattern to its logical extreme. It is a sort of mirror, true, but instead of holding a lamp to it as a Romantic might do, Borges holds up another mirror. In doing so, Borges suggests that the self-referential regress epitomized by the strange loop characterizes the most transcendent capacities of cognition.

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<sup>26</sup> “Mont Blanc” (lines 1-2).

### Strange Loops in “The Circular Ruins”

Similar strange loops occur in one of Borges’s best known fictions, “The Circular Ruins.” The narrative follows a mysterious man who arrives at an abandoned temple and proceeds to dream another man into being, only to discover that he himself is the figment of someone else’s dream. The effect is that “dream, world, and literature ultimately merge into one entity” (Stark 43). Of course, there are yet again strong hints of Schopenhauer, Berkeley, and other idealist philosophers here, but I agree with Sussman that Borges confronts these system-builders as much as he adopts their ideas. As one that defies traditional hierarchical systems, the process described by Borges is also an analogy for autopoiesis, the process of self-creation. The story possesses all of the elements of strange loops: recursion, infinity, strangeness, circularity. But what does it say about the self and consciousness? For one, as with *Finnegans Wake* and *The Castle*, it emphasizes the role of dreaming in the formation of the self. For another, it indicates that dreams for Borges are inherently “Zeno-esque” (Merrell 51). In dreamscapes, the laws that guide perception during waking are rendered obsolete, replaced by the paradoxical rules that define strange loops. As in the *Wake* or Escher’s prints, the logic of the dream is merely a hyperbolic version of the same rules that govern waking life.

Most discussions of “The Circular Ruins” focus on the infinite regress implied by the fact that the dreamer is dreamt by another person who in turn must be dreamt, ad infinitum. Yet there is a strange loop here rather than a strict regress. Before he begins to dream his creation, the dreamer lectures in his dreamworld to an audience of his creation and notices that one of his dreamt students possesses “sharp features that echoed those of the man that dreamed him” (*Fictions* 97). This foreshadows the story’s subsequent revelation that Borges is in fact writing

about a man who dreams himself. From a psychoanalytic perspective, all personae in dreams are reflections of the dreamer; however, it seems more likely that the resemblance between the dreamer and his student is a symptom of the dreamer's own fictionality. Consequently, it may be the case that the "mere simulacrum" (100) that constitutes his principal project is indeed creating his creator in turn. The dreamer consistently squirms at such an assertion: "To be not a man, but the projection of another man's dream—what incomparable humiliation, what vertigo!" (100) This is, of course, a reinterpretation of the Red King in Lewis Carroll's *Through the Looking Glass*, who is dreaming Alice just as she is dreaming him. The story's epigraph is in fact drawn from this exact source, and it points to this particularly bizarre version of the strange loop. In some sense it also suggests, as I mentioned in my discussion of the *Wake*, that dreams contribute to the process of self just as the self contributes to the dreaming process. If consciousness is largely an illusion of coherence, as Hofstadter and Dennett suggest, then one might describe consciousness as a lucid dream, as the body dreaming the self into wakefulness.

In some ways, there is no salient distinction between waking and dreaming for Borges. As he writes in a paraphrase of Schopenhauer, "dreaming and wakefulness are the pages of a single book, and that to read them in order is to live, and to leaf through them at random, to dream. Paintings within paintings and books that branch into other books help us sense this oneness" (*Non-Fiction* 162). Again, the dream is the offspring of the same consciousness that produces wakefulness. Borges senses, as Joyce and Kafka do, that waking is a particular type of dreaming, one dictated through selective perception but different from dreaming in degree rather than in kind. His metafictional works emphasize this unity, and as in Kafka or Beckett, one might depict dreaming and wakefulness as the two surfaces of a Möbius strip.



It is true that “The Circular Ruins” is “a parable not just of procreation but of creation in general” (Bell-Villada 87), and for that reason it is also appropriate as an example of the strange loop as a model of creative processes. In fact, Hofstadter’s work, in the vein of Arthur Koestler’s *The Act of Creation*, also focuses on the emergence of creativity from rule-based systems such as language and mind. The iterations of a strange loop, just like the iterations of the dreamers, are capable of producing novelty out of themselves, an emergent process evident in both Borges’s Library of Babel and the Total Library. This indicates what Hofstadter calls *recursive enumeration*, “a process in which new things emerge from old things by fixed rules” (*GEB* 152). This aspect of autopoiesis is intimately connected with fractals and chaos, but for our purposes here it points to the role of recursive enumeration in the generation of new forms.

Such perplexities throughout “The Circular Ruins” are precisely the perplexities posed by strange loops. For example, one might suspect an infinite regress because the dreamer is dreamt by that which he dreams. But rather than a vicious paradox, this is precisely the strange loop pattern formed by an autopoietic system. This also reminds us of the problem of the Cartesian homunculus, another infinite regress. If the dreamer is dreamt by someone else, who dreams the meta-dreamer? In turn, who dreams him? What “The Circular Ruins” provides is one explanation of how these two paradoxes might be resolved, namely by envisioning the narrative’s system as a strange loop. But is it a strange loop or merely a regress? Don’t these levels of dreamers within dreamers merely suggest an infinite series in either direction, above and below the level of the narrative’s protagonist? For the story to truly be a strange loop, wouldn’t we have to postulate a third dreamer, one who dreams the dreamer and is in turn dreamt by his creation’s creation? This last possibility would render an especially tangled hierarchy, suggestive of the authorship triangles I will discuss in Chapter Six. For now, let me merely note

that the text nowhere explicitly suggests this sort of triangle; but given Borges's interest in double binds and set theory, it is certainly a likely subtext.

### **Strange Loops in "Tlön, Uqbar, Tertius Orbis"**

"The Library of Babel," "The Aleph," and "The Circular Ruins" all demonstrate how reading fictions that draw attention to themselves as such blurs the normal levels between text and reality. As Hayles notes, these self-conscious narratives draw attention to their status as metafiction because as readers "we see the final step in Borges's seductive strategy, the inclusion of the reader himself in the circle of the fiction's Strange Loop" (*Cosmic* 151). Borges takes this metafictional nesting to another level, quite literally, in "Tlön, Uqbar, Tertius Orbis." He nests worlds within worlds, includes footnotes to imaginary books, and complicates the distinction between levels of discourse. Ana Maria Barrenechea notes that the "story is constructed like a Chinese Box: unreal worlds included one within the other and then, in turn, within the earth, which disintegrates on contact with such phantasmagoria" (38). Borges's story accentuates the most important effect of metafiction, namely its ability to blur the levels between fiction and reality, one of Borges's story's most unsettling effects. It is significant that, "[i]n the end, Borges tells us, the world *becomes* Tlön. As we witness this transformation, we can see Borges's strategy evolving from the first tenuous suggestion of a sequence to the infinite progression of a self-referential Strange Loop" (Hayles, *Cosmic* 144). If the world becomes Tlön, then the resultant reality will in turn create its own fiction that will create it, ad infinitum. It breaks the frame that ostensibly divides the fiction from reality.

To Borges, this is a false dichotomy: "I always get angry at those who speak of reality on one side and of literature on the other as though literature were not a part of reality"

(*Conversations* 10). Yet the most disturbing event in the story is the fusion of fictional and “real” worlds. Objects from Tlön—seemingly ordinary objects such as a compass, as well as impossible objects such as metallic cones that are unbelievably heavy—begin materializing in the narrator’s world. But the narrator’s world does not begin to resemble the fictitious world; it begins to become identical with it: “The world will be Tlön” (*Fictions* 81). Fiction and reality begin to blur. This may at first seem to be the plight of the schizophrenic rather than the normal mind, but it is, as in Borges’s comment that opens this paragraph, the condition of literature as a subset of reality as a whole.

The metafiction here points out another crucial point about both literature and strange loops: The map is not the territory. Borges’s writes in “On the Exactitude of Science” about a map that is so perfect that it is coextensive with the territory it seeks to chart (*Fictions* 325). Josiah Royce, one of Borges’s favorite philosophers, expresses a similar idea which Borges discusses in his essay “When Fiction Lives in Fiction” (*Non-Fiction* 160-62). Both instances echo precisely the same dilemma faced by Borges (the character, not the author) in “Tlön, Uqbar, Tertius Orbis.” Why might these ideas this unsettle us? Part of the reason lies in the fact that “Postmodernist texts . . . tend to encourage *trompe-l’œil*, deliberately misleading the reader into regarding an embedded, secondary world as the primary, diegetic world” (McHale 115). Borges explores this anxiety in “Partial Magic in the *Quixote*”:

Why does it disturb us that the map be included in the map and the thousand and one nights in the book of the *Thousand and One Nights*? Why does it disturb us that Don Quixote be a reader of the *Quixote* and Hamlet a spectator of *Hamlet*? I believe I have found the reason: these inversions suggest that if the characters of

a fictional work can be readers or spectators, we, its readers and spectators, can be fictitious. (*Labyrinths* 196)

This is playful, to be sure, but also a serious metaphysical speculation. If we are fictions, does that somehow demean our status as persons? If we are merely characters in a grander narrative, who is the author? God? Nature? The mind? As a literary philosopher, Borges seems content to pose these questions without providing any concrete answers.

Additionally, these fictions again highlight the notions of set theory. This too supplies us with important cognitive insights because for Rucker, “[s]et theory is, indeed, the science of the Mindscape” (41), where mindscape is likened to Dedekind’s *Gedankenwelt*, or “thought world” which is the domain of the infinite. This holds true for Borges as well as for Josiah Royce, for whom “a person’s mental image of his own mind must be infinite” (507). This is because we nest our self-concept within itself recursively, day in and day out, creating a richly textured narrative. Metafictions such as Borges’s also remind us that we, as autopoietic self-narratives, are semiotic sets embedded within the larger semiotic set of narratives more generally. Given Dennett’s Multiple Draft Model and Hofstadter’s strange loop concept, this is closer to actual cognitive scientific perspectives than one might initially imagine. It sounds remarkably constructionist, but as I have argued, it is better construed as emergence.

Borges’s parable has other insights into the mind as well, a fact evinced by the central role of psychology in his fictional world of Tlön: “It is no exaggeration to say that the classical culture of Tlön is composed of a single discipline—psychology—to which all others are subordinate. I have said that the people of that planet conceive the universe as a series of mental processes that occur not in space but rather successively, in time” (73). This is Borges’s attempt to align psychology with philosophical idealism to some extent, as if a cognitivist perspective

necessarily entails radical idealism. In some vague sense, Borges is correct to notice the similarities between these approaches, but he is also parodying them. As an author well-informed about the science and mathematics of his day, Borges embraced many ideas from these fields while simultaneously challenging them with questions. His was a critical mind, determined never to define itself with a single system; but the frequent assertion that Borges is a strict idealist in the tradition of Schopenhauer or Berkeley seems at odds with his sophisticated application of materialist science in his fiction.

In addition to these philosophical considerations, what these stories demonstrate about Borges is that “his literature basically is about literature” (Stark 21)—that is, metaliterature. They are also intuitively exploring the nature of language as it relates to consciousness, and this brings us to an important point that has been alluded to but not yet stated explicitly—language itself is an Incomplete System in the way that Gödel argues all formal systems are. That is, language can only ever refer to itself with itself, a fact I pointed out at the end of Chapter One when I likened the infinite self-referentiality of Joyce’s novels to Peirce’s notion of the interpretant. A similar pattern appears in Borges. For example, the dreamer in “The Circular Ruins” conjures his creation through the magic of words, which in turn conjure him. Likewise, the Aleph can envision the entire universe in its visual field but always inevitably returns to itself, capable of existing only in the linguistic approximation that Borges gives us. The Library of Babel is infinite and yet only within the confines of language does it find any realization. And “Tlön, Uqbar, Orbis Tertius” poses questions about the infinitely regressive possibilities in the language of referentiality, particularly that of scholarly reference.

What Borges is largely asserting is that language, like the mind, cannot but define itself as a strange loop, as an infinitely recursive system of symbols. He was fascinated by metaphors

comparing language to a labyrinth in the introduction to Diderot and D'Alembert's *Encyclopédie*, and indeed the recursiveness of encyclopaedias is an apt metaphor for Borges's fiction as a whole. But Borges's literary system is both encyclopedic and metalinguistic. In a discussion of language in general, psycholinguist Steven Pinker sees the Library of Babel as a symbol of the combinatorial systems that underlie language itself (8). It is this recursive, self-referential infinitude that marks the Library—and Borges's other fictions—as ones replete with strange loops and coping with the implications of a linguistic system that is fundamentally incomplete because it can only ever ultimately refer to itself with itself.

On a smaller scale, Borges is also commenting on the nature of the symbol itself as a self-referential sign. He adopts this idea from the seventeenth-century philosopher John Wilkins, famous for contriving logically based artificial languages: "In the universal language conceived by Wilkins in the middle of the seventeenth century, each word defines itself" (Borges, *Non-Fiction* 230). The philosophy of language Borges develops therefore approximates a Gödelian system, the very sort of self-referential system that underlies both strange loops and the conscious patterns of self they describe. This echoes F. H. Bradley's contention in *Appearance and Reality* (1893) that nearly all sentences lead to regress in the manner of a strange loop. Again, the labyrinth is an instructive symbol here, one that philosophers such as Max Black and Umberto Eco have equated with the structure of language itself.<sup>27</sup> As Eco contends, "The universe of semiosis, that is, the universe of human culture, must be conceived as structured like a labyrinth of the third type [i.e., a network]" (*Semiotics* 83). If, as Heidegger would have us believe, language is the house of being then that house looks suspiciously like a labyrinthine strange loop.

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<sup>27</sup> See Black's *The Labyrinth of Language* (1968) and Eco's *Semiotics and the Philosophy of Language*, the latter of which I mentioned earlier in this chapter.

Should we take these fictions seriously or are they merely elaborate inside jokes, as Borges often hinted in interviews? Are these playful language games or literary-philosophical treatises? I contend that they are both. On one level, critics have long seen a serious philosophical streak in Borges's writings. What has been less noted is Borges's impishness, his willingness to play with his readers. Hence, William Irwin is right to note in his discussion of "Pierre Menard, Author of the *Quixote*," that "[g]iven his playful nature, I suspect Borges himself would have had a hearty laugh at those who took his narrator seriously" (40). We must be content to laugh with him, while also taking his fictions as works that in many ways rival the best philosophy in their ability to generate grand questions.

### **Nonbeing and Genealogical Strange Loops**

Here I would like to point out two final commonalities between Borges's philosophy as it emerges in his texts and Hofstadter's phenomenology. The first concerns the self as a non-entity; the second concerns strange loops between authors and their precursors. One of Borges's most intriguing—and perplexing—ideas is the notion that all people are instantiations of a single person, or that authors are all a single author. In some way, this implies a sort of Keatsian "negative capability" where the author disappears in the writing so thoroughly that for all intents and purposes he does not even exist. There is also a hint of Joyce's opinion of the artist as expressed by Stephen Dedalus: "The personality of the artist, at first a cry or a cadence or a mood and then a fluid and lambent narrative, finally refines itself out of existence, impersonalizes itself" (*Portrait* 215). But Borges's idea also anticipates Hofstadter's declaration that the self is a non-entity, a "user illusion." As Borges writes in "The Nothingness of Personality":

I propose to prove that personality is a mirage maintained by conceit and custom, without metaphysical foundation or visceral reality. I want to apply to literature the consequences that issue from these premises, and erect upon them an aesthetic hostile to the psychologism inherited from the last century, sympathetic to the classics, yet encouraging to today's most unruly tendencies. (*Non-Fiction* 3)

Like Hofstadter and other cognitive scientists, Borges is arguing that personality, that most salient aspect of the self, is an illusion. The Western cult of personality for Borges is always suspect, and the person in his metaphysics is in reality “no one, or little more than an unintelligible cacophony, persisting in time and wearing out in space” (5). He is blatantly explicit about this position later in the essay when he asserts, “The self does not exist” (8). Despite this denial, as if repeating a Zen mantra he reminds his readers throughout the essay “There is no *whole* self” (3, emphasis mine). In part, Borges cannot shrug off the Western tradition so deeply engrained in him, but more importantly he stresses the non-unitary nature of the self. He derives this idea in part from Buddhism's rejection of the self, noting in “Personality and the Buddha” that *attavata* (the belief in the self as a discrete and unified “I”) is “the worst heresy for Buddhism” (*Non-Fiction* 349). A similar belief pervades his fiction, such as the irreality of the dreamer in “The Circular Ruins.”

This reflects Borges's abhorrence of (and fascination with) dualisms and symmetries. It also strikes a resonant chord with Hofstadter's cognitivist philosophy. Like Hofstadter, Borges is not denying the actuality of the self, merely the Western tendency to extol it as well as valorize it. He clarifies this position:

They err, as well, who suppose that the negation of personality I am urging with such obstinate zealotry refutes the certainty of being the isolated, individualized,



and distinct thing each of us feels in the depths of his soul. I do not deny this consciousness of being, nor the immediate security of *here I am* that it breathes into us. What I do deny is that all our other convictions must be adjusted to the customary antithesis between the self and the non-self, and that this antithesis is constant . . . (*Non-Fiction* 4)

His denial of the self is not a denial of self-consciousness, but a reappraisal of our culturally conditioned tendency in the West to discuss the self as a thing defined against that which it is not. Borges instead offers an alternative based on his familiarity with Buddhism, one that situates the self as a process within a larger cybernetic system rather than as an entity counterpoised against everything that is not itself. He extends this supposition in a way highly reminiscent of Dennett's argument in *Consciousness Explained*: "Consciousness—the final hideout where we might track down the self—also proves unqualified. Once the emotions, the extraneous perceptions, and even ever-shifting thought are dismissed, consciousness is a barren thing, without any appearance reflected in it to make it exist" (9). Again, this antiessentialist position is precisely what one finds behind Hofstadter's phenomenology.

Borges sees this Western tendency to emphasize the self particularly manifest in the tradition of the novel. "From Chaucer to Marcel Proust," Borges writes, "the novel's substance is the unrepeatable, the singular flavor of souls; for Buddhism there is no such flavor, or it is one of the many vanities of the cosmic simulacrum" (*Non-Fiction* 350). This leads directly into the second point of contact between Borges and Hofstadter which I would like to take up here, one made all the more interesting given Hofstadter's strikingly similar use throughout *I Am a Strange Loop* of "flavor" to describe the qualitative characteristics of different consciousnesses, especially fictional ones. In a statement fitting of Kafka, Borges asserts in his essay "A

Profession of Literary Faith,” that “all literature, in the end, is autobiographical” (*Non-Fiction* 23). This leads to a different kind of strange loop, one related to the autographetic strange loop that I discussed in Chapter Two. In part, this connection should come as no surprise given the complex interrelationship between Borges and Kafka.<sup>28</sup> Borges cites the examples of Cervantes, Robert Browning’s personae in his dramatic monologues, and Whitman as authors whose lives and work are inseparable. Their projects are auto-novelizations, exemplars of autographesis. For Borges, as for Kafka and Beckett, “all poetry is the confession of an I, a personality, a human adventure” (26).

Borges introduces another way in which the strange loop might be adapted to literary theory, one that is partially cognitive but also sociocultural. There are several dimensions to this type of strange loop. One is, as I have mentioned, the Barthesian consideration that the text itself writes the author as much as he writes it. Going a step further, one is reminded of the Derridean idea that Joyce creates *us*, his critics; but this would lead us into perhaps the strangest loop of all.<sup>29</sup> Another dimension is a text where characters create their authors within the text, a phenomenon that will be the focus of my discussion of Flann O’Brien in Chapter Six.

However, there is a third dimension to the authorial strange loop, specifically how a text interacts with its precursors. As Borges notes in “Kafka and His Precursors”: “The fact is that every writer *creates* his own precursors. His work modifies our conception of the past, as it will modify the future” (*Non-Fiction* 72-73, emphasis his). Similarly, in Harold Bloom’s *The Anxiety of Influence*, in some ways a version of Borgesian precursor creation, the later “strong” poet

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<sup>28</sup> Borges was the first to translate Kafka into English.

<sup>29</sup> To some extent Joyce did quite literally create his critics by organizing Frank Budgen and Stuart Gilbert to propound his ideas. He also encouraged the essays that make up *Our Exagmination*.

writes the former through an act of misprision.<sup>30</sup> This engenders a strange loop where the author is a complex production of influences so that when a reader encounters a text, he or she cannot but read that text in light of other authors he or she has read, whether or not the actual organic individual who penned the work lived before or after the author.

Borges develops this theory that the author is a bidirectional textual strange loop in several ways. In his short story “Everything and Nothing,” Borges tells of a man lamenting that “[t]here was no one inside him . . . there was no more than a slight chill, a dream someone had failed to dream” (318). In a quest to establish a sense of self, the man goes to London to pursue acting and finds himself literally becoming his characters: “No one was as many men as that man” (320). Only in a conversation with God after the last line do readers find out that the man is Shakespeare: “*I, who have been so many men in vain, wish to be one, to be myself,*” he confesses to God, to which He replies, “*I, too, am not I; I dreamed the world as you, Shakespeare, dreamed your own work, and among the forms of my dream are you, who like me are many, yet no one*” (320). This idea reiterates a common theme in Borges’s work: All men are but one man living different lives, each dreaming and dreamt by others in the manner of fictional characters.<sup>31</sup> He explicitly states this theme in “The Circular Ruins,” which Floyd Merrell calls a “dreamer triangle” (69). There are similar strange loops here in “Everything and Nothing,” especially if one considers that Shakespeare might be dreaming God in the story just as God dreams Shakespeare. The strange loops are rather obvious, but the narrative’s conceit also implies that authors are intricately bound to their work. They dream and are dreamt by their work in a Kafkaesque reciprocity. Borges suggests that authors such as Shakespeare are

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<sup>30</sup> Bloom mentions Borges at several points throughout his essay, although his psychoanalytic approach to influence is much different from the model I propose here.

<sup>31</sup> This idea is connected with Borges’s debt to transcendentalist philosophies, specifically Emerson. See Hardack.

consequently nothing but their works: they exist in a symbiotic relationship so that authors exist merely as textual manifestations.

Similarly, authors write their precursors for Borges, the central tenet of his essay “Kafka and His Precursors.” Here, there is a strong similarity between this genealogical strange loop and Genette’s theoretical notion that later authors influence their predecessors, especially how we read them. For example, Genette sees Joyce as an influence on Cervantes, since we cannot read the latter without being aware of the former due to our own historical position.<sup>32</sup> This remarkable idea designates another version of the authorship triangle, a strange loop explored by Hofstadter that I discuss at length in Chapter Six. If, for example, one argues that Borges influenced his predecessor Joyce—that he writes Joyce and that Joyce in turn writes Borges—one finds oneself in another loop, this time a genealogical one.<sup>33</sup> This resembles Harold Bloom’s anxiety of influence, but develops it further. Rather than merely a network of retrograde influences, the genotext and phenotext (to co-opt Julia Kristeva’s terminology) become intricate loops themselves. If we add the critical literature into this system, the result is even more intricate: The critics create the authors they write about, who in turn create the critics.

This type of loop applies to writer such as Borges or Joyce and his contemporaries, as well as to his successors (and incidentally his predecessors) to create a bidirectional system of influence that accurately models textual systems qua strange loops. This aesthetic-genealogical strange loop establishes a means of integrating artistic influence into a strange loop pattern. But this is not merely a reiteration of intertextuality as theorists such as Kristeva or Bakhtin see it; it is a comment on the extension of Hofstadter’s phenomenology to texts as consciousnesses.

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<sup>32</sup> See Merrell 189.

<sup>33</sup> An interesting point of comparison that might be developed elsewhere is Joyce’s suggestion in *FW* that the *Book of Kells* is, in fact, derived from *FW* rather than vice versa (122).

This leads us to a final consideration here. In *I Am a Strange Loop*, Hofstadter notes that our interaction with other consciousnesses necessarily leads to an exchange of information whereby the patterns describing one consciousness are inscribed (both figuratively and literally into the neural architecture) into the other. I have already discussed how Joyce's protean characters model this, but "entwinement" (*SL* 207) describes both virtual and actual consciousnesses: "Everything I do is some kind of modified borrowing from others who have been close to me either actually or virtually, and the virtual influences are among the most profound" (250). Given the importance of mirror neurons in contemporary cognitive theory, it is no surprise that our evolved capacities for internalizing semiotic systems should extend to literature.

This is, in effect, a cognitive theory of influence whereby a human's interactions with the virtual consciousnesses as "programmed" into a text become wired in some way as patterns in their brains, becoming entwined with the other parallel strands that constitute that person's self. As Hofstadter puts it:

We are all curious collages, weird little planetoids that grow by accreting other people's habits and ideas and styles and tics and jokes and phrases and tunes and hopes and fears as if they were meteorites that came soaring out of the blue, collided with us, and stuck. What at first is an artificial, alien mannerism slowly fuses into the stuff of our self . . . and gradually becomes as much a part of *us* as ever it was of someone else (though that person may very well have borrowed it from someone else to begin with). (251)

The retrograde influence suspected by Borges is, rather than Bloom's Freudian act of filial rebellion, more properly the result of the reverberations of these patterns that have fused into the

minds of readers as they engage a text. When one reads Cervantes for the first time after reading Joyce, one really does see Joyce in the text because the pattern of information inscribed in the reader's mind from that first textual encounter is reactivated in the second interaction. Of course, this notion of influence as a subconscious transfer of information also works the other way: Authors exhibit the properties of their forebears because, in the act of composing the text, their consciousness contained traces of their forebearers' virtual consciousnesses, traces which wind up in their own literary productions.

Although I have spoken at times about texts as if they were minds, even consciousnesses, one doesn't necessarily have to go that far to see that the connections are fruitful. And that is part of the strange loop concept's allure: it is not *exclusively* cognitive, but might be applied to non-cognitive forms in other areas. The pattern itself, as I have been trying to demonstrate, is particularly well-suited to describe literary works; and its implications take us deeper into literature than Hofstadter's investigations of Escher and Bach into art and music respectively. In this way, literature is an integral, if tacit, element in Hofstadter's phenomenology—especially the ways it addresses crossing between the levels of text and reader.

Before proceeding, it is worth asking, What does metaleptic fiction possibly have to do with the mind? Why does Hofstadter spend so much time discussing frames in *Gödel, Escher, Bach* when he is building a model of consciousness and self? The answer lies in the fact that metafiction is itself a form of reflexive or self-conscious fiction,<sup>34</sup> and its patterns mimic the patterns of consciousness. I have already begun to suggest as much, and a similar thesis was proposed by Bruce Kavin in *The Mind of the Novel* (1982), which presents a theory of literary consciousness approximating the one I am proposing here in many respects. As Kavin notes of

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<sup>34</sup> For comprehensive studies of this type of fiction see Brian Stonehill's *The Self-Conscious Novel*, McHale, and Waugh.

the self-conscious novels in his study, they “appear not to be just records of their narrators’ minds but to have ‘minds’ of their own, as if they mirrored the structure of the conscious self” (5). This is precisely the effect metaleptic fictions have, and Kawin rightly notes that “[t]he self is the mystery at the heart of the reflexive novel” (8). Here it is important to note that “reflexive” texts and “self-conscious” texts are not synonymous terms, but rather that a “reflexive text is set . . . between mirrors; its world doubles back on itself, often generating in the reader a paradoxical impression of limited being,” whereas a self-conscious text is a “higher order of apprehension . . . as if on some level the text ‘knows’ that it is a text” (16). Self-conscious texts are therefore a particular sort of reflexive text, and it is these texts that tend to exhibit strange loop properties.<sup>35</sup>

The texts I discuss here all belong to what Kawin calls “the literature of consciousness” (251), and their tangled hierarchies shed light on just how intricately a strange loop model of consciousness can bridge cognitive and literary theory. Hofstadter makes a similar suggestion in *I Am a Strange Loop* when he posits that consciousness can persist in artifacts such as novels insofar as they persist as symbolic networks in other minds, a fact I tentatively explored at the end of the last chapter. This reflects a process called “homeorrhesis” which one sees in the physical sciences, “the conservation of pattern while its constituent matter is in flux” (Livingston 79). Metafictions, and especially metaleptic ones, draw attention to the homeorrhetic relationship between the strange loops in the mind and the strange loops in the text.

It is also important here to note the cognitive role of jumping outside of the system, what Hofstadter calls “jootsing” (*Metamagical* 26). As Norman Holland notes of metafiction, “This is not just an intellectual puzzle. Shifting the physicality of the story shifts systems in my brain” (*Brain* 78). Holland claims, based upon cognitive research, that the dorsolateral prefrontal cortex is reactivated when a reader encounters metalepses, causing the reader’s self-awareness (which is

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<sup>35</sup> Tabbi adopts similar criteria for defining “cognitive fictions.”

often lost in the process of literary experience) to reassert itself. The neurobiological details notwithstanding, the important thing here is that a very real connection exists between our experience with metaleptic fiction and our sense of self. This awareness of our selves as such is precisely the sort of strange experience that metaleptic jumps within a text elicit.

The various tensions between order and chaos in Borges's fictions draws me to a final point. As John Barth notes, "Another way of describing Borges's accomplishment is in a pair of his own favourite terms, *algebra* and *fire*" ("Literature of Exhaustion" 76). Borges couples these words in "Tlön, Uqbar, Tertius Orbis" in his catalog of objects that make up Tlön. But rather than a merely interesting collocation, these words represent an important dialectic, both for understanding Borges's *ficciones* and for my overall argument. "Algebra" and "fire," so often juxtaposed by Borges, have been read to represent many things. Barth's interpretation remains widely accepted, with algebra representing logic and fire representing passion. Both of these traditionally opposite poles meet in Borges's fiction and "neither the algebra nor the fire, metaphorically speaking, could achieve this result without the other" (76). However, I contend that algebra and fire represent another related tension—that between chaos and order. Thus, algebra and fire might be read as two extremes reconciled within the strange loop, two sides of a single Möbius strip. Given the increasingly dominant paradigm in cognitive science that emphasizes the importance of emotion in cognition, one might read Borges's binary as a realization that the mind is not merely governed by logic nor by emotion, but by a delicate balance between the two. Similarly, art is a mixture of algebra and fire in this sense—or better yet, given the notion of language as calculus, a calculus of fire. As I argue in the next chapter on Italo Calvino, strange loops in his fiction often emerge from a similar tension between the mathematical order of formal logic and the beautiful chaos of emotion, as well as from the



estranging effects of metalepses. In Calvino's fictions even more than Borges's, the worlds of the reader intermingle with the worlds of the text, resulting in intricate hierarchies that form the focus of my next chapter.

CHAPTER FIVE  
I CROSS THE LINE:  
STRANGE LOOPS IN ITALO CALVINO'S FICTION

*Anything you can do, I can do meta.*

—Douglas Hofstadter

In his last work, the posthumously published *Six Memos for the Next Millennium*,<sup>1</sup> Italo Calvino frequently refers to his debt to Borges: “The last great invention of a new literary genre in our time was achieved by a master of the short form, Jorge Luis Borges . . . Borges has created a literature raised to the second power and, at the same time, a literature that is like the extraction of the square root of itself” (50-51). One might describe Calvino’s own project as a similar juxtaposition of the outward and the inward, the infinite and the infinitesimal, the grandiose and the everyday. Both Borges and Calvino weave texts that are both paradoxical and profound, pushing literature in many ways closer to scientific and philosophical speculation. Appropriately, scholars have grown increasingly comfortable calling both Borges and Calvino *literary philosophers*.<sup>2</sup>

Like Borges, Calvino is never quite satisfied with the systems at hand, whether they are epistemological systems organizing thought or complex systems operating within nature.

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<sup>1</sup> Written in 1985, these loosely connected lectures were originally intended to be delivered as the Charles Eliot Norton Lectures in Harvard that year. They were published in 1988 at the behest of the author’s widow, Esther Calvino.

<sup>2</sup> This is the title of a provocative collection edited by Gracia, Korsmeyer, and Gasché. The essays contain different viewpoints about how to discuss the philosophical importance of literary works by Borges, Calvino, and (to a lesser degree) Eco. The collection’s central question is whether one can consider these authors as philosophizing or whether their literature is merely philosophical.

Indeed, Henry Sussman calls both Borges and Calvino “systemic parodists” (“System” 149), dedicated to exploring a variety of systems, from science to language to traffic jams, in order to clarify the relationships between and within such systems. Both authors explore systems even as they attempt to dismantle them: “What if the lesson we draw from Borges’s and Calvino’s fiction is as much of the complicity between parodies and the systems they play off of as of the opposition?” (Sussman, “System” 151). Neither Borges nor Calvino accepts any system at face value, preferring instead to test them with their own brands of literary experimentation. But Calvino does not merely repeat Borges’s systemic project: He expands it.

There are several important contrasts between Borge’s *ficciones* and Calvino’s work. For example, John Barth sees a geometric difference between the two authors: “It seems to me that Borges’s narrative geometry, so to speak, is essentially Euclidean . . . In Calvino’s spirals and vertiginous recombinations I see a mischievous element of the non-Euclidean” (“The Parallels!” 1). Given Calvino’s interest in chaos theory and complex systems, this incorporation of nonlinearity comes as no surprise. Also, as opposed to Borges’s generally sober meditations, Calvino “leaves more room in his fiction for the everyday, and its particular register of humor” (Sussman, “System” 159-60). Part of the allure of Calvino’s fiction is his tendency to inject the commonplace into the cosmic, anthropomorphizing the universe in order to better understand our relationship to it. In order to do so, Calvino often focuses on consciousness and his “philosophy of metafiction may be characterized thus: he is above all a writer of semiotic consciousness” (Krysinski 196). In order to fashion a theory of semiotic consciousness through his fiction, Calvino draws from ideas from both the sciences and the arts—especially the strange loop.

Whereas Borges explores the strange loop from a somewhat idealist-philosophical perspective, Italo Calvino takes a more scientific approach.<sup>3</sup> We know, for example, that Calvino was intimately concerned with Vittorini's *le due tensioni*,<sup>4</sup> the Italian analogue to Snow's Two Cultures. In addition, Calvino often openly embraced science in literary circles, and disagreed with Roland Barthes's assertion that science pretends to transparency.<sup>5</sup> He also welcomed ideas from cybernetics, which many humanists treated with a great deal of suspicion in its formative stages.

In *Six Memos for the Next Millennium*, Calvino expresses a concise desire to see C. P. Snow's Third Culture realized: "Among the values I would like passed on to the next millennium, there is this above all: a literature that has absorbed the taste for mental orderliness and exactitude, the intelligence of poetry, but at the same time that of science and philosophy" (118). He attempted himself to realize a similar goal, particularly under the influence of the Oulipo group which included Raymond Queneau and Georges Perec, both of whom were heavily involved in the scientific and mathematic communities.<sup>6</sup> As Anna Botta notes, "In Oulipian literary experiments, science is not only used as source of inspiration, it in fact becomes the principle of organization of linguistic and narrative materials" (82). Although a relative latecomer to this French-dominated group, Calvino nonetheless took to their scientific approach to literature like a proverbial fish to water. What resulted was an oeuvre committed to

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<sup>3</sup> See Pilz for a study of Calvino and science. Pilz tends to focus on Calvino's biography, but does address his thematic use of science. Interestingly, Pilz does not mention either psychology or cognitive science in her otherwise impressively comprehensive book.

<sup>4</sup> Calvino mentions Vittorini's *Le Due Tensioni* in *The Uses of Literature* (24). Although he wrote novels, Vittorini was most known as a translator, rendering Faulkner, Eliot, and other modernists into Italian. He was also a champion of Calvino's fiction, helping him get published early in his career. Vittorini's work *Le Due Tensioni* has not, to my knowledge, been translated into English.

<sup>5</sup> See Botta.

<sup>6</sup> A self-proclaimed avant-garde literary movement, Oulipo stands for *Ouvroir de littérature potentielle* ("workshop of potential literature"). See Botta for an examination of Calvino's relationship with this group.

integrating scientific concepts with fabulist literature in a harmonious concert of the two cultures. In this way, Botta is correct when she notes that “Calvino’s poetics could thus be seen as subscribing to Latour’s project of symmetric anthropology: nature and culture are narrated by Calvino within their hybridized tangles, instead of being separated into a polarized asymmetry” (85).

Under the influence of scientific ideas from cybernetics and systems theory, Calvino came to see literature as a rule-based system, much like the language which it takes as its medium. As Calvino states in his essay “Cybernetics and Ghosts,”

Literature as I knew it was a constant series of attempts to make one word stay put after another by following certain definite rules; or, more often, rules that were neither definite nor definable, but that might be extracted from a series of examples, or rules made up for the occasion—that is to say, derived from the rules followed by other writers. (*Uses* 15)

This type of rule-based definition of literature might smack of formalism—and to some degree it does insofar as the structuralism with which Calvino was familiar bears a resemblance to formalist schools—but more accurately Calvino is connecting literature to the rule-based paradigms that had begun to dominate linguistics and psychology. Calvino was aware of the Chomskyan paradigm that based language in a series of rule-based algorithms, versions of which continue to attract many adherents in the cognitive sciences.<sup>7</sup> Douglas Hofstadter adopts a similarly rule-based approach in his system.

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<sup>7</sup> The most well-known popularizer of this paradigm is Steven Pinker. See his *Words and Rules* and *How the Mind Works*.

Indeed, Calvino draws directly from Hofstadter, consciously incorporating the multifaceted elements of strange loops into his fiction.<sup>8</sup> Throughout the lectures in *Six Memos for the Next Millennium*, Calvino addresses the affinity between his theories and Hofstadter's when, discussing Balzac's attempt to capture the infinity of experience, he asks, "But could it not happen as it does in Escher's pictures, which Douglas Hofstadter cites as an illustration of Gödel's paradox? In a gallery of paintings, a man is looking at the landscape of a city, and this landscape opens up to embrace the gallery that contains it and the man who is looking at it" (98). This reference to Escher's *Print Gallery* draws attention to Calvino's familiarity with Hofstadter's ideas, as well as to the similarities between his fictions and Escher's work. Calvino even quotes from *Gödel, Escher, Bach* in several of these lectures, a clear indication that Hofstadter's work had a profound effect on him (87, 91).

It is no secret that Italo Calvino not only personally knew the theorists of his day, but also wrote specifically to test their theories. During his time in Paris, Calvino attended Barthes's seminars on *Sarrasine* and Greimas's courses on semiotics, experiences affecting the composition of Calvino's *The Castle of Crossed Destinies* and *If On a Winter's Night a Traveler* (Botta 82). Given his interest in semiotics and narratology, it is no surprise that Calvino would likewise tinker with Hofstadter's ideas. This speaks to a portion of my argument that, until now, has largely remained a subtext, namely that *Gödel, Escher, Bach* is not merely an important cognitive study, but an important literary theoretical text as well. Hofstadter's book has not been noted as such, but its applications take one into territory where literary theory meshes with

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<sup>8</sup> Messina notes that "[t]he source of Calvino's knowledge of the set-paradox about undecidable systems is the book *Gödel, Escher, Bach* . . . by Douglas Hofstadter" (1026). This is the only scholarly reference I am aware of that directly draws Calvino into conversation with Hofstadter, with the exception of Calvino's own acknowledgment of his familiarity with Hofstadter's interpretation of Gödel in *Six Memos for the Next Millennium* (98).

cognitive theory under a single rubric to a degree in many ways not yet evinced by other cognitive literary theories.

Unlike the authors thus far examined, Hofstadter's strange loop concept *directly* informs Calvino's fiction. Part of this originates in the abundance of strange loop patterns in Kafka, Beckett, and Borges, all three of whom exerted an influence on Calvino.<sup>9</sup> There is also a genealogical connection between Hofstadter and Calvino, one that complicates the genealogical strange loop of influence which I have suggested—that authors write their precursors and in turn are written by them, a recursive loop that integrates Hofstadter's cognitive poetics with notions from poststructuralist literary theories. In some sense Calvino subjects Hofstadter to a Bloomian “strong reading” by taking the strange loop to unforeseen destinations.

One can see why Calvino would have been attracted to the strange loop concept. For one, his fictions revel in nonlinearity, self-reference, and *mise-en-abyme*. For another, Hofstadter's work foregrounds the importance of play in construing meaning and capturing precisely what the strange loop describes. Calvino is in many ways more playful than Borges, who himself was no stranger to language games. With Calvino we have a writer who tinkers with theories of languages to an even greater degree, constructing stories that attempt to confound their conclusions even as they demonstrate them. More than Borges's, Calvino's is a literature of ludics, what Bohman-Kajala and Warren Motte have both called Playtexts.<sup>10</sup> Roland Barthes's influence haunts this idea, of course, which is no surprise given Calvino's personal familiarity with the French semiologist. But while many critics read Calvino through a Barthesian lens, it is often the case that Calvino is frustrating Barthes's assertions. Although he often puts Barthesian

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<sup>9</sup> See Messina.

<sup>10</sup> Bohman-Kajala's study discusses Flann O'Brien, Georges Perec, and Samuel Beckett in this context.

theory into practice, “what Calvino seems to refute is Barthes’s contention that the novel is a lie and that fiction’s only reference can be found in itself” (Weiss 180). Indeed, Calvino himself saw the novel as simultaneously an aesthetic and an epistemological medium, envisioned the “contemporary novel as encyclopedia, as a method of knowledge, and above all as a network of connections between the events, the people, and the things of the world” (*Memos* 106).

Furthermore, for Calvino, play was not childish; it was an important element of adult cognitive development. A ludic literature puts into practice the well-established paradigm in developmental psychology that emphasizes the importance of play for self-formation.<sup>11</sup> In addition to this playfulness, one finds in Calvino’s work the humor associated with strange loops as a pattern that often brings together opposites. In this way, Calvino’s fictions always elicit a certain “funny feeling.” Calvino’s humor often surfaces when he juxtaposes the ridiculous with the serious, the scientific with the mystical, the bizarre with the everyday. In a way, he tinkers with Nicholas of Cusa’s coincidence of opposites, something I have already noted in the strange loops in Joyce and Beckett. This resembles incongruity-resolution humor theories such as the recent neurocomputational theory of humor proposed by Hurley, Dennett, and Adams that I mentioned in my introduction.<sup>12</sup>

One of the more frequent juxtapositions in Calvino’s work is between order and chaos. In “Exactitude,” a lecture collected in *Six Memos for the Next Millennium*, he introduces “crystal” and “flame” as two metaphors for two very different interpretations of chaos. The former refers to order emerging from within chaos, noise out of order; the other describes self-

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<sup>11</sup> There is an abundance of research on this connection, but see Spinka, Newberry, and Bekoff’s “Mammalian Play: Training for the Unexpected” (2001) for a broadly applicable ethological theory of play.

<sup>12</sup> I have already noted this refreshing study, but here I would also note that the authors do not reduce humor to a mere matter of symbolic manipulation. They concede in their preface that humor remains a difficult problem for AI to solve because no theory seems all-encompassing. However, their hypothesis is particularly broad.



organization within chaotic systems.<sup>13</sup> This recalls the dialectic between “algebra and fire” in Borges, one that in some sense likens the extremes of the mind to the harmonious order of mathematics on one end and the unpredictable chaos of nature on the other. Although John Barth distinguishes the Borgesian pair “algebra/fire” from Calvino’s “crystal/flame,” (“The Parallels!”), I see Calvino playing with a similar dialectic in his fiction.

As I mentioned in my previous chapter, algebra and fire describes the tension between order/linearity/ reality and chaos/nonlinearity/dream. Borges’s fictions delve into these topics frequently, but his self-imposed limitations often prevent him from anything but suggesting this tension. In Calvino’s fiction—and also in Pynchon’s, as I will discuss in Chapter Eight—it is this very tension that constitutes a thematic nexus around which all other elements seem to revolve. The apparent order of languages (including mathematics) as semiotic systems determined to order the world, in some ways are ultimately futile human attempts to categorize the world, to order it—an Aristotelian impulse common in science, perhaps best embodied by Linnaeus. Like Adam in the garden, from this perspective all things must be named and therefore inducted into the great chain of being. Of course, in the wake of postmodernist theories such as deconstruction and poststructuralism, such a view of language is hardly tenable anymore, whether or not we believe in the more extreme strains of these theoretical movements. Instead of equating names with essences and typology with establishing dominance over nature, Calvino juxtaposes the human tendency to envision language as an essential property of things with the scientific-pragmatic position that language is a tool. In other words, Calvino envisions language

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<sup>13</sup> Calvino acknowledges his debt to cognitive scientist Massimo Piattelli-Palmarini for this dichotomy, it having been used in Piattelli-Palmarini’s introduction to *Language and Learning: The Debate Between Jean Piaget and Noam Chomsky* (1980).

as *calculus*.<sup>14</sup> Consequently, Calvino develops a theory of literature wherein the text is a hyper-advanced machine—as is the mind that generates and interprets it.

Given the breadth of Hofstadter’s influence on Calvino, and the exchange of ideas common to both of their systems, I will limit my discussion to several of Calvino’s shorter works and two of his novels. First, I will explore strange loops in the cosmicomic stories from *Cosmicomics* (1965) and *t-zero* (1967). Then, I will discuss metalepsis and strange loops in *If On a Winter’s Night a Traveler* (1979). Next, I will discuss Calvino’s notion of the literary machine and its connection with strange loops in *The Castle of Crossed Destinies* (1973). Lastly, I will discuss Calvino’s co-option of chaos and complexity theory, particularly his dichotomy of the crystal and the flame, and assess what this literary appropriation of scientific concepts says about the strange loop. In all of these works, Calvino tinkers with the delightful, rebellious confusion that results when, playing its language games, fiction refuses to remain in bounds. Before exploring rhetorical metalepsis in Italo Calvino’s fiction, it will be necessary to connect metalepsis to strange loops in more detail, and then flesh out what these narrative jumps say about consciousness.

In *Postmodernist Fictions*, Brian McHale notes a link between strange loops and what Gérard Genette calls *metalepsis*.<sup>15</sup> As defined by Genette, metalepsis is the “passage from one narrative level to another” (*Narrative* 243). This occurs in two primary ways, rhetorical and ontological. In rhetorical metalepsis, this boundary is only spoken about, such as when a narrator addresses the reader, but it is not actually violated in the narrative’s action. In ontological metalepsis, the boundaries between the world of the text and the world of either

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<sup>14</sup> This idea originates with the work of Jaako Hintikka. See Thomas L. Martin’s *Poiesis and Possible Worlds* (2004) for an excellent elaboration of this concept.

<sup>15</sup> Genette introduced *metalepsis* in his seminal narratological work *Narrative Discourse* (1972) but explores this technique across various media in *La Métalepse* (2004).

author or reader are violated such that an author might appear in the work as a character. Both techniques are common markers of postmodernist fiction, but it is important to note that McHale equates strange loops with metalepsis outright when, in fact, metalepsis is only a part of the metafictional strange loops I am proposing here. For a metaleptic event to qualify as a strange loop, there must be a circularity. That is, when the author enters his storyworld, he realizes that he too is a character of his own making, lending the experience the strangeness requisite of a Hofstadterian loop. Furthermore, McHale neglects to emphasize how tangled textual hierarchies of this kind speak to problems of consciousness. This chapter hopes to rectify both of these shortcomings by exploring the connection between metalepsis and strange loops while also commenting on how this textual process mirrors cognitive ones.

I suggested in my discussion of Borges that metafiction calls the boundary between text and context into question. In other words, metafiction functions by breaking *frames*. As I mentioned in my introduction, strange loops necessarily cross levels, turning hierarchies into heterarchies. Hofstadter draws his notion of level-crossing in strange loops from Erving Goffman's "frame analysis," which has been adapted with great success in cognitive science (for example, as developed by Fauconnier and Turner into "conceptual blending"). Goffman saw the basis of frame analysis in William James, but also built upon ordinary language philosophers such as J. L. Austin and Wittgenstein. Frame analysis emphasizes the importance of frames in partitioning mental and social reality into manageable (and meaningful) subsets. The idea owes a great debt to Gregory Bateson, who saw "frames of interpretation" as fundamental for cognition.<sup>16</sup>

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<sup>16</sup> A well-known anecdote from Bateson is that framing makes all the difference when considering whether a bite between two monkeys indicates playfulness or belligerence, for example. See Bateson, *Steps to an Ecology of Mind* (177-93). Bateson's notion of frame begins with an informative take on the double binds of Liar Paradoxes also.

In a narrower sense, frames refer to the narratological distinction between structural or diegetic layers in a text. Goffman uses a musical analogy to describe movements between these layers as “keying,” either “upkeying” or “downkeying” depending on the direction. As Hofstadter demonstrates in “Little Harmonic Labyrinth,” strange loops can also describe these frames, particularly when a text moves between frames to form a tangled hierarchy. In fact, in a somewhat radical extension of Hofstadter’s idea, David Moger posits that all frame narratives are strange loops: “In the oscillation of the pairs full teller/empty listener, framed narrative offers itself as a recursive figure, a design where nothing is sure (in the sense of permanently fixed in place or hierarchically established) other than the fact of perpetual motion” (29). Other critics have echoed this sentiment: “While Bach’s cannons [sic] are a paradigmatic example of such loops in art, any story by Borges or any book of the *Iliad*, where nesting one scene inside another occurs, would serve as well” (Miers 1217). For example, in Conrad’s *Heart of Darkness*, there is something of a strange loop between the frame narrative and Marlowe’s account of his quest for Kurtz. While I see this as perhaps adapting strange loops to literature too loosely, I would entertain with Moger that to some degree all frame narratives—and thus all narratives because the form itself posits at least one frame between text and reader—are strange loops insofar as they transgress diegetic levels. In this respect, literature—indeed all texts—force their reader out of the here/now and into the world of the text, subjecting the reader to new sets of laws in a possible world—only to leave them at the end back in their actual world.<sup>17</sup>

To some degree, this is again the strangeness that characterizes a strange loop from mere circularity, and it is certainly suggestive. However, extending the strange loop to describe all texts—let alone define their poeticity as an effect of their self-referentiality—overextends

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<sup>17</sup> I use “possible world” deliberately to invoke possible worlds theory as explored by philosophers such as Hintikka, Eco, and Saul Kripke, as well as by literary critics such as Thomas L. Martin, among others. Kripke borrowed the term from Leibniz, but there is no necessary connection between its use and Leibniz’s monadological philosophy.

Hofstadter's concept by diluting its strangeness; if all texts are strange, the term loses its salience. More precisely, this sense of strangeness describes a properly literary domain, as the Formalists suggest. Additionally, only when a text further imbeds other fictions within it does this effect become overt, causing us to thereafter see just how strange this level-crossing really is. However, framing of this ilk piggybacks on a system also privileged in memory, the imagination. And therein lays the cypher for this process of level-crossing: frames foreground the ability of the imagination (that is, higher-order predictive and conceptual capacities, largely concentrated in modular neural networks in the prefrontal cortex) to explore nested narratives. These nested narratives challenge our preconceptions about the boundaries between text and context, between self and non-self, and between hypothesized possibilities and realized actualities.

### **Strange Loops in Calvino's Cosmicomical Fiction**

Among Calvino's most well-known works are his short story collections *Cosmicomics* and *t-zero*, each of which contains playful, heterarchic narratives that mix science and literature. The outermost frame in both collections is the nostalgic narrative of Qwfwq, a cosmic being who has existed since the dawn of time and finds himself manifesting at various epochs throughout universal history. Capable of transcending time and space, Qwfwq might seem at first glance to evade any attempt to classify him as human. However, as Davide Messina notes, Calvino uses Qwfwq to symbolize the incomprehensible first person pronoun: "[Qwfwq] is 'more or less unpronounceable,' in the first place, for specific narrative reasons: like the protagonist of Samuel Beckett's *Unnamable* . . . its main function is . . . interpreting the self-reference of the first-person pronoun as an utterly fictional function" (1005). Calvino's ubiquitous narrator is thus a

version of the self as strange loop I pointed out in Joyce, Beckett, and Kafka. Indeed, Messina argues that we might read Qwfwq's name as a permutation of Kafka's. In addition, the name is a palindrome: no matter which direction one travels along its morphemes, the same pattern is deduced, a common property of strange loops.

Through his varied and fantastic accounts in *Cosmicomics* and *t-zero*, Qwfwq shows how recursion and embeddedness are by-products of narratives in part because these narratives are themselves produced by a narrative. But Qwfwq exists outside spacetime; he is unfettered by embodiment and not subject to the laws that normally constrain conscious minds. Yet he speaks as if he were an embodied, spacetime-bound being. A disembodied, non-spatiotemporal being can have nothing to say about consciousness because those limits define not only what we are as humans but also how we think and speak about our condition. Consequently, Qwfwq claims to exist *ex tempore* and *ex corpore* but is always speaking within a framework governed by these rule-sets.

Perhaps the most evident strange loop in these stories is the repeated return to Qwfwq's narrative. We meander through stories of moons, cosmic space, and petite romances only to return to Qwfwq's voice, always already present in the text. He is the node around which *Cosmicomics* and the first half of *t-zero* orbit, the twist around which the strange loops rotate. But he is also Calvino's means of describing "semiotic consciousness."

In "A Sign in Space," Qwfwq ponders the time when he created the first sign, a sign which eventually engenders others to engulf the entire universe. On one level, Calvino's story describes the network conception of language held by Barthes and early semiologists. On another level, the narrator Qwfwq is pondering both the self-referentiality of signs and the autopoietic tendency of the "sign of signs": the personal pronoun. As Qwfwq notes, a "sign was

the thing you could think about and also the sign of the thing thought, namely, itself” (32). He draws attention to the self-referentiality of the sign, rather than any Saussurean notion of the sign as necessarily bound to its referent. I suggested in my last chapter that this autopoietic nature of the sign is a cybernetic idea, and Calvino develops a notion similar to Eco’s network-labyrinth model of semiotic systems.

But, although all signs are self-referential units within a larger autopoietic system, Qwfwq is most fascinated by the nature of the first sign he introduces into the infant universe: “that sign was mine, the sign of me, because it was the only sign I had ever made and I was the only one who had ever made signs. It was like a name, the name of that point, and also my name that I had signed on that spot” (*Cosmicomics* 33). This first sign is, in other words, the “I” which signifies the self. In part, Calvino is suggesting that this sign corresponds to the emergence of being, that without it there can be no story because there can be neither narrator nor author. As Kathryn Hume notes, in the case of Calvino’s fictions, “[r]epeatedly these manifest themselves as a Cartesian cogito pitted against some form of cosmos in flux” (*Calvino’s* 2). There is always a struggle in Calvino between the individual consciousness and that expansive, unconscious universe without. He draws our attention to the plight of the imaginative human consciousness trapped in a physical world that, without the power of narrative art, remains a meaningless labyrinth of death and beauty, a complex system of coinciding opposites. Only with the introduction of his self-symbol does Qwfwq finally begin to distinguish cogito from cosmos.

Qwfwq’s story is also the subjective expression of experience in a scenario which the cosmological writings of science usually portray as entirely objective and emotionless. Calvino sees a scientifically-minded literature as a solution to this disjuncture. In his lecture “The Written and Unwritten Word,” Calvino says as much when he describes “[a]n important

international trend in the culture of our century, what we might call the phenomenological approach in philosophy, the estrangement effect in literature, [which] urges us to break through the screen of words and concepts and see the world as if it appeared for the first time to our sight” (39). This is strangification, in all of its dimensions as laid out earlier in my introduction. Calvino therefore creates a literature of strangeness, an effect often achieved through various strange loops.

Calvino’s short story “The Spiral” develops this concern and also serves as an allegory for autopoiesis. The story recounts Qwfwq’s time as a mollusk, describing how he fed in a sightless aquatic world, fell in love, and eventually decided to create a shell. The story is both a comical memoir of a nautilus-type creature and a metaphor for autopoiesis. As Qwfwq notes, “To be sure, I lived a bit withdrawn into myself . . . I was what they call a narcissist to a slight extent; I mean I stayed there observing myself all the time” (142). In his primordial aquatic environment, Qwfwq during this phase of his life becomes particularly introspective. He is only aware of “the world” because “[t]he water was a source of information, reliable and precise” (142). At first he is passive and perceiving until he finally begins to develop a coordinated system of interaction with his environment, becoming in turn an active perceiver. He is, in other words, emerging as an embodied consciousness and developing a dynamic coordination with his surroundings. He achieves the peak of this process when he decides to produce a calcareous shell, “something that would defend this individual presence of mine from the indiscriminate instability of all the rest” (146). This episode signals an instance in *Cosmicomics* where Qwfwq first begins to define himself against the outside world. That is to say, at this point he becomes a subject rather than a fully integrated component of the universe.



This development of consciousness in the story is correlated with the processes of artistic production. As Qwfwq says, “the first word I said is more than enough: *make*, I wanted to *make* . . . So I began to make the first thing that occurred to me, and it was a shell” (146). Of course, “make” immediately evokes *poiesis* (literally “making”); but it also suggests *autopoiesis*. And the product of Qwfwq’s labors are remarkably similar to a strange loop: “I was getting one of those shells all twisted into a spiral, which you, when you see them, think are so hard to make, but all you have to do is keep working and giving off the same matter without stopping, and they grow like that, one turn after the other” (146). This shell is the product of his artistic act, the result of Qwfwq’s “self-expression” (146), as well as a metaphor for the story itself. But self-expression might also refer to the emergence of subjective consciousness from otherwise nonsentient matter, the expression of a self through autopoiesis. I read the shell as the woven text of the self in its role as a narrative construct, both product and producer: “this shell was a thing different from me but also the truest part of me” (146). It is a fiction, one created by reiteration, self-similar, a fractal narrative.

Qwfwq is not alone in his behavior, noting of the female about whom he dreams that “I was copying what she was doing and she without knowing it was copying what I was doing, and all the others were copying all the others, so we would be back where we had been before except for the fact that in saying these shells were the same I was a bit hasty, because when you looked closer you discovered all sorts of little differences that later on might become enormous” (147). Qwfwq makes several interesting observations here. First, his autopoiesis is mediated through its social interactions, created and created by them in the way that Niklas Luhmann argues that autopoiesis structures society. Second, Qwfwq notes that small differences emerge, some of which “might become enormous.” This describes the relationship between autopoiesis and chaos

theory, in which a small perturbation to an otherwise regular system can cause wide-scale changes. Third, Qwfwq makes it clear that this process is self-organizing in the manner of a complex system: “So I can say that my shell made itself” (147). This describes autopoiesis perfectly.

This creation does not stop at mere physical appearance. For one, the evolution of vision described in the story results in the spiral modifying the larger system of which it is a part, and being replicated yet again as an image. Qwfwq understands that the “form of the world was also changed, in the sense that now it included the form of the world as it had been without the shell plus the form of the shell” (150). This nesting calls to mind the layering of frames that I discussed in Borges, especially the observer paradox in “The Aleph.” Furthermore, Qwfwq realizes that he is no longer confined to a mere physical existence but also has a *virtual* existence as an image: “I elaborated a harmonious, colored image of myself to enter her visual receptivity, to occupy its center, to settle there, so that she could utilize me constantly, in dreaming and in memory, with thought as well as with sight” (151). There are hints of entwinement here, with the added dimension of the entwinement between virtual consciousnesses.

To some degree, I read Calvino’s story as an example of *ekphrasis*. We might recall Escher’s *Spiralen*, where a strange loop forms by reiterating itself until it turns back upon itself, modifying the very autopoietic processes underlying its creation. Similarly, the self-iteration involved in generating the shell mirrors similar processes in fractals. Rather than “mere repetition,” “[t]he spiral reenacts the circle, but opens out—if you’re going in the right direction. The nautilus’s latest chamber echoes its predecessors, but does not merely repeat them” (Barth, *Friday Book* 74). This pattern symbolizes Calvino’s notions of literature as a whole. As he notes, “A work of literature is one of these minimal portions in which the existent crystallizes

into a form, acquires a meaning—not fixed, not definitive, not hardened into mineral immobility, but alive as an organism” (*Memos* 70). This recalls Coleridge’s distinction between mechanical and organic theories of literature, but for Calvino there is no distinction. True to his cybernetic principles, Calvino understands the biological organism as a machine, even if it is a special type. This aligns him with Hofstadter’s and Dennett’s phenomenology also, which posits that living things are composed of automata, although as a whole they may not be subject to the repetitive, robotic behaviors that guide their components.

Calvino plays a similar game with “Crystals” in *t-zero*. Alternating between Qwfwq’s memories of his first encounter with crystals during the formation of the earth and a modern-day setting in a bustling city, the story is, as Albert Sbragia notes, largely a meditation on the nature of chaos. In fact, Calvino addresses the tension between these two ostensible poles throughout the story, making it the central conflict between Qwfwq and his estranged lover, Vug. As Qwfwq notes, “I play the game, in other words, the game of pretending there’s an order in the dust, a regularity in the systems, incongruous but still measurable, so that every graininess of disorder coincides with the faceting of an order which promptly crumbles” (30). Qwfwq is an adherent to the notion that order emerges out of chaos, the idea that self-organizing perfection can emerge from an otherwise noisy reality. But he confesses that

if I love order, it’s not—as with so many others—the mark of a character subjected to an inner discipline, a repression of the instinct. In me the idea of an absolutely regular world, symmetrical and methodical, is associated with that first impulse and burgeoning of nature, that amorous tension—what you call eros—while all the rest of your images, those that according to you associate passion

with disorder, love with intemperate flow—river fire whirlpool volcano—for me  
are memories of nothingness and listlessness and boredom. (31)

For Qwfwq, as for Calvino, chaos lies at the heart of love. But it is a particular understanding of chaos, similar to the chaos one finds in a strange attractor where we see “order *within* chaos” rather than order *out* of chaos (Hayles, *Chaos Bound* 7). Qwfwq gradually comes to comprehend this distinction, seeing the order he sees in traffic lights and daily schedules as “a threadbare patch over disintegration” (32). His is the dream of a “total crystal I dreamed, a topaz world that would leave out nothing” (33), an idealized vision of a harmonious universe and musical spheres.

For Qwfwq, this order is also the harmony of repetition because “[t]he wonder of crystals is the network of atoms that is constantly repeated: this is what Vug wouldn’t understand. What she liked . . . was to discover in crystals some differences, even minimal ones, irregularities, flaws” (33). Vug and Qwfwq see crystals differently, one as chaos, the other as order. Qwfwq cannot bring himself to see abnormalities in the facets: “I wanted to persuade myself that these were only apparent flaws, that they were all part of a much vaster regular structure, in which every asymmetry we thought we observed really corresponded to a network of symmetries so complicated we couldn’t comprehend it . . . this hypercrystal that included within itself crystals and non-crystals” (37).

Qwfwq struggles against admitting that chaos does in fact emerge within order, resists any possibility that these ideas might be more aligned than his binary thinking will allow: “She [Vug] wants to make me admit that real order carries impurity within itself, destruction” (37). Qwfwq finally admits defeat and concedes that Vug is right, that crystals demonstrate self-organizing chaos, where chaos emerges from order. But this realization does not come from some arcane scientific treatise or philosophical dissertation: It emerges from the everyday

experience understood against the universal, cogito and cosmos in interaction. For Calvino, labyrinth and city represent “tension between rational geometry and the entanglements of human lives” (*Memos* 71). This tension generates the humor in the story, where one minute Qwfwq is marveling at the newly formed earth and the next he is stuck in traffic in Manhattan. This recalls Kafka’s tendency to depict absurdity by setting the quotidian and the bizarre side by side. “The conceptual richness and profundity of the everyday,” Henry Sussman writes, “is the compost out of which Calvino tills the turns of plot and humor in his fictive writing . . . It is the abrasive juxtaposition, the always tenuous fusion, on the verge of collapse, between psychosocial experience and its phenomenological coordinates and a systematic reinscription of that experience” (160). What results is a strange loop where the self situates itself through a constant rising and falling between frames, between cosmic outer space and cognitive innerspace.

The story also fictionalizes Calvino’s own position in a debate about the nature of chaos and its relevance for cognitive science. As he explains in *Six Memos for a New Millennium*, the crystal and the flame are “two forms of perfect beauty that we cannot tear our eyes away from, two modes of growth in time, of expenditure of the matter surrounding them, two moral symbols, two absolutes, two categories for classifying facts and ideas, styles and feelings” (71). Calvino aligns himself with “the Party of the Crystal,” which envisions order within chaos.<sup>18</sup>

Of course, strange loops in Calvino are not restricted to this synecdoche between self and universe, because they also occur in his representations of space and language. One of the best spatial representations of a strange loop in Calvino’s fictions is “The Count of Monte Cristo,” the last story in *t-zero*. Trapped within the Chateau d’If, the narrator Edmond Dantès

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<sup>18</sup> As he admits in his lecture, Calvino derives his crystal/flame dichotomy from “the crystal” or self-organizing model put forth by Piatelli-Palmarini in the introduction to *Language and Learning* (1975), a debate between Chomsky and Jean Piaget. See Sbragia for an in-depth discussion of the relationship between this term and chaos theory more broadly.

describes the persistent escape attempts of another prisoner, Abbé Faria. But despite his best efforts, the Abbé cannot liberate himself:

at the moment when the pick's last blow should open his way to the rocky shore, he realizes he has come out in a cell that is even deeper in the fortress than the one from which he set out . . . After every failure, he goes back to correcting the plans and formulas with which he has frescoed the walls of his cell; he goes back to improving his arsenal of improvised tools; and then he resumes his scraping.  
(139)

This system of trial and error leads the narrator to construct his own theories about how to escape “the labyrinth of the fortress” (142). He continues to observe how the Abbé’s “itineraries continue to wind around themselves like a ball of yarn, and he constantly goes through my cell as he follows, each time, a different course” (141). The paths disorient the would-be escapee, who observes, “At times I hear scratching at the ceiling; a rain of plaster falls on me; a breach opens; Faria’s head appears, upside down. Upside down for me, not for him . . . He walks across the ceiling and the walls like a fly” and vanishes again (141).

This is a literary parallel to the strange loop seen in Escher’s *Relativity*. In Escher’s picture, figures proceed along various staircases only to reappear walking in different dimensions. It is a labyrinth unconstrained by gravity, a weightless strange loop. Similarly, in Calvino’s surreal prison, the narrator notes that “[s]ometimes [Abbé Faria] has hardly disappeared through one wall when he pops out again from the wall opposite . . . He emerges again, more weary, skeletal, aged, as if years had passed since the last time I saw him” (142). As in Escher’s print, time and space are broken down in the Chateau d’If: “Like an Escher illustration, Italo Calvino experiments with the invisible boundary between space and time”

(Carey 82). Both the staircases in *Relativity* and the prison in Calvino's story are bizarre renditions of the Penrose staircase that I associated with Kafka's Castle and the Zeno-esque non-journeys of Beckett's characters.

In addition to this spatiotemporal contortion, identity is likewise complicated. As the narrator notes, "When Faria appears from underground, the prisoner turns around: he always has the same face, the same voice, the same thoughts. His name is the same: Edmond Dantès. The fortress has no favored points: it repeats in space and time always the same combination of figures" (142). The prison has the repetitive qualities of a strange loop, the recursive structure that always funnels units back into the macrostructure. Faria's trial and error approach leads to nothing but a retracing of his steps, as if he were trapped in a double bind. But the narrator's approach is the opposite of testing: "While Faria continues taking the fortress apart, sounding out its weak points, I continue putting it back together, conjecturing more and more insuperable barriers" (144). The narrator is, in other words, espouses the virtues of theory whereas Faria is purely practice; neither can succeed without the other. In some sense, we find again an analog to Beckett's notion that art is failure; the same might be said of science, which depends upon the repeated testing of hypothesis until finally something gives.

The narrator hypothesizes that the prison's architecture of polyhedrons in "spheres or hyperspheres" (144) also complicates traditional notions of exteriority and interiority: "a fortress that grows around us, and the longer we remain shut up in it the more it moves us from the outside" (145). When he looks out from his window, he sees himself arriving at the island prison and begins to understand that he is not the captive of a system operating under the strict confines of logic, but rather one that is both logically systematic and fantastically illogical. At this point he says, "I must conceive of the prison either as a place that is only inside itself without an

outside . . . or I must conceive of it not as *my* prison but as a place with no relation to me inside or outside” (146). This complication suggests a Möbius strip, and in doing so draws the reader’s attention to the inchoate boundaries between subject and object, body and mind.

This Möbius effect confounds unity and multiplicity as well, as in Zeno’s paradox of plurality. The narrator notes that Faria “is tending toward the same point of arrival: the place of the multiplicity of possible things” (147). Unity and multiplicity are therefore beginning to coincide, differences are collapsing into sameness, chaos into order. Consequently, the narrator begins to identify the Chateau d’If with Monte Cristo, and later with Elba and Saint Helena, Napoleon’s prisons. In part, these unities of contraries represent the narrator’s search to find himself, to define himself: “the center is all around where I am; going deeper means descending into myself. You dig and dig and you do nothing but retrace the same path” (147). I read this as a metaphor for selfhood, the formation of which follows a similar path of constant retracing.

The story’s final movement sees escape as analogous to Alexandre Dumas creating his novel *The Count of Monte Cristo*. Through trial and error and bifurcating outcomes, the narrator wonders if he is part of a Dumas revision, if Faria and him cannot escape because the macronovel they inhabit is not yet finalized. Here is another spiraling system, as the narrator understands, because “[a] spiral can wind upon itself toward the inside or toward the outside” (151). His epiphany about how to escape this circuit rephrases what he realized earlier in the story: “the only way to escape the prisoner’s state is to know how the prison is built” (140). This is a version of Hofstadter’s solution to the Liar Paradox (indeed to the Eleatic paradoxes in general): to escape the labyrinth one has to joots, “jump outside the system.” It is this solution that Calvino also considers in his most well-known novel, *If On a Winter’s Night a Traveler*.



### Strange Loops in *If On a Winter's Night a Traveler*

Dulce María Zúñiga appropriately calls *If On a Winter's Night a Traveler* “la novela infinita de Italo Calvino.”<sup>19</sup> This novel—or as Calvino calls it, “hypernovel” (*Memos* 120)—follows the frustrations of a reader (appropriately named the Reader in the novel) who finds a fragment of a novel and embarks on a quest for the rest that leads him through the incomplete portions of a dozen other narratives. In the end, we see the Reader reading *If On a Winter's Night a Traveler* by Italo Calvino, the macronovel wrapping back upon itself to provide a glimpse of itself with itself. Indeed, the novel is “a self-referential literary game as in Borges’s recursive labyrinths” (Weiss 6). And like Borges’s fictions, Calvino’s novel also creates thought-provoking strange loops.

Most critics read Calvino’s novel in light of Barthes: “Critical response to *Traveler* has concentrated on this apparent alliance between Barthes and Calvino” (M. Watts 705). This is understandable given Calvino’s tendency to privilege the reader in the novel by addressing him directly from the outset: “You are about to begin reading Italo Calvino’s new novel, *If on a winter's night a traveler*. Relax. Concentrate. Dispel every other thought. Let the world around you fade” (3). Of course, immersing yourself in a novel that implores you to focus counteracts its very intention by pulling you out of the fiction and alerting you to the fact that you are indeed reading a literary text. One experiences the cognitive jolt described by Norman Holland, an analogue of the surprise that characterizes experiences with strange loops. The rhetorical metalepsis that opens the novel is, of course, a prominent device among authors early in the novel tradition: Fielding addresses his readers at the outset of *Tom Jones*, as does George Eliot in *Adam Bede*. Sterne puts this device to exhaustive use throughout *Tristram Shandy*, parodying the convention while simultaneously demonstrating its potency. This convention serves in some

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<sup>19</sup> Lit. “the infinite novel of Italo Calvino.” This is the title of her study of Calvino.

capacity to confer objectivity upon the account, or in Sterne's case to highlight the absurdity of attempting to do so. Consequently, rhetorical metalepsis in these early accounts does achieve the sort of level-crossing one sees in strange loops, albeit of a particularly banal variety.

This device also appears in works I have already discussed, although curiously not as much as one might expect. Indeed, of all Joyce's novels only *Finnegans Wake* includes a rhetorical metalepsis, as pointed out by James M. Cahalan.<sup>20</sup> Throughout the *Wake*, Joyce breaks the literary fourth wall, addressing his "lay readers and gentlemen" (*FW* 573). Joyce is, of course, heavily indebted to Sterne, whose spirit (dare I say consciousness) haunts the entire *Wake*—and Calvino's fiction. Furthermore, Joyce is in some sense attempting in the *Wake* to exhaust the novel, and to do so he must adopt and adapt rhetorical metalepsis. Although he ultimately fails to exhaust the form, he does provide an early example of fiction where metaleptic strange loops become visible in a work that is in many other ways the autopoietic text par excellence.

Of course, Calvino is drawing attention to authorship as much as readership in the novel. Because "*Traveler* is a succession of beginnings, or 'incipits'—openings onto novels that are never completed" (M. Watts 706), it draws attention to its author's technical prowess, reinscribing Calvino into the text. In this way, it resembles O'Brien's *At Swim-Two-Birds*, which likewise has multiple beginnings. But, whereas the *Wake* is sometimes called an antinovel, *If On a Winter's Night a Traveler* is more properly a metanovel. Like Velasquez's painting *Las Meninas* or Magritte's strange loop *Les Promenades d'Euclide*, it is a work of art obsessed with its own making. Linda Hutcheon calls these "narcissistic narratives" for this self-obsession, but they are perhaps more properly *autopoietic* fictions. A novel constructed as such contains the very process of its realization, especially in cases where "[t]he inner novelist perceives while he

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<sup>20</sup> See "'Dear Reader' and 'Drear Writer': Joyce's Direct Addresses to His Readers in *Finnegans Wake*."

is perceived, creates while he is created, and has free will while he is determined” (Lowenkron 343). This tendency is particularly common in postmodernist fiction; I am immediately reminded of Gide’s *The Counterfeiters*, Huxley’s *Point Counter Point*, García Márquez’s *One Hundred Years of Solitude*, and, remembering Malone’s narratives within his own narratives, Beckett’s *Malone Dies*. In all of these texts, works within the larger macrostructure interact with outer frame, producing a *mise-en-abyme*.<sup>21</sup> Lowenkron designates the levels between the outer novel and inner novel as “micronovel” and “macronovel” respectively (353), and in Calvino’s novel they interact to produce a tangled hierarchy.

We find an illustrative parody of this idea in John Barth’s “Frame-Tale,” which opens his experimental collection *Lost in the Funhouse*. If one follows the author’s instructions and configures the page as suggested, the line “Once upon a time there was a story that began . . .” (1-2) loops back upon itself. Physically, the page folds like a Möbius strip, a three-dimensional form with one surface and one edge that loops upon itself. This is the effect of Calvino’s novel in miniature, ending where it began. It also demonstrates that in frame tales “the author is given the opportunity to turn morphology into epistemology” (Lowenkron 347). Calvino’s metafiction, like Barth’s textual experiment or Joyce’s *Finnegans Wake*, draw our attention to the infinite recursivity of narrativity and perforce to the infinite recursivity of both the mind producing it and the mind consuming it. They also draw attention to the endlessly cyclical process of reading itself: “In short,” Calvino’s narrator states, “you seem to be a Reader who Rereads” (29). Barth’s “Frame-Tale” likewise demands that it be perpetually reread, albeit in the comically endless way of Lewis Carroll’s Red Queen.

In addition to the rhetorical variety, ontological metaleptic strange loops are, of course, a favorite technique of postmodernist authors. For example, in William S. Burroughs’s *The Soft*

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<sup>21</sup> See Dällenbach for a definitive early study of *mise-en-abyme* and its connection to reflexivity.

*Machine*, Burroughs himself appears as a character in an otherwise entirely fictional world. Similarly, Kurt Vonnegut makes an appearance near the end of *Breakfast of Champions* as a character within the novel he himself is writing. There is a proverbial laundry list of similar examples. Of course, this tendency is not unique to postmodernist fiction, as David Henry Lowenkron notes. In *Don Quixote* Cide Hamete Benengeli is a novelist within Cervantes's novel who warns the characters about Alonso Fernández de Avellando's counterfeit sequel.<sup>22</sup> To denounce this illegitimate forgery, Cervantes has both Quixote and Sancho Panza have read it the novel's second book; in purposefully rejecting the suggestions of this fake, they in effect recognize themselves as characters. There is both rhetorical and ontological metalepsis here, and even in the earliest novel in the Western tradition one sees these sorts of strange loops blurring the boundaries between frames.

But unlike most metanovels such as these, *If On a Winter's Night a Traveler* is only ostensibly about its own creation; more properly it is obsessed with its own consumption. Its metalepses are thus rhetorical rather than ontological. As a disciple of Roland Barthes, Calvino recognizes that reading is another type of writing, and his novel relishes in this fact. The novel does not contain a novelist within the novel, but rather a reader within that which is read. The tangled hierarchy that results is thus not between the artist and his work so much as between readers and *their* work. The Reader, as the novel's protagonist is called, is in fact both a character and the reader of the text in hand, and the frame between the reality of Calvino's readers and the reality of his characters is broken at the outset. Consequently, I would configure their relationship as laid out over the course of the novel in the same way that the Reader (the character) is related to the micronovels within the macronovel. On another level, the reader's reality is another macronovel within which *If On a Winter's Night a Traveler* is a micronovel.

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<sup>22</sup> This sequel was famously publicly denounced by Cervantes.

This is further complicated by Calvino at the end of the book when the very novel itself is being included within itself, producing a micronovel within the micronovel which happens to be the macronovel—a strange loop indeed!

Calvino takes this metafictional game to its limit by implying at the conclusion that the reader who has been feverishly searching for the continuations to his various novels is in fact the reader of the very book being written. There is a moment of strangeness, the twist characteristic of encounters with strange loops, and it is one that is patently metafictional. “The Reader achieves his marriage to Ludmilla, and at the end, as they read in bed, he finishes Calvino’s *If on a winter’s night a traveler*—thus creating an interesting ‘strange loop’” (Hume, *Calvino’s* 175). What such a realization does is not merely literary sleight of hand but a profound indication of the mind being aware of its own processes. At that moment, the artifice of the book steps to the foreground and we are firmly aware that we are reading about a fictional character reading the very book in which he himself is a character.

Additionally, the sexual union achieved by the Reader and Ludmilla (the Other Reader) at the book’s conclusion parallels the union between reader and text. Given Barthes’s injunction for *jouissance*, a term that implies an erotic relationship with textual experience, it implies an intimacy between reader and text that induces a literal fusion between them. Calvino fictionalizes Barthes’s theoretical notion, but also perhaps parodies this “erotics of reading” (Malmgren 107). Yet, this is another description of the relationship between reader and text in Hofstadter’s phenomenology. As a virtual consciousness, a novel quite literally imbeds itself in the reader’s neural architecture. I might even risk a metaphor that might unsettle some hardline feminists but nevertheless captures the sense of this interaction by saying that the text *inseminates* (in-seme-inates?) the mind. This metaphor becomes even more appropriate given

that Calvino, writing in Italian, configures the Reader in *If On a Winter's Night a Traveler* as masculine; the word “inseminate” itself also has the fortunate similarity to “seme” (“sign”).

I am, of course, jiving on Barthes's notion of play, and for good reason since another Barthesian idea appears in Calvino's novel: the ideal text as reversible. As Barthes notes in a well-known passage in *S/Z*: “In this ideal text, the networks are many and interact, without any one of them being able to surpass the rest; this text is a galaxy of signifiers, not a structure of signifieds; it has no beginning; it is reversible; we gain access to it by several entrances, none of which can be authoritatively declared to be the main one” (5). The ideal text sounds suspiciously like a literary strange loop as laid out thus far. What is most important for the argument at hand is that in Calvino's novel, the order of the micronovels does not make any difference to the macronovel's narrative. Even the sentence created by concatenating their titles at the end is composed of arbitrary clauses made to syntactically form a question; one might construe another sentence with a rearranged order to the same effect. Now, in contrast to Barthes's ideal text, there is some inherent linearity in language, and thus it is impossible for his ideal text to exist and be intelligible unless it was a Da Vincian mirror-text—and even then one would still read it linearly. In fact, there is not a human language that does not process written language in this way.<sup>23</sup> Part of this is because the geometric line is deeply imbedded in our psychology, but the point is that Calvino's novel, try as it might, cannot live up to Barthes's expectations. But this impossibility does not dissuade Calvino from attempting to create a novel that complicates our deeply held beliefs about linearity anyway.

The interplay between reader and author in the novel adds another dimension to autographesis. Calvino certainly sees the author and text involved in a reciprocal autopoietic act: “the author of every book is a fictitious character whom the existent author invents to make him

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<sup>23</sup> Even Mandarin and other Sinitic languages whose axes run vertically still rely on linearity.

the author of his fictions” (*Traveler* 180). Calvino adds the network formed between reader and writer, wherer the reader writes the author in a strange inversion. Poststructuralists such as Barthes would have embraced this, but rather than adopting Barthes’s death of the author as totally as many critics believe, Calvino seems instead to be reinscribing the author even as he subverts it. In some sense, his hypernovel enacts Hans-Georg Gadamer’s phenomenological notion of reading as a “fusion of horizons,” where meaning emerges through a coordinated syncopation between reader and author. As Mariolina Salvatori contends, “Calvino, like Gadamer, posits a text’s critical force, that is, the text’s potential to bring about understanding of the text and self-understanding of the reader/interpreter” (200).

### **Strange Loops and the Literary Machine in *The Castle of Crossed Destinies***

Calvino expresses a similar concern with reversibility in the two novellas comprised by *The Castle of Crossed Destinies*. Both relate accounts of travelers arriving at a castle (or a tavern in the second novella, *The Tavern of Crossed Destinies*), only to find themselves struck mute. In order to communicate, they draw from a tarot deck and the unnamed narrator constructs a series of highly interpretive stories from the cards’ sequences. What the seemingly chaotic process entails here is a version of what William S. Burroughs calls “the cut-up technique.” For Calvino, as for Burroughs, part of the purpose of such a method is to mimic the often fractured nature of consciousness, to draw the reader into a more intimate, cognitive understanding of the text and the mind’s relationship to it.

One of the primary ways it does this is by confounding traditional, Aristotelian notions of linear temporality. We have already seen texts such as *Finnegans Wake* that might be read in ways other than front to back. Indeed, Joyce’s novel is frequently consumed piecemeal rather

than beginning to end (if we can consider it having either). However, randomized order does not necessarily imply Barthesian reversibility; but Calvino nevertheless tries to imagine such a text because, like the micronovels in *If on a Winter's Night a Traveler*, the tarot cards that comprise *The Castle of Crossed Destinies* could hypothetically be read in any order. As the grave robber notes at the end of his tale (which is not really his but the narrator's): "I have come full circle and I understand. The world must be read backward. All is clear" (34). There are shades of both Barthes's ideal reversible text and a Kierkegaardian sense that life is lived forward but only understood backwards in retrospect. We might also find hints of a reversible strange loop.

As always with Calvino, even as he tries to realize in fiction what Barthes suggests in theory, he is also parodying these concepts. There is no such thing as an ideal text if reversibility is one of its criteria. Meaning depends largely on the direction and manner in which something is read, and Calvino is intimately aware of this fact. As the narrator remarks in the last chapter of *The Castle of Crossed Destinies*, "All the Other Tales,"

The square is now entirely covered with cards and with stories. My story is also contained in it, though I can no longer say which it is, since their simultaneous interweaving has been so close. In fact, the task of deciphering the stories one by one has made me neglect until now the most salient peculiarity of our way of narrating, which is that each story runs into another story, and as one guest is advancing his strip, another, from the other end, advances in the opposite direction, because the stories told from left to right or from top to bottom, presented in a different order, often change their meaning . . . (41)

The novel thus concludes with the suggestion that all the narratives were in fact a single meganarrative, intertextual and infinite, but nevertheless partially determined by which direction



the cards (that is, the narrative) are read. Even after finishing, the narrator must “scatter the cards, shuffle the deck, and begin all over again” (48), and the resulting recombinations will still depend upon where the next interpreter begins in the set. In part, Calvino is parodying reader-response theory in the very act of applying it, suggesting that readers can construct infinitely different stories from the same substrate but that these stories are not unconstrained. He tries to construct an absolutely readerly text, but it is only possible through a character he writes. On the other hand, Calvino is vindicating the power of readers by conferring upon them the choice to rewrite the text, to deny the authority of the author’s design. The infinite plenitude of textuality is thus reaffirmed in its own self-referentiality when we construe reader and text as two parts of a Möbius strip: “A mobius strip, after all, is more than the guarantee of perpetuity; since the end is coincident with the beginning, cherished illusions based on teleological models are invalidated . . . there is only the endless shuffling of the cards, endlessly promising and endlessly withholding any disclosure of the ‘dessous’” (Moger 29). The same might be true of *If on a Winter’s Night a Traveler*. Teleology might be broken, but the protean nature of language remains intact.

Beyond this reversible textuality, Calvino explores in *Castle of Crossed Destinies* the possibilities of a literary machine. This underscores his belief that the “imagination is a kind of electronic machine that takes account of all possible combinations and chooses ones that are appropriate to a particular purpose, or are simply the most interesting, pleasing, or amusing” (*Memos* 91). He admits as much in one of his lectures from *Six Memos for the Next Millennium*, noting that *The Castle of Crossed Destinies* was “intended to be a kind of machine for multiplying narratives that start from visual elements with many possible meanings, such as a tarot pack” (120). This brings me to an important part of Hofstadter’s phenomenology: Creativity emerges as an expected outcome of entirely predictable rules, the result of advanced

combinatorics rather than some mystical or divine inspiration. In part, Calvino develops this idea as a member of the Oulipo Group. Indeed, in *Six Memos for the Next Millennium* he notes a similar theoretical approach to fiction in the work of his fellow Oulipian, Georges Perec: “for Perec the construction of a novel according to fixed rules, to constraints, by no means limited his freedom as a storyteller, but stimulated it” (123). This comment might just as well apply to Calvino himself.

As his essay “Cybernetics and Ghosts” attests, Calvino was no stranger to cybernetics. Moreover, he adopted many of the principles that undergirded this movement, consciously enacting in literature what this school of thought wrought in theory. This led to some radical conclusions about the nature of literature in general. As Sbragia notes, Calvino believed that “[l]iterature can indeed be written by a machine, but it will always remain a place of privilege within human consciousness because its decisive moment is in its reading” (287). Indeed, although he accepted the tenets of cybernetics that the mind is a system within a system operating with symbolic strings of code through language, Calvino never lost sight of the human, never lapsed into the posthumanism that characterizes many contemporary adherents to cybernetics such as Hans Moravec or Ray Kurzweil. He does, however, refer to Claude Shannon (whose information theory identified information with entropy) and John von Neumann (who put forth hypothesis about self-reproducing automata), indicating that Calvino was constantly in-tune with ideas emerging from information theory and cybernetics (15).

As a result of incorporating these ideas with his own literary practice, Calvino saw literature as a “*macchina letteraria spastica*” (Sbragia 298) but, as Wladimir Krysiniski notes, “[f]or Calvino, literature is a machine of *cognition*” (197, my emphasis). Calvino’s theories of textuality were always already concerned with cognition, with the relationship between mind and

machine. Again, the best example of this theory in practice is *Castle of Crossed Destinies*: “In this text shaped by a ludic paradigm, the principle of the overwhelming game acts as a tool to utter and to narrativize an *ars combinatoria*” (Krysinski 197). This literary calculus is therefore a cognitive tool as well as a product of the rules undergirding cognitive process: “Literature is a combinatorial game that pursues the possibilities implicit in its own material . . . but the poetic result will be the particular effect of these permutations on a man endowed with a consciousness and an unconsciousness, that is, an empirical and historical man” (Calvino, “Cybernetics” 22). Rather than the dehumanizing effect many feared cybernetics would bring to theory, Calvino demonstrates how it actually foregrounds the processes of the literary medium, a medium that in many ways is the most human.

Another result of this adoption of cybernetic principles is an increasingly important role for “systems” in Calvino’s fiction. According to Sbragia, “[a]t the core of this self-generative process of literary creation and organization lies Calvino’s habitual quest for a pattern or order that contains a blueprint of the whole” (299). Whether it is the system that exists between reader and text, text and intertext, or text and world, Calvino is always aware that the dialectic between chaos and order produces wondrous variety. “This taste for geometrical composition,” he writes in *Six Memos for the Next Millennium*, “of which we could trace a history in world literature starting with Mallarmé, is based on the contrast of order and disorder fundamental to contemporary science” (69). This dialectic also underscores the strange loop as a pattern that emerges from iteration but produces new and unforeseen forms. As Sbragia notes of Calvino’s *mises-en-abyme*,

[it] echoes the position of that version of chaos theory which argues that chaos begets creation through repetition and variety. Chaotic systems possess order in

the form of periodic repetition of symmetries across scale levels. At the same time, initial aperiodic variations or contiguities are reintroduced and magnified at each scale level by the system's own feedback mechanisms. It is something similar to *mise en abyme* and synecdoche in the same system . . . The result is creation. (301)

As a savvy disciple of cybernetics, Calvino also describes systems in his fiction as not merely isolated but rather intricately bound to other systems. Calvino's "labyrinthine schematic . . . posits the world as a system of systems, where each system contains the others and is contained by them" (Baumann 339).

In this sense, Calvino creates a network like Joyce's or like Joyce's Italian analogue, Carlo Emilio Gadda. Calvino often addresses his debt to Gadda's "system of systems," describing his precursors literary universe as one "where each system conditions the others and is conditioned by them." Like Gadda, Calvino strives "to represent the world as a knot, a tangled skein of yarn" (*Memos* 106). Indeed, there is certain connection between metalepsis in Calvino and his appropriation of what was at the time emerging as complex systems theory. The system of the microtext is influenced and influences the macrotext in a strange loop of causation. As Phyllis Carey notes, "Lovelock, who proposed the Gaia principle, with its feedback systems for healing the whole Earth, and Chardin, who envisioned an Omega point as the origin and destiny of all created beings, would feel comfortable with Calvino" (Carey 92). This notion of an interconnected network, or macrosystem, will become particularly important in my discussion of Pynchon in Chapter Eight. Let me here simply note that Calvino also understands literature as a system within systems, a tangled hierarchy that operates under the same principles that produce cognition.

## Calvino and Authorship Triangles

Again, one must ask, What does this have to do with the mind? Certainly the relationship between contemporary dynamic models of cognition and consciousness intimate a deep connection between systems in language and systems in the mind/brain, a connection emphasized by the commonalities between systems theory and strange loops. On a broader level, Calvino's metafictional experiments demonstrate that the self, like Qwfwq or the travelers at the Castle of Crossed Destinies or the reader in *If On a Winter's Night a Traveler*, formulates itself through narrative. This is the human quality that is never lost, not even in Calvino's most extravagant cosmicomic stories about the beginning of time. There is always in Calvino a human element that is fundamentally a narrative process, the basic human need, to borrow Joan Didion's words, tell ourselves stories in order to live.<sup>24</sup>

The levels that exist between text and reality are thus thwarted for those who see one merely as a mimetic representation of the other. Neither mind nor text is, as Pragmatist philosophy reaffirms, a mirror of nature. But when these boundaries are blurred as in postmodernist fiction, the text is perhaps even more mimetic than it lets on. In these metafictional works, reader becomes character, author becomes reader, text context, and a reel of inversions occurs. These are the inversions of a strange loop. They also point to the role of conceptual blending in this type of strange loop, the way it compromises attempts to establish definitive hierarchies in a heterarchic world. Self-conscious fiction thus demonstrates a crucial aspect of consciousness, namely its recognition of itself as part of a larger system. Aware that it is autopoietic, the being capable of saying "I" recognizes both that it speaks about itself and that

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<sup>24</sup> This is the title of a collection of essays by Didion.

it is doing so; but it does not forget that, while the mind configures the world through frames, these boundaries between self and world are illusory.

These acts of frame-breaking transgress the usual boundaries between hierarchies; they also draw our attention to the fictionality of consciousness. As Alan Palmer notes in *Fictional Minds*, characters' minds are embedded narratives within a larger narrative. Likewise, we are characters in our own fictions, and in the grander narratives of history and culture. This is the ultimate effect of Calvino's metalepses: they force us to recognize the self that consciousness produces as a fictional entity constantly undergoing autopoiesis, quite literally written into the neural architecture of the mind through its experience as a dynamic process rather than a discrete entity: "You think that after all you must be weaving a piece of cloth: because you are sitting at a loom—even if it is empty—and going through the motions of weaving" (Wittgenstein, *Investigations* 132e). The result is a beautiful tapestry made all the more wondrous by its recursive complexity.

As I've argued so far, the loops in Calvino focus primarily upon the relationship between the reader and the text, which Calvino sees as a system of systems. But he also suggested the notion of a writer creating characters that in turn create the author, violating levels in what might otherwise remain a tidy hierarchy. Both Calvino and Hofstadter are particularly concerned with frames and level-crossing. In his essay "Levels of Reality in Literature," Calvino claims that "literature does not recognize Reality as such, but only *levels*" (*Uses* 120, emphasis his). We have already seen examples of frame-breaking strange loops in Borges's fictions, particularly in "Tlön, Uqbar, Orbis Tertius," a favorite among critics interested in metafiction. Like Borges, Calvino emphasizes the role of imagination in this process, positing Coleridgean disbelief as absolutely essential for fiction to do its work. As one might expect, the result is not

homogeneous: “In a work of literature, various levels of reality may meet while remaining distinct and separate, or else they may melt and mingle and knit together, achieving a harmony among their contradictions or else forming an explosive mixture” (101). Marie-Laure Ryan and other narratologists have attempted to categorize these fictional “stacks,” but regardless of any typology, Calvino’s fictions demonstrate that any attempt to delineate strict boundaries is doomed to fail given the dynamic nature of narrative frames and their cognitive counterparts.

Calvino explores an intriguing consequence of this blending later in “Levels of Reality in Literature.” Discussing Flaubert’s *Madame Bovary*, Calvino notes that there is a reflexive relationship between Gustave Flaubert the author and Emma Bovary the character, a strange loop similar to autographesis. Calvino illustrates this relationship with a diagram which illustrates the relationship between author and character forming a feedback loop.

As Calvino notes of such an autopoietic system, “Each element projected reacts in its turn on the element that projects it; it transforms and conditions it” (112). This is undoubtedly recursion applied to the complex relationship between textual and organic consciousness.

Calvino develops this recursion into a system that prefigures autopoiesis:

How much of the ‘I’ who shapes the characters is in fact an ‘I’ who has been shaped by the characters? The further we go toward distinguishing the various levels that go to make up the ‘I’ of the author, the more we realize that many of these levels do not belong to the author as an individual but to collective culture, to the historical period or the deep sedimentary layers of the species. The starting point of the chain, the real primary subject of the verb ‘to write,’ seems ever more distant from us, more rarefied and indistinct. Perhaps it is a phantom ‘I,’ an empty space, an absence. (113)

One can sense the influence of Barthes's *le mort d'auteur* here, but Calvino also seems to suggest that this absence works in both directions: both author and character effectively function as characters, as semiotic rather than essential realities. Rather than reality (or more precisely, Reality), "Literature recognizes the *reality of the levels*, and this is a reality (or 'Reality') that it knows all the better, perhaps, for not having to come to understand it by other cognitive processes" (121). This network forms what Hofstadter calls an "authorship triangle" (*GEB* 65). What results is an intricate reciprocal interaction between the author's consciousness and the virtual consciousnesses of his characters. It is to this manifestation of the strange loop that I turn in the next chapter on Flann O'Brien.



CHAPTER SIX  
“ARSE ET CELARE ARTEM”:  
AUTHORSHIP TRIANGLES AND STRANGE LOOPS IN  
FLANN O’BRIEN’S NOVELS

*The universe is not only queerer than we think, it is queerer than we can think.*

—J. B. S. Haldane

Brian O’Nolan (Flann O’Brien) is himself one of the most intriguing characters—in both the literary and historical senses—in all of literature, having written under so many various *noms-de-plume* as to be nearly fictional himself.<sup>1</sup> This agrees with the theory of autographesis that I proposed in Chapter Three, and also reinforces the comedy undergirding O’Brien’s entire oeuvre. But O’Brien’s novels often take his literary playfulness to the level of serious metaphysical speculation. In *At Swim-Two-Birds* (1939), *The Third Policeman* (1967), and *The Dalkey Archive* (1964),<sup>2</sup> O’Brien weaves intricate metafictional narratives that stand with *Finnegans Wake* as the earliest examples of a fully postmodernist literature.<sup>3</sup> Part farce, part metaphysics,

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<sup>1</sup> There is a huge amount of speculation about just how many journalistic items O’Nolan composed. He wrote the *Cruiskeen Lawn* column for *The Irish Times* under the Gaelic name Myles na gCopaleen. See Cronin for the definitive biography of O’Nolan.

<sup>2</sup> Cited hereafter as *AS*, *TP*, and *DA*, respectively. Although it was composed before *The Dalkey Archive*, *The Third Policeman* was published posthumously in 1967, although O’Brien composed the novel immediately after *At Swim-Two-Birds*.

<sup>3</sup> Several critics have noted this: “I would argue that *At Swim-Two-Birds* is already a postmodern text” (Murphy 37). See also Hopper’s *Flann O’Brien: A Portrait of the Artist as a Young Post-Modernist*: “Flann O’Brien has produced a meta-literature which is post-realist, post-colonial and post-Joycean, and which bears striking resemblances to writers such as Beckett, Borges and Nabokov, i.e. it is quintessentially *post-modernist*” (xv). Hopper describes *AS* as a “proto-post-modernist work” (13).

O'Brien's novels explore the possibilities of metafiction in ways that, while different from both Borges and Calvino, are nevertheless brimming with strange loops.

The Chinese-Box structures of O'Brien's novels have been noted by Brian McHale and others and, despite critical neglect of O'Brien's work compared with the attention given to Joyce and Beckett,<sup>4</sup> he has come into the limelight for his use of various techniques characteristic of postmodernism, such as nested narratives. In fact, some critics have argued that O'Brien was far ahead of his time: "despite the fact that Sterne, Gide, Huxley, and, less famously, James Branch Cabell had employed the *mise-en-abyme* and/or self-reflexive narration in their works before O'Brien, he pushed these devices to hitherto unseen limits, to the point of the extinction of the narrator and perhaps even the text itself" (Murphy 10). While I think Neil Murphy may be exaggerating when he says that O'Brien extinguishes textuality, he correctly notes that O'Brien is pushing metafiction in a direction hitherto unseen. O'Brien is not merely using metafiction to showcase the fictionality of narrative, nor is he merely playfully deconstructing textuality. Like Borges<sup>5</sup> and Calvino, he seems to be using nested narratives as a means of demonstrating how fiction and the mind interact—and how each interacts with itself.

Most critics have tended to see O'Brien's novels as irreverent parodies or Menippean satires. Both M. Keith Booker and Keith Hopper read O'Brien's work through this lens, and one

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<sup>4</sup> McHale's *Postmodernist Fiction* discusses O'Brien in light of the connection between metalepsis and strange loops. See Hopper and also Booker. O'Brien is by no means ignored by critics in Irish studies. As Hopper notes, "O'Brien completes the Holy Trinity of Irish fiction: alongside Joyce the Father and Beckett the Son, he remains the Holy Ghost in the Machine" (xiv).

<sup>5</sup> It is interesting to note that Borges was the first to review *AS*: "I have enumerated many verbal labyrinths, but none so complex as the recent book by Flann O'Brien, *At Swim-Two-Birds* . . . is not only a labyrinth: it is a discussion of the many ways to conceive of the Irish novel and a repertory of exercises in prose and verse which illustrate or parody all the styles of Ireland. The magisterial influence of Joyce (also an architect of labyrinths; also a literary Proteus) is undeniable but not disproportionate in this manifold book" (*Non-Fiction* 102). O'Brien's biographer Anthony Cronin states, "Joyce declared [*AS*] the work of a 'real writer' who had 'the true comic spirit' and attempted to get the book reviewed in French periodicals, although without success. It is thought to have been the last novel Joyce ever read" (94).

cannot read O'Brien without always considering that the subject at hand is simultaneously being both scrutinized and ridiculed. For this reason, Booker draws multiple comparisons between O'Brien's work and Kafka's in *Flann O'Brien, Bakhtin, and Menippean Satire* (1995). In his reading of *The Third Policeman*, Booker sees "an air of absurdity (and of pessimism) that immediately suggests the world of Kafka" (128). It is therefore appropriate that David O'Keefe's recent film *Babble* (2008) is a part comic, part philosophical meditation framed as a three-way, trilingual conversation between Kafka, Borges, and Flann O'Brien.<sup>6</sup>

However, Booker downplays the humor common to both Kafka's and O'Brien's work, and therefore usually refers to Kafka's absurdity rather than to the subtle comedy at play in his work. Because of its many Kafkaesque paradoxes, O'Brien's work is sometimes considered a "critical minefield" (Hopper 231). As with the other authors that I have discussed, comedy and tragedy are closely allied in O'Brien, and looking at his novels through a cognitive literary lens allows us to engage his philosophical speculations while remaining conscious that we always run the risk of embroiling ourselves in the joke. This difficulty also arises because O'Brien dabbles in paradox, and if we recall the dialectic between paradox and humor, "where a sentence is a joke, any question about its truth or falsity seems little more than a refusal to join in the fun" (Levi 54).

Interestingly, there have been no cognitivist attempts to read O'Brien, an omission that one finds similarly in Joyce's work. Likewise, there has been only one attempt at a

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<sup>6</sup> O'Keefe's film, itself staged as a play, was first "performed" at the 32<sup>nd</sup> Exhibition of Visual Art in Limerick, Ireland on 7 March, 2008. The film has received modest critical attention, although its trilingual dialogue (German, Spanish, and Gaelic) requires a linguistic sophistication that presents an additional layer of difficulty. O'Keefe emphasizes the existential questions in the three authors' works. Also, these three authors are discussed by Neil Cornwell in *The Absurd in Literature* as the archetypes of absurdist writers, along with Daniil Kharms.

psychoanalytic reading of O'Brien's novels, an interesting gap in the critical corpus.<sup>7</sup> Why this neglect of the mind in O'Brien? One answer might be the difficulty of pinning down in O'Brien's work exactly what is statement and what is ridicule. In addition, critics may be frightened to engage O'Brien through a "serious" lens such as cognitive theory given the pitfalls such as that which befell Hugh Kenner, who treated a farcical interview by O'Brien with Joyce's father as if it had actually occurred.<sup>8</sup> However, despite this avoidance, O'Brien's novels present framing in such a way that a cognitive approach might shed light on precisely how his novels produce their estranging effects.

In *At Swim-Two-Birds*, O'Brien nests narratives within narratives until the levels of the hierarchy that normally define fiction from reality becomes incredibly entangled, more than any fiction I've discussed in previous chapters. The unnamed narrator, a Trinity student writing a novel, presents a first-person narrative of his efforts to write the novel, only to be continually interrupted by his own manuscript. Within that manuscript, the narrator's protagonist is a writer whose own characters eventually rebel against him, drug him with soporifics, and stage a trial to condemn him for his crimes against his creations. These rebellious actions are undertaken when the author's characters begin writing a revenge narrative about the very author who created them. This is the first distinct example thus far of a specific type of strange loop called an "authorship triangle" (Hofstadter, *GEB* 95). As Hofstadter notes, authorship triangles occur when one formal system writes a system that in turn writes the initial system. The paradox is solved by recognizing that the entire recursive system is itself the product of an external system, in this

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<sup>7</sup> See Doherty, who suggests that Mathers's name is a combination of "mother" and "father" and suggests that the narrator's crime as a complex Oedipal act. Doherty also extends Clissman's observation that *TP* resembles Sartre's *No Exit*, adding comparisons to *Nausea* and Beckett's *Watt* as well (52). This is interesting given that there have also been very few existentialist readings of O'Brien.

<sup>8</sup> See Harriman 56.

case the author of the triangle. I proposed theoretical versions of this idea in the autographesis described in Chapter Two and in the genealogical strange loops discussed in Chapter Three, but I have not yet discussed an authorship triangle within a work. I also explored a similar notion in my discussion of Borges's "The Circular Ruins," likening it to what Floyd Merrell calls a "dream triangle" (69).

Because authorship triangles occur in works that implicitly concern their own creation, texts that produce these triangles are often what Linda Hutcheon calls "narcissistic narratives." In this respect they also are examples of what Alistair Fowler calls "poiomena" (sing. "poiomenon"). This type of metafiction is particularly characteristic of postmodernist fiction because it "is calculated to offer opportunities to explore the boundaries of fiction and reality—the limits of narrative truth" (372), a frequent concern of postmodernist authors. Indeed, the authorship triangles proposed by Hofstadter as a possible extension of the strange loop concept are poiomena as well—one might even suggest that all poiomena are strange loops in a broad sense, hence McHale's extensive use of strange loops in his characterization of postmodernist fiction.<sup>9</sup>

Although less metafictional than O'Brien's first novel, *The Third Policeman* and *The Dalkey Archive*, originally conceived as a single work, nonetheless expand several issues raised by their predecessor. Specifically, they elaborate O'Brien's meditations on time, intertextuality, and science. In this chapter, I will begin by discussing authorship triangles in *At Swim-Two-*

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<sup>9</sup> Other frequently cited poiomena include Sterne's *Tristram Shandy*, Nabokov's *Pale Fire*, Rushdie's *Midnight's Children*, and Beckett's trilogy, all of which demonstrate other strange loop tendencies as well. All of these novels are discussed by McHale, albeit only regarding their metaleptic tendencies.

*Birds*. I will then discuss O'Brien's more "science-fictional" novels<sup>10</sup> and relate the strange loop concept to both what these texts say about time and what they say about science.

### **The Authorship Triangle in *At Swim-Two-Birds***

O'Brien presents one of the best literary examples of an authorship triangle in *At Swim-Two-Birds*. In many ways a proto-digital, proto-hypertextual text, the novel opens with three alternative beginnings, complicating from the outset any notion of linear narrative. Much like Calvino's *If On a Winter's Night a Traveler*, *At Swim-Two-Birds* is fully aware of its status as a fiction. The unnamed student whose narrative forms the outermost frame of the novel proceeds to write about the hijinks of Dermot Trellis, a novelist whose narrative is intermittently interrupted by his own narratives about a villain from Trellis's novel named John Furriskey and a ragtag bunch of other characters borrowed from various literary works, both real and fictitious. These violations between the level of narrator and the level of narratee are facilitated because "Trellis has absolute control over his minions but this control is abandoned when he falls asleep" (47-48). This allows for a series of metaleptic breaks, often signaled when the outermost narrator says, "Conclusion of the foregoing" (60 and *passim*). Certainly these metalepses demonstrate "O'Brien's genius for structured chaos" (Bohman-Kalaja 102), but they also show us how metaleptic strange loops can lead to an authorship triangle.

The novel's levels are explicitly outlined by O'Brien's unnamed narrator in a synopsis table before the levels begin to wildly conflate (*AS* 85). Once the second diegetic level emerges—that is, the narrative about the narrator's narrative—the boundaries between author

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<sup>10</sup> In his study of O'Brien, Hopper notes that science-fiction has a curious history in Irish literature, contrasting McHale's assertion throughout *Postmodernist Fiction* that science-fiction is to postmodernist literature what the detective novel was to its modernist predecessor.

and text begin to dissolve. For example, immediately after creating her, Trellis molests his character Sheila Lamont, unable to contain his lust for her (86). This is the first transgression in the novel, and it serves as a catalyst for Trellis's villain (Furriskey) to wage a rebellion against his creator in a manner befitting Milton's Satan or Mary Shelley's Monster. Yet the created here are themselves creators: In an instance of verbal irony, Trellis's own characters mock him as "Mr. Storybook" (88) and yet they themselves tell their own narratives throughout the novel. For example, Finn McCool, one of Trellis's characters borrowed from Irish mythology, narrates the story of Mad King Sweeny, only to be interrupted by the others in attendance telling tales of a poet named Jem Casey.<sup>11</sup> Both Sweeny and Casey appear in the main narrative later in the novel. At this point, O'Brien's *mise-en-abyme* reaches its greatest depth, now nesting four tiers of narration: the unnamed narrator telling the story of his writing; the narrative of Trellis at the Red Swan Hotel; the narratives of *his* characters who also live in the hotel and begin turning against him; and those characters' dizzying array of seemingly unrelated narratives. Here is another metaleptic strange loop, one so tangled that the primary diegetic level is lost in a sea of heteroglossia. The narratives begin to intertwine and are somewhat difficult to distinguish in parts if not for the shifts in tone that differentiate Finn's mythological narrative from the more vernacular yarns of Shanahan, Lamont, and the others.

The blending of narrative levels is in part a reflection of the unnamed outermost narrator's literary theory put forth at the novel's outset. He states that all good literature borrows characters from other work and that characters are in fact capable of wandering between texts (15). The narrator expands this thesis when he states that "[t]he modern novel should be largely a work of reference" (33). As such, one might characterize O'Brien's novel as an experiment in intertextuality, and the authorship triangle in *At Swim-Two-Birds* exemplifies the strange loops

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<sup>11</sup> Significantly, O'Brien held an M. A. in Celtic studies, completing a thesis on medieval Irish Gaelic nature poetry.

that emerge between texts refusing to exist in a vacuum. For instance, early in the novel the Pooka and the Good Fairy (two of Trellis's characters) encounter Slug and Shorty, characters from fictional author William Tracy's cowboy stories. En route to the Red Swan, the gang of characters in turn encounters Jem Casey and spots Mad King Sweeny in the boughs, an encounter that brings the bottom-most level of the novel's tangled hierarchy into contact with its third-tier. Already readers are urged to question which, if any, level supersedes the others.

This level-crossing aspect of the loop reaches its climax once the troupe of characters arrives at the Red Swan Hotel. A character named Orlick Trellis arrives, apparently Dermot Trellis's son, though he may merely be another fictional character because at this point fathering applies as much to the biological act as to the literary one. This signals the beginning of the authorship triangle. As the characters begin to worry that the soporific drugs they've been using to keep their author asleep might soon wear off, "they suggest that [Orlick] turn the tables (as it were) and compose a story on the subject of Trellis, a fitting punishment indeed for the usage he has given others" (236). Here, characters write a narrative about their own author, a scenario which conforms precisely to the Hofstadterian authorship triangle introduced in *Gödel, Escher, Bach*.

This blurring between author and work does not go unrecognized by Trellis, who describes his writing as an "absorbing project" (O'Brien, *AS* 257), an almost tongue-in-cheek comment on his gradual subluxation by his own fictions. At this point, Trellis is punished by his characters in the narrative (subnarrative? hyponarrative?) before finally being brought before a court of judges, composed of his own characters. The characters assert that Trellis "got a fair trial and a jury of his own manufacture" (301), but in the novel's Carrollian-Kafkaesque inversion the judge is the jury (281). This inversion of justice is appropriate given the inversion



of levels within the novel. It is only when a maid at the Red Swan Hotel burns Trellis's drafts by accident that the unfortunate author is freed from his characters' abuses.

In some ways, Flann O'Brien follows Joyce<sup>12</sup> in representing reality as a strange loop, but his level-crossing narratives take on a more fantastic flavor. In *At Swim-Two-Birds*, O'Brien weaves a narrative where the struggling author-narrator creates a novel in which the authors seek to punish their own author. The result is a complex and riotous metafiction, one that constantly refers to its own making. By writing characters who write characters who write the author, O'Brien is entering into a dialogue about metafiction and thus about reality itself. But one must ask: What is the outermost frame? If human life is ordered as a narrative text (as many psychological and phenomenological models of consciousness I've explored thus far suggest) then to what degree does the mind create subjective reality and to what degree does it merely interpret and process objective material existence? O'Brien provides no answers but an amused chuckle.

Furthermore, O'Brien's novel is in many ways as schizophrenically encyclopaedic as *Ulysses*, sometimes cited by critics "as [the] Source-Text for O'Brien's *At Swim-Two-Birds*" (Orr 817). Like Joyce, the outermost narrator in the novel vehemently practices a literary theory that encourages borrowing characters from other texts. "The entire corpus of existing literature," O'Brien's narrator writes, "should be regarded as a limbo from which discerning authors could draw their characters as required" (25). O'Brien borrows liberally from Irish legend, folklore, popular culture, and even Victorian novels, if we liken Orlick Trellis to Orlick in Dickens's *Great Expectations*. Consequently, the network formed by the interrelated levels in O'Brien's novel is

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<sup>12</sup> There has been some debate about the extent of Joyce's influence on O'Brien. Joyce appears as a character in O'Brien's *The Dalkey Archive*, but some critics—and O'Brien himself—argue that Joyce's influence has been exaggerated. I address this later in this chapter.

a microcosm for literature as a whole, a tangled hierarchy incessantly referring to itself with the very medium of which it is composed.

Indeed, intertextuality suggests a sort of strange loop between texts and intertexts: “Another way, then, that texts are self-referential is through *intertextuality*: all texts refer to other texts, gaining their meaning by performing various permutations on other texts” (Livingston 60). As Barthes posited in *S/Z*, texts form a network. Similar to Barthesian poststructuralism, autopoetics sees every book as “a node in a network of nodes that are themselves networks” (Livingston 40). The entire network of texts thus becomes a massive strange loop—what we might call a “labyrinth.” I have adduced several networks so far, but the term “network” itself—prominent in cybernetics and connectionist cognitive science—is worth pointing out here. As Bruno Latour notes, “More supple than the notion of system, more historical than the notion of structure, more empirical than the notion of complexity, the idea of network is the Ariadne’s thread in these interwoven stories” (3). As an autopoietic network, the sort of autopoiesis represented by strange loops therefore maps onto intertextuality as O’Brien presents it in the novel.

One might ask, Isn’t this what we would expect if literature is a system that emerges from the autopoietic system of language (which in turn emerges from the autopoietic system of consciousness)? Is O’Brien saying that “literature is best read as a comment on other texts, rather than on society” (Hall 16)? Intertextuality allows us to see literature as yet another Ourobouros, consuming and consumed by itself, autopoietically generating a recursively infinite network of meaning through self-referentiality. As a consequence, the authorship triangle might

be broadened to contain not only narratives wherein characters write their authors but also texts that write other texts, a strange looping cosmic web such as that envisioned by Hayles.<sup>13</sup>

Nevertheless, we must be careful when extending self-reference in this sense not to completely sever the text from the world in a regression back to the bad habits of New Criticism or some of their structuralist successors, some of whom envisioned literature as an entirely hermetic system that could not refer to anything but itself (this persists in many post-structuralist schools of thought, most notably and often mistakenly based upon Derrida's maxim "*il n'y a pas d'hors de texte*"). We should instead embrace a more cybernetic approach and see literature as both a self-referential, autopoietic system *and* as a system interacting with the larger semiotic processes of culture. O'Brien's novels encourage this vision of literature as a network.

In authorship triangles such as those in *At Swim-Two-Birds*, narrators weave narratives with narrators that narrate themselves, texts attempt to cannibalize other texts, and characters come into existence apparently *ex nihilo*. As such a complicated text, the novel resists any single theme because its narratives intertwine like the voices in a ballad. There is no "outside," only metafiction, levels within levels, dreams within dreams. A tangled hierarchy results, one where the levels intertwine, where neither origin nor narrative can be distinguished. The result is a kind of palimpsest, but one where the lower levels have not been erased—they create the upper diegetic levels in turn. The result is an amusing but suggestive type of strange loop that is both hilarious and profound.

There is another strange loop in the novel that is worth pointing out here: Dermot Trellis's "theory of aestho-autogamy" (O'Brien, *AS* 55). This fictional process, "whereby characters are born fully formed" (Murphy 12), curiously resembles the sort of autopoiesis

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<sup>13</sup> As Hayles notes, "The recurrent image I use to explain complex interconnections of theory, technology, and culture is a feedback loop" (*Chaos Bound* xiv). I revisit this systematic expansion of the feedback loop in my conclusion.

manifest in strange loops. Kellman calls this type of literature “the fiction of self-generation,”<sup>14</sup> and O’Brien forces us to wonder exactly what this “auto-aesthogamy” implies. This process debuts early in the novel when Trellis brings the villain of his novel John Furriskey to life fully formed (55). In one of the novel’s three beginnings, we find out that John Furriskey “was born at the age of twenty-five and entered the world with a memory but without a personal experience to account for it” (10). As Trellis notes of this creative act, he “at last realized his dream of producing a living mammal from an operation involving neither fertilization nor conception” (55), a process extremely similar to the dreaming in Borges’s “Circular Ruins.” Like Borges’s dreamer, Furriskey is not born *ex nihilo*, but rather creates himself at the insistence of his author. One character dreams another character into being, “the dream of every practising psycho-eugenicist the world over” (55). Like Borges’s dreamer, the author does not realize that he himself is the creation of another being.

This process is repeated in the account of a fictional writer of westerns, William Tracy, whose own characters have wandered into Trellis’s novel as friends of the newly-formed Furriskey. This narrative is told by Shanahan, a former character in one of Tracy’s westerns, and is thus thrice-embedded. Here I see *en nuce* a version of the authorship triangle that Hofstadter alludes to. This is reinforced when we realize that Furriskey’s birth is described as “*ab ovo ab initio*” (55), a seemingly redundant statement that one might translate as “from the beginning from the beginning.” This describes both the stuttering, multiple apertures of the novel as well as the autopoietic quality of Furriskey’s creation. O’Brien also pokes fun at scientific

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<sup>14</sup> Kellman’s term bears a striking resemblance to many of the fictions in the present study, and he notes that “[t]his device of a narrative which is in effect a record of its own genesis is a happy fusion of form and content” (1246). Kellman also introduces an interesting play on the Cartesian cogito when he sees self-generating fictions as statements of “scribo, ergo sum” (1248); however, Kellman does not draw any connections between “self-generation” and either autopoiesis or self-organization as it is understood in the sciences. Nevertheless, the parallels are intriguing.

terminology even as he uses it. But a final question arises: Could autoaesthogamy also refer to Flann O'Brien's own emergence in 1939 out of Brian O'Nolan's imagination? Didn't O'Nolan, like Trellis, give birth to a man that did not exist yet came into being fully equipped with the memories of another? This consideration is interesting, and provides even more metafictional possibilities for this particular strange loop.

On the surface, the notion of autoaesthogamy in *At Swim-Two-Birds* might mark the novel as what T. S. Eliot calls an *autotelic* text, as Murphy suggests: "Like all self-referential metafictional texts, its primary focus is its own telling, its own possibility and the ontological limits of the text are purely textual" (15). But is this not also the case with the self as a strange loop? Is the self as Joycean machine and center of narrative gravity, as Damasio's autobiographical self, not essentially a function that must always focus on its own telling, that is, on the conditions of its physical existence and its subjective, mental life? We know, for example, that O'Brien was interested in "the limits of consciousness" (Hopper 152), especially how consciousness interacts with and constructs reality, and for that reason he is an apt author against which to read the strange loop concept. Indeed, the cognitive slant of the novel is made explicit at the outset: "Having placed in my mouth sufficient bread for three minutes' chewing, I withdrew my powers of sensual perception and retired into the privacy of my mind . . . I reflected on the subject of my spare-time literary activities. One beginning and one ending for a book was a thing I did not agree with" (9). As in Calvino's *If On a Winter's Night a Traveler*, the novel's readers are constantly aware that they are indeed reading, engaged in a cognitive activity. It is through narration that O'Brien's characters make sense of the world, but whether they achieve any certitude is always debatable. They are, as we all are, constantly narrating themselves to achieve some approximation of order in their chaotic reality.

### **Strange Loops in *The Third Policeman***

O'Brien's *The Third Policeman* offers a different variety of strange loop, one that bridges the authorship triangles in *At Swim-Two-Birds* with the temporal strange loops that I will discuss in my final chapters. Overall, *The Third Policeman* is a markedly circular novel: The narrator endures various fantastic encounters in his search for the third policeman, only for readers to ultimately realize that he has, in fact, been dead for most (if not all) of the novel—although the narrator may or may not himself be aware of this fact. Condemned to repeat the novel's events over again, the narrator inhabits a reality that is recursive but infinite. In other words, for O'Brien eternity is not so much a linear extension toward infinity as an infinite cycle, one where the deceased narrator must constantly question what is real, which level if any is authentic. This doubt places O'Brien within the idealist philosophical tradition of Berkeley, while also drawing our attention to the insufficient ability of the human mind to comprehend notions such as eternity.

The novel opens with an epigraph from de Selby, a fictional scholar with whom the narrator is obsessed: "Human existence being an hallucination containing in itself the secondary hallucination of day and night (the latter an insanitary condition of the atmosphere due to accretions of black air) it ill becomes any man of sense to be concerned at the illusory approach of the supreme hallucination known as death" (5). Already we are in the realm of pseudoscience, hallucination, and farce. We are also in the realm of scholarly footnotes. Throughout the novel,

the narrator is at work on his “De Selby Index” cataloguing the work of the obscure scholar who, incidentally, plays a major role in O’Brien’s subsequent novel *The Dalkey Archive*.<sup>15</sup>

The novel’s many footnotes provide the most obvious formal diegetic strange loop in the novel. Although Joyce tinkered with footnotes in *Finnegans Wake*, O’Brien takes the technique to a level that prefigures similarly intrusive fictional footnotes in later postmodernist works such as Nabokov’s *Pale Fire* and Mark Z. Danielewski’s *House of Leaves*.<sup>16</sup> These “pseudo-footnotes” both reiterate the nested structures in the novel and “play a vital autocritical function” (Hopper 91). This heightens the text’s self-referentiality, frustrating attempts to deconstruct it because it has in many ways already deconstructed itself. Indeed, as if to taunt critics, at one point the footnotes overtake the primary diegetic level, running for pages until it nearly snuffs out the main narrative. And if we consider the citations within citations, the Chinese boxes formed by warring scholars of de Selby, we are embedded even further into a *mise-en-abyme*. Furthermore, this autocritical function in the text resembles a broader trend in the novel as a whole, as Bakhtin points out: “To a greater or lesser extent, every novel is a dialogized system made up of the images of ‘languages,’ styles and consciousnesses that are concrete and inseparable from language. Language in the novel not only represents, but itself serves as the object of representation. Novelistic discourse is always criticizing itself” (49). According to

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<sup>15</sup> J. J. C. May notes that de Selby resembles the German “der Selbe,” which translates as “the Self” (Hopper 209). There is the possibility that the narrator’s conversations with de Selby are indeed his own meditations, which would wrap the novel’s strange loop even tighter around itself in a network of self-referentiality.

<sup>16</sup> It is worth noting that *House of Leaves* appears frequently in discussions of strange loops, and Hofstadter even appears at one point as a character in the section entitled “What Some Have Thought” (Danielewski 354-69). In Danielewski’s novel, itself heavily indebted to Joyce, Borges, Pynchon, and other authors I discuss here, Hofstadter supplies a fictional interview noting similarities between “Holloway’s Expedition” (an episode in *House of Leaves*) and “Little Harmonic Labyrinth” from *GEB*. I have avoided discussing *House of Leaves* at length in the present study because its relationship with strange loops requires an exegesis of its own. See Shiloh (142-48) for a brief discussion of strange loops in Danielewski’s novel.

Bakhtin, the novel as a form is necessarily self-referential, foregrounding a similar function of language itself. O'Brien's novel reifies this concept.

In part, O'Brien frames his novel as a satire of scholarship, and science specifically. But it is the novel's structure, its infinite regresses and circularities, that force us to ask: In a work overtly positioned as a parody of science, what does the presence of strange loops tell us? In some sense, it is futile to ask serious questions about O'Brien's novels because they are comical in that truly parodic way designed to frustrate attempts to apply anything serious to them. But the playfulness<sup>17</sup> of strange loops helps bring this otherwise elusive novel into the discussion.

Although not as overt as the diegetic levels in *At Swim-Two-Birds*, there are several frame narratives in the novel, and "[t]he primary frame narrative of *The Third Policeman* is a heterocosmic space that exists in opposition to the 'real' world" (Murphy 22). Such questions about reality make up the book's central theme. In many ways, the unnamed narrator is a non-being, the sort of non-self found in Beckett's trilogy. "I was born a long time ago," he tells us as the novel begins, and already uncertainties about time arise (O'Brien, *TP* 7). Appropriately, the narrator is an orphan, emotionally detached, but possibly aestho-autogamous like the characters in *At Swim-Two-Birds*. He is also aware of his status as a non-entity: "'I don't even know my own name,' I answered. This was a very remarkable thing for me to say because the next time I was asked my name I could not answer. I did not know" (21). His anonymity makes him the ideal Borgesian everyone and no one,<sup>18</sup> as if his condition is symptomatic of humanity as a

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<sup>17</sup> Play has been a major critical term in discussions of O'Brien's fiction. See Bohman-Kalaja's *Reading Games*, a comparative study of play in O'Brien, Beckett, and Georges Perec. Bohman-Kalaja calls O'Brien's novels "play-texts" that fulfill the rules of play as laid out by Johan Huizinga in *Homo Ludens* (1938): they are voluntary; not real or ordinary; exist in their own limited time and space; are rule-based; and are not serious. However, given the breadth of this definition, all literature might be taken as play, especially in light of Barthes's emphasis of play. Nevertheless, fleshing out the strange loops in O'Brien's novels not only maintains the playfulness central to them, but also allows us to entertain the serious philosophical possibilities raised by these novels.

<sup>18</sup> Keith Hopper appropriately calls the narrator "Noman."



whole in some way. Soon after in the novel, he repeats this fact: “I did not know my name, did not remember who I was . . . I found I was sure of nothing save my search for the black box . . . I had no name” (32). In many ways, the narrator is Beckett’s Unnamable, unable to name himself because, in part, he does not exist.

However, the novel opens with a straightforward frame narrative set in a realistic possible world. Not until the narrator and his guardian Divney murder old Mathers for his cashbox do events begin to spiral out of control. When the narrator returns to retrieve his loot, he encounters the man he believed he’d killed, seemingly alive yet somehow strange. This moment serves the same purpose as the rabbit hole in *Alice in Wonderland* or the tornado in L. Frank Baum’s *The Wonderful Wizard of Oz*;<sup>19</sup> after the narrator returns to collect the black box, we’re not in Ireland anymore. Already O’Brien’s narrator begins to question reality: “interminable speculations as to the colour and quality of the real eye and as to whether, indeed, it was real at all or merely another dummy with its pinhole on the same plane as the first one so that the real eye, possibly behind thousands of these absurd disguises, gazed out through a barrel of serried peep-holes” (26). He also begins to repeatedly wonder whether the murder he committed “was a bad dream” (27).

Beyond this outermost frame, there are several other levels in the text. First, there are the aforementioned metalevels consisting in the narrator interjecting his footnotes about his research on the fictitious scholar de Selby. Another level is the intermittent conversations between the narrator and his “soul,” or consciousness, which he affectionately calls “Joe.” These digressions offer an interesting parodic take on the mind/body problem, but they also point to the importance of frames in the novel. As Hopper notes, “for a metafictionist like Flann O’Brien in 1940, the

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<sup>19</sup> It is interesting to note that the film version of Baum’s novel was released during the composition of *The Third Policeman*. See Hopper (119).

mirror itself is less important than the frame which contains it” (6). Again, a frame narrative is not necessarily sufficient to qualify as a strange loop; it needs circularity.

The “integral ‘strange loop’ of the text’s circular structure” (Hopper 218) emerges once we realize in the end that the narrator is condemned to relive the events of the novel. This recursion forms the sort of Ouroboros that I pointed out in *Finnegans Wake* and Beckett’s trilogy, a text that forces us back to its beginning. The narrator learns about the three policemen from Mathers and sets out to find them only to end up where he began. In this way, O’Brien’s novel embodies one of Sergeant Pluck’s Five Rules of Wisdom: “Take left turns as much as possible” (63). The journey is always cyclical, even though the narrator (and first-time reader) is unaware of this. En route, the narrator notices that the environment has changed: “My surroundings had a strangeness of a peculiar kind, entirely separate from the mere strangeness of a country where one has never been before” (41). This is the strangeness of *déjà vu*, a sort of alienation of familiarity. It is also the strangeness affiliated with the strange loop.<sup>20</sup> And when he reaches the police station again at the novel’s conclusion, apparently amnesic, the narrator is confronted again with Pluck’s endless question: “Is it about a bicycle?” (206). At the novel’s conclusion, just as we believe answers will be provided, O’Brien refers us back to the beginning of his literary carousel.

As in Kafka’s *Castle*, space is cyclical in *The Third Policeman*, a fact emphasized by de Selby’s meditation on space: “if one leaves any point on the globe, moving and continuing to move in any ‘direction,’ one ultimately reaches the point of departure again” (97). For example, when the narrator returns to Divney’s, he realizes that he has been dead since he went to retrieve Mathers’s black box. But this is where the already strange narrative becomes even stranger: The

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<sup>20</sup> Kenner has noted this strangeness as what O’Brien frequently calls “queerness” (“Fourth” 62). For an in-depth treatment, see Kenner’s “The Fourth Policeman.”

narrator forgets his identity and ends up back at the bizarre police-barrack. As O'Brien wrote in a note to the publisher, "Hell goes round and round. In shape it is circular and by nature it is interminable, repetitive and very nearly unbearable."<sup>21</sup>

This twisted space reproduces the novel's twisted, Carrollian logic. When we meet Mathers's ghost—his identity a fact we find out only later—the murdered man refuses to answer questions straightforwardly, instead resorting to the frustrating spirals of the Liar Paradox. When the narrator asks, "Will you refuse to answer a straight question?" Mathers replies, "I will not" (28). Here, O'Brien is playing with a version of the Liar Paradox, creating a strange loop of questions and answers from which the narrator garners little information.

In its seemingly interminable movement without movement, the narrator's journey also follows Zeno's paradox, as well as Einstein's appropriation of Parmenides and Kant, both of whom argued that time was a product of the mind. O'Brien mocks this vision of space and time even as he deploys it:

From this premise he discounts the reality or truth of any progression or serialism in life, denies that time can pass as such in the accepted sense and attributes to hallucination the commonly experienced sensation of progress as, for instance, in journey from one place to another or even 'living' . . . The illusion of progression he attributes to the inability of the human brain—'as at present developed'—to appreciate the reality of these separate 'rests,' preferring to group many millions of them together and calling the result motion, an entirely indefensible and impossible procedure since even two separate positions cannot obtain

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<sup>21</sup> This note is included at the end of the Flamingo Modern Classic edition (207).

simultaneously of the same body. Thus motion is also an illusion. He mentions that almost any photograph is conclusive proof of his teachings. (*TP* 52-53)

But O'Brien never digresses without some satirical point in mind. The absurdity of Zeno's paradox is for him evidence that thinking outside the realm of everyday experience can lead to nonsense.<sup>22</sup> It discounts the reality of time and space, leading us into dangerously paradoxical territory and infinite regresses.

*The Third Policeman* provides several examples of infinite regresses. The first is the circular narrative itself, which one assumes will continue to include itself within itself eternally like the image on the Quaker Oats Box of the Quaker holding the box depicting himself holding the box ad infinitum.<sup>23</sup> As Keith Hopper notes of this recurring trope in the novel, "This pattern of infinite regress has a structural reflection in the 'strange loop' which turns the novel into an endlessly repeating cycle" (250-51). Other pertinent examples include Officer MacCruiskeen's strange inventions: a spear with an infinitely narrow point, an infinite box containing infinite replications of itself, a magnifying glass that "magnifies to invisibility" (141). These are all symbols of the novel itself as an infinite Chinese-Box.

MacCruiskeen's boxes are the most obvious of these symbols. As he notes, "The one I am making now is nearly as small as nothing" (*TP* 76), and each box is a perfect replica of both the one that contains it and the one it contains. Indeed, these boxes mirror the somewhat absurd Atomic Theory proposed by Pluck: "Everything is composed of small particles of itself and they are flying around in concentric circles and arcs and segments and innumerable other geometrical figures too numerous to mention collectively, never standing still or resting but spinning away

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<sup>22</sup> Like *AS*, *TP* has been called a nonsense novel by critics. See Bohman-Kalaja.

<sup>23</sup> Aldous Huxley specifically addresses this image in *Point Counter Point*, and it is interesting that O'Brien cites Huxley among the authors in the narrator's library in *AS*.

and darting hither and thither and back again, all the time on the go. These diminutive gentlemen are called atoms” (86). There is an infinite regress in the very material construction of the novel’s fictional universe. It is, however, a patently absurd interpretation of atomic theory, especially when Pluck argues that a man staying too long in contact with his bicycle begins exchanging atoms with it until he becomes part bicycle himself (50).

These circular, spatial infinite regresses are also reflections of temporal ones. The narrator’s is “an eternally recurring journey, which resembles life but in which the laws of physics, temporality, and spatiality are repeatedly broken” (Murphy 16). Throughout the novel, time is markedly nonlinear. As Pluck states, “This is not today, this is yesterday” (63), and as in Kafka’s *The Castle* we are never quite certain when we are. Time in the novel is constructed like MacCruiskeen’s Chinese boxes, or like an infinite film that contains itself: “Like an infinite recession of Chinese boxes, the self-begetting novel begins again where it ends” (Kellman 1245). As Hopper notes, this is both an intertextual conversation with Zeno and Lewis Carroll, and version of time proposed by J. W. Dunne (254-55).<sup>24</sup> In the serialism proposed by Dunne, moments are imbedded in other moments and no moment has primacy over any other (163). It is a version of Einsteinian simultaneity, or a block universe.<sup>25</sup>

This sort of recursive time is typified by the various citations of de Selby. As MacCruiskeen reminds narrator, “several of the more delicate speculations of de Selby, notably his investigation of the nature of time and eternity by a system of mirrors” (66), a man sees in his reflection a younger man due to the limited speed of light. This is certainly a reaction by

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<sup>24</sup> Dunne was extensively discussed by Borges. See “Time and J. W. Dunne” in *Non-Fiction* (217-19).

<sup>25</sup> Block universes and their relationship to strange loops is the subject of Chapter Seven.

O'Brien to the often mind-boggling theories about time and space posited by Einstein<sup>26</sup> earlier in the century. Indeed, in a parody of Einstein, de Selby has an absurd experiment where, using a chain of mirrors, a man can see himself as a boy because light is always lagging behind the present moment (67). This might be written off as farce, but is not O'Brien also fascinated with mirrors, both reflexivity and the mirror of fiction? Of course O'Brien understands, as do many postmodernist authors after him, that the realist mirror of Shakespeare and Stendhal is a flawed one, that fiction is more akin to Joyce's "cracked looking-glass" (*Ulysses* 7) than to the Romantic notion of the mirror and the lamp explored by M. H. Abrams. But the ultimate frame questioned here is time because the narrator, prior to his death, was "steeply inclined to think in terms of chronological sequence, serried planes, Riemann integral, calibration, and compilation. His language—grounded in mathematics and physics—has geared him for causal, derivative processes which seek to stabilize by measuring and directing forces encountered" (Shea 123). At the novel's "twist," the fictional world does not operate under such precise laws, and time itself has been called into question.

Critics seem to read de Selby's treatment of time as a parody of various Zenoid interpretations of spacetime, particularly Einstein (Murphy 18). But doesn't the absurdity of Einstein's very real theory lend its possibilities to the author of fiction? Is not the fictional author one who sees beyond the commonsense means of perception into the truer, if more absurd, nature of things? O'Brien's game with time is perhaps testimony to his realization that,

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<sup>26</sup> O'Brien's literary response to Einstein has been somewhat underappreciated by scholars. "Beyond the Zone of the Middle Dimensions: A Relativistic Reading of *The Third Policeman*" by Charles Kemnitz sees Einsteinian theory guiding *TP*, but Hopper disagrees, arguing that O'Brien had only a layman's familiarity with the work of the famous scientist. Nevertheless, Hopper notes Myles na gCopaleen's "great fascination with the iconic figure of Einstein" (196) but Hopper sees Kemnitz's reading as "absolutist" (Hopper 197) for not considering that O'Brien parodies Einstein. Certainly a more appropriate reading lies somewhere between Kemnitz's scientific and Hopper's postmodernist ones.

at heart, reality is not as it is perceived, but rather more like the wacky world of physics, the very world that underlies the mind.

This leads us to the novel's argument with Descartes. *The Third Policeman*, like Beckett's trilogy and his later novel *Watt*, is "a serious and sustained critique of modern, secular Cartesianism" (Hopper 227). Indeed, the mind-body problem is in many ways central to *The Third Policeman*. Hopper calls the narrator an "arch-materialist" (261), and the tension between dualism and materialistic monism is often explicit in the novel. For example, when the narrator first meets Sergeant Pluck, their conversation suggests a concern with the Cartesian *cogito*. Pluck asks, "What is your pronoun?" to which the narrator responds, "I have no pronoun" (58). Here O'Brien draws our attention to the narrator's lack of an "I" even though the entire narrative is told in the first person. But Pluck goes further, asking the narrator "'What is your cog?'" (58). The narrator understands neither what this is nor, in Pluck's follow-up question, what a "surnoun" is, replying "I have not got that either" (58). This might be a comment that the narrator is essentially a non-entity, an absent center as I discussed in Kafka and Beckett. But it also points to the admission by the narrator that he does not possess a cogito. In a certain sense, this admission confronts Descartes by positing the cogito as a fiction.

The most explicit discussion of Descartes appears when the narrator begins to question the nature of his soul, Joe:

Here I had a strange idea not unworthy of de Selby. Why was Joe so disturbed at the suggestion that he had a body? What if he *had* a body? A body with another body inside it in turn, thousands of such bodies within each other like the skins of an onion, receding to some unimaginable ultimum? Was I in turn merely a link in a vast sequence of imponderable beings, the world I knew merely the interior of

the being whose inner voice I myself was? Who or what was the core and what monster in what world was the final uncontained colossus? God? Nothing? Was I receiving these wild thoughts from Lower Down or were they brewing newly in me to be transmitted Higher Up? (*TP* 123)

Answering the question of whether the process of mind/body interaction is top-down or bottom-up, Joe says it's top down. However, even he is not certain because “[h]*umanity is an ever-widening spiral*” (123, emphasis in original). The “body within another body inside it in turn” (118) is both a parody of Dunne’s nested time-structure and Descartes’s homunculus. As Dennett points out, the notion that the Cartesian theater is somehow controlled by some smaller version of itself leads to a vicious infinite regress that renders it logically untenable. O’Brien likewise turns this type of *mise-en-abyme* into an elaborate gag.

### **Strange Loops and *The Dalkey Archive***

O’Brien develops many ideas from *The Third Policeman* in *The Dalkey Archive*, a book that was published largely from the former’s leftovers. O’Brien intended the novel to be a “farrago of Geophysics, Einsteinian energy, theology, hagiography and booze” (qtd. in Dotterer 55). Because critics generally consider it to be “essentially a pilfered pastiche of disparate thematic elements from *The Third Policeman*” (Hopper 44), it has suffered from a general critical neglect. Yet there are several notions I would like to develop that I mentioned only tangentially in my discussion of *The Third Policeman*.

The novel follows Mick Shaughnessy and his friend Hackett as they encounter a bizarre scientist ironically named De Selby<sup>27</sup> who describes his fantastic theories about time, takes them

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<sup>27</sup> I should note that O’Brien capitalizes the “d” in “De Selby” in *DA* whereas he does not in *TP*.



to meet St. Augustine in an underwater cave, and reveals to them his plans to destroy the world with a chemical known as DMP (not to be confused, O'Brien's narrator insists, with the Dublin Metropolitan Police). What ensues is Mick's attempt to foil De Selby's plan by involving the local policeman, a priest, and James Joyce, whom Mick discovers is pouring pints in Skerries, a town outside of Dublin. A pastiche of dialogues, armageddon plots, and pub talk, the novel's overall conceit is farcical, an attempt to juxtapose the everyday with the mysterious, the scientific with the theological, and the storyworld with its status as a text.

The main street in Dalkey is the Vico Road. But immediately after introducing this fact, the narrator asks, "Is there to be recalled in this magnificence a certain philosopher's pattern of man's lot on earth—thesis, antithesis, synthesis, chaos? Hardly" (7). The cyclical time in *Third Policeman* might also suggest the work of Vico, who posited a cyclical paradigm for history. In *The Dalkey Archive*, O'Brien confronts this connection directly. Although O'Brien is also "dancing" with Joyce's use of Viconian cycles, he makes it a point to distance himself from his precursor.

The scientist archetype in O'Brien also comes clearer into view. The De Selby who had in *The Third Policeman* occupied merely the musings of that novel's narrator, confined to footnotes, becomes in *The Dalkey Archive* a central character. As in *The Third Policeman*, De Selby is clearly a comical character, "a theologian and a physicist, sciences which embrace many others such as eschatology and astrognosy" (12), who makes whiskey in a week by suspending time and converses with spirits (both whiskey and apparitions). De Selby serves a dual function in O'Brien's novel, both as a straw man for the often overblown cosmic conclusions of theoretical science and as a sounding board for O'Brien's own absurdist ideas.

The conflict between De Selby and the rising prominence of Einsteinian relativity forms a particularly ambiguous tension in the novel. As the scientist admits, “The postulates of the Relativity nonsense of Einstein are mendacious, not to say bogus. He tried to say that time and space has no real existence separately but were to be apprehended only in unison” (14). Yet De Selby’s own postulates are even more bizarre than any of Einstein’s, although his conclusions are quite similar. One is reminded of the argument between Einstein and philosopher Henri Bergson, the two men never reaching agreement despite their mutual belief in time’s illusory nature.

De Selby is also the mouthpiece of O’Brien’s own interest in the coincidence of opposites, a return again to Nicolas of Cusa and Giordano Bruno, both of whose ideas appeared prominently in Joyce. Like Joyce, O’Brien distrusts binary thinking. “Divergences, incompatibilities, irreconcilables are everywhere,” De Selby exclaims, before lamenting, “Poor Descartes!” (15). Rather than Descartes’s ordered binaries, O’Brien provides the paradoxical unities of contraries. De Selby then takes a swipe at Descartes’s style: “He might as well have written *inepsias scripsi ergo sum*” (15). This translates as “I write ineptly, therefore I am” (my translation), a joke by O’Brien at the Enlightenment philosopher’s hyper-rationalistic vision of the universe.

O’Brien’s satire of Descartes extends to the New Physics that dominated twentieth-century science. De Selby’s theory of time in the novel is a reiteration of the same theory expressed in footnotes throughout *The Third Policeman*. As De Selby explains,

*time* is a plenum . . . One might describe a plenum as a phenomenon or existence full of itself but inert. Obviously space does not satisfy such a condition. But time is a plenum, immobile, immutable, ineluctable, irrevocable, a condition of

absolute stasis. Time does not pass. Change and movement may occur within time. (16-17)

On a satirical level, De Selby's comment might be a description of himself (and therefore of all scientists and/or theologians) as "full of itself but inert," given all his high philosophizing that results in nothing. As De Selby remarks later in the conversation, "It would be impossible for me . . . to give you gentleman, who have no scientific training, even a glimpse into my studies and achievements in pneumatic chemistry" (Dalkey 20). Again, the arrogance of the scientist becomes a target for O'Brien, whose pen is always poised to deflate those who've exaggerated their self-importance or the infallibility of their ideas. In this sense, O'Brien situates science as yet another dogmatic system like religion, which he also targets throughout the novel.

De Selby's theory about time also points to the illusory nature of time, explicated by Parmenides and Zeno, and subsequently elaborated by Kant. In this sense, O'Brien is making a serious comment on the nature of time, even though De Selby accidentally stumbled upon his findings about time while trying "[t]o destroy the world" (18). This type of time, which allows for time-travel and other strange possibilities, is the focus of my discussion of temporal strange loops in Chapter Seven. Here let me simply state that time in De Selby's system results in temporal strange loops.

O'Brien's mixture of science and religion also contributes to the novel as comedy, another instance of juxtaposing opposites to elicit laughter. When De Selby leads Mick and Hackett to an underwater grotto where he summons St. Augustine, the novel takes a diegetic turn fitting of Lewis Carroll. Like Alice's many encounters, this meeting with the Church father is both farcical and philosophical. For example, Augustine's "Dublin accent was unmistakable . . . [and his] extraordinary utterance can here be distinguished only typographically [with italics]"

(34). By pointing to the typeface, O'Brien reminds us that we are reading. But he also prepares us for a catechistic dialogue between De Selby and a cantankerous Augustine. Although they wander through discussions of Apostles and patriarchs, Augustine ends the conversation with an interesting meditation on his temporal situation: "*I have no tomorrow. I am. I have only nowness.*" (43). This reiterates De Selby's own theory about ever-present time.

*The Dalkey Archive* is, like its predecessors, a fiercely intertextual novel, and these discussions of time explicitly refer to *The Third Policeman*, of which it was once a part. Similarly, the "comic little police station in charge of Sergeant Fottrell" (47) invokes the strange police station in *Third Policeman*—and yet again, a bicycle is involved. Here, O'Brien also foreshadows his partially ridiculous, partially cybernetic theory of Mollycules through Sergeant Fottrell: "But there are dangers of a mental nature inherent in the bicycle and that story I will relate to you coherently upon another day" (49). Although O'Brien does revisit this theory later in the novel, one might also read this as a reference to the as-then-unpublished *Third Policeman*, even then sitting in O'Brien's drawer.

As Hopper contends, O'Brien's Mollycule Theory is "metafictionally a metaphor for 'transference,' i.e. intertextuality" (241). In addition to this metaphor, it is also a proto-cybernetic meditation on information exchange, coupled with a hilarious take on the monism one finds in pre-Socratics such as Democritus and the Atomists. In Fottrell's theory, atoms can be exchanged between man and bicycle until the result is a being that is posthuman (80). As Fottrell recalls of one such victim, "I remember an old man. He was harmless enough but he had the people driven loopy by the queer way he moved and walked" (90). In addition to the reference to "loopiness" as akin to madness, there is also a cybernetic principle at work here, the

“bicyclosis” (100) being a metaphor for the exchange of information between body and environment, albeit a feedback loop taken to its extreme.

Similarly, O’Brien constructs a quirky information theory where even sheep are conceptualized as “little bits of sheepness whirling around doing intricate convulsions inside the baste” (81). This is both a whimsical game with Atomism (and its modern successors à la Niels Bohr and quantum theory) and a meditation on textuality. O’Brien is also poking fun at the supposed incontrovertible truths of science. Sergeant Fottrell, who is himself a “poor man’s De Selby” (90), calls it “a very intricate theorem and can be worked out with algebra” (81), calling to mind Beckett’s experiments with irrational mathematics. But O’Brien goes a step further and engages ideas from the new physics that prefigure subsequent cybernetic theory.

There is also a hint perhaps of a proto-memetics here. Later in the novel during the meeting between De Selby and Father Cobble, Mick tries to compare the dissemination of DMP to the spread of religion to incite an argument; but Father Cobble ends up agreeing, even offering Jesuit physics facilities to test his theories. Confused by this apparent reconciliation between what he sees as mutually exclusive ways of seeing the world, Mick stresses the difference between “disseminating a thing, a commodity” and “disseminating an idea, a faith” (113). In part, O’Brien is parodying religion, which peddles its ideas as commodities in a literal way. However, O’Brien might also be suggesting that atoms and bits, both fundamental units of information, could after all behave in similar ways—a conclusion drawn by many early cyberneticists. This cognitive connection is underscored when, later in the novel, Joyce (the character) responds to Mick’s explanation of the theory: “Psychical research or cycle research. I prefer the psychical” (184). This plays on “cycle” again, hinting perhaps at O’Brien’s parodic treatment of psychology and Joyce’s own cognitive fiction.

The most overt intertextual reference in *The Dalkey Archive* is the inclusion of James Joyce as a character. Through pub gossip, Mick discovers that Joyce is not dead, that he “put the story out himself” about his own death (98) and is now a bartender in Skerries. As I mentioned earlier, O’Brien’s relationship with Joyce is ambivalent, but it is worth discussing here in more detail.<sup>28</sup> On the one hand, O’Brien “argued that Joyce had been inconsiderate enough to publish *Finnegans Wake*” the same year O’Brien’s *At Swim-Two-Birds* debuted (Dotterer 55). O’Brien also noted, “If I hear that word ‘Joyce’ again, I will surely froth at the gob” (qtd. in Cronin 216). Yet he also opined that Joyce should have received a Nobel prize. Clearly, O’Brien struggled with Joyce’s magisterial literary presence, particularly embittered about his fellow Irishman’s expatriation, but could never quite shed off his admiration for his countryman.<sup>29</sup>

Some critics such as Ronald Dotterer have read O’Brien’s last novel as “the explicit outlet, and a full-scale expurgation of this obsession, for Brian O’Nolan’s own understanding of Joyce’s influence on his own literary life” (54). Dotterer sees a slew of references to Joyce’s work in *The Dalkey Archive*, from the Vico Road that ends and begins *Finnegans Wake* to Sergeant Fottrell’s name, which Dotterer argues is borrowed from the Cyclops episode in *Ulysses*. Although Dotterer does suggest that “[i]n all of Brian O’Nolan’s uses of James Joyce there remains a recurrent theme for Flann O’Brien’s fiction: the heretic’s sense of doctrine destroyed in order to give rise to new, more sound belief” (63), Lucas Harriman sees Dotterer perpetuating a common mistake among Joyce critics by exaggerating Joyce’s influence on

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<sup>28</sup> See Dotterer and Harriman for two recent, thorough, and somewhat conflicting assessments of O’Brien’s artistic debt to Joyce.

<sup>29</sup> O’Nolan was a fiercely proud Dubliner, and his popularity in his hometown for many years exceeded Joyce’s, whom many Dubliners likewise saw as betraying his Irishness.

O'Brien. Instead, Harriman sees O'Brien confronting Joyce even as he co-opts his material. Harriman is likely correct when he argues that Joyceans have seen Joyce everywhere in O'Brien—perhaps to the detriment of his own legacy.<sup>30</sup>

In many ways, Mick serves as O'Brien's mouthpiece in the novel. As Mick notes of his familiarity with Joyce's work, "I've read some of the stupid books written *about* Joyce and his work, mostly by Americans" (103-04). This comment about the growing critical corpus surrounding Joyce's work betrays O'Brien's own opinion of Joyce's legacy. Dr. Crewett, a bar patron who is reluctant to reveal Joyce's whereabouts, asks Mick why he's so interested, to which Mick replies: "I happen to know somebody who can write very well. Stylishly" (104). This comment refers to Mick's girl Mary, a burgeoning writer, but might also allude to Flann himself.

O'Brien's intertextual game with Joyce leads to him creating an entirely fictional Joyce, one who claims Sylvia Beach (the real Joyce's publisher) had written *Ulysses* and who claims to be unaware that *Finnegans Wake* was even published. In fact, O'Brien's Joyce only acknowledges *Dubliners* and claims that he co-authored it with Oliver St. John Gogarty, the real Joyce's one-time friend and basis for Buck Mulligan in *Ulysses*. Even more outrageous is Joyce's desire to join the Jesuits, for whom he's been writing propaganda.

Like Harriman, I read O'Brien's parodic treatment of Joyce as both revenge narrative and respectful homage. O'Brien depicts Joyce as both a writer of consequence and a non-entity. For example, when Mick wonders if the De Selby threat can "be resolved by bringing together De Selby and Joyce and inducing both to devote their considerable brains in consultation to some recondite, involuted and incomprehensible literary project, ending in publication of a book which

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<sup>30</sup> An example of this is the critical commonplace that locates O'Brien's lyricism in Joyce's influence; however, this is more likely the product of O'Brien's Gaelic linguistic heritage.

would be commonly ignored and thus be no menace to universal sanity?" (118). I see here an intertextual, critical reference to Joyce's own sprawling works, as well as a jab at Joyce's literary celebrity. In this sense, O'Brien is ridiculing the attention received by Joyce's works, works that in some ways say nothing even in the act of saying everything. But might O'Brien also be insinuating that any union of science and literature might either produce a cataclysm or go entirely unnoticed? Is he perhaps wondering whether a Third Culture is even possible?

This discourse between O'Brien (via Mick) and Joyce constitutes the last third of the novel, and the supreme irony in the novel is its very (anti)climax: Instead of a harrowing adventure to save the world, we are left with the protagonist pestering Joyce about his literary work (most of which he denies even writing). Before undertaking his plan to dispose of De Selby's deadly chemical weapon, Mick notes, "At last action was to take the place of dialogue and dissertation" (152). Yet nothing happens compared with the fantastic sequences that open the novel. Even with the threat of poisonous DMP looming in the background, De Selby's scheme is undone when Mick and Fottrell break into the scientist's house, steal the canister containing the reputedly deadly chemical, and stow it in the Bank of Ireland. Although they deal with the threat of "this diabolical miracle of science" (154), ultimately it's discovered that De Selby repented and moved to London. There was, we find out, probably no real threat at all.

The novel ends with an absurd meditation: "What had happened, after all? Nothing much" (203). This echoes Mick's comment earlier in the novel when he notes of his encounters with De Selby that "Nothing whatever had happened, he reminded himself, but talk" (61). There is the spirit of Zeno here, the father of the absurd, but O'Brien also pokes fun at himself. O'Brien's novel is ultimately nothing but "talk," an exercise in literary procrastination.



But O'Brien knows that neither he nor his subject matter should be taken at its word. At the end of the novel, Mick's girlfriend Mary says, "I'm fed up with writers who put a fictional gloss over their own squabbles and troubles. It's a form of conceit, and it's usually very tedious" (203). This comment is both a jab at Joyce and a self-deprecating comment about Flann O'Brien himself. He cannot leave us on a serious or strictly realist note lest the comedy in the novel deteriorate entirely. As the narrator notes, "An ill-timed laugh can wreck an important thing" (165), and O'Brien never risks letting readers take him too seriously—or themselves as readers and, perhaps, as critics. In addition, as in *At Swim-Two-Birds*, O'Brien cannot allow his readers to forget that they are reading. The result is, as in Calvino's fictions, an estranging effect, one that disrupts our normal frames about reality and therefore forces us to question what we think we know about it.

Let us briefly consider the results of these strange loops. First, they challenge certain assumptions inherent in a philosophico-scientific modernism, namely the validity of linear relationships. In this sense, Booker sees O'Brien firmly within the Nietzschean tradition of questioning epistemological systems, aligning him firmly with the postmodernists. I see some problems with this given my antipathy towards the more extreme postmodernisms, namely deconstruction, and I arguing to some extent that Booker, like many postmodernist critics, has commandeered O'Brien in an attempt to close the text through its very opening. That is, by asserting that O'Brien's text is indeterminate and anti-rationalist, Booker is in fact determining the text, inhibiting any attempt to ascertain whether or not (and the degree to which) O'Brien endorsed any of the scientific ideas that he parodies in his earlier novels and again in *The Dalkey Archive*.

And yet, as Neil Murphy notes, O'Brien's oeuvre is "a perpetual assault against all forms of human knowledge, usually by using various parodic modes within polyphonic texts that repeatedly draw attention to the obvious fact of their own construction and, by inference, to the fact of the construction of all texts, all knowledge" (9). In this sense, Murphy sees O'Brien as closer to Beckett than to Joyce: "both Beckett and O'Brien's collective energies can be described as radical rejections of existing narratives frames within highly innovative fictional forms . . . their embracing of self-reflexivity, *mise-en-abyme*, and polyphonic intertexts all indicate a desire to unmake, or remake, existing narratives" (37). The problem with these assertions is that, while O'Brien was certainly an iconoclast, he is making some serious comments on the nature of the physical—and therefore of the cognitive—universe. He is also making a comment about art, twisting the old adage that the highest form of art is concealing art into "arse est celare artem," playing with "ars" (art) and "arse" (ass). It is precisely this sort of irreverence that O'Brien brings to otherwise sullen ideas from the sciences.

As popular wisdom has it, there is a kernel of truth in every joke. As if referring to the novel of which he is a part, the narrator in *The Third Policeman* asks, "Is this all a joke for entertainment purposes?" (101). The "this" to which he refers might be the novel, life, or reality itself, which very well may be a cosmic prank. Nevertheless, what O'Brien's novels deliver is a series of questions about narrative, time, and space that force us to look at the world through different lenses, some of which embrace scientific knowledge, others of which reject it. What one must keep in mind is that this interaction of science and its antitheses leads, through a dialectical process, to a strengthening of our understanding of the world, whether or not it does so by means of an elaborate joke.

“Whether one is a scientific genius or a mad policeman with aspirations to supreme knowledge,” Neil Murphy argues, “it matters little because empiricism, epistemological systems, our comprehension of time and space, all produce nothing more than ever-increasing layers of farce” (21). O’Brien certainly indulges in nonsense,<sup>31</sup> but whether he does this with total disregard for scientific ideas is debatable. Again, farce is often an admission that there is some truth to the claim which makes it worth parodying. Furthermore, sometimes it is the exclusive role of fiction to push the discoveries of science beyond their original formulations, to remove them from their contexts, in order to test their possibilities without the confines of rigid logical systems. In this way, fiction *strangifies* so that we might grapple with these ideas in a more humanistic mode. In doing so, O’Brien’s fiction uses various strange loops to defamiliarize our beliefs about the world. The result is comedy that is both hilariously absurd and philosophically insightful, aligning O’Brien with Democritus, the laughing philosopher. Another author to engage scientific ideas in this way is Kurt Vonnegut, whose literary experiments with temporal strange loops constitute the focus of my next chapter.<sup>32</sup>

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<sup>31</sup> *TP* has been called a nonsense novel by Wim Triggles in “Ireland in Wonderland: *The Third Policeman* as a Nonsense Novel.”

<sup>32</sup> A complete comparative study of O’Brien and Vonnegut has not yet been undertaken, but given their respective statuses as humorists, such a project would likely be fruitful. It is interesting to note that De Selby’s plot to destroy the world with DMP resembles Vonnegut’s conceit in *Cat’s Cradle*, where the world is undone by the absurd substance Ice Nine.

## CHAPTER SEVEN

“THIS CAN BE USEFUL FOR ROCKETRY”:

### TEMPORAL STRANGE LOOPS IN VONNEGUT’S *SIRENS OF TITAN* AND *SLAUGHTERHOUSE-FIVE*

*Ends and beginnings there are no such things*

—Robert Frost

Until now, I have suggested that strange loops generally fit into spatial, logical, or metafictional categories, but I have made several insinuations that they describe a certain temporal aspect as well. Time, like embodiment and narrativity, is crucial to understanding both how consciousness unfolds and how literary strange loops depict this emergence; after all, the self can only be understood in relation to time if it is, as Hofstadter suggests, a dynamic, autopoietic process. Furthermore, if “literature is a time-art” (Frank 799), any discussion of literary strange loops would be remiss to ignore this aspect. I will offer a caveat at the outset, however: Hofstadter does not explicitly discuss time in relation to strange loops, and therefore this chapter is the first point where I am adapting his idea into territory where it has not previously been applied. Consequently, I will be delving into more speculative territory that is less rooted in cognitive literary studies proper but nevertheless concerned with consciousness. In order to do so, I will first discuss spatiotemporal strange loops more broadly, particularly their relationship with Gödel’s corollary to Einsteinian relativity, before moving on to investigate examples of such loops in Vonnegut’s fiction.

The representation of spatiotemporal reality in the novel has undergone major shifts since the genre's rise to greater prominence in the nineteenth century, with the linear realism of Fielding and Balzac replaced with the nonlinearity one associates with Sterne or, earlier still, Cervantes. Joyce's oeuvre provides us with an early example of this nonlinear scheme as it evolved in the twentieth-century, first in *Ulysses* and subsequently in *Finnegans Wake*.<sup>1</sup> I have already discussed cyclical spatiality in both novels, and I have suggested that they likewise depict time cyclically: Characters live through time-events that are iterations of previous moments and places, circling the novels' cityscapes both spatially and temporally. Although less nonlinear than the *Wake*, *Ulysses* does complicate absolute temporal linearity: "while Bloom's *life* may unfold linearly through time, other aspects of his life emerge in non-linear fashion through his memories and desires, ceaselessly looping back to related ideas or incidents, creating a layered and colorful canvas" (Mackey 120). On one level, these nonlinearities are examples of conventionally nonlinear techniques such as flashback and foresight. On another level, they suggest that the novel is tinkering with the conventional arrow of time. As Leopold Bloom states in the "Circe" chapter, "But tomorrow is a new day will be. Past was is today. What now is will then morrow as now we be past yester" (420). Time's linear and nonlinear levels conflate, allowing us to experience consciousness both diachronically and synchronically as a strange loop. These temporal loops in the novel complicate any strictly linear sense of time, although the overall framework of *Ulysses* remains chronologically linear.

We undergo a similar but much more extreme experience reading *Finnegans Wake*, most notably via the novel's macrostructure as it begins midway through its final sentence. As I mentioned in Chapter One, here is the historical cyclicity of Vico's *New Science*, but also a

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<sup>1</sup> Wyndham Lewis in *Time and Western Man* attacks *Ulysses* as an expression of an antiquated philosophy of time.

complex dialectic between *kairos* and *kronos*, between the subjective time of experience and the objective time of measurement. This repetition is combined with a sophisticated and fractured temporality, one that likely finds its basis in Einsteinian relativity, as Thomas Jackson Rice and others suggest.<sup>2</sup> Time in this scientific system, like much in Joyce, is a loop rather than a cycle, constantly feeding itself into itself infinitely. Hence Joyce's novelistic universe is, to co-opt the title of physicist Michael Lockwood's book, a labyrinth of time.

Of course, Joyce is not alone. To avoid belaboring the point, let me merely reiterate briefly that similar strange temporalities appear in *The Castle*, where Kafka tinkers with time, bending it as regularly as he bends space. Beckett's trilogy similarly contorts time such that we never know exactly when we are. Likewise, critics have frequently noted similar constructions of time in Borges. Indeed, the structure of the Library of Babel resembles the temporal structure discussed by Borges in his nonfiction,<sup>3</sup> one first expounded by J. W. Dunne in his *An Experiment with Time*. For Dunne and Borges, time is an infinite hierarchy of "static time dimensions" like a Chinese box (to use Dunne's metaphor), presided over by the dynamic "absolute time" of conscious observers (Lockwood 16). As I mentioned in my discussion of Calvino, this Chinese box metaphor is a strange loop and it also serves as a convenient metaphor for time in these novels. Lastly, Flann O'Brien's *Third Policeman* depicts time as an infinite circularity, yet another strange loop haunting its pages. It seems, on some level, that literary strange loops often imply nonlinear time.

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<sup>2</sup> See *Joyce, Chaos, and Complexity* (1997). Rice also draws similar parallels between Joyce and complexity science, as well as Einstein. I believe Joyce's debt to Einstein has not received enough attention, but there have been several recent studies filling in this gap in addition to Rice. See Jeffrey S. Drouin's *The Einstein of English Fiction: James Joyce, the New Physics, and Modernist Print Culture* (2011), as well as Thiher's *Fiction Refracts Science: Modernist Writers from Proust to Borges* (2005).

<sup>3</sup> Most explicitly in "Time and J.W. Dunne" and "A New Refutation of Time," both published in his *Selected Non-Fictions*. Dunne's work had a remarkable effect on literary representations of temporality. It focuses primarily on temporality and dreams, as well as serialism, an ancient philosophical notion advanced by Parmenides and Zeno that Einstein's theories seemed to corroborate.

At first glance, one might ask what this has to do with consciousness. On one hand, it reflects Kant's notion of time as a purely cognitive concept.<sup>4</sup> On the other hand, locating time in the mind involves what Kenneth Burke calls the "noblest synecdoche": "where the individual is treated as a replica of the universe, and vice versa, we have the ideal synecdoche, since microcosm is related to macrocosm as part to whole, and either the whole can represent the part or the part can represent the whole" (*Grammar* 508). Conceiving time as such reflects the tendency of strange loops to behave like holons, systems that include themselves within themselves, where part is whole, where whole is part.<sup>5</sup>

On a larger scale, a vindication of this Kantian (or more properly, neo-Kantian) view of time as a subjective category emerged with Einsteinian relativity. Einstein effectively dismantles any notion of absolute, objective time. Linear time is untenable because "Einstein tells us that Copernicus and Galileo were, after all, not any righter than Ptolemy and the Pope" (Hofstadter, *Metamagical* 108). Newtonian time as an absolute metric becomes obsolete in a universe where clocks run slower at higher velocities, gravity slackens time, and all events occur in a simultaneity. As Rudy Rucker suggests, "on the basis of modern physical theory we have every reason to think of the passage of time as an illusion. Past, present, and future all exist together in space-time" (10). Such violations of commonsense perpetrated by Einstein's ideas led thinkers such as Henri Bergson to deny them outright.<sup>6</sup> Nevertheless, it is important to remember that "It may well be that cultural habits like imagining time as flowing forward, or perceiving other

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<sup>4</sup> I use "concept" both in the specific Kantian sense and in the cognitivist sense adapted from it to mean a frame generated by the mind to partition reality into manageable categories of information.

<sup>5</sup> Compare with Bergson's summary of Leibniz's view that every monad (a category which includes minds) "is the mirror of the universe" (*Matter and Memory* 38).

<sup>6</sup> Bergson and Einstein met once to discuss their philosophies of time and notoriously could find not point of agreement between themselves.

human bodies as persons, run so deep in us that we could not possibly think ourselves outside them” (Eagleton, *After Theory* 59).

On a literary level, this temporal schema fits snugly with Bakhtin’s notion of the *chronotope*, an idea directly adapted from Einsteinian notions of spacetime and heavily indebted to Kant. In “Forms of Time and of the Chronotope in the Novel,” Bakhtin defines the chronotope as “the intrinsic connectedness of temporal and spatial relationships that are artistically expressed in literature” (84). Indeed, the depictions of time in the novel, Bakhtin argues, are inseparable from their depictions of space; hence the literal translation of “chronotope” as “time-space,” a playful inversion of the Minkowskian spacetime made famous by Einstein.<sup>7</sup> Bakhtin thus strangifies relativity to describe a semiotic phenomenon. As Bakhtin notes, “The chronotope is the place where the knots of narrative are tied and untied” (250). This knot metaphor suggests a similar knottedness in temporal strange loops, a symptom of how consciousness construes time nonlinearly.

The cognitive research on time is diverse, but one observation has become exceedingly clear as it refines its suppositions: time is, as Kant posited, largely a cognitive rather than an ontological category. Empirical evidence suggests that, in addition to the various physical anomalies observed in relativistic experiments, the perception of time is altered by variables such as stress, age, and spatial relationships. Consequently, time seems to pass slowly during childhood the speeds up exponentially as we age. Likewise, in life-threatening situations, time slows down. The perception of time even varies across cultures, as Robert Levine notably contends in *A Geography of Time* (1997). These anomalies indicate that time is mediated by

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<sup>7</sup> Bakhtin explicitly notes his debt to both Kant and Einstein in his essay (84-85).



cognitive factors rather than exerted by reality uniformly across individual consciousnesses.<sup>8</sup>

While the precise causes of discrepancies between measured and perceived lapses in time are by no means certain, what the research undoubtedly implies is that the mind constructs, and is constructed by, its experience in time. This is partially because, as the kappa and tau effects suggest,<sup>9</sup> we not only speak about time spatially, but actually conceive of it as such. As George Lakoff and Mark Johnson argue, temporal metaphors are always already spatial as a result of our embodied consciousness (14-21). This is particularly the result of how we construct and retrieve memories.

Memory is the primary means by which consciousness understands itself as temporal, and it is memory that lends a sense of coherent unity to our sense of “I.” As John Taylor notes, “consciousness involves memory structures or representations of the past of episodic, autobiographic, semantic, preprocessing, and emotional character . . . consciousness arises from the intermingling of recorded past experiences with incoming present activity” (37). Indeed, in *An Essay Concerning Human Understanding* (1690), Locke argues that consciousness is nothing but episodic memory. Locke’s position is, of course, reductionist to the extreme: Memory certainly plays a central role in consciousness, but it is just one component of a more complex system. As Antonio Damasio notes, the memory-based autobiographical self is but one of many self-functions in the mind. Of course, comprehensive treatment of nonlinearity and memory requires a study in its own right, but I will simply say here that memory has a tendency to blur the distinction between past and present in the sheer act of remembering. Hence, consciousness occupies a confluence between the remembered past and the experienced present.

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<sup>8</sup> For an excellent treatment of both historical and contemporary psychological perspectives on time, see *Psychology of Time* (2008), edited by Simon Grondin. See also Eagleman.

<sup>9</sup> See Casasanta and Boroditsky.

In addition to these general relationships, autopoiesis itself implies a temporal element. As Ira Livingston notes, “Part of the circularity of an autopoietic system is a kind of causal loop, which also appears as a kind of time loop” (88). This implies both the repetition of elements in recursive processes and the nonlinear, relativistic time suggested by post-Einsteinian physics. As an autopoietic system, a strange loop is “an eddy in linear time, or, to put it another way, autopoietic systems constitute *relational time*” (88). This sort of autopoietic time eschews linearity, complicates hierarchical notions of causality, and defamiliarizes our temporal experience. It is in many ways both phenomenological time and narrative time, cyclical rather than linear. “According to Ricoeur,” Mark Currie reminds us in *After Time*, “the relationship of narrative and temporality is undeniably circular, in the manner of all hermeneutic activity, in the sense that narrative reconfigures the experience of time in the act of representing it, and in doing so, it inflects the temporality that it represents with the shape that narrative gives to it” (Currie 189).

Because it can be best imagined as a strange loop, I will refer to this perspective of time as “strange time.” True to its conformation as a strange loop, strange time seems paradoxical because it attempts to reconcile Parmenidean and Heraclitean perspectives of time. Indeed, this concept of time as a strange loop complicates traditional, Aristotelian notions of time by proposing that time is nonlinear, recursive, and cognitively bound. Furthermore, strange time complicates the tripartite model of time as past, present, and future, first proposed by Augustine in Book XI of his *Confessions*. Envisioning time in such a way also contradicts the universal history of Hegelian and Marxian theories of time. In part, Einsteinian relativity renders these divisions obsolete because in a relative, simultaneous universe, all events exist coevally and are reified only when they are perceived. Thus past events in this system are ontologically on par

with present and future events. It is this Parmenidean perspective of the universe that is particularly strange. As Wittgenstein notes, “When we think of the world’s future, we always mean the destination it will reach if it keeps going in the direction we can see it going in now; it does not occur to us that its path is not a straight line but a curve, constantly changing directions” (*Culture* 3e). Accordingly, time in literature—especially those works involving time-travel tropes such as Kurt Vonnegut’s early novels—often behaves like a strange loop. Although this might seem like a tangential direction in which to take Hofstadter’s idea, it is nonetheless an important demonstration of how his cognitive phenomenology connects to broader scientific ideas about time. It is to the congruence between strange time and Vonnegut’s literary works that I would like to turn next.

### **Vonnegut, Gödelian Universes, and Strange Time**

In post-Einsteinian fiction, one finds a litany of authors attempting to configure this vision of time in their work, and perhaps none so fervently as Kurt Vonnegut, described by Kevin Boon as “a storyteller in the scientific age—a post-Nietzschean, post-Einsteinian sage writing in a time of long-dead Gods and inhumane science” (168). Certainly Vonnegut’s relationship with science deserves a full-length study of its own, but it is important to note that, like most postmodernist authors, Vonnegut’s relationship with science is in fact an ambiguous one. His satiric project revels in cosmic irony, “the laughable prospect of man’s attempts to give order to the disorder of the universe through philosophies, theologies, or even scientific systems” (Lundquist 18). As if his skepticism was absolute, scholars “seem to gravitate instinctually to those stories with no whiff of science” (Karon 106); but Vonnegut’s skepticism is both directed at science and informed by it. In this way, Vonnegut is a disciple of both Spinoza and that ultimate

philosophical skeptic, David Hume.

It is no secret that relativity especially fascinated Vonnegut, an author “deeply interested in epistemological questions of an impressive variety—the unreality of time, the problem of free will, the nature of a pluralistic universe, and man’s ability to live with his own illusions” (Lundquist 16). Given his familiarity with the natural and social sciences<sup>10</sup> and his service in a war that would end with Einstein’s ideas quite literally exploding into the popular imagination, Vonnegut never quite seems to escape the gravitational field of Einsteinian relativity.

What is less well-known is the likelihood that Vonnegut draws upon a more refined version of this theory than previously argued, one intimately connected to strange loops. In 1949, none other than Kurt Gödel proposed a fascinating and controversial corollary to both special and general relativity.<sup>11</sup> Gödel states that Einstein’s “relativity of simultaneity” leads to an unequivocal proof for the view of those philosophers who, like Parmenides, Kant and modern idealists (such as MacTaggart), deny the objectivity of change and consider change as an illusion or appearance. The argument runs as follows: change becomes possible only through a lapse of time. The existence of an objective lapse in time, however, means that reality consists of an infinity of layers of ‘now’ which come into existence successively. But, if simultaneity is relative, reality cannot be split up into such layers in an objectively determined

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<sup>10</sup> Critics such as Jerome Klinkowitz frequently mention Vonnegut’s background in the natural sciences as well as his graduate studies in anthropology. In addition, scholars have noted the effect of his work as a technical writer for General Electric on his style. Vonnegut discusses both in *Wampeters, Foma, and Granfaloons* and in the introduction to *Slapstick*.

<sup>11</sup> For the original presentation of Gödel’s work, see “An Example of a New Type of Cosmological Solution to Einstein’s Field Equations of Gravitation” (1949). The article originally appeared in a special issue of *Reviews in Modern Physics* commemorating Einstein’s seventieth birthday. Gödel developed a strong friendship with Einstein when they worked together at Princeton’s Institute for Advanced Study. The discussion group they founded there included such eminent thinkers as physicist Wolfgang Pauli and philosopher Bertrand Russell. For a comprehensive overview of Gödel’s personal and professional relationship with Einstein, see Palle Yourgrau’s *A World Without Time* (2006).

way. Each observer has his own set of ‘nows’ and none can claim the prerogative of representing the objective lapse of time. (“A Remark” 557)

Gödel’s argument essentially upholds Zeno’s famous paradox on a cosmic scale by denying the absolute reality of time. Although little discussed outside the hallowed halls of theoretical physics, the idea of a Gödelian universe resonated with physicists and mathematicians in general, with several failed attempts to disprove it surfacing in subsequent years.<sup>12</sup> But it is the idealism inherent in Gödel’s model that is truly noteworthy: In an era when idealism was largely displaced by more positivist philosophical systems, Gödel audaciously claims “that at least in one point relativity has furnished a very striking confirmation of Kantian doctrines” (“Some Observations” 230). Specifically, Gödel understands time as a cognitive category rather than as an inherent property of the universe: the conscious mind projects time upon the universe rather than deriving time from it.

In part, Gödel follows Einstein in arguing for a type of block-universe interpretation of Minkowskian spacetime. As physicist Michael Lockwood notes, the block universe concept describes “everything that ever exists, or ever happens, at any time or place, as being just as real as the contents of the here and now . . . at all times and places, actuality through and through” (69). On a deeper level, Gödel suggests a more complex model of the universe, one that agrees with the proposals of a block universe while implying other consequences. One of the most notable of these is the existence of “close timelike curves,” each of which “is [a curve] that is joined up to itself—a curve that forms a closed loop in space-time” (Lockwood 125).<sup>13</sup> This

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<sup>12</sup> Notable attempts to refute Gödel’s claim were made by North in 1965 and Chari in 1960. Ozsvath and Schucking in 1962 pursued a project to re-evaluate the infinite nature of Gödel’s universe, but their work subsequently supported Gödel’s claims. All of these studies are discussed by Lockwood.

<sup>13</sup> A *time-like curve* is defined as “[e]very world-line of an ordinary object.” A *world-line* is the punctual representation of an object’s position in four-dimensional space-time. According to Lockwood, a “curve is said to be timelike if, in the vicinity of every event on the curve, it lies within the light-cone centred on that event. In other

temporal schema is precisely what Vonnegut presents in *The Sirens of Titan* (1959) and *Slaughterhouse-Five* (1969), and reading these novels together with Gödel's corollary gives us a strikingly accurate picture of what temporal strange loops might look like at several levels.

Gödelian universes offer a plausible mathematical basis for the possibility (though not necessarily the actuality) of time travel as portrayed in Vonnegut's novels. No matter how much distance one covers in a Gödelian universe, one eventually returns to the point of departure. In this way, time as Gödel construes it is a strange loop on a cosmic scale.<sup>14</sup> In short, Gödel amends Einsteinian relativity to suggest the universe recursively folds back upon itself in the manner of a strange loop. Vonnegut's fictional universe in both *Sirens of Titan* and *Slaughterhouse-Five* approximates such a strange-looping block universe, which produces these texts' rich chronological structures. Despite Harold Bloom's injunction that structure is "an absurd term to apply to almost any novel by Vonnegut" (*Kurt* 1), the temporal schemas of his novels conform remarkably well to the suggestion that temporal strange loops manifest in his fiction.<sup>15</sup>

In the preface to his non-fiction collection *Wampeters, Foma, and Granfaloons*, Vonnegut offers us a concise, if whimsical, summary of his opinion on the phenomenology of the universe:

Here is my understanding of the Universe and mankind's place in it at the present time: The seeming curvature of the Universe is an illusion. The Universe is really as straight as a string, except for a loop at either end. The loops are

words, the curve, at every event along its length, is oriented at a steeper angle than the surface of the light cone centred on the event" (45-46). For an accessible yet scholarly presentation of these terms, see Lockwood.

<sup>14</sup> Here it should be noted that Gödel's assertion that the universe is spinning has been largely dismissed by scientists, causing some physicists to assert that "Gödel's mathematical model was intended as a curiosity only, not as a serious proposal. Even in the 1940s astronomers had good reason to doubt that the universe as a whole is spinning, although individual galaxies are" (Davies, *How To* 33). Nevertheless, it is the structure of this sort of time rather than its ontological reality that concerns me here.

<sup>15</sup> Bloom seems to have largely overlooked the detailed attention paid by Vonnegut in structuring his novels. Vonnegut's literary chaos is largely an intentional device.

microscopic. One tip of the string is forever vanishing. Its neighboring loop is forever retreating from extinction. The other end is forever growing. Its neighboring loop is forever pursuing Genesis. (xxii)

Although his use of “loop” is coincidental, Vonnegut’s visualization of the universe is strikingly similar to a cosmic strange loop. He combines his understanding of relativity with a version of Kantian idealism by emphasizing the illusory quality of the universe as we perceive it. Vonnegut is, as always, attuned to the limits of our senses and their inability to deliver any ultimate knowledge about noumenal reality. Furthermore, he affirms the infinite nature of the universe while emphasizing its loop-like architecture, a picture of spacetime reminiscent of the ribbons of a Möbius strip.<sup>16</sup> Though he maintains his characteristic quirkiness on the subject, Vonnegut asserts that the universe cannot truly exist as it appears to our perceptual systems. Instead, it is a paradox because the notion of time as ever-present just doesn’t make any sense to our senses.

Perhaps Gödel’s theory’s most interesting consequence is the possibility of time travel into the past,<sup>17</sup> and authors who adopt this trope often create literary strange loops as a result. In his exhaustive study of time travel, Paul J. Nahin discusses time-travel tropes across the disciplines of physics, philosophy, and literature with a particular emphasis on Gödel. Although Nahin does not mention strange loops in his work, the concept is implicit in ideas like closed timelike curves and Gödelian universes, which he discusses at length. As Palle Yourgrau mentions, “Gödel, the union of Einstein and Kafka, had for the first time in human history proved, from the equations of relativity, that time travel was not a philosopher’s fantasy but a scientific possibility” (6). Vonnegut’s incorporation of Einsteinian relativity into his fiction

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<sup>16</sup> As Vonnegut scholar Rodney Allen noted to me recently, an image of a Möbius strip adorns the mural at the Kurt Vonnegut Memorial Library in Indianapolis, again suggesting that he had such a structure in mind.

<sup>17</sup> Einsteinian Relativity already allowed for hypothetical time travel into the future.

inevitably leads him to consider these same consequences and reach similar, if not identical, conclusions.

Alasdair Richmond has distinguished several species of time travel: Gödelian, Wellsian, and Nietzschean. Unlike the device in Wells's *Time Machine*, A. J. Deutsch clarifies that Gödelian time travel does not require "an exotic sort of vehicle, but an exotic sort of place" (qtd. in Nahin 306). This describes the chrono-synclastic infundibulum in *Sirens of Titan*, which is a rift in spacetime rather than a vehicle. In addition, I should note that Richmond raises a necessary caveat cautioning readers not to conflate the strange loops of Gödelian time travel with Nietzschean eternal recurrence: "Both . . . are endless, but eternal recurrence is infinite linear repetition of similar events, and circular time is finite but nonlinear" (308). Strange time in Vonnegut's texts is more akin to what Richmond calls *circular time*. Indeed, most literary time travel narratives see time in this manner.

Vonnegut's temporal schema in both novels is expressed by an alien race, the Tralfamadorians, albeit depicted with minor variations in each novel.<sup>18</sup> In *Sirens of Titan*, the Tralfamadorians are robots with macroscopic perspectives of historical time. In *Slaughterhouse-Five*, Billy Pilgrim's Tralfamadorian guide introduces himself thus: "I am a Tralfamadorian, seeing all time as you might see a stretch of the Rocky Mountains" (85). Like God in Boethius or Aquinas,<sup>19</sup> Tralfamadorians see all time at once. This is also the perspective of Einstein's favorite philosopher, Spinoza, who urged humanity to envision the universe *sub specie aeternitatis*, literally "from the perspective of eternity." Tralfamadorians are, in other words, capable of stepping outside of the system (another example of what Hofstadter calls "jootsing")

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<sup>18</sup> The Tralfamadorians' name also calls to mind the various peoples in Swift's *Gulliver's Travels*. Certainly Vonnegut shares with Swift a penchant for ingenious satire.

<sup>19</sup> In *De Consolatione Philosophiae* (ca. 524) and *Compendium Theologiae* (ca. 1265), respectively.



and seeing the tangled hierarchies of time in their entirety. This leads to a variety of unforeseen—and frequently problematic—consequences, especially when one considers what this implies for free will.

### **Strange Loops in *The Sirens of Titan***

*The Sirens of Titan*, Vonnegut's second novel, introduces an astronomical anomaly called a *chrono-synclastic infundibulum*, a glitch in spacetime wherein anything moving through it becomes "*scattered far and wide, not just through space, but through time, too*" (9, emphasis in original). Vonnegut defines the infundibulum in a work within this work, *Dr. Cyril Hall's A Child's Cyclopedia of Wonders and Things to Do*. Here, Vonnegut satirizes Einstein to some degree, mocking both the fantastic flavor of relativity and parodying its complexity. According to the "cyclopedia," inside the chrono-synclastic infundibulum "*all the different kinds of truth fit together as nicely as the parts in your Daddy's solar watch*" (9). Critics have called the infundibulum "a sort of gyre in time and space, within which all truths become known" (Reed 62). It is also a sort of Gödelian time-machine.

When the aristocratic Winston Niles Rumfoord accidentally enters this glitch in his private space ship near Mars, the encounter spreads him through time, giving him an almost godlike perspective on the universe. He materializes at regular intervals at times and places on Earth and Titan, indeed to places as distant as Betelgeuse. Regardless of distance, he returns to these points in a sort of orbit. His materializations are the "punctual" manifestations of his otherwise wave-like existence. And yet, because of his "infundibulated" vision of all-time, Rumfoord cannot escape his circuit. Though he knows the details of his path, he is powerless to change it. Moreover, despite being fully aware of the predetermined nature of his actions,

Rumfoord cannot behave otherwise. Essentially, he is confined to a strange loop.

Throughout the novel, Rumfoord attempts to explain this new, relativistic perspective both to Malachi Constant (the novel's millionaire-playboy protagonist) and Rumfoord's estranged wife Beatrice (who eventually becomes Malachi's mate on the moon Titan). As Rumfoord explains:

life for a punctual person is like a roller coaster . . . I can see the whole roller coaster you're on. And sure—I could give you a piece of paper that would tell you about every dip and turn, warn you about every bogeyman that was going to pop out at you in the tunnels. But that wouldn't help you any . . . Because you'd *still* have to take the roller-coaster ride. (54)

Although Rumfoord's comment is a meditation on free will, it also draws our attention to the structure of time in the novel. The track is closed, its path determined. People in such a world are like the monks walking along the Penrose staircase in Escher's *Ascending and Descending*: no matter how far they proceed, they never get anywhere. Thus, when asked by Beatrice why he does not reveal the details of her future, Rumfoord replies, "I didn't design the roller coaster, I don't own it, and I don't say who rides and who doesn't. I just know what it's shaped like" (54). Like the "punctual" characters in the text, Rumfoord suffers from the knowledge that he cannot prevent future events, even though, unlike them, he can see the entirety of the strange loop as one outside the system.

Rumfoord describes this perspective *sub specie aeternitatis* thus: "Everything that ever was will be, and everything that ever will be always was" (292). There are echoes of Stephen Dedalus's musings on time in *Ulysses*, as well as Lewis Carroll's Red Queen, who remembers events that have yet to occur. Rumfoord's statement also recalls Dr. Manhattan in Alan Moore's

*The Watchmen*,<sup>20</sup> for whom “There is no future. There is no past . . . Time is simultaneous, an intricately structured jewel that humans insist on viewing one edge at a time, when the whole design is visible in every facet” (6). This denial of an absolute past or present is neither the Eternal Return of Nietzsche nor the static universe of Zeno; rather it is a vision of time as a constant information loop, more cybernetic than mystic: “Whatever we’ve said, friend, we’re saying still,” Rumfoord explains before his final dematerialization takes him to the farthest reaches of the universe, “such as it was, such as it is, such as it will be” (302). Time for Rumfoord is both simultaneous and circuitous. There is a metafictional consideration here as well because, as a character in a text, it is quite true that Rumfoord’s conversations with Malachi Constant will be repeated with every reading of the text. Indeed, Rumfoord and Constant exist both statically in the book and dynamically in the cognized text.

Despite hints of a deterministic or mechanistic universe such as that proposed by Hobbes, chaos also features prominently in the novel.<sup>21</sup> As Rumfoord explains to Malachi Constant, “Things fly this way and that, my boy . . . with or without messages. It’s chaos, and no mistake, for the Universe is just being born. It’s the great becoming that makes the light and the heat and the motion, and bangs you from hither to yon” (34). In a nonlinear, simultaneous, and cyclical universe, there is no genesis, only being. Thus Vonnegut appropriately inverts the Eden myth by concluding the narrative with Malachi Constant and Beatrice enjoying an Edenic existence on Titan. In *Forever Pursuing Genesis*, Leonard Mustazza notes that in Tralfamadorian time—that is, Gödelian-Einsteinian time—“the sting of time is removed, its ability to corrode is

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<sup>20</sup> Moore’s is the only graphic novel to win a Hugo award, and thus figures prominently in the postmodern canon (if we concede such a hierarchy exists) as a whole. Significantly, Stuart Moulthrop has noted a strange loop in the novel’s return to its metafictional inclusion of itself at the end. It is also worth noting that the title comes from Juvenal’s self-referential question in his *Satires*, “*Quis custodiet ipsos custodes*” (which Moore translates as “Who watches the watchmen?”).

<sup>21</sup> Kevin Boon has dedicated an entire study to chaos in Vonnegut’s oeuvre.

undermined, and the tragic view that the aging process makes for is eliminated . . . as a result of time's nonlinear nature, no one really dies except in brief moments" (113). Here is, in essence, an inversion of the Fall; and if one defines the fall, as Kafka did, as coming into consciousness (Parry xv), we see that Vonnegut is playing with our desire to return to the simpler, instinctive ways of life that characterized more primitive modes of existence. He suggests as much at the end of the novel where Constant's son Chrono enjoys an idyllic, shamanistic existence on Titan.

To some extent, Vonnegut is parodying teleological systems such as Christianity, but, like Shelley, he cannot entirely escape the metaphysics that he seeks to overthrow. Like Rumfoord, at the beginning of the Gospel of John, the Logos exists in a similar state of perpetual becoming, *ex tempore*. In addition to this Biblical parody, Vonnegut is also parodying time as historical progress. Stanley Schatt sees history as "the major subject of *The Sirens of Titan* since Vonnegut's focus is on whether or not human history is meaningful" (36). This is partially true but only part of a broader discourse on time in the novel.

Certainly history allows us to construct cause/effect relationships in a narrative that might somehow illuminate our place within the cosmos, albeit only proximately. But *The Sirens of Titan* explains human history merely as the machinations of an alien race, reducing the glorious monuments of civilization such as Stonehenge and the Great Wall to mere messages about forthcoming spare parts for Salo's ship stranded on Titan for millennia. Even if we manage to find meaning in history, the universe as a whole remains for Vonnegut "a nightmare of meaninglessness without end" (1-2). This phrase recalls both Stephen Dedalus's famous assertion in *Ulysses* that "History is a nightmare from which I am trying to awake" (42) and Marx's statement that history "weighs like a nightmare on the brain of the living" (qtd. in Kitching 5). Rather than follow Marx's teleological belief in a utopian revolution, Vonnegut

follows Joyce by emphasizing the nonlinearity of time, thereby satirizing the myth of progress. The novel's characters likewise reject these grand narratives because, in effect, the temporal architecture of the novel renders them obsolete.

I have deliberately likened the structure of time in the novel to architecture, because it is an instructive symbolic device for Vonnegut. That Vonnegut's father worked as an architect is incidental to the text, but he does often recourse to detailed descriptions of specific architectural structures in his novels that parallel similar architectures in scientific descriptions of time. For example, in *Slaughterhouse-Five*, Vonnegut situates Billy Pilgrim and the former movie-star Montana Wildhack in a geodesic dome during their captivity by the Trafalmadorians, aliens related to the race of the same name in *Sirens of Titan*. The geodesic nature of this Trafalmadorian prison certainly suggests the geodesics used in Einsteinian geometry to describe the shape of spacetime.<sup>22</sup>

These bear a striking, though certainly not coincidental, resemblance to the Poincaré disks that I have already indicated in Joyce and Borges.<sup>23</sup> Like both Poincaré disks and literary strange loops, geodesics are created through a fractalic process, repeating the same tiling in three-dimensions. Unlike disks, however, geodesics form spheres that wrap back upon themselves; they are thus more similar to strange loops than even Poincaré disks.

Architectures in *Sirens of Titan* also seem to replicate Vonnegut's temporal structure. The first is Rumfoord's mansion, which seems infinite. "[N]othing about the Rumfoord mansion diminished as it approached heaven," Malachi Constant observes when he first sees it, ". . .

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<sup>22</sup> Geodesics have been identified throughout Vonnegut's oeuvre by John Somer in "Geodesic Vonnegut; or, if Buckminster Fuller Wrote Novels."

<sup>23</sup> Poincaré arrived at an independent formulation of relativity contemporaneously with Einstein, although neither man ever recognized the other's ideas. One significant difference is that Poincaré never abandoned the now-disproven ether theory.

[t]urned upside down, it would have looked exactly the same” (13). The Rumfoord mansion is thus a miniaturized version of strange time, which like the mansion is conceivably reversible. A second symbolic architecture structure is the fountain within the Rumfoord mansion. When we first encounter it, the fountain is spilling into itself without end, a symbol of recursion (13). In its design, the fountain is a strange loop, both cyclical and self-referential. Incidentally, later in the text, a vendor outside the mansion sells replicas of the self-replicating fountain during one of Rumfoord’s materialization ceremonies (238-39). Here, a self-replicating fountain is itself replicated for sale. This interplay of levels further emphasizes the recursive structure of the novel’s temporality. Indeed, Laurence Broer sees the repeated spiral images in the novel as also representing the involutions of the characters’ minds.

As Broer argues, “in a novel like *Sirens of Titan* . . . or *Slaughterhouse-Five*, what is seemingly outer space is actually the tortuous, subterranean passages of the protagonist’s own mind” (9). Certainly in light of Gödel’s corollary, I would not exclusively read Malachi Constant’s adventures merely as “a microcosm of his own mind” (43). If this were the case, all science-fiction would have to be read as mere hallucination, which is to both misread the genre and to neglect the very real science that often infuses such narratives. But Broer’s argument does emphasize Vonnegut’s cognitive concerns, drawing particular parallels between the hallucinatory nature of *Sirens of Titan* and Lewis Carroll’s *Alice* books.

*The Sirens of Titan* certainly draws more from Carroll’s *Alice* books than critics have suggested.<sup>24</sup> More importantly, Vonnegut’s debt to Carroll reinforces the strange loops in the

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<sup>24</sup> David Ketterer draws extensive comparisons between *Sirens of Titan* and *Alice in Wonderland* (Schatt 40). See also Broer (30).

text.<sup>25</sup> For example, when Malachi Constant enters the Rumfoord mansion, he “lock[s] the Alice-in-Wonderland door behind him” (7). He is firmly in the speculative domain of *Gedankenexperimenten*, time warps, and suspended natural laws. Thus, human beings can walk on the surface of Mars using “goofballs” to breathe, a man and his dog can materialize across the solar system, and aliens can manipulate events from lightyears away. To Rumfoord, all of these extraordinary scenarios seem plausible, even normal, just as the inhabitants of Wonderland often cannot understand why Alice is so startled by their world’s wacky logic. Similarly, as in Vonnegut’s novel, “time in the *Alice* books is a fraught matter” (Beer xxviii). Fittingly, when Rumfoord dematerializes, only his smile remains in Cheshire cat fashion (35), and the infundibulum itself recalls the many warps in Carroll’s fiction.

There is also a Carroll Paradox at work in Rumfoord’s logic throughout the novel. Rumfoord’s reason for assembling the Martian Army to wage war on Earth is no less than to fulfill the plans of the Tralfamadorians, who are orchestrating events in the novel so that Malachi Constant’s son, Chrono, can deliver replacement parts to Salo, a Tralfamadorian stranded on Titan. Appropriate for a Carroll Paradox, the argument for Rumfoord’s actions is justified by the actions themselves, creating a tautological loop. In order to fulfill Salo’s mission, Rumfoord manipulates certain events, but in doing so is himself manipulated by his foreknowledge that he will inevitably perform those very actions. This is another Hofstadterian recursion, one where the “moves change the rules, the rules determine the moves, round and round the mulberry bush” (*GEB* 688).

An interesting example of a strange loop in the text arises with the introduction of Unk, a brainwashed soldier in Rumfoord’s Martian Army who is in fact Malachi Constant, whose

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<sup>25</sup> Vonnegut draws upon Carroll in *Breakfast of Champions* as well when Kilgore Trout describes mirrors as “leaks” that connect different worlds, a reference to *Through the Looking Glass*.

memory has been deleted. However, despite continuous bouts with induced amnesia, Unk manages to devise a system to remember his identity: he leaves himself letters that explain what the memory-erasing sessions have made him forget. The letter he leaves to himself is another strange loop. As he continues to replicate the letter, Unk continues to end up right where he started. He does not realize he is getting nowhere, does not recognize that he is being manipulated by Rumfoord, does not even recognize that the letters' author is himself.

Unk's use of narrative to configure his temporal experience is reminiscent of Ricoeur's approach to the relationship between time and narrative: "Time becomes human time to the extent that it is organized after the manner of a narrative; narrative, in turn, is meaningful to the extent that it portrays the features of temporal experience" (*Time and Narrative* 3). Unk's self-referential letters are his attempt to configure an otherwise disjointed temporal experience into a more cohesive and linear sequence. In other words, he must use narrative to make sense of the disjointed circumstances of his temporal life. Since "Unk had written the letter to himself before having his memory cleaned out" (132), the letter contains the entire catalog of knowledge amassed by Unk before his numerous memory cleanses. Only Rumfoord is able to fully explicate the events that succeed Constant's loss of memory. Ironically, he begins his recap of Unk's origin with "Once upon a time" (160), an introductory remark that emphasizes both his patronizing tone and his tendency to construct reality around myths or fables. This aspect of Rumfoord's project in the novel centers on the creation of myths, or in Vonnegutian terms, *foma*.<sup>26</sup> Rumfoord's project coincides in many ways with Vonnegut's own, namely the need to present scientific ideas in the forms of myths, to reintroduce the role of the shaman to a post-scientific, post-theistic society.

Many critics dismiss *Sirens of Titan* as a parodic space opera or a comic reflection on the

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<sup>26</sup> "Harmless untruths" as defined in the epigraph of *Cat's Cradle*.



ironies of humanity's search for meaning in the emptiness of space. While both arguments are partially accurate, Vonnegut's novel more properly investigates time on a metaphysical level. Furthermore, beginning with *Sirens of Titan* Vonnegut develops the temporal schema and stylistic devices that come to define his fiction thereafter. The fractured narratives that result reflect Vonnegut's quest as an artist to reconcile the apparent facts of relativity with the more immanent concerns of time as human experience. Without attempting to erect a system that reconciles these two views of time, Vonnegut accepts that neither progress nor eschatology make sense anymore. In a gesture reminiscent of Kafka and Beckett, he answers this absurdity by laughing at the abyss. Neither relativity nor scientific models of consciousness can answer the grand questions about the meaning of life. Vonnegut recognizes this, as do the characters in *Sirens of Titan*, and, as Vonnegut says throughout *Slaughterhouse-Five*, "so it goes."

### **"Spastic in time": Strange Loops in *Slaughterhouse-Five***

Vonnegut continues this project in *Slaughterhouse-Five*; in many ways, this novel must be read in tandem with *Sirens of Titan* to fully appreciate the temporal schema that Vonnegut deploys throughout his oeuvre. From the novel's first line, Billy Pilgrim, the novel's protagonist, has "come unstuck in time" (1). His erratic jaunts through his life are analogous in many respects to Rumfoord's: He materializes at various points in time and space; he comes to an understanding of time as a simultaneity; and he has no control over where and when he will go next. Even the narrator of the novel's outermost frame notes that "[s]omebody was playing with the clocks," suggesting that we are no longer in the realm of linear time (20). Indeed, in the wake of relativity, clocks "no longer speak of anything except themselves and their internal functioning" (Eco, *Salmon* 58). Hence, Vonnegut can violate the conventions of metrical time by

disclosing the beginning and end of the novel simultaneously: “It begins like this: *Listen: Billy Pilgrim has come unstuck in time.* It ends like this: *Poo-tee-weet?*” (22). Like *Finnegans Wake*, Vonnegut writes a novel where end and beginning are coexistent, and indeed the fractured narrative stretches between them. Likewise, Vonnegut is not afraid to reveal that ““the climax of the book will be the execution of poor old Edgar Derby . . . arrested in the ruins [of Dresden] for taking a teapot. And he’s given a regular trial, and then he’s shot by a firing squad”” (4-5). Before we even meet Derby, he is already dead to us. In this way, Vonnegut prepares his readers for the spirals through spacetime the novel traces.

Billy oscillates between captivity on the planet Tralfamadore, his quotidian life as an optometrist, and his traumatic experiences around the firebombing of Dresden. He “has seen his own death many times, has described it to a tape recorder” (141). Vonnegut relates a similar, personal scenario in *Wampeters, Foma, and Granfaloon*: “I honestly believe I am tripping through time. Tomorrow I will be three years old again. The day after that I will be sixty-three” (2). Certainly he is being facetious, but he is also commenting on the nature of memory as well as ruminating on the possibility in a Gödelian-Einsteinian universe that, in some very real sense, he exists at different ages simultaneously. In fact, in *Timequake*, Vonnegut uses a similar unstable temporality as the book’s central conceit when a “sudden glitch in the space-time continuum . . . causes everybody and everything [to] do exactly what they’d done during a past decade, for good or ill, a second time” (xiv-xv). Like *Slaughterhouse-Five*, Vonnegut vacillates between moments in time in *Timequake*, presenting a scenario where temporal events are not singular and isolated but duplicated and interwoven.

*Slaughterhouse-Five* attempts to render in prose the Tralfamadorian perspective of time wherein “All moments, past, present, and future, always have existed, always will exist” (27).

As Billy Pilgrim's Tralfamadorian guide later explains in a comment much-cited by critics, "I am a Tralfamadorian, seeing all time as you might see a stretch of the Rocky Mountains. All time is all time. It does not change. It simply *is*. Take it moment by moment, and you will find that we are all, as I've said before, bugs in amber" (85-86). This is the strange time I pointed out in Rumfoord's case, one where the passage of time is an illusion. Again, Vonnegut's is apparently a Zeno-esque reality, where time is space.

Borges's "Tlön, Uqbar, Orbis Tertius" provides a parallel to Tralfamadorian time.

Explaining the philosophy of Tlön, Borges writes:

One of the schools of Tlön goes so far as to negate time: it reasons that the present is indefinite, that the future has no reality other than as a present hope, that the past has no reality other than as a present memory. Another school declares that *all time* has already transpired and that our life is only the crepuscular and no doubt falsified and mutilated memory or reflection of an irrecoverable process. (*Fictions* 79)

The inhabitants of Tlön, like Vonnegut's Tralfamadorians, deny time entirely. They are, in other words, extreme idealists who believe that time does not exist at all. Again, time from this angle is cognitively constructed, a relationship between events rather than discrete coordinates.

Furthermore, it becomes difficult to explain one's situation outside the system because one can never extricate oneself from it.

Is it even possible to view ourselves from outside time? If time is cognitive, is there any way to envision ourselves without it? Can we jump outside the system to resolve its many paradoxes? One finds an excellent parallel to this conundrum in Edward Abbott's *Flatland* (1884), a Victorian fantasy about the inhabitants of realms that exist only in certain dimensions.

For example, the Flatlanders can only perceive two dimensions, while the Pointlanders are limited to only one. Like the Flatlander A. Square, those characters in *Slaughterhouse-Five* who have not been privileged with a Tralfamadorian perspective remain unable to envision themselves outside it. Another tangled hierarchy manifests here, one where Billy Pilgrim, Rumfoord, and the Tralfamadorians exist on a higher dimensional level than other characters. They are akin to Lord Sphere in *Flatland*, who can see in three-dimensions and imparts this capacity upon Square. When Square attempts to convince the others that he has seen three-dimensions, no one believes him. Disbelief likewise greets Billy Pilgrim at every turn in the novel. Other characters remain trapped within the confines of their experience, even the narrator: “There was nothing I could do about it . . . As an Earthling, I had to believe whatever clocks said—and calendars” (Vonnegut 20). He remains, as Rumfoord explains throughout *The Sirens of Titan*, “punctual.” Rather than as a continuum, [t]o be punctual meant to exist as a point, meant that as well as to arrive somewhere on time” (7). This is an appropriate adjective in light of the comparison with Abbott’s *Flatland*, where the inhabitants of Pointland are capable of only seeing in one-dimension. This is a variation of the frame problems I discussed in my Chapters Four, Five, and Six. But instead of metaleptic boundaries, these fictions draw our attention to our own existence bound to time and inability to think ourselves outside it.

The tangled hierarchy that forms between different perspectives of time in *Slaughterhouse-Five* is only one of many. Another strange loop in the novel is the endlessly repeated Yon Yonson song, which recursively loops back into itself. The song is a relevant parallel to the temporal structure of the novel as a whole:

My name is Yon Yonson,  
I work in Wisconsin,

I work in a lumbermill there.  
The people I meet when I walk down the street,  
They say, “What’s your name?”  
And I say,  
“My name is Yon Yonson,  
I work in Wisconsin . . . (SHF 3)

In addition to satirizing the repetitiveness of nursery rhymes,<sup>27</sup> the endlessly repeating loop of the Yon Yonson song is a clear example of a strange loop: no matter how far we proceed, we always return to the beginning. One might ask, how is this strange? Isn’t this merely repetition of the nursery rhyme variety? In some ways, it is. But its strangeness emerges when it’s compared to the medium of song in general—most songs do not repeat themselves in this manner. The novel’s text operates in a similar fashion, since the events are structured to endlessly repeat themselves within the confines of their block universe. This imbues it with a particular strangeness. Likewise, the repetition of other elements throughout *Slaughterhouse-Five*, a deliberate stylistic device, allows Vonnegut to develop his metaphor. The most noteworthy of these repetitions is the much addressed comment “So it goes” that peppers the text, a “leit-motif” in the novel which invites us to consider the text as analogous to an endlessly rising canon. Nested structures of quotations in quotations also appear which, like the endlessly repeating Yon Yonson song, exhibit strange loop qualities because they confound normal expectations of frame. Temporally, we as readers proceed through the novel only to remain, like Carroll’s Red Queen, running in place without actually getting anywhere.

Billy’s existence “unstuck in time,” an analog of Rumfoord’s dilemma in *Sirens of Titan*,

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<sup>27</sup> This rhetorical device is prominent in folklore. It’s also a common device in humor, such as the “Who’s On First?” skit, made famous by Abbott and Costello. Modern appropriations of this sort of repetition are legion, although it is most commonly used in advertising and popular music.

likewise manifests this strange loop time structure. He moves around the strange loop of his life, being born, dying, and, of course, gravitating back to the center of his experience, the terror of Dresden. Billy cannot escape the traumas of his life, largely due to their temporal ever-presence. His existence, like Rumfoord's, is therefore infinite. But, as physicist Paul Davies remarks, Pilgrim's "immortality [is] restricted to a fixed set of events" (*About* 41). As a strange loop, Billy's life contains an infinity of events within a finite set of ever-present moments. He must continuously re-experience these moments. The situation places him firmly in a loop:

Billy Pilgrim has come unstuck in time.

Billy has gone to sleep a senile widower and awakened on his wedding day. He has walked through a door in 1955 to come out another one in 1941. He has gone back through that door to find himself in 1963. He has seen his birth and death many times, he says, and pays random visits to all the events in between. (23)

Importantly, no matter how many jaunts Billy takes through his life, he inevitably returns right back where he started. These moments are also cognitive nodes around which his consciousness circulate, summoning them into consciousness at random. He cannot escape the recursive flux of his consciousness through the static moments of his life.

In part, the novel is, like Unk's letters, Billy Pilgrim's attempt to cope with his peculiar temporality through narrative. He attempts to humanize his experience of an otherwise inhuman perspective. Vonnegut explicitly states that *Slaughterhouse-Five* is written "somewhat in the telegraphic schizophrenic manner of the tales of the planet Tralfamadore" in the subtitle, indicating that the novel's form approximates this kind of time. Marc Leeds explores this "Tralfamadorian" method as a theory of reading, but he focuses on the simultaneity of such a text rather than on the formal circularities that characterize the novel's strange loops. Indeed,

Vonnegut's vision of the Tralfamadorian novel is perhaps most analogous to the concluding lines in Gabriel Garcia-Marquez's *One Hundred Years of Solitude*, where after years trying to translate scrolls left behind by Melquíades the gypsy, Aureliano realizes that the author "had not put events in the order of man's conventional time, but had concentrated a century of daily episodes in such a way that they coexisted in one instant" (446). Melquíades's manuscript, like the novels of Tralfamadore or the philosophies of Borges's Tlön, describe time as both simultaneity and circularity—in other words, as a strange loop.<sup>28</sup>

While difficult to portray within the limits of linear narrative, Vonnegut best achieves the effect of a strange loop in the third chapter of *Slaughterhouse-Five*. As John Somer notes, a reader may begin anywhere in the chapter (229). The order of events is haphazard and scattered through space-time. More than at any other moment in the text, "Billy is spastic in time" throughout the chapter (23). One minute he is a German POW, the next he is performing an eye exam later in life as an optometrist (55-56). Just as he accustoms himself to his new surroundings, "he was back in World War Two again" (58). As he explains, "he was simultaneously on foot in Germany in 1944 and riding his Cadillac in 1967" (58). The chaotic nature of these jaunts only reinforces their connection to strange loops: Billy is cycling through the events in his life with "no control over where he is going next" (23). Like Rumfoord, Billy cannot escape the circuit of his temporal strange loop, but unlike Rumfoord he is never quite certain where he will end up next.

Here I should briefly note the bidirectionality involved in Billy Pilgrim's jaunts through time and space. He apparently jumps erratically through time, revisiting moments both past and future. Indeed, there is no distinct present for Billy Pilgrim, no absolute frame of reference,

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<sup>28</sup> Burgass notes a similar connection: "Tralfamadorian plot construction is coherent with four-dimensional time; their novels are emphatically anti-Aristotelian and bear a singular resemblance both to Derrida's idea of writing and Melquíades' fictional technique in *One Hundred Years of Solitude*" (181).

reinforcing the unimportance of directionality in these mental leaps. In Gödel's corollary to Einsteinian relativity, direction is irrelevant; it is the toroidal circularity of this type of time that is important. Significantly, one central but often overlooked aspect of relativity is that "all phenomena it describes are reversible" (Coveney 80). But commonsense perception contrasts the apparent symmetry relativity advances. This raises a significant paradox, perhaps best known as Lochschmidt's Paradox. This paradox results from the apparent disjuncture between the symmetrical laws of physics and our experience of those same laws. Physicist Roger Penrose notably comments on the problems of such asymmetries: "The main problem is that on the microscopic level, the laws of physics are all symmetric with respect to time, yet time asymmetry is manifest on the macroscopic scale" (qtd. in Coveney 81). We ostensibly experience time in one direction, yet physically it would seem that this "flow" is arbitrary. I say ostensibly because memory confounds any attempt to explain temporal experience as a solely linear phenomenon; consciousness oscillates back and forth between the specious present, the remembered past, and the hypothetical future. Hofstadter's assertion that the strange loop is a bidirectional pattern—in both the sense that it confounds any dominant directionality when moving through hierarchical systems, and that its circularity confounds linearity—conforms to the notion that temporal experience, and indeed time itself, is not an arrow but a loop.

Bidirectional loops in time also occur in *Sirens of Titan*. When Malachi Constant returns to Earth after years trapped on Mercury, Rumfoord reveals to the crowds gathered to greet his arrival that the Space Wanderer (as Constant is now called) is in fact the same hedonistic playboy who has become the object of their collective disgust. This turnabout shocks Constant, who has gone from Messiah to scapegoat in mere minutes. But this reversal of fortune might have gone the other way. As Rumfoord explains to Constant, the crowd would "like it just as much the



other way around, you know . . . It's the contrast they like. The order of events doesn't make any difference to them. It's the thrill of the fast reverse" (251-52). Directionality is suspect when one sees time, as Rumfoord does, from all directions simultaneously.

Furthermore, as readers, we too are hornswoggled into believing that our normal notions of cause and effect will hold in Vonnegut's fictional universe.<sup>58</sup> Vonnegut confounds this expectation, which is partially the result of his portrayal of time. Constant's fortunes become the stuff of tragedy not because he falls from a life of privilege to one of disgrace, but simply because these two states are antipodes. At the end of the novel, Constant finds some semblance of inner peace with Beatrice tending his plot in what one might read as a reversal of the Eden myth: paradise is achieved only at the end of Constant's suffering, not at the beginning. The order of events is trivial, and Vonnegut effectively dismantles our notion of cause and effect, a consequence of nonlinearity that I will discuss as a central element in Pynchon's *Gravity's Rainbow*.

Ultimately one must ask if these texts themselves can be viably termed strange loops in every respect. Indeed, in an ideal strange loop, there need be no point of embarkation; any starting point should suffice. At first glance, this criterion undermines the possibility that Vonnegut's time-travel novels are strange loops. For the texts to achieve their optimum effects, the sequences of events *do* matter. While juxtapositions serve a crucial function in Vonnegut's fiction, he cannot escape entirely from the necessary formulations of cause and effect. There is still, despite Vonnegut's experimental plot structure, a beginning, middle, and end. The readers' foreknowledge of the end and the terminal explanations of the beginning bend this traditional sequence, but they do not abolish or eliminate it completely.

A thought experiment nicely illustrates this hypothesis. Randomly selecting starting

points in the text, would the reader extract the same narrative? To some extent, they would. Both *The Sirens of Titan* and *Slaughterhouse-Five* could function with altered order. As I proposed earlier in this chapter, Chapter Three of *Slaughterhouse-Five* could easily and effectively function with a different order of events. The same might be said of *Finnegans Wake*, Calvino's *If On a Winter's Night a Traveler*, or any of William S. Burrough's cut-up novels. But one must consider that not all portions of Vonnegut's text could survive such an experimental reconfiguration of event-order. At some point in such a rearrangement they would lose both their efficacy and perhaps even their meaning. I would also exercise caution and resist the temptation to generalize the strange loop aspects of Vonnegut's fiction to *every* element of that fiction.

Nevertheless, books as artifacts might viably serve as examples of simultaneous strange loops. Only the application of linear human consciousness (*vis-à-vis* the reader) imposes a linearity or "punctuality" to the flow of the narrative. Stylistic devices can alter the perception of this flow. One could argue that the perceived passage of time in the novels directly correlates with the length of time taken to read them. By this hypothesis, shorter sentence structures would affect the reader's perception of elapsed time. Vonnegut's telegraphic, punctuated prose style often achieves the effect of playing with time in this manner. He even goes as far as to alter chapter length, producing a similar effect. Furthermore, each individual's perception of time affects the flux. Thus, even the reader exists in a subjective time, relative to everything else. While certainly a metatextual extreme, the possibility exists nonetheless.

Another intriguing Barthesian situation arises here. If a reader has already read the text, it becomes feasible to begin anywhere and form a lexical strange loop. At its extreme, this argument suggests that all texts might exist as strange loops, creating self-referential universes

that do indeed create themselves in their symbiotic relationship with the reader. This supposes a sort of hermeneutic system. Unfortunately, such a proposal neglects the semantic reliance of the text upon external systems of signification. As no text exists in a vacuum, no text is ultimately a strange loop in itself but rather only as one loop in a larger tangled hierarchy. A proximate identification, however, is apparently tenable and worth consideration as a viable theoretical possibility.

Significantly, Vonnegut's depiction of time as a strange loop finds parallels in science-fiction, a genre he long sought to distance himself from. Despite this antipathy for being labeled a science fiction writer, Vonnegut freely admits that writers of this genre, always attuned to the dialectic between science and literature, "are among the precious few Americans in whose minds C. P. Snow's two cultures sweetly intertwine" (*Wampeters* 4). Vonnegut's Tralfamadorian novels remain masterpieces of this form, and it is thus no surprise that his conception of time finds its best analogues in science-fiction.

One example is Robert A. Heinlein's "All You Zombies—," where a traveler goes through various permutations in the course of traveling to time, experiencing a bizarre version of the grandfather paradox.<sup>29</sup> By the narrative's end, we discover that the narrator is actually his own father, wife, and child as a result of his time-traveling during which he underwent a series of sex changes. The narrator, unable to extricate himself from the chain of events even after he discovers his weird circumstances, comments on the metaphysics of such a universe: "A thing either is, or it isn't, now and forever amen" (45). Time in Heinlein's story is both a block

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<sup>29</sup> Heinlein, often called "The Grand Master" of the genre, exerted an ubiquitous influence on science fiction. His importance for the genre, indeed for literature as a whole, is well argued by Robert Silverberg: "No one who has written fiction since 1927 or so can fail to take into account Hemingway's theory and practice without seeming archaic or impossibly naïve; no one since 1941 has written first-rate science fiction without a comprehension of the theoretical and practical example set by Heinlein" (324-325). Vonnegut's prose sometimes garners comparisons to Hemingway, but his debt to Heinlein has yet to be explored.

universe and a loop, in accordance with the strange time concept found in Vonnegut. Significantly, the bartender in the story (who is in fact another manifestation of the narrator), wears an Ouroboros ring, “the World Snake that eats its own tail, forever without end. A symbol for the Great Paradox” (38). One might construe this story itself as an ideal strange loop.

The Möbius strip which I have occasionally identified as a visual metaphor for a variety of strange loops is equally appropriate for visualizing strange time. As Paul Fry notes, “In representation, space—the space of the universe, for example—cannot be imagined other than spatially; it cannot even be grasped as ‘space-time’ unless one resorts to such visual aids as the Möbius strip” (7). Strange time exists simultaneously, but if one travels in a linear path along the surface, eventually one returns to the point of departure. Several science-fiction authors have adopted the Möbius strip as an approximation of the structure of time, notably Arthur C. Clarke in “The Wall of Darkness.” In that narrative, the curious Shervane traverses the fabled Wall only to end up back where he started, watching himself departing on the journey he has just completed. The story’s shaman-figure Grayle elucidates the human discomfort with the idea of the Wall when he suggests that “[w]e can imagine no ending to space, yet our minds rebel at the idea of infinity” (116). He proceeds to explain the structure of the universe as a Möbius strip with a piece of paper, “an example in two dimensions of what really must occur in three” (117). The phenomenon Clarke is suggesting manifests a space-time structure that loops back upon itself, much like Gödel’s proposal or the temporal suggestions of Vonnegut’s fiction. In Vonnegut’s texts, the timeline of Billy Pilgrim also resembles a Möbius strip, as does the roller coaster reality proposed by Rumfoord. Both of these images approximate the Ouroboros I mentioned previously or, better yet, the lemniscate symbol often used as a symbol for infinity itself.

What Vonnegut's novels and these other fictions suggest is that strange time captures a particularly perplexing aspect of both consciousness and narrative. How can the universe be a simultaneity and also seem to flow through time? As I have argued, it requires looking at reality through two lenses, what Wilfrid Sellars calls the "scientific image" of particles and forces and the "manifest image" of everyday cognitive life.<sup>30</sup> Seen through the former, the universe is indeed the sort of block universe proposed by Einstein and Gödel, one that defies our commonsense. Seen through the latter, the universe flows precisely because it is ordered as such by our minds. If depth is best perceived from two points at once, then this conclusion drawn from Vonnegut's fiction in light of strange loops provides us with not only a deeper understanding of time but also a wonderful example of reconciling antipodes. Even if "[w]e are here on Earth to fart around" (*Man Without* 62), at least we might do so with a better idea of the sort of universe in which we do so. As I discuss in the next chapter, the reconciliation of opposites becomes a central concern in Pynchon's *Gravity's Rainbow*, and the novel's cybernetic strange loops complicate both cause/effect relationships and the subject/object divide.

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<sup>30</sup> Sellars introduces these terms in "Philosophy and the Scientific Image of Man," collected in *Science, Perception, Reality* (1963). Sellars is notable as a defender of neo-Kantianism.

## CHAPTER EIGHT

“OF COURSE IT DIDN’T HAPPEN. OF COURSE IT HAPPENED”:

STRANGE LOOPS, COGNITIVE SCIENCE, AND CYBERNETICS IN PYNCHON’S

*GRAVITY’S RAINBOW*

*In girum imus nocte et consumimur igni.*<sup>1</sup>

—Anonymous Latin palindrome

Thomas Pynchon’s novels have long been a favorite subject for critics and theorists interested in the connections between science and literature. Despite Pynchon’s personal familiarity with science and his willingness to engage its themes, his relationship with it is nevertheless, like most postmodernist authors, an ambiguous one, hovering somewhere between awe and trepidation. Katherine Hayles repeatedly draws attention to Pynchon’s complex stance toward science, and she makes him the author most representative of her proposed field model of literature.<sup>2</sup> Kathryn Hume, on the other hand, sees Pynchon’s project as mythography, concerned with dismantling myths—in the Barthesian sense of myth as propaganda or ideological tool—and replacing them with something less prescriptive (10). However, myth and science are not, as Hume suggests, necessarily mutually exclusive. As philosopher Karl Popper notes of this function of science:

Thus science must begin with myths, and with the criticisms of myths; neither with the collection of observations, nor with the invention of experiments, but

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<sup>1</sup> Literally, “We enter the circle at night and are consumed by the fire.”

<sup>2</sup> See *The Cosmic Web* (168-98); see also Slethaug for an excellent discussion of chaos theory in Pynchon’s work.

with the critical discussion of myths, and of magical techniques and practices.

The scientific tradition is distinguished from the pre-scientific tradition in having two layers. Like the latter, it passes on its theories; but it also passes on a critical attitude toward them. The theories are passed on, not as dogmas, but rather with the challenge to discuss them and improve upon them. (66-67)

Commenting on Pynchon's scientific mythography, critics such as Alan Friedman generally point to three major scientific themes at work in Pynchon: the clockwork universe model of Newtonian physics; the statistical model that envisions science as predictive; and the models of uncertainty that emerged from twentieth-century physical theories such as quantum mechanics (69). There has, however, been little work connecting Pynchon to cognitive science.<sup>3</sup> In a true postmodernist vein, his novel *Gravity's Rainbow* (1973)<sup>4</sup> heralds the technological marvels engendered by science while at the same time drawing his readers' attention to the disillusionment that comes along with a world overpopulated by information technology. This chapter aims to accomplish three goals related to this gap. First, I want to analyze how Pynchon integrates strange loops into his novel. Second, I want to develop the connection between the strange loop concept and cybernetics that I suggested in Joyce. As a consequence of this second point, I want to then discuss Pynchon's deconstruction of cause and effect.

Any attempt at a summary of *Gravity's Rainbow* is a monumental task. As in Borgesian cartography, any map of the novel is necessarily the territory, and "[n]o matter how much we work on *Gravity's Rainbow*, our most important interpretive discovery will be that it resists analysis—that is, being broken down into distinct units of meaning" (Bersani 113). It is the overall pattern rather than the details, the emergent structure rather than its components, that

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<sup>3</sup> The notable exception is Joseph Tabbi's *Cognitive Fictions*, which makes extensive use of Pynchon.

<sup>4</sup> Cited hereafter as *GR*.

lends the novel its semantic force. *Gravity's Rainbow* follows a loosely affiliated group of characters during and after World War II who are embroiled in various conspiracies surrounding the Germans' dreaded V rocket. Pynchon's fictional world is a deteriorating wasteland, swarming with espionage, conspiracies, and uncertain identities. It is also an extremely encyclopaedic novel, one that, like *Ulysses* or *Finnegans Wake*, is never content to circulate around a single node.<sup>5</sup>

The psychological aspects of *Gravity's Rainbow* demonstrate how enmeshed his literary world is with the empirical world of cognitive science. In *Cognitive Fictions*, Joseph Tabbi draws our attention to the extremely psychocybernetic nature of Pynchon's novel, arguing that it embodies a certain fictional technique that is not only concerned with consciousness but also how consciousness has mutated in the presence of various information technologies. Tabbi constructs a convincing analogy between Pynchon's fiction and media technologies, especially hypertextual ones. He sees this connection as evidence that Pynchon's texts reflect the findings of modularity theories in the cognitive sciences, theories which "challenge bounded conceptions of the mind in favor of a mind able to reflect back on itself and re-engage the environment after the accumulation of (previously indistinct) information" (76).

Indeed, the parallels that Tabbi notes between Pynchon's work and ideas from cognitive science such as neural networks and modularity are insightful. However, Tabbi notes that "[n]ot until *Vineland* and *Mason & Dixon* do the total loops in *Gravity's Rainbow* become strange loops, such that the desire to bring all things to consciousness is revealed for what it is: a residual humanism, fueled by resentment at the loss of individual autonomy in a managed and mediated culture" (xvi). Here I must disagree, because strange loops abound in Pynchon's novel—in fact, *Gravity's Rainbow* has all the hallmarks of a literary strange loop. All the

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<sup>5</sup> See Mendelson for a discussion of *GR* as an encyclopaedic novel.



indicators of a strange loop are here in the text: paradoxical double binds and circularities; nonlinear time where cause and effect disintegrate; and transgressions between the levels of subjective perception and objective observation.

### **Paradox and Labyrinths in Pynchon's Cybernetic Novel**

First and foremost, *Gravity's Rainbow* delights in paradox. For example, the narrator states near the novel's conclusion: "Of course it happened. Of course it didn't happen" (777). Highly reminiscent of Beckett's Liar Paradox in *Molloy*, Pynchon's version symbolizes his project to create a world of instability where the truth is not the center but the circumference. There is a hint of Poincaré here, just as in Joyce. It is perhaps no coincidence that Pointsman, a character whose name reminds us of Poincaré, is obsessed with points, Poisson distributions, and a seemingly arcane numerology. Poincaré's infinite point, which undergirds Escher's work and appears in Joyce, reappears here.

Typical of a literary strange loop, Pynchon's novel exhibits the obsessive circularity produced by these paradoxes, a circularity centered on self-reinforcing notions of self-concept. Like Joyce, he achieves this primarily through rhetorical repetition. For Pynchon "repetition tends to enforce not difference, but identity" (Hardack 91). He also directly invokes the language of cybernetics and its successor cognitive science in order to accomplish this. He uses the words "nodes" and "critical points" (*GR* 451) to describe centers of these spiraling structures in his "swirling fog of details" (326). This applies both to Pynchon's vision of history as such a system as well as his phenomenology of consciousness.<sup>6</sup> Consequently, the consciousness of the

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<sup>6</sup> It is interesting to note here that the recurring node in Pynchon's historical schema is the year 1904, the year in which *Ulysses* takes place. Many critics (for example, Robert Adams) have noted Joyce's influence on Pynchon.

novel's characters circulates around various thematic nodes, especially in their treatment of paranoia, itself like a strange loop run amok.

The nodes in *Gravity's Rainbow* are numerous, and like many of the narratives discussed thus far, they create a fictional reality akin to mental experience in its cybernetic modality. Hansel and Gretel, Slothrop's map, the mysterious network of Them, and the bizarre, clandestine machinations of Pointsman's Psi Section all reappear like leitmotifs throughout the novel in various guises, nodes in the text's engram. And, of course, there is always the returning neurosis about the V rocket, the mutual obsession of the novel's characters. This weaving produces a text analogous to Escher's prints, "not a disentanglement from, but a progressive knotting into" (3).<sup>7</sup> We are once again in the labyrinthine circularities of a strange loop.

But unlike Borgesian labyrinths, Pynchon's are not merely the book or the mirror or even just the mind, but the world itself, with all of its intricate pathways and corridors: "For [Borges] it is enough . . . to suggest to the reader's mind labyrinths and infinite regressions . . . Pynchon and Barth [among others] carry the reader down mazed paths, exhausting possibilities where Borges only posits them" (Cooper 33). Critics have repeatedly likened Pynchon's novels to labyrinths,<sup>8</sup> but there are two observations I would like to add. First, it would seem that Pynchon largely equates the image of the labyrinth with the Skinner boxes made famous by behaviorist psychology. Pynchon repeatedly mentions Pavlov, the father of behaviorism, and parodies this school that was famously displaced by Chomsky's devastating critique of behaviorism, an event which catalyzed the cognitive revolution in the late 1950s. Thus, in some sense *Gravity's*

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<sup>7</sup> See also the narrator's portrayal of Tyrone Slothrop as "this inexhaustively knotted victim" (*GR* 93). This draws us close to Lacanian typology, where knots are put to a similar effect. The similarities are not, given Lacan's focus on the mind and language, entirely coincidental.

<sup>8</sup> See especially Hawthorne.

*Rainbow* revels in feedback loops (and for that matter strange loops), and might be read as an extended critique of behaviorism.

Pushing this further, one might see the novel as a whole as a textual Skinner box within which Pynchon, like one of his demented Pavlovian characters, experiments on his characters as if they were rats in a maze. The labyrinth and this type of maze are in many ways identical in Pynchon. But, as with many aspects of Pynchon's work, this application is simultaneously parody. This prevents us from identifying all labyrinths in Pynchon with Skinner boxes. Indeed, in some ways, the strange loops qua labyrinths in the text function to satirize behaviorism, and instead replace the maze with the feedback loop which undergirds the cognitive paradigm that was replacing Skinnerian behaviorism even as Pynchon wrote the novel.

*Gravity's Rainbow* explores several other cognitive scientific principles to similar effect. One statement in particular draws these ideas together: "Parallel, not series. Metaphor. Signs and symptoms. Mapping on to different coordinate systems" (159). The first sentence echoes Pynchon's insistence throughout the novel that its series of nodes are parallel rather than serial. This is an important connection between the novel and cognitive theories of mind such as Dennett's and Hofstadter's, for whom the self is a series of parallel rather than series (i.e., hierarchical) functions. The second sentence suggests the integral role of metaphor in cognitive models following Lakoff and Johnson, a position similarly integrated into Hofstadter's phenomenology. Lastly, the notion of different coordinate systems is a nod to Pynchon's debate with Descartes.<sup>9</sup> Unlike the isolated essence of the cogito, Pynchon is proposing a different, more cybernetic model of consciousness.

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<sup>9</sup> Descartes developed the binary Cartesian plane of analytical geometry. I would also add here that these suggestions might certainly be drawn out further in a full-length study focusing on Pynchon and cognitive science more broadly. For example, Springer says in the novel: "But mistakes are part of it too—everything fits. One sees how it fits, ja? learns patterns adjusts to rhythms, one day you are no longer an actor, but free now, over on the

## Pynchon's Consciousness without Borders

Pynchon's world is always mediated through the mind—particularly the mind of the narrator. As the narrator notes of Pointsman: “what there is of labyrinth collapsing in rings outward, hero and horror, engineer and Ariadne consumed, molten inside the light of himself, the mad exploding of himself” (167). There are two instabilities here. First, there is the instability of identity in Pynchon's deteriorating postwar society. Second, there is the implosion of the self that is characteristic of the modern, and subsequently postmodern, condition. Pynchon demonstrates this with his persistent tendency to collapse the narrator's and character's voices. As Richard Hardack notes, this stylistic contagion is comparable to the Uncle Charles Principle that I briefly explored in my chapter on Joyce,<sup>10</sup> and the “resulting triangulations reflect both the cause and the effect of the radical triangulation and permeability of consciousness in Pynchon's work” (Hardack 95). There can be no single point of view, no omnipotent narrator in a strange loop because indeterminacy is such an integral part of its matrix. Realizing that the self is a non-entity, the narrator cannot assert any definitive identity; instead, he must satisfy himself through mimicking the voices of the characters, his very language melting into their idioms. Furthermore, he exists outside of the traditional frames of space and time, able to freely navigate between frames.

This unstable point of view suggests the cybernetic type of consciousness espoused by Hofstadter's concept and symbolized by the labyrinth. The narrator is one of the more obvious loops in the novel. Some critics have argued that “the narrator is the only character in the novel”

other side of the camera” (GR 300). Although I discuss Pynchon's all-exclusive ontology later in this chapter, I will here merely mention that Springer's statement addresses two aspects of Hofstadter's idea. The first is the notion of pattern. The other is the notion of error. As Springer sees it, mistakes are necessary. This echoes a title of a study by Hofstadter and David Moser: “To Err is Human; To Study Error-Making is Cognitive Science.”

<sup>10</sup> Hardack (95) notes the affinity between Dorrit Cohn's “stylistic contagion” in *Transparent Minds* and Kenner's principle, as well as its relationship to *style indirect libre* and stream of consciousness.

(Siegel 21), because he shifts so readily between minds. This shifting in part evinces that the narrator of *Gravity's Rainbow* “continually reminds us the reader that everything in the novel is a projection, expressively concretized, of one mind, and that this mind must interpret organic stimuli by the abstracting structures which every mind, consciously and unconsciously, provides” (31). One of these structures is the recursive feedback of the strange loop. The narrator serves as the glue that keeps the cosmic web of the novel together. Significantly, the narrator’s consciousness is a multicursal rather than a unicursal labyrinth, one whose paths bifurcate rather than dictate by any master design, no matter how much the characters are certain that such a design exists. Similarly, readers in Pynchon’s labyrinth are neither determined to any one path nor given a choice, a cybernetic expression of the paradox of choices between alternatives in a system that both determines and is determined by its constituent units.

Part of the reason for these labyrinths is the need to complicate boundaries. As Squalidozzi, the Argentinian gaucho leader, says, “We are obsessed with building labyrinths, where before there was open plain and sky. To draw ever more complex patterns on the blank sheet. We cannot abide that *openness*: it is terror to us. Look at Borges” (*GR* 307). The intertextual reference is appropriate because Pynchon adapts many of Borges’s concerns in the novel, particularly the labyrinthine nature of textuality. Pynchon also, like Borges, blurs the line between reader and text, to the point that the reader is perhaps just as taken in by the conspiracy as the characters.

Another Borgesian strange loop that reappears in the novel is the ouroboros. Pynchon’s repeated mention of Kekulé, whose famous formulation of the three-dimensional structure of benzene parallels the novel’s multi-dimensional plot, suggests also a strange loop, another Necker cube like the one I pointed out in my discussion of *Molloy*. Pynchon’s ouroboros is not a one-

dimensional cycle but a multidimensional loop, existing like a chemical resonance structure between forms, betwixt-and-between, its conformation neither cis- nor trans- , but in flux between these two states. Likewise, the self is in flux, as Pynchon's meditation on the ego testifies, a waveform alternating between sine and cosine but endlessly repeating itself like a cycle around the trigonometric unit circle. Not so much a *regressus ad infinitum* as an *emergentia ex infinitum*, the self constituting itself from the obsessive nodes of its paranoia. The narrator discusses how "Kekulé dreams the Great Serpent holding its own tail in its mouth, the dreaming Serpent which surrounds the World . . . The Serpent that announces, 'The World is a closed thing, cyclical, resonant, eternally-returning,' is to be delivered into a system whose only aim is to *violate* the Cycle" (80).<sup>11</sup>

### **Paranoia, Anti-Paranoia, and Strange Loops**

What these loops in the text also suggest is one of the more salient terms in Pynchon criticism: paranoia. As Kathryn Hume notes, "We gradually realize that everyone in the Zone is paranoid. All the Zone's inhabitants believe themselves to be the focus of plots, and all find connections in events that to outsiders look like mere coincidences" (*Mythography* 10). For Pynchon, paranoia has a specific, non-clinical definition: "Like other sorts of paranoia, it is nothing less than the onset, the leading edge, of the discovery that *everything is connected*, everything in the Creation, a secondary illumination—not yet blindingly One, but at least connected" (*GR* 820). This sort of paranoia is necessarily a condition of seeing everything as part of a larger cybernetic system. This seems at odds with the claim common in modernist and

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<sup>11</sup> In *The Act of Creation*, Koestler discusses Kekulé and the Ouroboros at length, noting the similarities between his holon concept and this discovery. Given the similarities between holons and strange loops, it is precisely this violation of levels that the novel's strange loops emphasize and which draw us into its fictional world.

postmodernist writing that the world is fractured and schizophrenic. Rather, Pynchon sees everything as interacting, and although disturbed by this, he realizes that it is the conscious mind that does the connecting. As some critics such as Tabbi and Hayles have noted, it is a thoroughly cybernetic worldview<sup>12</sup> where the mind is but one of many systems in a tangled hierarchy.

The primary result of this type of paranoia is the dissolution of the Cartesian mind/body dualism. “‘Yess, yess,’ all staring at him, ‘but then why keep saying ‘mind and body’? Why make that distinction?’” (*GR* 687). This statement echoes Pynchon’s own discomfort with mind/body dualism. This sort of paranoia also leads to the dissolution of subject and object. He recognizes that “‘subject’ and ‘object’ are not two entities which interact at the same level, but one and the same X on the opposite sides of a Moebius strip” (*Žižek, Parallax* 213). Indeed, this is a central concern for Pynchon, best demonstrated through his ultra-Pavlovian characters: “Kevin Spectro did not differentiate as much as he [Pointsman] between Outside and Inside. He saw the cortex as an interface organ, mediating between the two, but *part of them both*. ‘When you’ve looked at how it really is,’ he asked once, ‘how can we, any of us, be separate?’” (*GR* 165). As with Beckett and Joyce, Pynchon dissolves Descartes’s binary through a suspicion that nothing is discrete and everything is continuous. The “Cartesian x and y of the laboratory” (400) break down in Pynchon’s cybernetic system, and the collapse of dualism in the novel is thus a rejection of the cogito as an isolated essence. Rather, as in Hofstadter’s phenomenology, it is a pattern. Hardack calls this tendency “consciousness without borders” (102). It reflects Hofstadter’s notion that consciousness is not a “caged bird” but rather, in cybernetic fashion, always already interacting with other systems.

In a sense, Pynchon’s notion of paranoia is a symptom of “the humanist and modern need to make things connect, to discover form, to shape chaos into cosmos” (Olsen 73-74). It is

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<sup>12</sup> In *Cognitive Fictions*, Tabbi notes parallels between Pynchon and Bateson’s cybernetics (35).

therefore a creative impulse. Pynchon's creative paranoia is in some sense analogous to Hofstadter's notion of cybernetic creativity, the idea that new forms can be created by the rearrangement of old rules through recursive enumeration. This is the logic of linguistic creativity as well: "Or has he by way of the language caught the German mania for name-giving, dividing the Creation finer and finer, analyzing, setting namer more hopelessly apart from named, even to bringing the mathematics of combination, tacking together established nouns to get new ones, the insanely, endlessly diddling play of a chemist whose molecules are words" (*GR* 455). Although on some level, Pynchon is commenting on the tendency in German to form new words by concatenating preexisting ones, he is also commenting on the process of literary production as linguistic creativity. "Of the stitching and unstitching of words, there is no end," the Buddha reminds us. Pynchon's novel embodies this doctrine in a manner similar to Calvino's "infinite novel" or Joyce's anti-novels.

But if Pynchonian paranoia describes a worldview where everything exists within a larger system, then anti-paranoia represents the sort of fracturation often associated with modernism. "If there is something comforting—religious; if you want—about paranoia," Pynchon's narrator states, "there is still also anti-paranoia, where nothing is connected to anything, a condition not many of us can bear for long" (506). The tension between these two viewpoints is the very tension between the monism suggested by the strange loop concept and the discontinuities it attempts to map. This tension is also the dialectic between harmony and complexity, between holistic and reductive systems. Systems for Pynchon, which might be megacorporations or behaviorism or "meaning-making modes of consciousness—spell the end of change and finally cultural, psychological, and physical death on a cosmic scale. Anti-paranoia, on the other hand, is the posthumanist and postmodern delight in the endless production of signifiers without



signifieds” (Olsen 74). These are the poles of Zen and Western rationalism, universals and particulars.

In part, the anti-paranoia decried by Pynchon is a symptom of perceiving chaotic systems everywhere, not the least of which is the self once the myth of the unified center has been exploded by scientific epistemology. This is an extension of Bacon’s Idols of the Tribe to cybernetics as a whole. But the patterns intuited in the system consist of information, making the chaos in Pynchon is akin to entropy, which he explicitly discusses both in *The Crying of Lot 49* and an appropriately titled early short story, “Entropy.” Pynchon reminds us that his (and ours) is a world where transcendent order has disintegrated in the face of social anarchy and the intellectual fragmentation catalyzed by increasingly compartmentalized sciences. It is a universe ruled by chaos and chance. Indeed, “[t]here was no difference between the behavior of a god and the operations of pure chance,” a suggestion that natural chaos has eclipsed any notion of a rational god of order (*GR* 376).

This chaos is precisely what emerges when binaries are dissolved. The binary notions that guide Pointsman’s entire outlook on life are called into question, and yet at the same time contemporary neuroscientific models vindicate them. The brain is indeed a composite of all-or-nothing components because there are no gradients on a neural level—either a neuron fires or it doesn’t. Consequently, “Pointsman can only possess the zero and the one” (*GR* 63). Pointsman espouses a cybernetic vision of the mind as a computer: “he imagines the cortex of the brain as a mosaic of tiny on/off elements. Some are always in bright excitation, others inhibited. The contours, bright and dark, keep changing. But each point is allowed only two states: waking or sleep. One or zero” (64). But Pynchon’s novel does not allow these tidy binaries to establish

any stability; the novel is perpetually retreating from systematization, resisting attempts to reduce it by any binary, structuralist logic.

In many ways, Pynchon copes with this dissolution of binaries through the same paradoxical means I pointed out in Kafka, Borges, and Beckett. Appropriate to any literary strange loop, Pynchon delves into the realm of Gödel and his Incompleteness Theorem. In fact, Pynchon explicitly mentions Gödel at several points in the text, drawing our attention to the necessary incompleteness of both his textual system and the cognitive one that it in part attempts to understand. He also alludes to Gödel's suicide in a poem, after which Pynchon remarks:

In its [the poem's] complete version it represents a pretty fair renunciation of the things of the world. The trouble with it is that by Godel's Theorem there is bound to be some item around that one has omitted from the list, and such an item is not easy to think of off the top of one's head, so that what one does most likely is go back over the whole thing, meantime correcting mistakes and inevitable repetitions . . . well, it's easy to see that the 'suicide' of the title might have to be postponed indefinitely! (*GR* 372)

Incompleteness is crucial here, since no system can hope to encapsulate everything without running into the self-referential paradoxes that have cropped up throughout this study. There is a suggestion in Pynchon's interpretation of Gödel that in writing a poem about suicide that attempts to fully flesh the reasons for such a deed, the very act of enumeration leads to a self-referential regress. This is part parody, part serious speculation. In some ways, one might see Pynchon's novel in a similar light: one can never completely read it because there is something always waiting to be included in its interpretation—a sort of hermeneutic circle out of control.

Pynchon mentions Murphy's Law as a version of Gödel's Theorem, but his knowledge of Gödel suggests a more technical familiarity with its implications. Mark Richard Siegel argues that both Murphy's Law and Gödel's theorem imply that, rather than being a determined system, Pynchon's novel is always open to possibilities (18). Furthermore, Pynchon wrought a certain literary antiderivative, expanding levels outward through integration. The calculus alluded to in the text is perhaps better understood as the science of level-crossing, or better yet, as the literary calculus of level-crossing in the novel itself. For example, Slothrop never quite knows whether he is hallucinating, being deceived, or experiencing authentic reality. These paraworlds are specifically paranoid for Pynchon, levels of suspicion nested into each other like Matryoshka Dolls such that, when characters (and readers) reach what they believe to be the smallest unit, they find themselves back at the outermost frame, bewildered and skeptical. That said, paranoia for Pynchon does not appear to be pathological, but rather it describes a normal reaction to social stimuli, a symptom of our inherent uncertainty about people's intentions, state machinations, and even our own perceptions. The self is meta-stable for Pynchon in part because it lies within a network that is likewise meta-stable, a system of systems including history, political systems, and society. And in turn these systems depend upon individuals, shaping and shaped by them. Pynchon's "System" is just that: an ever-widening gyre that envelops everything from the microscopic particle to the macroscopic forces of society.

The notion of system (or System), bandied about often by both Pynchon and his critics, presents an interesting consideration. Joseph Tabbi notes that two major systems reappear throughout *Gravity's Rainbow*: the mystic and the scientific. Perplexed by what he sees as Pynchon's tendency in the novel "to deploy as many psychics as scientists" ("Apollonian" 160), Tabbi suggests that Pynchon is drawing our attention to these fields not as antipodes but as

versions of a single system. Rather than the traditional approach in Pynchon criticism to explain the mystical elements in terms of scientific concepts about chaos and mathematics, Tabbi proposes them as part of a cybernetic network he calls the “Apollonian Dream,” a term drawn from the novel itself. Tabbi sees this as the novel’s “unifying structural conceit” (162), a means of depicting “a level at which the complex of technical metaphors and supernatural elements within the narrative unite Pynchon’s social, psychological, and technological vision” (162). He follows Pynchon in connecting the modifier “Apollonian” with the sense it carries in German philosophers such as Schelling and Nietzsche, the creative impulse opposed to Dionysian destructiveness. Certainly this is a valid reading. But I would like to connect this observation with the possibility that the Apollonian Dream also refers to a fractalic strange loop.

Critics have noted the chaotic fractal patterns in Pynchon,<sup>13</sup> but none have considered the Apollonian gasket as both a visual and conceptual analogue to Pynchon’s novel as a whole. Read beside Tabbi’s notion of the Apollonian Dream, the Apollonian gasket visualizes the novel’s bifurcating structure. Such patterns share with the strange loop a recursiveness that, as one descends through the levels of iteration, forces readers into self-similar topologies. This fractalic pattern resembles the repeated patterns I described in *Finnegans Wake* and *The Castle*, fracturing toward infinity to generate complex self-referential loops. One might also characterize the self in Hofstadter’s phenomenology in this way, a constantly refining set of operations that produce a marvelously complex tapestry. Pynchon’s novel, like Joyce’s, replicates microstructures in macrostructures, microstructures in macrostructures, creating a complex tangled hierarchy.

We see a fuller picture of Pynchon’s concept of self emerging, one that certainly conflates levels of reality in its persistent search for identity and intertwines itself with nonlinear spacetime

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<sup>13</sup> Notably Hayles in the last chapter of *The Cosmic Web*.

to define itself as autopoietic; but this perspective of the self is also one that is always already bound to its context, writing and written by broader circumstances. As Pynchon's narrator states in his discussion of the engineer Pökler's moment of self-realization:

. . . He thought of himself, there and here, as a radio transmitter of some kind, and believed that whatever he was broadcasting at the time was at least no threat to them. In his electro-mysticism, the triode was as basic as the cross in Christianity. Think of the ego, the self that suffers a personal history bound to time, as the grid. The deeper and true Self is the flow between cathode and plate. The constant, pure flow. Signals—sense-data, feelings, memories relocating—are put onto the grid, and modulate the flow. We live lives that are waveforms constantly changing with time, now positive, now negative. Only at moments of great serenity is it possible to find the pure, the informationless state of signal zero. (470)

This state of signal zero is similar to Hofstadter's blend of Zen and science, or the Buddhist notion of the non-self. Only in this state of no information—the precise opposite of entropy since entropy in information theory implies increasing rather than decreasing amounts of information—can the self recognize its own illusoriness. It is not a static essence or soul but a dynamic, metastable flow. It is modulated by sensory stimuli and memories, but it is not defined by them.

### **Effects and Causes in *Gravity's Rainbow***

One of the most notable deconstructions of a binary in the novel is its dissociation of cause and effect. Pynchon's narrator speculates that “[t]he next great breakthrough may come

when we have the courage to junk cause-and-effect entirely, and strike off at some other angle” (GR 89). Is Pynchon proposing that, in his own dissociation of these classically inseparable binaries, his novel is that “other angle”? “You will want cause and effect,” Pynchon’s narrator tells his reader in an act of rhetorical metalepsis before conceding, “All right,” as if forced to conform to this linear logic (772).<sup>14</sup> But both the chaotic anti-paranoia and the cybernetic paranoia in Pynchon are reinforced by his suggestions throughout *Gravity’s Rainbow* that time is not linear. Hardack sees this as a result of Pynchon’s approach to consciousness: “Through this use of radical free indirect discourse, consciousness itself is relentlessly ventriloquized or echoed, and located *outside* individual identity; some narrator absorbs, duplicates, and disperses the voices of the characters s/he is discussing and, in so doing, decenters notions of self-contained subjectivity and linear time” (94).

This is most evident in the frequent discussions of the V rocket<sup>15</sup> as an object that betrays any concept of linear sequence, either spatial or temporal: “Imagine a missile one hears approaching only *after* it explodes. The reversal! A piece of time neatly snipped out . . . a few feet of film run backwards . . . the blast of the rocket, fallen faster than sound—then growing *out of it* the roar of its own fall, catching up to what’s already death and burning . . . a ghost in the sky” (55). Pynchon is positing a technology so powerful that it literally inverts our normal notions of cause and effect, more than merely a weapon that breaks the sound barrier. This is the reversible aspect of strange or cognitive time. It is also the Einsteinian time I explored in Vonnegut’s fiction, time configured much like a film whose frames seemed arrayed in order but

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<sup>14</sup> There are numerous other references to this inversion in the text (see GR 89, 752).

<sup>15</sup> It is also worth noting that the rocket is a symbol of infinity, especially if we consider its serial number 00000 as both a series of concatenated zeros and an extended lemniscate. Although I don’t have the space to treat this suggestion in full here, we might consider Rucker’s question: “What if we regard 0 and  $\infty$  as being in the same place?” (211).

are in fact present simultaneously on the reel. As Hardack notes of this tendency in Pynchon's fiction, "Events do not unfold in time, but in relation to one another" (92). As a similar simultaneous loop, the book itself is like the V rocket, opening with the sound of its own detonation but closing in silence. In this sense, *Gravity's Rainbow* resembles both *Finnegans Wake* and *Slaughterhouse-Five* as a novel that begins where it ends (or ends where it begins).

The path of the rocket as a metaphor for nonlinearity is certainly neither new nor exclusive. But it suggests several aspects about time little discussed by critics. At one point the narrator asks his audience, "Do you find it a little schizoid [. . .] breaking a flight profile into segments of responsibility? It was half bullet, half arrow. *It* demanded this, we didn't" (*GR* 453). It's as if the rocket were sentient, conscious even, and somehow controlling every movement in the novel's fictional world. If we take the characters' creative paranoia seriously, the rocket is in fact doing this in the sense that it drives the plot and dictates its characters. But it also makes an interesting comparison with an arrow; specifically, it invokes Zeno's arrow. In a system where time can be conceived as arbitrary and illusory units, control becomes uncertain. Are we controlled or free to choose? This dilemma infuses Pynchon's oeuvre as a whole and any treatment of it requires more space than I have here. But what is important is that Pynchon's concern with control in the novel suggests cybernetics yet again. Indeed, the subtitle of Wiener's germinal book on the subject is "control and communication in the animal and the machine."

A similar temporality emerges during the novel's first séance. We learn during these bizarre paranormal scenes in the text that "spirits from other parts of the veld . . . time and space on their side have no meaning, all is together" (*GR* 153). Rathenau, the ghost of an assassinated German foreign minister, states to the living: "You are constrained over there, to follow it in time, one step after another. But here it's possible to see the whole shape at once" (165). This is

an echo of Rumfoord's and the Tralfamadorians' perspectives *sub specie aeternatis*, the ability to jump outside the system and see time as a simultaneous Gordian knot. Hardack sees in this a reflection of Emerson as well because "[i]n Emersonian terms, everything happens all at once and has also already happened" (101). In a sense, Rathenau is also speaking across the frame of the novel itself to the readers and critics. Like the characters within the novel, we too are unable to fully see Pynchon's literary artifact all at once; we have no Aleph, so to speak.

Pynchon expresses a complementary view of time when he summarizes time as described by the Herero technicians working on the rocket later in the novel: "The Erdschweinhöhle will not be bound, like the Rocket, to time. The people will find the Center again, the Center without time, the journey without hysteresis, where every departure is a return to the same place, the only place" (*GR* 370). There are hints here of what Marcel Eliade calls "the eternal return," a rejection of what Pynchon calls "the oneway flow of European time" (*GR* 724). It also suggests the strange time I introduced in my chapter on Vonnegut as a desire for the unity of cosmos rather than the disunities of history. Pynchon's use of nonlinear time thus allies him with the other authors I have discussed insofar as time in the novel is dynamic and nonlinear, which consequently dismantles discrete boundaries between cause and effect.

Dismantling cause and effect suggests two major points in Pynchon's novel. One is the autopoiesis professed in the novel; the other is the negation of any First Cause. Both points are expressed cogently during one of the novel's séances:

It's control . . . For the first time it was *inside*, do you see. The control is put inside . . . A market needed no longer be run by the Invisible Hand, but now could *create itself*—its own logic, momentum, style, from *inside*. Putting the control inside was ratifying what de facto had happened—that you had dispensed with



God. But you had taken on a greater, and more harmful, illusion. The illusion of control. That A could do B. But that was false. Completely. No one can *do*. Things only happen, A and B are unreal, are names for parts that ought to be inseparable. (*GR* 34)

Pynchon describes a self-creating system—in this case explicitly the market, but this is a synecdoche for practically every system in Pynchon—as well as the disintegration of cause and effect. In some sense, this represents an attempt to rationalize an otherwise senseless historical moment. As in Vonnegut’s *Sirens of Titan*, it calls into question any sense of history as a linear sequence.<sup>16</sup> As Roger Mexico notes early in the novel: “Innocent as a child, perhaps unaware—perhaps—that in this play he wrecks the elegant rooms of history, threatens the idea of cause and effect itself . . . Will Postwar be nothing but ‘events,’ newly created one moment to the next? No links? Is it the end of history?” (*GR* 64-65). This is anti-paranoia, the notion that things are disconnected, free-floating, signifiers without signifieds, an extreme postmodernist perspective. There are, in this worldview, no referents because all foundationalist connections have dissolved. It is also the paranoia of Hegel, Fukuyama, and Baudrillard.<sup>17</sup> History comes to an end when time ceases to function in a linear, one-to-one fashion, when events can no longer be rationally explained syllogistically. It is a paranoid theory that history is a feedback loop of conspiracies and ulterior motives where one cannot delineate any clear connection between cause and effect (*GR* 277).

In another sense, Pynchon is again satirizing the binary if-then logic of Pavlovian behaviorism. In the face of the war’s madness, any linear explanation of human behavior fails to

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<sup>16</sup> Roger Mexico’s play “wrecks the elegant rooms of history, threatens the idea of cause and effect itself” (*GR* 56).

<sup>17</sup> See Hegel’s *Phenomenology of Mind*, Fukuyama’s *The End of History and the Last Man*, and Baudrillard’s *Simulation and Simulacra* for developments of three different, though certainly connected, theoretical versions of this idea.

encapsulate how such horror could have unfolded. Indeed, Pynchon mentions Pavlov throughout the novel as a prototypical behaviorist. As the Pavlovian Spectro notes, “You’re putting response before stimulus” (56). This inversion yet again suggests that temporal strange loops confound traditional conceptions of cause and effect.

Another result of this inversion of cause and effect is reversibility, an aspect of many strange loops that, while not definitive, is nevertheless an important point. I touched upon this briefly in my reading of Vonnegut, but I want to mention it again here. Hofstadter discusses an example such a loop in *Gödel, Escher, Bach* called the “Crab Canon,” a musical exercise patterned after the Escher print of the same name. This type of canon can be played in reverse such that the voices switch roles but the melody remains the same. Again, not all strange loops are reversible, but there they often exhibit a certain bidirectionality. Again, Barthes’s notion of the reversible text as the ideal text comes to mind, but I would like to add several caveats here. First, reversibility is not a criterion of a strange loop. Second, with the exception of palindromes, it is nearly impossible to create a literary work that is reversible in all respects—and no one has yet written a palindromic novel. Instead of formal reversibility, temporal strange loops emphasize the nonlinear bidirectionality of strange time. This stems in part from the reversibility of time in the laws of physics. This is Lochschmidt’s paradox, where despite the supposed reversibility of all physical laws, we do not experience the world as such even though everything about the mathematical systems we use to explain it tells us otherwise.

This reversibility is not absolute; remember, nothing is absolute in Pynchon’s novel and everything is relative. As with Vonnegut, this suggests on a grand scale the Einsteinian revolution in physics, with its shift in emphasis from absolute space and time to relative spacetime. As a consequence of the reversibility I touched on in Vonnegut, Pynchon’s literary

universe is both reversible *and* irreversible. In other words, the novel struggles with cognitive dissonance with respect to directionality as much as it does with holism/reductionism. Pynchon admits as much when he states, “the reality is not reversible” (*GR* 151). Similarly, the Rocket is also described late in the novel as the “Great Irreversible” (745). Considering again the Rocket as the text (and therefore as a mind, in Kavin’s sense), it cannot possibly be read in reverse, despite the narrator’s injunction to the readers to “edit, switch, insert” (302). Late in the novel he extends this suggestion: “its text is theirs to permute and combine into new revelations, always unfolding” (727). Is this a rhetorical metalepsis that attempts to draw us as readers and critics into the text? Is this also the description of mind and language as a complex combinatorial system? Always the engineer, Pynchon never seems quite able to jettison the scientific worldview, even when such a worldview conflicts with our commonsense perceptions about reality.

In this way, might one consider this type of paranoia to be a parody of science, which claims to create systems of knowledge capable of connecting everything in the universe beneath a Grand Unified Theory? As Patricia Waugh asks of literary depictions of science, “In a radical extension of Kantianism, it may then be argued that scientists simply impose models on the world rather than discover them in the world” (40). There is an affinity here between such radical Kantianism and Pynchonian creative paranoia whereby a system is created that describes reality but does not necessarily inhere in it. This is an extreme expression of Kuhn, but also a line of reasoning that echoes Gadamer’s critique of objectivity in *Truth and Method*.<sup>18</sup> Systems that purport to be entirely objective fall into the fallacious trap of believing they somehow transcend the limits of language. No known language, not even the elegant syntax of

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<sup>18</sup> Gadamer, like most phenomenologists, locates meaning in our lived experience rather than in any objective reality.

mathematics, has yet been able to overcome this obstacle. Pynchon is in part drawing our attention to the pervasive presence of language in all of our systems attempting to describe nature.

In some ways, though, this paranoia is more appropriately the sort of connectedness apparent in the strange loop concept, particularly evident in *Gödel, Escher, Bach*'s seemingly schizophrenic treatment of topics from music theory to logic to genetics. And this is one of its strengths. As a concept, the strange loop represents the connectedness across disciplines required of any properly psychosemiotic pattern. What results is a "Gödel Vortex—Where All Levels Cross" (*GEB* 713). But more importantly, both Pynchon's novel and Hofstadter's work goad us into jootsing, stepping outside the Skinner box of our mind to see the greater patterns at work: "We have to play the patterns. There must be a pattern you're in, right now" (*GR* 257). This statement is not merely directed at the characters but also at the readers *as minds*. Frames here disintegrate to a degree greater than anything one finds in Calvino, Borges, and O'Brien. The closest comparison is the Zen connection which seems to pop up around every turn.

### **What Do We Do Zen? Looking Ahead**

"You are either alone absolutely, alone with your own death," Pynchon's narrator claims, "or you take part in a the larger enterprise, and you share in the deaths of others. Are we not all one?" (*GR* 454). There are two results worth mentioning in brief here. First is the connection between this statement and Hofstadter's extended mind. In Pynchon's phenomenology, characters (and therefore persons more broadly) internalize others because they possess a Theory of Mind, the seemingly human-specific capacity that endows us with empathy. Paranoia in this sense is also the Zen state of satori, the ultimate realization of holism: "The oneness dividing

itself into subject-object and yet retaining its oneness at the very moment that there is the awakening of a consciousness—that is satori” (Suzuki 24). But Tabbi reminds us, “This is not exclusively an expression of a holistic zen vision” (Tabbi 176). Indeed, as in cognitive science’s appropriation of cybernetic principles, Pynchon retains the necessary tension between whole and part in all systems, including those that produce emergent consciousness.

However, there is some suggestion in the novel that perhaps these connections are paranoid in the traditional sense, not evidence of any real connection but fabrications of an overactive mind. For example, Slothrop suggests that his encounter with the octopus assassin may never have happened (*GR* 291), a suggestion that mirrors Pynchon’s occasional references to LSD and schizophrenia. This disintegration of opposites is precisely what I have indicated in various manifestations of the strange loop: “you weaken this idea of the opposite, and here all at once is the paranoid patient who would be master, yet now feels himself a slave . . . who would be loved, but suffers his world’s indifference . . . Our madmen, our paranoid, maniac, schizoid, morally imbecile” (56). Such a breakdown seemingly leads to the so-called “ultraparadoxical phase” observed in the novel’s behaviorist laboratories, a prefiguration of Bateson’s double bind theory of schizophrenia where stimulus and response—indeed all categorical opposites—become hopelessly confused.

Finally, I must consider whether paranoia as discussed by the characters is in fact what it seems to be at first glance because “[a]ll the paranoid thinking in the novel is probably justified, and therefore . . . really not paranoid at all” (Bersani 101). Therefore, one might suspect that the various instances of paranoia throughout the novel are not necessarily pathological, more schizoid than schizophrenic.<sup>19</sup> As I will show in my final chapter, this leads to questions about

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<sup>19</sup> For every mystical unity where a character unites opposites, “there is a Pointsman or Mucho who becomes schizophrenic or quadrophenic, or loses all sense of boundary to the self” (Hardack 110).

the strange loop structure. Does it describe a certain type of madness? Can we establish any certainty when strange loops seem to define themselves with themselves in a vicious infinite regress? There is no certainty in the novel because the question always looms that, given the often metafictional nature of the novel itself, is it itself weaving delusional fictions? This leads us to the consideration that paranoia in Pynchon does indeed imply a pathological condition, a very specific type of madness: schizophrenia. In such a condition, a normal consciousness becomes so entangled in its own Gordian knot of illusions that escape seems impossible. It is to this ontological confusion that I turn my attention in the final chapter on the strange paraworlds of Philip K. Dick.

## CHAPTER NINE

### IT'S A MAD, MAD, MAD, MAD WORLD: PARAWORLDS, STRANGE LOOPS, AND SCHIZOPHRENIA IN THE WORK OF PHILIP K. DICK

*Crazy, but that's how it goes . . .*

—Ozzy Osbourne

Up to this point, I have attempted to liken strange loop patterns to the self-referential processes underlying normal consciousness. But what about abnormal processes? More specifically, what about the schizophrenic structures that seem to recur in the authors discussed so far? Is there a connection between the strange loop and that more colloquial “loopiness” usually associated with mental illness? In his essay collection *Metamagical Themas*, Hofstadter provides a fitting anecdote in his discussion of self-referential sentences<sup>1</sup>: “And Loul McIntosh, who works at a rehabilitation center for formerly schizophrenic patients, had a question connecting personal identity with self-referential sentences: ‘If I were you, who would be reading this sentence?’ She then added: ‘That’s what I get for working with schizophrenics’” (35). Hofstadter calls this type of linguistic Liar Paradox “literary schizophrenia,” expressed in such sentences as “‘You have, of course, just begun reading the sentence that you have just finished reading’” (35) or, even better, something like this: “‘This sentence contains threee

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<sup>1</sup> Both “On Self-Referential Sentences” and “Self-Referential Sentences: A Follow-Up,” collected in *Metamagical Themas*, are playful and suggestive accounts of the various “snags and snarls” caused by linguistic self-reference. Here, Hofstadter develops many of the ideas he introduced in *GEB*, but I would recommend that anyone interested in reflexivity as it manifests in language consult these chapters in full.

errors.”<sup>2</sup> The literary schizophrenia to which Hofstadter refers suggests an interesting and as yet unexplored consequence of the strange loop concept’s application to consciousness, especially in literature.

In some ways, this final chapter is admittedly more speculation than argument, although I hope the seeds of an argument will germinate within it. Throughout my exploration of strange loops, I have pointed out several instances in the texts where location is uncertain, either in time, space, or narrative frame. This uncertainty is a symptom of the strange loop structure’s circularity and inter-dimensionality. But it also forces us to ask questions about what this uncertainty might suggest about the mind’s ability to establish its place in the world. In many of these novels, and especially in parts where strange loops feature most prominently, it seems that we are literally and figuratively lost, confused, or perhaps insane. Indeed, the suggestions of madness in the subtexts of the narratives thus far discussed suggest a particular type of insanity: schizophrenia.

Before turning specifically to Philip K. Dick’s work, here I must first lay out in detail exactly how the strange loop is connected to schizophrenia more broadly. Schizophrenia is usually discussed in literary theory, following Deleuze and Guattari, as the defining symptom of postmodernism.<sup>3</sup> Yet if it is, to them and others, *the* cultural malady of postmodernism (or at least a dominant trope), then it seems likely that it relates to—or even emerges from—that other dominant postmodern paradigm: autopoiesis. Is schizophrenia autopoiesis out of control?

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<sup>2</sup> This one includes several layers of reference because when you count the spelling errors, there are only two. The trick is that the third error is on a semantic, not a syntactic or orthographic level, because the sentence makes a mistake in counting its own errors. Hofstadter lists many similar examples to this one in *Metamagical Themas*.

<sup>3</sup> See *A Thousand Plateaus: Capitalism and Schizophrenia*. See also Jameson’s *Postmodernism, or the Logic of Late Capitalism*. It is worth noting that Jameson is an influential Dickian critic, and it is quite possible that Dick’s work is partially responsible for Jameson’s tendency to liken postmodernist aesthetic practices to schizophrenia given the prominence of this mental disorder in Dick’s oeuvre.



Unfettered imagination? Hypercreativity? The allure of connecting artistic creativity (and indeed, scientific and mathematical variations of such creativity) with schizophrenia is deeply imbedded in Western thought.<sup>4</sup> This partially arises from a need to explain extraordinary feats of imagination as somehow aberrant, even pathological. After all, if they were normal, everyone would be capable of accomplishing artistic prominence, which is certainly not the case. Thus, such arguments run, hypercreativity must be a pathology—and few psychological pathologies produces stranger behavior than schizophrenia. But the reality is different. Schizophrenics cannot control their hallucinations, whereas artists—and authors especially—are crafting deliberate artifacts (whether or not unintended meanings are later excavated from them). True, artists often claim to be working from instinct, possessed by the Muse, acting as if they are not in control of their faculties; but the evidence suggests that, in praxis, art is an expression of will rather than instinct, and creativity is not necessarily correlated with madness.<sup>5</sup> Neither is postmodern culture schizophrenic in any literal sense.

Instead of a sociocultural metaphor, schizophrenia is more properly a clinical disorder with very real correlates in the mind/brain.<sup>6</sup> Rather than a homogeneous mental disorder, schizophrenia falls into several overlapping categories, including paranoid, catatonic, and disorganized.<sup>7</sup> This typology, while important, is not the typology I follow here; I am not

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<sup>4</sup> This relationship remains controversial. Clinical studies connecting the two continue to proliferate (for example, Grocke and Castle's "Music, Music Therapy, and Schizophrenia") despite claims such as R. Keith Sawyer's: "The connections between creativity, schizophrenia, and manic-depressive illness are intriguing, but when you review all of the scientific research, the bottom line is that there isn't convincing evidence of a connection between mental illness and creativity" (171). Sawyer asks whether this might be the result of its changing clinical definition.

<sup>5</sup> This is not to discount the thesis of Dutton's *The Art Instinct*, which in some ways follows Pinker's language instinct in positing art as an evolved human capacity with specific adaptive advantages. But Dutton does draw categories in his definition of art that are in my opinion fuzzy sets.

<sup>6</sup> For a recent authoritative overview of the condition, see Tsuang, Faraone, and Glatt's *Schizophrenia*.

<sup>7</sup> See the DSM-IV for a breakdown of the various sub-types of schizophrenia and a more detailed clinical outline of their respective symptoms.

attempting to associate different schizophrenic subtypes with literary strange loops, but rather to point out the common ground between the symptoms common between its subtypes and the aspects of the strange pattern I have thus far discussed in a literary context. In many respects, schizophrenia is a three-fold pathology, and these three aspects correspond to the three major divisions of this dissertation. In fact, these three divisions offer an intriguing path for the possible development of a cognitive literary theory of schizophrenia, although I will only be able to lay out a rudimentary blueprint of such a theory here.

First, schizophrenia is a problem of the self. Schizophrenics are unable to configure themselves as cohesive beings. They often suffer delusions wherein they are someone else, such as a historical person, or perhaps several such people. Here the pathology overlaps with certain forms of multiple personality disorder, but to some degree these types of delusions are versions of cognitive symbiosis out of control. The self-concept that in normal cognition sustains a person's belief that they are a single, continuous person breaks down. The Möbius strip of consciousness is cut so that, for the schizophrenic, "self and the non-self, outside and inside, no longer have any meaning whatsoever" (Deleuze and Guattari, *Anti-Oedipus* 2).

Second, schizophrenia is a linguistic problem, accompanied by narrative incoherence, a loosening of associations, and a general linguistic deficiency. Schizophrenic patients are often unable to maintain a coherent self-narrative. In other words, their narrative center of gravity has imploded. Furthermore, they frequently lose their ability to communicate, often drifting into what is sometimes referred to as "word salad." The frames which conceptual blending theories from cognitive linguistics say are so important to how we configure reality break, leaving the schizophrenic not only uncertain as to which level they inhabit, but also unable to effectively communicate this experience.

Lastly, if schizophrenia is a spatio-temporal disorder, as cognitive scientist David Eagleman and others suggest, then a connection with the self as spatio-temporal strange loop presents itself.<sup>8</sup> Schizophrenics cannot configure themselves in relation to time as a normally functioning person would: they become, like Vonnegut's Billy Pilgrim, "unstuck." Critical treatments of Vonnegut's work have emphasized this connection as well,<sup>9</sup> and clinical evidence paints a similar picture of schizophrenic time as nonlinear. The fractured time often associated with modernism and postmodernism seems to reflect this pathological breakdown of traditional, linear concepts of time.

These divisions immediately remind us of the three primary ways which strange loops seem to be divided. If, as Daniel Dennett suggests, one of the best ways to test a theory is to induce a pathology in it, then it would seem appropriate to at least flirt with the possibility that strange loops might model aberrant as well as normal modes of consciousness. Therefore, it is perhaps no coincidence that the authors I discuss here as prime examples of strange loops are nearly all discussed by critics in connection to schizophrenia, a fact I have mentioned in passing in the previous chapters. For example, psychiatrist N. J. C. Andreason discusses this connection in "James Joyce: A Portrait of the Artist as a Schizoid" (1973). After reading *Ulysses*, Carl Jung confessed that he thought Joyce was schizophrenic.<sup>10</sup> Kafka and Beckett have likewise been discussed in this context, as have Vonnegut and Pynchon.<sup>11</sup> Could the preponderance of these

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<sup>8</sup> See Densen's "Time Perception and Schizophrenia" and also Davalos et al.

<sup>9</sup> See Broer.

<sup>10</sup> Jung treated Lucia Joyce, Joyce's daughter, for schizophrenia, for which she was diagnosed. Beckett had a close (though platonic) relationship with her early in his career. Also, an argument might also be made for *FW* as "art therapy," an attempt by Joyce to cope with his own mental condition, although this is speculative.

<sup>11</sup> Kudzus sees schizophrenic tendencies in Kafka. Numerous critics have likewise seen this theme in Beckett, but see Barnard and also Keatinge. I already suggested in Chapters Seven and Eight that similar observations have been

studies partially be the result of the preponderance of strange loop patterns in all of these authors, especially in the ways they represent consciousness?

This is an especially intriguing question when one considers the role of cybernetics in theories of schizophrenia.<sup>12</sup> The most well-known of these theories is one developed by Gregory Bateson called the double-bind theory. Significantly, Bateson's double-bind theory of schizophrenia finds its origins in the Liar Paradox that undergirds strange loops. According to Bateson's article "Double Bind, 1969," the schizophrenic experiences the cognitive equivalent of the Liar Paradox, unable to reconcile two simultaneous, mutually exclusive states of mind. This leads to a breakdown because the schizophrenic cannot maintain these frames, making metacommunication (among other processes) impossible. In later developments of Bateson's idea, this double-bind was seen to exist outside schizophrenia, aligning it to some degree with what cognitive science calls cognitive dissonance.<sup>13</sup>

What I am suggesting is that, in an expansion of Bateson's double-bind theory of schizophrenia, strange loops seem to point to a structure underlying all three aspects of the disorder. These might also be a reason why schizophrenia is so often affiliated with modernism and postmodernism—indeed unlike any other period in literary history. But if, as Bateson argues, the double-bind lies beneath normal cognitive states as well, then it would seem fruitful to see how Bateson's double bind theory corresponds with Hofstadter's strange loop concept. If

made by Vonnegut's and Pynchon's critics. For the former, see Broer. However, this critical trend is far less common in Borgesian and Calvinian criticism, though an argument might be made in these authors as well.

<sup>12</sup> Bateson dedicated the greater part of his later career to the topic. It was also an interest for R. D. Laing, another early cyberneticist who was also a psychoanalytic. I should note that the definition of the disorder has undergone a semantic shift since the publication of the DSM-III in 1980 and its successor (and currently used standard manual), the DSM-IV, in 1994. It will be interesting how the forthcoming publication of the DSM-V (expected 2013) will further refine the disorder's definition.

<sup>13</sup> Rather than a pathological condition, cognitive dissonance describes the inability for a subject to hold two mutually exclusive notions or images in their mind simultaneously. The most well known experiment on cognitive dissonance involves the "rabbit-duck" diagram, a Rorschach-like image that can be viewed as either the image of a rabbit's head or a duck's face, but not as both simultaneously.

schizophrenia is a strange loop out of control, it might be because it begins to violate, irremediably in many cases, the boundaries between the various hierarchies dismantled in strange loop processes. Like a Liar Paradox that has locked up the mind, it shares its fundamental pattern with the strange loop. The schizophrenic experiences a warped sense of self, confused linguistic capacity, and fractured time. His or her realities likewise blur, as do the categorical distinctions between normally unrelated objects and events. It is, in these senses, the strangest of all strange loops.

### **The Shifting Paraworlds of Philip K. Dick**

An author in whose work this type of schizophrenic strange loop features prominently is Philip Kindred Dick. Dick's work presents reality as a tangled hierarchy in some ways similar to the metastable frames that I discussed in Borges, Calvino, and O'Brien. But the metafictional realities I have dealt with thus far have tended to be mostly playful insofar as they tempt us to realize that they are in fact fictional; Dick's fictions try to make us question this categorical distinction absolutely. Some fiction, as Brian McHale and others suggest, succeeds in forcing us to question our own reality, or as Borges suggests, even supplants it. However, the work of Philip K. Dick takes this sort of ontological uncertainty to another level, weaving tangled hierarchies that are both riveting novels and serious metaphysical inquiries.

Dick has become something of a poster-child for postmodernism, garnering attention from critics such as Fredric Jameson, Slavoj Žižek, and Katherine Hayles, not to mention his popularity amongst French poststructuralist theorists such as Jean Baudrillard.<sup>14</sup> With the recent

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<sup>14</sup> Jameson calls Dick the "Shakespeare of Science Fiction" in an obituary written for Dick (qtd. in Booker and Thomas 147). Baudrillard and others often cite Dick as an example of various ideas throughout French theory.

publication of his metaphysical *Exegesis*, critical interest in Dick is likely to increase even more. He is, after being generally neglected since his death in 1982, gradually becoming a major figure in American *belles lettres*. As one critic notes, were it not for his association with the oft-maligned science-fiction genre, “novels such as *Ubik* and *VALIS* and *The Man in the High Castle* would stand next to the works of Pynchon, Vonnegut, Barth, and Calvino as demonstrably postmodern in theme and development, and likely as major achievements within the canon of postmodern literature” (Link 23). Of course, there is much in Dick’s work that lends it to postmodernist criticism, especially given his anti-establishment positions and his tendency to question the validity of epistemological systems.

Although most often labeled a science fiction author, Dick is first and foremost a novelist of ideas. Contrary to Dick’s claims to an authorial inheritance including Flaubert, Balzac, and the realist/naturalist tradition of the nineteenth century,<sup>15</sup> his novels read more like Kafka’s or Borges’s in their surreal sensibility. Dick delves into complex metaphysical territory, but like Joyce or Kafka he is both an extremely realist author and one simultaneously striving to dissemble false notions about the perceived world. His meditations are therefore realist insofar as they unveil the real, disclosing the underlying systems that our perceptions often misconstrue—or outright hide. For Dick, much of reality is manufactured—by the government, media, or the senses—through convincing simulacra.

Critics have long suggested that Dick’s work operates on a far deeper philosophical level than popular science fiction in general. In the tradition of Stanislaw Lem, Robert Heinlein, and Arthur C. Clarke, Dick’s work does not merely entertain us: it forces us to confront grand metaphysical issues. However, Dick has yet to enter the cognitive literary discourse, a surprising

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<sup>15</sup> In an interview in 1984, Dick confesses, “The novels that influenced my writing . . . were the French realistic novels . . . Flaubert, Stendhal, Balzac . . . and the Russian novelists who were influenced by them” (“Interview” 6). However, he also admits to being heavily influenced by Kafka, Proust, and Joyce, among others (*Shifting* 14).

oversight given his forays into mentality and consciousness. Moreover, Dick was especially interested in philosophy of mind. His own bohemian experiments with psychedelic drugs notwithstanding, he demonstrates in both his nonfiction and fiction that he is always at least partially interested in consciousness, and especially schizophrenia.

Although most Dick criticism tends to assume that his literary vision expresses Jungian or mystical perspectives, Dick was thoroughly interested in contemporary psychology and psychiatry, as his personal essays attest.<sup>16</sup> For example, in “Schizophrenia and the Book of Changes,” Dick discusses schizophrenia as not merely retreat from reality but a literal blurring of boundaries between categories that, in normal cognition, are discrete: “The deadly appearance . . . of schizophrenia, is not a retreat from reality, but on the contrary: the breaking out of reality all around him; its presence, not its absence from his vicinity. The lifelong fight to avoid it has ended in failure; he is engulfed in it” (*Shifting* 176). For Dick, schizophrenia is thus a case of categorical confusion between phantasy and hyperreality, but not a rare pathology so much as a means of understanding how normal consciousness works.

It is only through his fiction that Dick is able to fully explore the implications of his ideas and delve into the possibilities of worlds within worlds that may or may not be constructions of the human mind. More specifically, Dick thematically weaves this type of schizophrenia into his novels.<sup>17</sup> A comprehensive critical overview of his forty-two novels and over one hundred short stories is both an impossible task and unnecessary to my argument, so I have limited my

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<sup>16</sup> See the essays collected in *The Shifting Realities of Philip K. Dick*. In several of these, Dick admits he admired Louis Kagan, editor of *Language and Thought in Schizophrenia* (1944). I should also stress that I am not arguing that Dick was schizophrenic. Although Dick admits he “took what they prescribe schizophrenics” (*Exegesis* 27), nowhere to my knowledge did any clinician diagnose him with the disease. Diagnosing Dick’s mental condition is a task that many biographers and critics have dabbled with, although such an endeavor is, like psychoanalytic readings of Dick, fraught with many rabbit holes and unfounded speculation.

<sup>17</sup> Schizophrenia forms the central theme also in *Martian Time-Slip* and *We Can Build You*.

discussion of strange loops in Dick to three novels: *The Three Stigmata of Palmer Eldritch* (1964), *Ubik* (1969), and *Lies, Inc.*<sup>18</sup> All three novels present futuristic worlds where, through various means, both reality and the self are called into question, time disintegrates, and language becomes the stuff of both revelation and deceit. In *The Three Stigmata of Palmer Eldritch*, Dick describes a future where a hallucinogenic drug (Can-D) allows people on earth and its Martian colonies to escape the horrors of an overpopulated, hyperindustrialized society by slipping into a plasticene fantasy world. *Ubik* follows Joe Chip, a telepath who during a corporate mission to the Moon suddenly enters a reality where the only protection from an enigmatic, destructive force called Jory is a mysterious spray-can product called Ubik. *Lies, Inc.* follows wealthy industrialist Rachmael ben Appelbaum on his quest to uncover the truth about Whale's Mouth, a far-off settlement to which citizens of Earth are teleported, but from which they cannot return. I will primarily focus on *Lies, Inc.*, as it is one of Dick's most thematically comprehensive novels, but these other texts offer useful parallels.

These novels represent paragons of what I call, following Dick, his "paraworld novels." In *Lies, Inc.*, Dick uses the term "paraworld" to describe alternate but conceivably equivalent realities; it is this term that I will use to describe the cognitive frame-breaking seen in schizophrenia. In many Dick novels, these paraworlds are induced by hallucinogenic drugs, futuristic technologies, or inexplicable gaps between actual and perceived realities. Often these worlds obey the same physical laws as our own, but just as often they follow entirely unique rules as in an Alice Universe<sup>19</sup>—but they remove the reader one level, one derivative of reality. In doing so, what Dick's literary experiments do perhaps better than any other author is draw our

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<sup>18</sup> *Lies, Inc.* was originally published in 1964 as *The Unteleported Man* before an expanded version was published in 1984 posthumously.

<sup>19</sup> A reference to Lewis Carroll's famous character, this is a term used by physicists for realities with physical laws with rules fundamentally different from our own.



attention to the cognitive constructedness of the world. He explores just how far a writer might push the sort of “narrative construction of reality” proposed by Bruner, testing the boundaries until the center fails to hold and things fall apart. What Dick is essentially asking is this: Where do we draw the line between cognitive and physical realities?

In many ways more of a humanist than contemporaries such as Isaac Asimov, Philip K. Dick outlines a vision of reality that draws upon both scientific models and the philosophico-literary tradition: “Asimov’s methodology reflects his education as a scientist; Dick, while his fiction never blunders into scientific error, writes as a humanist familiar with classical music, philosophy, and the Western literary tradition” (Warrick 207). Given this philosophical streak, Dick provides few concrete answers in his fiction, but poses many questions. What does this questioning of ontological realities mean? What is Dick suggesting in his novels when characters are no longer able to distinguish between fantasies? In part, Dick forces us to consider several fundamental issues connected with strange loops and schizophrenia. First is the notion of ontological frames, which I have already treated at length in Chapter Five. Dick’s paraworld fictions extend the confusion between levels I noted in authors such as Calvino, Flann O’Brien, and Borges so that the level-crossing feedback loops so common in his fiction become hopelessly entangled. Second, Dick understood schizophrenia as a disorder of time:

What distinguishes schizophrenic existence from that which the rest of us like to imagine we enjoy is the element of time. The schizophrenic is having it all *now*, whether he wants it or not; the whole can of film has descended on him, whereas we watch it progress frame by frame. So for him, causality does not exist.

*(Shifting 176)*

This is a pathological realization of strange time. Third is language, specifically literature. For Dick, language offers the only potential escape from the aberrant strange loops of schizophrenia, and there is a connection between Dick's mystical opinions and both strange loops and schizophrenia. Through a treatment of these themes in Dick, what emerges is a portrait of the artist not as a schizophrenic, but as a strange loop.

### **Strange Loops, Reality, and the Self in Dick's Universe**

If the science fiction novel is, as Ira Livingston suggests, a narrative "of meta-self-becoming . . . *metabildungsroman*" (142), then one might call Dick the Thomas Mann of science-fiction. His characters are always in search of themselves and their place within the universe as a whole: "Dick's study of the mechanisms of existence illustrate the relationship between the self and the non-self. Each of his novels describes the basic process in which the 'I'—often in the form of a double character—creates meaning out of the world surrounding it" (Kucukalic 11). The strange loops and tangled hierarchies found in his fiction are, as I have mentioned before, reflections of this very process of autopoiesis. "I seem to be living in my own novels more and more," Dick writes in the *Exegesis*, "I can't figure out why. Am I losing touch with reality? Or is reality sliding toward a Phil Dickian type of atmosphere?" (22).

Dick's literary quest is always one mediated through his own paranoia, his suspicion that reality is not, cannot possibly be, what we perceive it to be. Rather reality is some unknowable noumenality, inaccessible *in toto* to our limited, mammalian senses. There is thus no reliable outer frame in Dick's cosmology. Indeed, Dick "does not so much play the part of a guide through his fantasmagoric worlds so much as he gives the impression of one lost in their

labyrinths” (Lem 62). Again, the image of the labyrinth, one manifestation of the strange loop, allows us to situate Dick’s metaphysic within the purview of strange loops.

The labyrinthine quality of Dick’s fiction emerges because he draws attention to the uncertainty produced when the strange loops of consciousness run amok. In some sense, he is offering us a thread to escape the labyrinth: “Dick follows Joyce in his use of the Daedalus myth,” Patricia Warrick writes, “for each artifice of literature is able to suggest to man the means of flight from the predicament” (209-10). And like Joyce, “occasionally Dick lifts the reader briefly above the labyrinth, or plunges him below, and from the upper or lower perspective he glimpses patterns and possible meanings” (209). Given the ubiquitous jumps between levels within his fictions, one such pattern seems to be the strange loop, especially as intricate conspiracy theories form within the minds of his characters. The labyrinthine conspiracies woven into Dick’s novels are of course only partially sociopolitical and technological. Certainly Dick’s paraworld novels all demonstrate a suspicion of both media and political systems, both intricately conspiring to create illusions of control. A similar trope runs throughout Dick’s oeuvre, from the posthuman dilemma in *Do Androids Dream of Electric Sheep?* to the intricate plot of *Time Out of Joint*, often forming a strange loop geometry between the mindself and other systems.

What Dick does innovate is the metaphysical level-crossing aspect of strange loops. For Dick, reality is primarily cognitive, generated by and for the mind. It consists of various layers of reality stacked within each other like a strange version of a Russian Doll or Chinese Box combined with a Klein Bottle.<sup>20</sup> This type of strange loop would be as if, going down from the largest doll or box to the smallest, we were to open it only to find ourselves again at the highest

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<sup>20</sup> Hofstadter discusses Klein bottles briefly as analogues of strange loops (*GEB* 691).

or topmost level. This occurs in *Ubik* when, after frantically struggling to solve the mystery of Ubik, Joe Chip realizes that it is he, not Runciter, who is perhaps in a half-life chamber. Similarly, in *Palmer Eldritch* when Martian colonists take Chew Z to escape their miserable colonial life, they sink into a tertiary reality only to reemerge into the original one. Dick composes literary experiments that parallel Hofstadter's "Little Harmonic Labyrinth," where Achilles and the Tortoise "push" and "pop" their way through various "stacks of frames" only to return to the dialogue's original diegetic level.

For Dick, the loops generate the metaphysical uncertainty characteristic of his novels in which characters are never quite sure whether what they perceive is genuinely real or subjectively imagined. Dick always wants readers to question his characters' perceptions—and consequently their own. What is the primary level in which the self dwells? How much—some? all? none?—of reality is produced by the mind? For Dick the answer is never definite, but the suggestion is that all of reality depends upon the mind for its existence *to the subject*. Dick's novels are replete with tangled hierarchies of paraworlds to this effect, and this strange loop reflects the inherently nested and recursive structure of consciousness. Constantly shifting realities and elaborate metafiction are a major part of our self-system. Dick points out that we are not stable minds somehow actualized and perceiving, but always in flux, always undergoing strange autopoiesis, forever pursuing genesis and retreating from extinction.

According to Lejla Kucukalic, there are three types of reality in Dick: "reality as an evolving, continually changing process without a set point"; "reality as a completely unreachable Other"; and "reality [that] exists in a separate dimension from the quotidian, chronological world, as a Platonic form that can be discerned through insight, revelation, and even intellectual pursuit" (3). Certainly Dick emphasizes flux in Heraclitean fashion, but I do not read him as a

complete idealist in the vein of Berkeley. There is always a reciprocal relationship between mind and body for Dick, a reciprocity bordering on the monism inherent in most cognitivist philosophies. He does not dismiss the embodiment that pure idealists would deny as mere instantiations of pure Mind. Instead, Dick recognizes that the brain maps the physical world within itself and vice versa in a cybernetic feedback loop. Given Dick's interest in Wilder Penfield's "brain mapping" (*Shifting* 195)—the near perfect correspondent mapping of the human body in the sensorimotor cortex—we should suspect that he is as suspicious of Cartesian mind/body dualism as he is of objective reality.

Similarly, rather than "a type of Cartesian solipsism" (Link 52), I see Dick's work reiterating the tension inherent in selves that are both creating and created by reality in a complex and seemingly paradoxical dialectic. But he nowhere explicitly denies reality absolutely. Instead, like Hume, he remains skeptical of it. One consequence of this skepticism—a skepticism undergirding many philosophies of science, I would add—is that it causes us to question the possibility of self-knowledge. In Dick's fiction, "[a]s one turns his or her attention away from the shimmering, translucent nature of external reality and looks inward, one is confronted with yet another epistemological crisis: can one know one's self?" (Link 53). This effectively turns Socrates's famous dictum into an infinite question, one which leads us into a Beckettian vortex. But in no way does questioning the self imply questioning the very existence of reality—and I would, like Dr. Johnson, refute it thus: by recalling that consciousness in Hofstadter's model obeys the supervenience thesis, which axiomatically secures conscious reality in its physicality, that is, in its embodiment.

Certainly, Dick is always skeptical of reality as a solid concept. In this way, the imbedded realities in his narratives represent meditations on possible worlds—nested within

each other until one can no longer tell, like the characters in O'Brien's *At Swim-Two-Birds*, what constitutes reality and what constitutes illusion—represent meditations on possible worlds and textuality itself. Psychoactive drugs in *The Three Stigmata of Palmer Eldritch* cause users to sink deeper into false worlds that, while drug-induced, represent a possible interpretation of our own subjective experience. This experience, according to Hofstadter and many cognitive scientists, is itself a convincing hallucination, such that the ostensibly discrete “I” that we feel is stable is in fact a dynamic and constantly shifting approximation of innumerable cognitive processes. Dick likewise treats these themes in *Ubik*, which also questions reality and its alleged stability.

Although all of Dick's novels question these boundaries in one way or another, none does so with the complexity of *Lies, Inc.* From this novel's outset, Dick hovers in the realm of uncertainty. Fittingly, Dick's novel opens with an interesting version of the Liar Paradox when the chief mechanic for Lies, Inc. reflects on his conundrum: “Of course he could ask the computer . . . but the computer, being programmed to lie, would of course lie—even to Lies, Incorporated itself” (1). Here at the beginning Dick warns us not to place our faith in the binary logic of computing systems, a theme common in his fiction.<sup>21</sup> He is also drawing our attention to the fictionality of both the very fiction we are reading and the realities its characters believe they inhabit. Considering the possibility that he is merely a rat dreaming, Appelbaum asks early in the text, “Maybe I'm not here shaving; maybe I'm just dreaming this. Maybe I'm asleep in my pile of string, and having a good dream, not the bad one; having the dream where I'm a – He thought, *A man*” (3). This reminds us a strange loop I have not yet mentioned, perhaps best

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<sup>21</sup> See *Do Androids Dream of Electric Sheep?* (1968), adapted into the well-known postmodernist film *Blade Runner* (1982) by Ridley Scott. See also Dick's essays “The Android and the Human” (1972) and “Man, Android, and Machine” (1976), collected in *The Shifting Realities of Philip K. Dick*.

expressed by Chuang Tzu's Zen parable of a butterfly dreaming he is a man who in turn is dreaming he is a butterfly.<sup>22</sup> This leads into a strange loop similar to Escher's print *Butterflies*, where no matter how far we move along the edge we find the cycle repeated. As in this print or Chuang-Tzu's kōan, the novel questions reality from the outset, suggests clandestine totalitarian-corporate conspiracies, and thus a Pynchonian paranoia emerges.

Dick's interest in neuroscience in *Lies, Inc.* offers a particularly intriguing segue between Appelbaum's ruminations and strange loops. As in *Finnegans Wake*, dreams bear a striking resemblance to Dick's paraworlds. In a Jungian turn toward collective species-memory, Appelbaum considers that his sensation of illusory reality consists of merely "memories from the paleocortex, rather than the neocortex. There's an anatomical explanation. Has to do with the accretional layers of the brain; the brain has old layers which come to wakefulness during normal sleep" (Dick, *Lies* 5). This is, of course, speculative cognitive science, a blend of mysticism and psychology; but it does evince that Dick sees these strange loops originating in the mind.

These breaks between realities overtake the bulk of the novel. After arriving at Newcolonizedland, Applebaum sees a grim, industrial society, not the images advertised back on earth; he is then immediately attacked with an LSD dart: "He had, now, only a few minutes ahead; that realization alone generally took the target out: to know, under conditions such as these, that very shortly the entire self-system, the structure of world-character which had developed stage by stage over the years from birth on" (82-83). At this point in the text, psychotropic drugs disintegrate the self, producing a schizophrenic-like dissolution of self-

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<sup>22</sup> The butterfly connection is enriched when one considers that Hofstadter's earliest significant contribution to physics was the Hofstadter Butterfly, a pattern created through self-similar repetitions. Also, the Butterfly Effect popularized by Gleick describes the Zen-like situation when small perturbations in a system produce wide-scale change.

concept. As in a strange loop where frames are continually transgressed, no absolute frame remains.

When he joins others who have just arrived on the colony, Appelbaum has a blurred sense of self: “Eleven persons in addition to himself, he realized; eleven and me, but what is me? Am I what? [. . .] and he wondered if the breach with that which had been familiar was so complete as to include himself; had his own physical identity, his customary self, been eradicated too, and some new gathering of matter set in its place?” (93). The trauma of traveling through the Telpor Device seems to instantiate schizophrenic symptoms. Dick describes the so-called Telpor Syndrome as the “Disjunction of the percept-system and substitution of a delusional world” (104). This is the world of the schizophrenic, one that absolutely loses any correspondence with objective (read social) reality.

Importantly, these paraworlds appear to be a heterarchy: neither one is ultimately any realer than the other (111), nor can any one be established as ultimately genuine (122, 124). The only guarantee that everything Appelbaum experiences is not a hallucination is confirmation from others. This is a central concept in Dick’s philosophy of mind: a hallucination is merely a reality that is not verified by others. “‘But this world can’t be para,’ Gretchen Borbman said, ‘because we all share it, and that’s still our sole criterion, the one point we can hang onto’” (117). Hallucination in this sense is thus largely solipsistic, because only the perceiver experiences it; it has no reality otherwise.

One might come to precisely the same conclusion about subjective consciousness in Hofstadter’s system insofar as the self is hallucinated by itself. But, like Dick, Hofstadter roots this process in a more or less objective reality, which for Dick is primarily defined as one verified by multiple observers. It is only when this feedback loop between world and subject,



between Self and Other, that the characters in Dick's novels experience the paranoia typical of schizophrenic breaks with reality. Appelbaum validates that he really is in Whale's Mouth on Newcolonizeland because "[e]very person in this room is just as involved in an involuntary subjective psychotic fantasy-superimposition over the normal frame of reference as I am; some of you possible even more so. I don't know. Who knows what takes place in other people's minds?" (122). Dick is not, as some anti-cognitivist thinkers might believe, arguing for the impossibility of knowing what a particular mind/brain is thinking. Instead, he seems to be reaffirming what the strange loops in cognitive symbiosis seem to imply, namely that mutually intelligible experiences are the basis for our ability to communicate anything to others.

When this capacity breaks down the result is schizophrenic dissociation. The schizophrenic's reality no longer corresponds to others and experience becomes hopelessly incommunicable. A similar disintegrating reality appears in both *Ubik* and *Palmer Eldritch*. In the former, Joe Chip comes to the realization that it was not his boss Runciter who died when the mission to the Moon went awry—it was himself who died. He realizes that he is not in the world of the conscious living but in the dreamlike world of half-life, a condition in Dick's future reality where the dead are able to maintain some level of consciousness after their bodies cease to function. Chip thus inhabits a realm of pure hallucination, a paraworld that symbolizes the breakdown of referential frames characteristic of schizophrenia as Dick perceives it.

Faced with the realization that levels of reality represent frames in a tangled hierarchy that could at any moment spiral out of control, Dick turns to the only recourse he has: fiction. Since reality is for Dick "a bipolar construction" (in the sense of oscillating between Real and Imaginary rather than clinically bipolar), the only way he "can come to grasping it is to mirror in fiction the polarities" (Warrick 214). As Ricoeur, Bruner, and others suggest, reality is

configured through narratives, and any question about reality can only be properly pondered through this medium. Fiction for Dick is not merely a means of conceptualizing mind and self, but of philosophizing about them. To any metaphysical question, “Dick, according to his own philosophy, would want the reader to accept only the answer he discovers as he looks in the mirror of the fiction and sees his own awareness reflected back” (Warrick 230). This is yet again the function of cognitive fiction.

In some sense, the text to Dick is a version of Stendhal’s mirror, an artifact designed to reflect the world back upon itself.<sup>23</sup> But more importantly, the text is a tool for configuring self-consciousness for Dick. For example, in *Lies, Inc.* Applebaum only comes to a realization of what is going on when he finds a copy of Dr. Bloode’s *The True and Complete Economic and Political History of Newcolonizedland*. Like Melquíades’s scroll in *One Hundred Years of Solitude* or Vonnegut’s fictional source for *Slaughterhouse-Five*, the *History* includes events that have already happened, including passages of the book we as readers are reading (139). Like Billy Pilgrim, Applebaum reads about his own death (149). When his companion Freya realizes the book is predicting events, she comes to an understanding that their jaunt through the Telpor Device not only distorted their perception of spatial and categorical reality, but of time too: “Several worlds, she realized. And each of them different. And—if they’re looking in that book, not to see what has happened but to see what will happen . . . then it must have something to do with time. Time-travel. The UN’s time-warpage weapon” (160). It is at this point, convinced like Applebaum that they are in the authentic reality, that she asks, “Am I in a paraworld now?” (162). True to their heterarchical structure, the paraworlds have already started to blur.

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<sup>23</sup> Later in *Lies, Inc.*, we find that the metatext imbedded in the novel referred to as a “Ganymede life-mirror” (184), an alien being that is also a text. The relationship between this and Coleridge’s notion of organic textuality is an interesting corollary.

A clear parallel with Borges's "Tlön, Uqbar, Tertius Orbis" arises here: "The delusional worlds somehow active here at Whale's Mouth had already spread to and penetrated Terra [i.e., Earth]. It had already been experienced—experienced, yes; but not recognized" (Dick, *Lies* 169). We discover that earlier scenes in the novel are also part of paraworlds. Fictions within the fiction are bleeding across the boundaries the characters once believed existed between reality and illusion. Escher's *Print Gallery*, distorting reality as it is perceived through an art-object, is a particularly effective visual analogue to the sort of effect Dick's metafiction has on both the characters and his readers. This is the surreal logic of a heterarchical strange loop.

### **Schizophrenia and Strange Time in Dick**

Like Vonnegut's *Sirens of Titan* and *Slaughterhouse-Five*, temporality in Dick's paraworld novels refuses to obey any linear schema, as one would expect in a tangled hierarchy. For example, when readers finally encounter the mysterious eponymous Eldritch in *The Three Stigmata of Palmer Eldritch*, he is not a man but a being that has apparently succeeded in transcending time by imbedding psychological replicas of himself in internally imbedded, mental worlds. The drug Eldritch has been peddling is in fact a means of replicating his consciousness in others, a means of transcending time: "Time, as Philip K. Dick might characterize it, is a demonological or divine invasion into our horological world" (Hardack 133).

In some ways, I read Eldritch's almost viral existence as a metaphor for authorship, textuality, and indeed for God.<sup>24</sup> He becomes god-like precisely because he is able to replicate himself in the texts of other minds, not unlike Hofstadter's notion of symbiotic consciousness in *I Am a Strange Loop* or the consciousness without borders common in Pynchon's fiction. If one

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<sup>24</sup> One might draw strong parallels as well between Eldritch and the notion of memes I mentioned in Chapter One.

compares this to Alan Palmer's comparable thesis in *Fictional Minds* that characters' consciousness are narratives imbedded within larger narratives, one might construe Eldritch as an author in this sense. Again, Dick is addressing infinity, but not the outward-looking infinity espoused by Cantor and the mathematicians; instead, he is tackling that inverted infinity, inwardly eternal and self-similar, repeating endlessly copies of the original form.

Time is similarly warped in *Lies, Inc.* After he passes through the Telpor Device, "Rachmael watched, and years lapsed by, recorded by the internal clock of his perceiving mind; he knew the duration and knew the meaning of the landscape's perpetual refusal to live: he knew where he was and he recognized this which he saw. It was beyond his ability *not* to recognize it. This was the hellscape" (86). This is not only the strange time one might expect in such a narrative, but more specifically schizophrenic time. The clinical research often refers to the schizophrenic experience with time as "hellish" and here it is no different. "He felt, now, even more truly out of phase in the time-dimension: he felt the gulf between himself and those, everyone else in the universe of sentient life, beyond his anti-prolepsis chamber . . . And then abruptly he cease. Because once again the random word-salad noise had burbled into seeming spontaneous existence in his ears" (133).

Part of this hellishness is the sheer confusion involved. When is now? Appelbaum likewise seeks "any comprehensible theory—that would serve to reorient him in space and time" (96). He has undergone a radical break with objectively verifiable time, one that forces him to question the reality of time in general: "Time had stopped or the image had stopped, or perhaps both . . . or was there such a thing as time at all?" (125-26). One might suspect connotations of radical Kantianism or Platonism here, with Appelbaum's sense of temporality so fractured that he comes to the realization that time is not a reality. In this sense, Hayles is correct when she says

that “[t]o live postmodernism is to live as schizophrenics are said to do, in a world of disconnected present moments that jostle one another but never form a continuous (much less logical) progression” (*Chaos Bound* 282).

A similar model occurs in Philip K. Dick’s story “A Little Something for Us Tempunauts,” worth noting here because it explicitly likens time to a loop in a manner reminiscent of the strange time I explored in Vonnegut. The protagonist Addison Doug prevents his own death during a mission into space, an action that “virtually guarantees the locking in of an absolutely unyielding loop” (Richmond 307). As Addison Doug admits, “We’re in a closed time loop . . . we keep going through this again and again” (Dick, “Tempunauts” 404). The situation of these tempunauts—literally “time-sailors”—is analogous to both Billy Pilgrim and Rumfoord’s situation in Vonnegut’s novels: like the chrono-synclastic infundibulated Rumfoord or the “unstuck” Billy Pilgrim, the tempunauts experience a continuous repetition of the same events in a temporal loop. Dick calls this phenomenon “Emergence Time Activity” (413), itself a species of strange loop. In addition, Dick’s story introduces a type of *causal loop*, defined as “close causal chains in which some of the causal links are normal in direction and others are reversed” (Lewis 140). The reversibility of these loops resembles the bidirectionality in Vonnegut’s and Pynchon’s work, coupled with a similar complication of cause/effect relationships.

The illusory nature of time and space is thus manifest in Dick as in the other authors mentioned here, but to a pathological degree where the strange loops spiral out of control. Our selves, time, space, death—these grand narratives that seem realest, under closer scrutiny, lose their solidity in Dick, become mental constructs evolved over the course of human evolution so that our limited minds can cope with the infinite complexity of the material universe and its

mechanisms. Kurt Gödel echoes this sentiment: “The illusion of the passage of time arises from the confusing of the *given* with the *real*. Passage of time arises because we think of occupying different realities. In fact, we occupy only different givens. There is only one reality” (qtd. in Rucker 171). Dick echoes this Platonist sentiment, but always wonders whether one can maintain this atemporal vision alongside our experience with time without suffering the extreme cognitive dissonance characteristic of schizophrenia.

### **Language, Zen, and Schizophrenia in Dick**

As with the self and spacetime, Dick’s paraworld novels explore the disintegration of language itself. In *Lies, Inc.*, when Appelbaum arrives at Whale’s Mouth, his language is muddled: “Within him all his language disappeared; all words were gone. Some scanning agency of his brain, some organic searching device, swept out mile after mile of emptiness, finding no stored words, nothing to draw on: he felt it sweeping wider and wider, extending its oscillations into every dark reach, overlooking nothing” (88). This loss is complicated because, for Dick, language cannot be extricated from spacetime, thus when one disintegrates for the schizophrenic, the other follows.

This reflects the “peculiarity of the schizophrenic . . . not that he uses metaphors, but that he uses *unlabeled* metaphors” (Livingston 57). Again, the ability to communicate subjective experience breaks down here, and the strange loops undergirding language unravel. The schizophrenic’s use of language is therefore overly abstract, disjointed from the world. Like the schizophrenic, the mystic cannot communicate his transcendent experiences to others; he can merely show them the way. Many critics have seen Dick’s work as implicitly mystical. Certainly his interest in Jung, the *I Ching*, and alternate worlds aligns him with a mystical

tradition. However, he is also expressing the same view as William James in *A Pluralistic Universe* (1907), for whom there is no single knowable reality although it is likely that such unity exists beyond our perceptual capacities. This notion is similar to Pynchon's paranoia, which seeks connections between seemingly unconnected events. "Mysticism is an extreme form of monism," Rucker states, "The central teaching of mysticism is simplicity itself: All is One" (209). In this sense, Dick's mysticism is a belief in a noosphere or Hegel's Absolute Spirit (Kucukalic xiv), but it seems more appropriate, as Patricia Warrick suggests, to posit that Dick adopts a cybernetic perspective. In this Dick again resembles Pynchon. Like Pynchon, he depicts such holistic worldviews with both suspicion and awe; and he also rejects the tenability of binary systems, preferring to find his answers betwixt-and-between poles in the liminal, paradoxical space that is the strange loop's domain. "The enlightened human consciousness for Dick," Warrick writes, "is thus not a state but an event of eternal passage between contraries" (216).

These experiences are largely mystical because they transcend the boundaries of language. As Wittgenstein reminds us, "There are, indeed, things that cannot be put into words. *They make themselves manifest. They are what is mystical*" (*Tractatus* 149). This is a problem consistently tackled by Dick; indeed, communicating such an experience is his central concern in his over eight-thousand page *Exegesis*. Dick's emphasis on the hallucinatory or illusory nature of the Self thus parallels the same notion espoused by Hofstadter. Like Hofstadter, Dick owes this idea partially to Zen Buddhist notions of the non-self. Dick was certainly cognizant of and "influenced by Oriental philosophy, particularly Taoism" (Warrick 207), and his fascination with non-Western philosophy is well-documented. Likewise, I have repeatedly noted Hofstadter's copious use of Zen kōans in *Gödel, Escher, Bach*. Dick synthesizes the Zen worldview with

Western scientific psychology in a sophisticated way similar to Hofstadter in many ways, showing how level-crossing loops, despite their strangeness, depict an important geometry for understanding consciousness. If the science fiction writer is “the poet of science” (Warrick 236), then I would consider Dick one of cognitive science’s foremost poets.



## CONCLUSION

### “WHAT A LONG STRANGE TRIP IT’S BEEN”

*We shall not cease from exploration  
And the end of all our exploring  
Will be to arrive where we started  
And know the place for the first time*

—T. S. Eliot<sup>1</sup>

“A work of art forces us,” Wittgenstein writes, “to see it in the right perspective but, in the absence of art, the object is just a fragment of nature like any other” (*Culture* 4). Without art to broaden our horizons, we remain merely subjects of nature rather than agents within it. As I have suggested through the many examples of literary strange loops that I have explored, only through a combination of the two can one fully appreciate the way both science and literature attempt to model reality in their different ways. Cognitive fictions provide us with one form where these models might coexist and improve one another. But discerning meaning from such fictions is difficult precisely because they do not try to divulge it in a scientific statement—instead, they force us to experience meaning through them, to come to an intimate knowledge of the world as paradox.

As Hofstadter notes of the twentieth century, “just as the central problem of Zen is to unmask the self, the central problem of art in this century seems to be to figure out what art is” (*GEB* 706). In contrast to Hofstadter, I believe that the two questions are inseparable: to understand art is to understand the self and consciousness, and vice versa. This understanding is

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<sup>1</sup> *Little Gidding* (lines 241-44)

only possible through consilience, through both humanistic and scientific ideas. In the course of my discussion, I have fostered a dialectic between these two fields that complicates any argument for their being opposites. As John Limon notes in *The Place of Fiction in the Time of Science*, art and science have generally corresponded in a complimentary, not antagonistic, way. Although Limon's argument is specific to American literature, I would expand it to include literature as a whole since the division of science from other disciplines in the nineteenth-century.<sup>2</sup>

As I draw near the end of this strange loop, I would like to clarify a few possible misconceptions. First, I would like to stress that both Hofstadter and I often use "strange loop" as an analogy rather than a literal model, although it can be this also in cases where the strange loop enacts isomorphic cognitive processes. Nevertheless, there remains much work to be done in both cognitive science and cognitive fiction before anyone can assert whether the mind truly functions like an autopoietic strange loop. However, given the abundance of information from the cognitive sciences, as well as from the most sophisticated cognitive fictions from Joyce to Philip K. Dick, it seems likely that fiction often comes to conclusions that resonate with cognitive theory. Nevertheless, Hofstadter's caveat about Gödel's Theorem at the end of *Gödel, Escher, Bach* is worth noting: "it is quite unjustifiable to translate it directly into a statement of another discipline and take that as equally valid. It would be a large mistake to think that what has been worked out with the utmost delicacy in mathematical logic should hold without modification in a completely different area" (696). Thus, like Hofstadter, I have sought to use the strange loop primarily as an extended metaphor; but it is certainly a remarkably accurate one when assessed in concert with cognitive evidence.

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<sup>2</sup> A similar idea was proposed by Latour in *We Have Never Been Modern*.

The converse argument also needs to be addressed, namely that such an interpretation of these novels is overly reductive. Of course with textuality, as with any semiotic system, nothing is ever really simple; in a theoretical ecology of *différences* and heteroglossias, ideologies and egos, there can never be a reading that satisfies everyone. But this is the beauty of literature, because it allows us to multiply its complexities, look at it like a multifaceted jewel, and see how our minds are refracted and reflected by it. However, in order to make better sense of the text, we must also take Hofstadter's advice and *simplify*, since "[d]rastic simplification is what allows us to reduce situations to their bare bones, to discover abstract essences, to put our fingers on what matters, to understand phenomena at amazingly high levels, to survive reliably in this world, and to formulate literature, art, music, and science" (SL 35). Rather than a reductionist perspective, Hofstadter's viewpoint, as well as its adaptation that I followed in this dissertation, offers a way to describe textual behavior in light of how the mind itself may work. Even if they are autopoietic systems, our selves are still "unpredictable self-writing poems—vague, metaphorical, ambiguous, and sometimes exceedingly beautiful" (363). Viewing them in this way not only enriches our appreciation of these texts, but also reminds us how powerfully literature describes the nuances of nature's most complex realities. Ever elusive categories like "mind" and "self" may never be completely codified by either science or literature, but Hofstadter's phenomenology enables us to imagine ways in which art can draw us closer to a better understanding of both.

It is said that every act of appropriation entails a little violence, so I will here excuse myself if I have transmogrified Hofstadter's ideas beyond their original purpose or scope. But in part, that is precisely Hofstadter's hope. By its very interdisciplinary, *Gödel, Escher, Bach* invites us to think outside the box, to abduct ideas from one discipline and tinker with them in

another. I have tried to present a coherent application of Hofstadter's ideas in a literary critical and theoretical framework, but they might be extended even further. Some might argue that I already have over-extended Hofstadter's idea, violated his aforementioned injunction to adapt Gödelian ideas to other domains with utmost caution. But that is the splendor of theory; it allows us a laboratory unrestricted by scientific method or the laws of physics, a place to test ideas that might at first seem absurd but later prove profound. In our absurd universe such practices are needed, such risks necessary. Only by extending Hofstadter's phenomenology to its most extreme conclusions can we test its ideas' limits and explore its potential beyond cognitive science alone. What I have tried to offer is therefore a theory of textuality as bound to consciousness, a literary and semiotic interpretation of the mindself. Whether correct or not only time will tell, but that is the boon of science and of literary interpretation: both are ever-open to revision as philosophical efforts refine our understanding of this mad world.

### **Looking Backward, Moving Forward: Shortcomings, Omissions, Implications**

We have seen a plethora of strange loops at various levels. At the broadest level, I have argued that strange loops characterize particular techniques used to depict the self, fiction, and time. At a narrower level, I have explored specific types of strange loop relationships that emerge in many facets of texts. Most obviously, there are the strange loops within the texts—various circularities, labyrinths, leitmotifs, and paradoxes. These are the ones most analogous to those seen in works by Escher or Bach. But there are several more interesting strange loops that I have tried to tease out by examining these loops from various distances. Autographesis, the strange loop between author and text, blends the boundaries between the organic and the semiotic. I have addressed genealogical strange loops between authors and their precursors.

This led inevitably to the strange loops that exist between texts, in various intertextualities. All of these suggestions intimately bind the strange loop concept to theoretical notions of textuality and authorship.

I must also excuse myself from any accusations of subscribing to Bacon's Idols of the Tribe—that is, seeing patterns where they do not exist. One might liken this to Pynchon's paranoia or a radical cybernetic perspective. Hofstadter dubs a similar fallacy the Eliza effect, named after a computer program which reads meaning into symbolic strings that are not there. This is an ever-present danger in any hermeneutic endeavor. As opponents of psychoanalysis used to joke, isn't a cigar sometimes just a cigar? Likewise, one might ask, isn't a loop sometimes just a loop? Certainly, sometimes it is. But I have tried to show, more often than not in literature, patterns suggest more than merely themselves. At times this runs the risk of two bad critical habits. The first is taking a fiction as a fact, committing what Gilbert Ryle once called a "category mistake." We must always remember that literary works provide only provisional truths, and part of their power is that they instill in us rebelliousness against the tyrannies of factuality. We must remember that "[i]f made too much like real life, novels can be mistaken for messages; we need to be reminded they are metaphors" (Klinkowitz, *Kurt Vonnegut* 73). This echoes Wittgenstein: "Do not forget that a poem, although it is composed in the language of information, is not used in the language-game of giving information" (*Investigations* 28).

A second potential accusation regarding scientism must also be addressed. Opponents of more scientific approaches to literary studies—indeed to such approaches in the humanities as a whole—often accuse such perspectives as a misguided attempt to make everything into a science. Hopefully my methodology excuses me from such an accusation, but I would also add

that a similar accusation might be levied against anti-scientific perspectives which attempt to remove all discursive power from science. Adopting a scientific worldview is not, as some of its radical opponents suggest, equivalent to science worship or an uncritical acceptance of science's principles. Indeed, even speaking of science as if it were some homogenous entity is misleading given that it is constantly revising its fundamental tenets in light of the philosophy of science. Instead of either extreme, a balance must be reached. This too is a reason why I believe approaches like Hofstadter's contribute important vistas to the intellectual landscape.

In light of these considerations, there are several points that I want to mention that I have not discussed or that might seem like omissions. Let me take this opportunity to address them now. First is that I have only tangentially discussed Artificial Intelligence, which is in many ways central to Hofstadter's oeuvre. I have good reasons for doing so. I have avoided the topic primarily because I do not have the expertise to analyze the full extent of whether or not consciousness is possible in substrates other than our cellular ones, a thesis one would have to address in the course of such a discussion. Also, I feel that as studies emerge discussing the intricate exchange between literary studies and AI grow in number, such an argument would be more complete. So for now I must save a full discussion for another time. What I will point out is that in appropriating Gödel, Hofstadter seems to contradict his tutelary spirit. In his 1951 Gibbs Lecture, "Some Basic Theorems on the Foundations of Mathematics and Their Philosophical Implications," Gödel essentially denies that the mind is a consistent, finite machine. This is particularly interesting given that Hofstadter, who is in many ways Gödel's best explicator, is himself skeptical of the anti-mechanist viewpoint that Gödel espouses.

This points to an aspect of Hofstadter's phenomenology that might explain why he has thus far been largely neglected by theorists of language. As a dogmatic adherent of "strong AI,"

Hofstadter joins the ranks of Hans Moravec and Marvin Minsky as a thinker confident that consciousness can exist in sufficiently advanced machines, though he does not believe we are anywhere near actualizing this possibility. I have always squirmed at the notion (call this the humanist in me) that minds and computers operate upon the same symbolic manipulation processes. Is not a computer itself the product of a mind? Does not the mind emerge from an organic substrate that must in principle dictate many, if not all, of its operational features? We are, of course, material, electrochemical entities, but can a computer hope to be conscious if it consists of only silicon and alloys? Can we isolate the products of consciousness as such or are we doomed to only ever create a second-order variety of what is largely considered the single most fascinating phenomenon in the universe? There are too many questions surrounding this assumption. However, if consciousness can exist in machines, it is likely that it would follow a set of rules aimed at producing autopoietic strange loops.

A related concern that has until now largely remained tacit is also arises here: free will. If, as Hofstadter and Dennett suggest, consciousness can conceivably exist in nonhuman computational systems, are we merely automata, as Hobbes surmised? I will not deny that there is some fatalism lurking in Hofstadter's strange loop concept—he himself notes it toward the end of *Gödel, Escher, Bach*—if only because the pattern relies upon rules in order to give rise to its emergent higher-order structures and processes. While most people (and certainly most cognitive scientists) would probably concede that treating the mind as a machine is instructive metaphorically, far fewer are likely to agree with Hofstadter, Dennett, and others that the mind *is* a machine, even if it's a highly sophisticated one. Yet the idea that consciousness is computation is a difficult one to argue against.

Again, the computer metaphor unsettles die-hard humanists afraid that designating consciousness as a program reduces noble humanity from the pinnacle of the Great Chain of Being to a sphexish<sup>3</sup> automaton. Such a position reeks of—gasp!—determinism. The political ramifications of this philosophical position notwithstanding, determinism does not sit well with we creatures convinced that our volition is, in fact, *ours*. But, as Sam Harris argues perhaps most effectively, cognitive science is gradually suggesting that free will is largely illusory—or at the very least, must be redefined. Empirical evidence suggests that we become conscious of our volitional actions long after the neuronal cascade that produces them has already been set into motion.<sup>4</sup> We operate largely within the confines of actions, behaviors, and beliefs that *are* determined insofar as we are aware of them, quite literally in fact, after they have already occurred.

In a sense, we operate on the sort of neural algorithmic programs posited by nativist schools of cognitive science. This prompts Harris to ask, “How can we be ‘free’ as conscious agents if everything that we consciously intend is caused by events in our brain that we *do not* intend and of which we are entirely unaware?” (25-26). Clearly the moral implications of this assertion are fraught with pitfalls, but are we clinging to the notion of conscious free will in a sort of moralistic fallacy? Are we denying the facts of nature and the suggestions of literature merely because we believe it complicates our ethical systems? No human wants to believe they are a creature of instincts; most would say that is the animal’s condition, not the human being’s. The seeds for such an idea are latent in Chomskyan generative grammar and Pinker’s language instinct, points of dispute between these computational models of language and those humanist

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<sup>3</sup> A term coined by Hofstadter to describe the seemingly robotic behavior of ants.

<sup>4</sup> For a representative study see Fried, Mukamael, and Kreiman; see also Wegner’s *The Illusion of Conscious Will* for a similar philosophical argument.



approaches more familiar to literary scholars. This cognitive deterministic specter also seems to lurk in Hofstadter's system.

In addition to these cognitive considerations, I must here consider briefly what temporal strange loops suggest about free will on a broader level. As a temporal schema that confounds cause and effect, strange time as manifested in Vonnegut's and Pynchon's fiction especially would seem to violate any notion of free will. Block universes, temporal reversibility, the dissolution of cause and effect: in light of these observations, absolute free will seems incompatible with strange loops. Time in these novels suggest a concept related to determinism or fatalism. Whether it's the Gödelian universes in Vonnegut or the cause/effect inversions in Pynchon or the fractured temporality in Dick, time on a cosmic level seems to conform to theories of ontological eternalism. In this view, we are determined not because we obey innate programs in our mind/brains but because everything we do has in fact already been done. We are, in effect, navigating the Möbius strip of a lifetime that has already transpired—and will continue to transpire eternally.

But sociobiological determinism is one hobgoblin, block universes another, and Harris's cognitive argument still another. None of these are mutually exclusive. Rather they are linchpins in a single hypothesis: we seem to be determined by many factors on many levels, automata like Joyce's Bloom, Kafka's K., or Beckett's Molloy/Moran. We seem to exist, as Billy Pilgrim does, like bugs in amber. And, like the Edwin Abbott's Flatlanders, we often find it impossible to, as Hofstadter might say, joots, to jump outside the system in order to get a clearer perspective on our human condition. So yes, characters are machines in a loose sense, as are we. They are operant parts in a cybernetic text, we in a cybernetic universe. They obey rules outside of which they cannot operate, as do we.

But even entertaining this possibility does not mean that we have to accept it. After all, the person aware of their future will likely still try to change it, even if by doing so they inevitably bring it about. Furthermore, these various determinisms do not dictate how we go about living *meaningful* lives. That is the purview of what the existentialists saw as freedom in an otherwise meaningless universe. As Harris notes, “One of the most refreshing ideas to come out of existentialism (perhaps the only one) is that we are free to interpret and reinterpret the meaning of our lives” (40). It is perhaps for this reason that so many of the authors I discussed express existentialist concerns: they have recognized the strange loops determining existence, and they write to liberate themselves from that very realization. They recognize in some way that “[y]ou are not controlling the storm, and you are not lost in it. You *are* the storm” (14). And thankfully, they channel the momentum of their brainstorming into wonderful fictions.

I should here like to reiterate and expand some of the concerns expressed in my introduction concerning the specific texts I have discussed. For example, all the authors I’ve discussed are men, or more specifically male canonical authors writing in the Western tradition. Are strange loops therefore a pattern unique to male writers, to male consciousness even? Are strange loops unique to the Western literary tradition? For that matter, are they exclusive to prose fiction? To all of these questions I would answer with a resounding no. Certainly one might find strange loops in the work of Virginia Woolf and Gertrude Stein, or Joan Didion and Margaret Atwood. Such an endeavor might reveal excellent points of either comparison or departure with my own study. Certainly an extension of my proposals here to authors such as Woolf and Stein would likely produce insights into the relationship between their fiction and contemporary cognitive models. Investigating non-canonical texts is another potentially

rewarding thread worth pursuing as the literary critical modus operandi broadens its scope to challenge notions of canonicity.

In response to the second concern, non-Western literary traditions might certainly evince many of the patterns I have explored here. Especially in my discussion of time, there are hints of the sort of cyclical temporality one finds in novels such as Tayeb Salih's *Season of Migration to the North* and Leslie Marmon Silko's *Ceremony*. Similarly, in addition to novels from previous periods, strange loops might be explored in contemporary novels such as Roberto Bolaño's *2666* (2009), Mark Z. Danielewski's *House of Leaves*, and Paul Auster's *City of Glass* (1985).

Lastly, investigating strange loops outside prose fiction is not only warranted but necessary. The pattern arises across mediums and there is every reason to believe it will be found in films, graphic novels, and verse. One notable example of the latter is *Knots*, a collection of verse by cyberneticist R. D. Laing. As Laing notes in his preface, "The patterns delineated here have not yet been classified by a Linnaeus of human bondage. They are all, perhaps, strangely, familiar. In these pages I have confined myself to laying out only some of those I actually have seen. Words that come to mind to name them are: knots, tangles, fankles, *impasses*, disjunctions, whirligogs, binds" (i). Laing's *Knots* is a fascinating example of how reflexive level-crossing can subsist in poetry. Written as a cyberneticist, Laing's poems revel in paradox, self-referentiality, and the sort of recursion a computer scientist delights in—an infinite code of self-reference, a Gödelian swirl. It would also be worthwhile to trace strange loops in hypertextual literature, especially since both the pattern and the medium emerged from cybernetic principles.

Another omission that must be noted is my avoidance of evolutionary concerns, another aspect that Hofstadter discusses tangentially and which contemporary cognitive approaches often

foreground. A significant amount of recent work (for example, by Joseph Carroll and also by Jonathan Gottschall and David Sloan Wilson) has addressed the almost incontrovertible position that narrative is a fundamentally human capacity selected for its adaptive advantages, and evolving alongside psychobiological, social, and cultural systems. I have generally ignored the evolved aspects of both consciousness and narrative for two reasons. First, given the depth of this position, it requires an exploration of its own. Second, while I endorse evolutionary psychology in principle, I cannot escape the persistent shadow of paleopoetry that haunts it: evolutionary psychology frequently offers pleasant “If So” stories more akin to Kipling than to Kepler. I therefore have avoided discussing evolution’s role because, until we have a firmer grasp of evolutionary theory and its role in the emergence of human consciousness, any literary theory entirely grounded in evolutionary psychology must remain tentative at best. Nevertheless, a psychosemiotics of the kind I am proposing must accept the legitimacy of evolutionary psychology’s methods without sacrificing the autonomy of cognitive poetics. Approaches such as the one I have followed must continue interpreting texts as tools for understanding consciousness and develop what one might call a literary-critical *humaneutics* dedicated to understanding the individual in all its dimensions.

I respond to these possible loose ends as a directive for future research questions. Does culture play a role in strange loops or are they, as Hofstadter suggests, a human universal? How would emphases on different aspects of strange loops in different cultures reflect its role as an artifact of consciousness? What about oral literatures? I am posing more questions than we can answer, but one must wonder whether the strange loops in the texts I have chosen are merely symptoms of a historical and cultural moment in the West or a pattern shedding light on the nature of human consciousness. One hint lies in Hofstadter’s and Francisco Varela’s frequent

allusions to Zen Buddhism. As I have suggested in keeping with Hofstadter, Zen provides a markedly non-Western means of expressing many of the cognitive ideas encapsulated by the strange loop concept.

I must finally consider pedagogical implications. On one level, literary strange loops seem to open another way of conceiving the relationship between reader and text. If consciousness operates like a strange loop, understanding autopoiesis in this way might improve our ability to understand processes such as learning, literacy, and perception. Computer models of story understanding built on similar principles are just now beginning to shed light on exactly what it means to say we read a story. Combined with cognitive studies of brain activity during the reading process itself, these findings should encourage English pedagogy to continue to embrace cognitive science as both a theoretical and pedagogical resource.

Also, following J. Terry Gorton's emphasis of literary entrapment as a strange loop, I would suggest that using the autopoietic strange loop to describe processes like textual immersion, polysemy, and intertextuality enhances not only the understanding of literary theory but the very way it is taught. The visual richness of the concept combined with its metaphysical and epistemological suggestiveness makes it a valuable tool for expressing literary theoretical concepts that might otherwise remain hopelessly abstract for some students. Also, it provides an opportunity to integrate other art forms in discussions about literature. By encouraging students to find strange loop patterns in both literary texts and other media (for example, music, plastic arts, and film), we can maintain the connection between literary studies and cognitive sciences without neglecting the crucial function of literary studies as an exercise in aesthetics. In addition to Escher, I have suggested Magritte's work as a helpful visual aid for teaching certain literary theoretical topics. Further comparisons might be drawn between strange loops and the works of

other surrealists such as Salvador Dalí, films such as Christopher Nolan's heavily Hofstadterian *Inception*,<sup>5</sup> or in classical and contemporary music. This broadened approach situates strange loops as an important theoretical and pedagogical tool for teaching literary studies with and through other art forms.

The pedagogical applications extend in the other direction as well. Using strange loops to introduce cognitive concepts through literature in courses in the behavioral sciences is an approach that not only enhances students' understanding of complex cognitive processes, but also produces scientists with a firmer understanding of humanistic methods. The old Arnoldian adage that literary studies teaches the best that has been said and done by man does, I believe, largely hold true. Teaching cognitive theory through literary texts not only engages and nurtures the imaginations of future scientists, but also provides them with alternative means of testing their methods and speculations through reading and writing about literature, methods that afford them modes of thinking not available to them in traditional empirical practice.

### **Concluding Remarks**

Physicist Werner Heisenberg, of Uncertainty Principle fame, once stated: "There is little ground for believing that the current world view of science has directly influenced the development of modern art or could have done so" (61). How wrong he was! As I have tried to show, fruitful exchanges occur between science and literature at every turn. Instead of two hermetically sealed fields of knowledge, there is always a dialogue between science and

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<sup>5</sup> There is, in fact, already an article on this connection, "Paradox, Dreams, and Strange Loops in *Inception*" by Tyler Shores, collected in the pop philosophy series published by Wiley and Sons. However, more extensive scholarly treatment is surely warranted.

literature because, whether we want to admit it or not, both are culturally conditioned practices that are part of a larger network of information exchange, a cybernetic network.

Indeed, literature often seems to presage the sort of scientific revolutions described by Thomas Kuhn. These literary paradigm shifts often coincide with, even prefigure, similar shifts in the sciences. Therefore, it is no coincidence that the novel's "cognitive turn" in the twentieth century occurs in parallel with similar shifts in the sciences. This brings me to a point about culture. If culture is "made of a web of semiosis, a thick tapestry of interwoven sign systems" (Orr 813) as semiotics posits, then one might construe it as similarly autopoietic. Scholars such as Niklas Luhmann, Katherine Hayles, and Ira Livingston suggest that autopoiesis—and by proxy, strange loops—might underlie social interactions, including perhaps culture as a whole. "In other words," Livingston writes, "cultures are not like *branchings* out from a single trunk but like complex fractal *braidings*, networks" (151). If culture itself is an autopoietic system then its artifacts, including literature, realize this same process on another level and yet another tangled hierarchy results.

There are, of course, some historical considerations that accompany this. For example, why are strange loops so prevalent in postmodernist literature? One reason is that "[s]elf-referential paradoxes are, of course, the stuff of which deconstructive analyses and postmodern literature are made" (Hayles, *Chaos Bound* 207). Although literary strange loops appear in Sterne, Cervantes, and other authors writing at the dawn of the novel, this pattern becomes a central obsession of the modernists and their postmodernist successors. Hayles sees this as the result of science's inextricable link to broader trends in intellectual culture: "Why should John Cage become interested in experimenting with stochastic variations in music about the same time that Roland Barthes was extolling the virtues of noisy interpretations of literature and Edward

Lorenz was noticing the effect of small uncertainties on the nonlinear equations that described weather formations?” (*Chaos Bound* 4). This hints at the underlying cultural processes at work behind many of the connections I have drawn here.<sup>6</sup>

Autopoiesis—or more specifically, one of its particular geometries, the strange loop—underscores a wide array of elements common to both modernist and postmodernist fiction. The isomorphisms are striking, both between texts and Hofstadter’s numerous examples in *Gödel, Escher, Bach*, as well as between different texts; but what do these remarkable isomorphisms ultimately tell us? What does the preponderance of this geometry *mean*? For one, it supports Hayles’s claim that autopoiesis is *the* dominant paradigm of the period. More importantly it illuminates a key feature of the mind’s most spectacular process, consciousness. I have posited that strange loops map an array of processes that generate the mindself and its intimate, if illusory, knowledge of itself. How the mindself constitutes itself with respect to itself, society, and ecology becomes clearer through this recognition.

Fact and fiction share a common etymology. As such, it seems appropriate that any model of consciousness should appeal to the two primary functions of consciousness: reason and imagination. The former category, the domain of science, allows us to envision consciousness as an emergent property of simpler systems that nevertheless is capable of turning around and affecting those very systems from which it emerged. The latter category, the domain of literature, allows us to envision consciousness as a distinctly human endeavor, one seemingly bound to both self and language in a network of correspondences. Through a combination of

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<sup>6</sup> Hayles goes on to say that “[m]odern consciousness differs from earlier modes of thought because it has absorbed more of the chaos within itself” (*Chaos Bound* 61). McHale seems to make similar suggestions in *Postmodernist Fiction* that these forms are more common during that episteme than others because it has become more thoroughly part of the cultural matrix. Although these conclusions are possible, I am hesitant to ascribe more “chaos” or “reflexivity” to modern consciousness than previous eras, particularly given the likelihood that the mechanisms underlying postmodern (as a historical rather than theoretical category) consciousness have not significantly evolved since the Great Leap Forward some 40,000 years ago.



these two modes, one might nurture a theory of consciousness that is both holistic and reductionist, capable of seeing consciousness as both strange loop and tangled hierarchy from within and without.

Norman Holland states, “Drawing on neuroscience, I think academic critics and professors will come up with persuasive answers to some of the wonderings we all have about literature” (*Brain* 5). I have attempted in part to argue the other side of Holland’s prediction: namely that drawing on literature, neuroscientists will be able to better refine their questions and situate them within a broader intellectual context. “Literature informs the neuroscientific study of self with an intimacy that is otherwise unavailable to neuroscience,” Aaron Mishara writes (117). According to Holland, Mishara and others, the qualitative data available in literature is far richer than anything reducible to variables or statistics. In this spirit, I have tried to show just how rich the literary Muse really is.

Is the strange loop a cure-all for the gap between the sciences and the humanities? Not by any means—and I don’t believe that any such panacea exists. But rather than leaving me schizophrenic like a character in a Philip K. Dick novel, I find the strange loop a convenient means of reconciling an array of ideas from both of the Two Cultures. In some ways, it has helped reconcile my own disciplinary schizophrenia. Hofstadter’s pattern has helped me hold together notions about the mind that might otherwise remain alienated from each other, part of two estranged argots that might otherwise never come in contact. In addition, the strange loop provides a means of discussing consciousness seriously without losing the humor that appears so often in both Hofstadter’s work and in the fictionists that I have discussed. “Self-reference in art is not an isolated technique found only in metafiction, M. C. Escher prints, and curios,” Joseph Tabbi writes, “Neither is reflexivity necessarily an act of narcissistic indulgence or an aesthete’s

insistence on the autonomy of the higher arts. Rather, self-reflection represents an assertion of the aesthetic system's *difference* from other systems, the artist's inclusion of only a small part of the infinite complexity of non-human environments and the beauty of being, all of which have their own existence apart from our cognitive maps, aesthetic representations, and narratives" ("Introduction" 4). As such, literary art serves to remind us that we are units in a larger system, and renders that system more humane.

I have suggested that the gap between the sciences and the humanities is largely a social rather than a properly epistemological divide. But if there is a gap between the humanities and the sciences, it lies in the inability of the latter to provide our lives with any meaning. In a world of ateleological Darwinian evolution, nonsentient subatomic particles, and black holes, I can sometimes commiserate with those who see the perils inherent in such a worldview. Consequently, it becomes difficult not to fall into the sort of abyss that consumed Nietzsche and his existentialist successors. But even Nietzsche knew that art fills this void. Thus the early Wittgenstein rightly notes, "We feel that even if *all possible* scientific questions be answered, the problems of life have still not been touched at all. But of course there is then no question left, and just this is the answer" (*Tractatus* 155). As readers we constantly encounter scientific ideas alongside those of philosophy and literary theory. We are forced to engage these ideas and wrestle with their validity. From this perspective, experiments with fiction become valid, indeed necessary, tools for exploring the facts of science, in ways that empirical science cannot.

Cognitive science is not the skeleton key to the house of Being, but it opens many doors. It provides us with accurate knowledge about the world, but not with any firmer grasp of how to live. This leads me to one final realization: Perhaps Hofstadter's omission of literature is an unintended part of his message? In his otherwise encyclopaedic *Gödel, Escher, Bach*, he seems

to discuss everything else except literature directly; perhaps this is because literature already captures best the very processes Hofstadter attempts to illuminate by other means. Whatever the reason, I hope I have demonstrated how fertile his phenomenology is as a semiotic and literary critical tool. The strange loop concept affects us in the way that Francis Bacon hoped all science would, that like art it should prevent us from getting too comfortable in our ways of seeing the world. Good science, like great art and great literature, should strangify our experience, restore in us our ancestors' wonder at the world, and reconfirm our understanding that life without literature is really no life at all. And to do so, the greatest literary art balances order with chaos, cogito with cosmos, calculus with fire.

## WORKS CITED

- Abbott, Edwin A. *Flatland: A Romance of Many Dimensions*. New York: Signet, 1984. Print.
- Abbott, H. Porter. *Beckett Writing Beckett: The Author in the Autograph*. Ithaca: Cornell UP, 1996. Print.
- . "A Grammar for Being Elsewhere." *Journal of Modern Literature* 6.1 (1977): 39-46. Print.
- Ackerley, Christ, and Stanley E. Gontarski. *The Grove Companion to Samuel Beckett: A Reader's Guide to His Works, Life, and Thought*. New York: Grove, 2004. Print.
- Adams, Robert Martin. *Afterjoyce: Studies in Fiction After Ulysses*. New York: Oxford UP, 1977. Print.
- Alanen, Lilli. *Descartes's Concept of Mind*. Cambridge, MA: Harvard UP, 2003. Print.
- Albright, Daniel. *Beckett and Aesthetics*. Cambridge: Cambridge UP, 2003. Print.
- Andreason, N. J. C. "James Joyce: A Portrait of the Artist as a Schizoid." *Journal of the American Medical Association* 244 (1973): 67-71. Print.
- Arnauld, Antoine. *On True and False Ideas*. Trans. Stephen Gaukroger. Manchester: Manchester UP, 1990. Print.
- Attridge, Derek. *Joyce Effects: On Language, Theory, and History*. Cambridge: Cambridge UP, 2000. Print.
- Augustine. *The Confessions of Saint Augustine*. Trans. Rex Warner. New York: Mentor, 1963. Print.
- Aunger, Robert, ed. *Darwinizing Culture: The Status of Memetics as a Science*. Oxford: Oxford UP, 2000. Print.
- Auster, Paul. *City of Glass*. New York: Penguin, 1985. Print.

- Austin, J. H. *Zen and the Brain: Toward an Understanding of Meditation and Consciousness*.  
Cambridge, MA: MIT P, 1999. Print.
- Babble*. Dir. David O’Kane. Independent, 2008. Film.
- Badio, Mario. *De Limites y Convergencias: La Relacion Palabra/Imagen en la Cultura Visual Latinoamericana del Siglo Veinte*. Diss. U of Toronto, 2007. *ProQuest*. Web. 11 Sep. 2012.
- Badie, Kambiz, and Maryam Tayefeh Mahmoudi. *Strangification: A New Paradigm in Knowledge Processing and Creation*. Frankfurt: Lang, 2007. Print.
- Baert, Patrick, ed. *Time in Contemporary Intellectual Thought*. Amsterdam: North Holland, 2000. Print.
- Bakhtin, Mikhail. *The Dialogic Imagination*. Ed. Michael Holquist. Trans. Caryl Emerson and Michael Holquist. Austin: U of Texas P, 1981. Print.
- Bal, Mieke. *Narratology: Introduction to the Theory of Narrative*. Toronto: U of Toronto P, 1997. Print.
- Baron, Scarlett. “*Strandentwining Cable*”: *Joyce, Flaubert, and Intertextuality*. Oxford: Oxford UP, 2011. Print.
- Baronti Marchiò, Roberto. ““All Old Dadgerson’s Dodges’: Language and Meaning in Lewis Carroll and James Joyce.” *Joyce’s Victorians*. Ed. Franca Ruggieri. Rome: Bulzoni, 2006. 25-53. Print.
- Barrenechea, Ana Maria. *Borges: The Labyrinth Maker*. New York: New York UP, 1965. Print.
- Barth, John. “Frame-Tale.” *Lost in the Funhouse*. New York: Bantam, 1969. 1-2. Print.

- . *The Friday Book: Essays and Other Nonfiction*. Baltimore: Johns Hopkins UP, 1997. Print.
- . "The Literature of Exhaustion." Bradbury 70-80.
- . "'The Parallels!' Italo Calvino and Jorge Luis Borges." *Context* 1 (1997): 1-2. Web. *Dalkey Archive Press Online*. 15 Nov. 2012.
- Barthes, Roland. *S/Z: An Essay*. Trans. Richard Miller. New York: Hill, 1974. Print.
- Bartolussi, Marisa, and Peter Dixon. *Psychonarratology: Foundations for the Empirical Study of Literary Response*. Cambridge: Cambridge UP, 2003. Print.
- Bateson, Gregory. *Mind and Nature: A Necessary Unity*. Toronto: Bantam, 1979. Print.
- . *Steps to an Ecology of Mind*. New York: Ballantine, 1972. Print.
- Baudrillard, Jean. *Simulacrum and Simulation*. Trans. Sheila Faria Glaser. Ann Arbor: U of Michigan P, 1994. Print.
- Baum, L. Frank. *The Wonderful Wizard of Oz*. Chicago: Hill, 1900. Print.
- Baumann, Paul. "Mosaics, Magicians, and Mystery." *Commonweal* 2 (1989): 339-41. Print.
- Bayerl, Elizabeth Ann. "Tangled Hierarchies: 'Godel, Escher, Bach: An Eternal Golden Braid' and 'Gravity's Rainbow.'" Diss. Syracuse U, 1985. Print.
- Beckett, Samuel. *Company*. 1980. *Nohow On*. 1989. London: Calder, 1992. 9-59. Print.
- . *Disjecta: Miscellaneous Writings and a Dramatic Fragment*. Ed. Ruby Cohn. New York: Grove, 1984. Print.
- . *The Letters of Samuel Beckett, Vol. 1 1929-1940*. Ed. Martha Dow Fehsenfeld and Lois More Overbeck. Cambridge: Cambridge UP, 2009. Print.
- . *Malone Dies*. 1951. *Three Novels: Molloy, Malone Dies, The Unnamable*. New York: Grove, 1955. 171-282. Print.

- . *Mercier and Camier*. New York: Grove, 1974. Print.
- . *Molloy*. 1951. *Three Novels: Molloy, Malone Dies, The Unnamable*. New York: Grove, 1955. 1-170. Print.
- . *Murphy*. 1938. New York: Grove, 1957. Print.
- . *Proust and Three Dialogues with George Duthuit*. London: Calder, 1965. Print.
- . *The Unnamable*. 1953. *Three Novels: Molloy, Malone Dies, The Unnamable*. New York: Grove, 1955. 283-407. Print.
- . "Three Dialogues." *Proust and Three Dialogues with George Duthuit*. London: Calder, 1965. 55-135. Print.
- . *Waiting for Godot: A Tragicomedy in Two Acts*. New York: Grove, 1954. Print.
- . *Watt*. New York: Grove, 1953. Print.
- . "Whoroscope." 1930. *Selected Poems 1930—1989*. Ed. David Wheatley. London: Faber, 2009. 3-8. Print.
- Beckett, Samuel, et al. *Our Exagmination Round His Factification for Incamination of Work in Progress*. 1929. London: Faber, 1972. Print.
- Beer, Gillian. "Alice in Time." *The Modern Language Review* 106.4 (2011): xxvii-xxxviii. *JSTOR*. Web. 19 August 2012.
- Beja, Morris. *Epiphany in the Modern Novel: Revelation as Art*. New York: Owen, 1971. Print.
- Bergson, Henri. *Matter and Memory*. Ann Arbor: U of Michigan P, 1911. Print.
- Bersani, Leo. "Pynchon, Paranoia, and Literature." *Representations* 25 (1989): 99-118. *JSTOR*. Web. 8 Aug. 2012.

Bernheimer, Charles. "Watt's in *The Castle*: The Aporetic Quest in Kafka and Beckett."

*Newsletter of the Kafka Society of America* 6.1-2 (1982): 19-24. Print.

Black, Max. *The Labyrinth of Language*. Westport, CT: Praeger, 1968. Print.

*Blade Runner*. Dir. Ridley Scott. Warner, 1982. Film.

Bloom, Harold. *The Anxiety of Influence: A Theory of Poetry*. London: Oxford UP, 1973.

Print.

---. Introduction. *Kurt Vonnegut's Slaughterhouse-Five*. New York: Chelsea, 2007. Print.

Bohman-Kalaja, Kimberly. *Reading Games: An Aesthetics of Play in Flann O'Brien, Samuel*

*Beckett, and Georges Perec*. Urbana, IL: Dalkey, 2007. Print.

Bolaño, Roberto. *2666*. Trans. Natasha Wimmer. New York: Picador, 2009. Print.

Booker, M. Keith. *Flann O'Brien, Bakhtin, and Menippean Satire*. Syracuse: Syracuse UP,

1995. Print.

---. "Science, Philosophy, and 'The Third Policeman': Flann O'Brien and the Epistemology of

Futility." *South Atlantic Review* 56.4 (1991): 37-56. *JSTOR*. Web. 29 Aug. 2012.

Booker, M. Keith, and Anne-Marie Thomas. *The Science-Fiction Handbook*. London: Wiley,

2009. Print.

Boon, Kevin Alexander. *Chaos Theory and the Interpretation of Literary Texts: The Case of*

*Kurt Vonnegut*. Lewiston, NY: Mellen, 1997. Print.

Borges, Jorge Luis. *Collected Fictions*. Trans. Andrew Hurley. New York: Penguin, 1998.

Print.

---. *Conversations*. Ed. Richard Burgin. Jackson: UP of Mississippi, 1998. Print.

---. *Labyrinths: Selected Stories and Other Writings*. Ed. and Trans. Donald A. Yates and

James E. Irby. New York: New Directions, 1962. Print.



- . *A Personal Anthology*. Ed. Anthony Kerrigan. New York: Grove, 1967. Print.
- . *Selected Non-Fiction*. Trans. Ester Allen, Suzanne Jill Levine, and Eliot Weinberger. Ed. Eliot Weinberger. New York: Penguin, 1999. Print.
- . *Selected Poems*. Ed. Alexander Coleman. New York: Penguin, 2000. Print.
- Botta, Anna. "Calvino and the Oulipo: An Italian Ghost in the Combinatory Machine?" *Italian Issue*. Spec. Issue of *MLN* 112.1 (1997): 81-89. *JSTOR*. Web. 10 Dec. 2012.
- Bradbury, Malcolm, ed. *The Novel Today: Contemporary Writers on Modern Fiction*. Manchester: Manchester UP, 1977. 70-80. Print.
- Bradley, Francis Herbert. *Appearance and Reality*. London: Sonnenschein, 1897. Print.
- Brater, Enoch. *Why Beckett*. London: Thames, 1989. Print.
- Brienza, Susan D. *Samuel Beckett's New Worlds: Style in Metafiction*. Norman: U of Oklahoma P, 1987. Print.
- Brockman, John. *The Third Culture: Beyond the Scientific Revolution*. New York: Touchstone, 1995. Print.
- Brod, Max. *Franz Kafka: A Biography*. 1937. New York: Schocken, 1960. Print.
- Broer, Lawrence R. *Sanity Plea: Schizophrenia in the Novels of Kurt Vonnegut*. Tuscaloosa: U of Alabama P, 1989. Print.
- Breuer, Rolf. "Paradox in Beckett." *Modern Language Review* 88.3 (1993): 559-80. Print.
- Bruner, Jerome. *Actual Minds, Possible Worlds*. Cambridge, MA: Harvard UP, 1986. Print.
- Budgen, Frank. *James Joyce and the Making of Ulysses*. Bloomington: Indiana UP, 1964. Print.
- Buki, Ann McGarrity. "Lewis Carroll in *Finnegans Wake*." *Lewis Carroll: A Celebration*. Ed. Edward Giuliano. New York: Potter, 1982. 154-66. Print.

- Burgass, Elaine. "A Brief Story of Postmodern Plot." *Yearbook in English Studies* 30 (2000): 177-86. Print.
- Burke, Kenneth. *A Grammar of Motives*. Berkeley: U of California P, 1969. Print.
- . *Language as Symbolic Action: Essays on Life, Literature, and Method*. Berkeley: U of California P, 1966. Print.
- Burnett, Jacob. "Strange Loops and the Absent Center in *The Castle*." *Kafka for the Twenty-First Century*. Ed. Stanley Corngold and Ruth V. Gross. Rochester, NY: Camden, 2011. 105-19. Print.
- Burroughs, William S. *The Soft Machine*. 1961. New York: Grove, 1992. Print.
- Cahalan, James M. "'Dear Reader' and 'Drear Writer': Joyce's Direct Addresses to His Readers in *Finnegans Wake*." *Twentieth-Century Literature* 41.3 (1995): 306-18. *JSTOR*. Web. 25 May 2011.
- . *The Irish Novel: A Critical History*. Boston: Twayne, 1988. Print.
- Calvin, William H. *The Cerebral Symphony: Seashore Reflections on the Structure of Consciousness*. New York: Bantam, 1990. Print.
- Calvino, Italo. *The Castle of Crossed Destinies*. 1973. New York: Harcourt, 1977. Print.
- . *Cosmicomics*. 1965. Trans. William Weaver. New York: Harcourt, 1981. Print.
- . *If On a Winter's Night a Traveler*. 1979. Trans. William Weaver. New York: Harcourt, 1981. Print.
- . *Six Memos for the Next Millennium*. Trans. Patrick Creagh. Cambridge, MA: Harvard UP, 1988. Print.
- . *t-zero*. 1967. Trans. William Weaver. New York: Harcourt, 1986. Print.
- . *The Uses of Literature*. 1980. Trans. Patrick Creagh. San Diego: Harvest, 1986. Print.

- . "The Written and the Unwritten Word." *New York Review of Books* 12 May 1983. Print.
- Camus, Albert. *The Myth of Sisyphus and Other Essays*. 1955. New York: Vintage, 1991. Print.
- Carey, Phyllis. *Wagering on Transcendence: The Search for Meaning in Literature*. New York: Rowman, 1997. Print.
- Carney, Sean. *Brecht and Critical Theory: Dialectics and Contemporary Aesthetics*. London: Taylor, 2005. Print.
- Carr, David. *Time, Narrative, and History*. Indiana UP: Bloomington, 1986. Print.
- Carroll, Joseph. *Evolution and Literary Theory*. Columbia: U of Missouri P, 1995. Print.
- . *Literary Darwinism: Evolution, Human Nature, and Literature*. New York: Routledge, 2004. Print.
- Carroll, Lewis. *Alice in Wonderland*. 1865. Ed. Donald J. Gray. New York: Norton, 1971. Print.
- Casasanto, Daniel, and Lera Boroditsky. "Time in the Mind: Using Space to Think About Time." *Cognition* 106.2 (2008): 579-93. *PsycInfo*. Web. 15 Aug. 2012.
- Cervantes, Miguel de. *Don Quixote*. 1615. Trans. Edith Grossman. New York: Harper, 2005. Print.
- Chalmers, David. *The Conscious Mind: In Search of a Fundamental Theory*. New York: Oxford UP, 1996. Print.
- Chomsky, Noam. *Rules and Representation*. New York: Columbia UP, 1980. Print.
- Churchland, Patricia. *Neurophilosophy*. 1986. Cambridge, MA: MIT P, 1998. Print.
- Clark, Andy, and David Chalmers. "The Extended Mind." *Analysis* 58 (1998): 7-19. Print.

- Clarke, Arthur C. "The Wall of Darkness." *The Collected Stories of Arthur C. Clarke*. New York: Orb, 2000. 104-118. Print.
- Clarke, Bruce, and Manuela Rossini, eds. *The Routledge Companion to Literature and Science*. New York: Routledge, 2011. Print.
- Cohn, Dorrit. *Transparent Minds: Narrative Modes for Presenting Consciousness in Fiction*. Princeton: Princeton UP, 1978. Print.
- Cohn, Ruby. "Watt in the Light of *The Castle*." *Comparative Literature* 13.2 (1961): 154-66. *JSTOR*. Web. 28 Jul. 2012.
- Collins, Christopher. *A Poetics of the Mind's Eye: Literature and the Psychology of Imagination*. Philadelphia: U of Pennsylvania P, 1991. Print.
- Compton, John J. "Some Contributions of Existential Phenomenology to the Philosophy of Natural Science." *American Philosophical Quarterly* 25.2 (1988): 99-113. *JSTOR*. Web. 10 Oct. 2012.
- Conrad, Joseph. *Heart of Darkness*. 1902. Ed. Ross C. Murfin. Boston: Bedford, 2011. Print.
- Cooper, Peter L. *Signs and Symptoms: Thomas Pynchon and the Contemporary World*. Berkeley: U of California P, 1983. Print.
- Cordle, Daniel. "Changing of the Old Guard: Time Travel and Literary Technique in the Work of Kurt Vonnegut." *Time and Narrative*. Spec. issue of *Yearbook of English Studies* 30 (2000). 166-76. *Project Muse*. Web. 22 Feb. 2012.
- Corngold, Stanley. *The Fate of the Self: German Writers and French Theory*. New York: Columbia UP, 1986. Print.
- . "Kafka's Double Helix." *Franz Kafka: The Necessity of Form*. Ithaca, NY: Cornell UP, 1988. 105-36. Print.

- Cornwell, Ethel F. "Samuel Beckett: The Flight from Self." *PMLA* 88.1 (1973): 41-51. Print.
- Cornwell, Neil. *The Absurd in Literature*. Manchester: Manchester UP, 2006. Print.
- Coveney, Peter. "A Clash of Doctrines: The Arrow of Time in Modern Physics." *Baert* 77-99.
- Cox, F. Brett, et al. "A Working Canon of Slipstream Writing." *Readercon*. Burlington  
Marriott, Burlington, MA. 18 July 2007. Conference Presentation.
- Crane, Mary Thomas. "Surface, Depth, and the Spatial Imaginary: A Cognitive Reading of *The Political Unconscious*." *Representations* 108 (2009): 76-97. Print.
- Critchley, Simon. "Who Speaks in the Work of Samuel Beckett." *The Place of Maurice Blanchot*. Spec. issue of *Yale French Studies* 93 (1998): 114-30. Print.
- Cronin, Anthony. *No Laughing Matter: The Life and Times of Flann O'Brien*. New York:  
Fromm, 1989. Print.
- Currie, Mark. *After Time: Narrative, Fiction, and the Philosophy of Time*. Edinburgh:  
Edinburgh UP, 2007. Print.
- . *Metafiction*. New York: Longman, 1995. Print.
- Cusanus, Nicholas. "On Learned Ignorance." 1453. *Nicholas of Cusa: Selected Spiritual Writings*. Trans. and ed. H. L. Bond. Mahwah, NJ: Paulist, 1997. Print.
- Damasio, Antonio R. *Descartes' Error: Emotion, Reason, and the Human Brain*. New York:  
Avon, 1994. Print.
- . *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*. San  
Diego: Harvest, 1999. Print.
- . *Self Comes to Mind: Constructing the Conscious Brain*. New York: Vintage, 2010. Print.
- Dauster, Frank. "Notes on Borges' Labyrinths." *Hispanic Review* 30.2 (1962): 142-48. *JSTOR*.  
Web. 9 Sep. 2012.

- Davalos, D. B., M. A. Kisley, and R. G. Ross. "Effects of Interval Duration on Temporal Processing in Schizophrenia." *Brain and Cognition* 52.3 (2003): 295-301. *PsycInfo*. Web. 15 Sep. 2012.
- Davies, Paul. *About Time: Einstein's Unfinished Revolution*. 1995. New York: Simon, 2005. Print.
- . *How to Build a Time Machine*. New York: Penguin, 2003. Print.
- Dawkins, Richard. *The Selfish Gene*. 1976. Oxford: Oxford UP, 1989. Print.
- Deleuze, Gilles, and Felix Guattari. *Anti-Oedipus*. 1972. Trans. Robert Hurley, Mark Seem, and Helen R. Lane. London: Continuum, 2004. Print.
- . *A Thousand Plateaus: Capitalism and Schizophrenia*. Trans. Brian Massumi. Minneapolis: U of Minnesota P, 1987. Print.
- De Man, Paul. "Self (Pygmalion)." *Allegories of Reading: Figural Language in Rousseau, Nietzsche, Rilke, and Proust*. New Haven: Yale UP, 1979. 160-87. Print.
- Dennett, Daniel C. "Are We Explaining Consciousness Yet?" *Cognition* 79 (2001): 221-37. *PsycInfo*. Web. 30 Oct. 2011.
- . *Consciousness Explained*. Boston: Back Bay, 1991. Print.
- . *Darwin's Dangerous Idea: Evolution and the Meanings of Life*. New York: Simon, 1996. Print.
- . *Freedom Evolves*. New York: Viking, 2003. Print.
- . *The Intentional Stance*. 1987. Cambridge, MA: MIT P, 1996. Print.
- . *Kinds of Minds: Toward an Understanding of Consciousness*. New York: Basic, 1996. Print.

- . "The Self as Center of Narrative Gravity." *Self and Consciousness: Multiple Perspectives*. Ed. F. Kessell, P. Cole, and D. Johnson. Hillsdale: Erlbaum, 1992. 275-78. Print.
- Densen, Michelle E. "Time Perception and Schizophrenia." *Perceptual and Motor Skills* 44 (1977): 436-38. *PsycInfo*. Web. 30 Oct. 2011.
- Dick, Philip K. "An Interview with Philip K. Dick, Part One." *PKDS Newsletter* 5 (1984): 6-7. Print.
- . *Do Androids Dream of Electric Sheep?* 1968. New York: Ballantine, 1996. Print.
- . *The Exegesis of Philip K. Dick*. Ed. Pamela Jackson and Jonathan Lethem. Boston: Houghton, 2011. Print.
- . *Lies, Inc.* 1964. Boston: Mariner, 2011. Print.
- . *Martian Time-Slip*. 1964. New York: Vintage, 1995. Print.
- . *Selected Stories of Philip K. Dick*. New York: Pantheon, 2002. Print.
- . *The Shifting Realities of Philip K. Dick: Selected Literary and Philosophical Writings*. Ed. Lawrence Sutin. New York: Vintage, 1995. Print.
- . *The Three Stigmata of Palmer Eldritch*. 1964. Boston: Mariner, 2011. Print.
- . *Time Out of Joint*. 1959. Boston: Mariner, 2012. Print.
- . *Ubik*. 1969. London: Panther, 1973. Print.
- . *We Can Build You*. 1972. New York: Mariner, 2012. Print.
- Didion, Joan. *We Tell Ourselves Stories in Order to Live: Collected Nonfiction*. New York: Knopf, 2006. Print.
- Doherty, Francis. "Flann O'Brien's Existentialist Hell." *Canadian Journal of Irish Studies* 15.2 (1989): 51-67. *JSTOR*. Web. 11 July 2012.

- Donald, Merlin. *A Mind So Rare: The Evolution of Human Consciousness*. New York: Norton, 2001. Print.
- Doob, Penelope Reed. *The Idea of the Labyrinth from Classical Antiquity Through the Middle Ages*. Ithaca, NY: Cornell UP, 1990. Print.
- Dotterer, Ronald L. "Flann O'Brien, James Joyce, and *The Dalkey Archive*." *New Hibernia Review* 8.2 (2004): 54-63. *Project Muse*. Web. 12 Dec. 2012.
- "Douglas Hofstadter." *New York Times Book Review* 28 December 1980. 18. Print.
- Drouin, Jeffrey S. *The Einstein of English Fiction: James Joyce, the New Physics, and Modernist Print Culture*. London: Routledge, 2012.
- Dunne, J. W. *An Experiment with Time*. Oxford: Macmillan, 1927. Print.
- Dupuy, Jean-Pierre. *On the Origins of Cognitive Science: The Mechanization of the Mind*. Cambridge, MA: MIT P, 2009. Print.
- Dutton, Dennis. *The Art Instinct: Beauty, Pleasure, and Human Evolution*. Oxford: Oxford UP, 2009. Print.
- Eagleman, David. "Human Time Perception and Its Illusions." *Current Opinion in Neurobiology*. 18.2 (2008): 131-36. *PsycInfo*. Web. 20 Jan. 2012.
- Eagleton, Terry. *After Theory*. New York: Basic, 2003. Print.
- . *Literary Theory*. 2nd ed. Minneapolis: U of Minnesota, 1996. Print.
- Eco, Umberto. *How to Travel with a Salmon and Other Essays*. Trans. William Weaver. San Diego: Harcourt, 1994. Print.
- . *The Limits of Interpretation*. Bloomington: Indiana UP, 1990. Print.
- . *Semiotics and the Philosophy of Language*. Bloomington: Indiana UP, 1984. Print.



- Edelman, Gerald. *Bright Air, Brilliant Fire: On the Matter of the Mind*. New York: Basic, 1992. Print.
- Einstein, Albert. *Relativity: The Special and the General Theory*. Trans. Robert W. Lawson. New York: Crown, 1961. Print.
- Eliot, George. *Adam Bede*. 1859. Ed. Carol A. Martin. New York: Oxford UP, 2008. Print.
- Eliot, T. S. "Little Gidding." 1942. *Four Quartets*. Boston: Mariner, 1968. 49-57. Print.
- . *Selected Prose of T. S. Eliot*. Ed. Frank Kermode. New York: Houghton, 1975. Print.
- Ellmann, Richard. Preface. *Ulysses*. 1922. Ed. Hans Walter Gabler. New York: Vintage, 1993. ix-xiv. Print.
- . *James Joyce*. Rev. ed. Oxford: Oxford UP, 1982. Print.
- Faris, Wendy B. *Labyrinths of Language: Symbolic Landscape and Narrative Design in Modern Fiction*. Baltimore: Johns Hopkins UP, 1988. Print.
- Fauconnier, Gilles, and Mark Turner. *The Way We Think: Conceptual Blending and the Mind's Hidden Complexities*. New York: Basic, 2002. Print.
- Fielding, Henry. *Tom Jones*. 1749. Ed. John Bender and Simon Stern. New York: Oxford UP, 2008. Print.
- Fodor, Jerry A. *The Language of Thought*. Cambridge, MA: Harvard UP, 1975. Print.
- Foucault, Michel. *The Archaeology of Knowledge and the Discourse on Language*. Trans. A. M. Sheridan Smith. New York: Pantheon, 1972. Print.
- Fowler, Alistair. *A History of English Literature*. Cambridge, MA: Harvard UP, 1991. Print.
- Frank, Joseph. "Spatial Form in Modern Literature." *Theory of the Novel: A Historical Approach*. Ed. Michael McKeon. Baltimore: Johns Hopkins UP, 2000. 784-802. Print.

- Fried, I., R. Mukamel, and G. Kreiman. "Internally Generated Preactivation of Single Neurons in Human Medial Frontal Cortex Predicts Volition." *Neuron* 69 (2011): 548-62.  
*PsycInfo*. Web. 13 Oct. 2012.
- Friedman, Alan J. "Science and Technology." *Approaches to Gravity's Rainbow*. Ed. Charles Clerc. Columbus: Ohio State UP, 1983. 69-102. Print.
- Frost, Robert. "Why Wait for Science." *Robert Frost: Collected Poems, Prose, and Plays*. New York: Library of America, 1995. Print.
- Fukuyama, Francis. *The End of History and the Last Man*. New York: Free Press, 1992. Print.
- Gadamer, Hans-Georg. *Truth and Method*. 1975. New York: Continuum, 1996. Print.
- Gamow, George. *One, Two, Three . . . Infinity: Facts and Speculations on Science*. 1947.  
New York: Dover, 1988. Print.
- García Márquez, Gabriel. *One Hundred Years of Solitude*. Trans. Gregory Rabassa. New York: Harper, 1970. Print.
- Geertz, Clifford. *Local Knowledge: Further Essays in Interpretive Anthropology*. New York: Basic, 1983. Print.
- Genette, Gérard. *Narrative Discourse: An Essay in Method*. Ithaca: Cornell UP, 1983. Print.
- Gide, André. *The Counterfeiters*. 1926. Trans. Dorothy Bussy. New York: Vintage, 1973.  
Print.
- Gillespie, Michael Patrick. *The Aesthetics of Chaos: Nonlinear Thinking and Contemporary Literary Criticism*. Gainesville: U of Florida P, 2003. Print.
- Gleick, James. *Chaos: Making a New Science*. New York: Viking, 1987. Print.
- Glicksberg, Charles I. *The Self in Modern Literature*. University Park: Pennsylvania State UP, 1963. Print.

- Gödel, Kurt. "An Example of a New Type of Cosmological Solution of Einstein's Field Equations of Gravitation." *Reviews in Modern Physics* 21.3 (1949): 447-50. Print.
- . "A Remark About the Relationship Between Relativity Theory and Idealistic Philosophy." *Albert Einstein: Philosopher-Scientist*. Ed. Paul Arthur Schilpp. New York: Harper, 1977. 557-62. Print.
- . "Some Observations About the Relationship Between Theory of Relativity and Kantian Philosophy." *Kurt Gödel: Collected Works*. Vol. 3. Ed. Solomon Feferman, John W. Dawson, Jr., Warren Goldfarb, Charles Parsons, and Robert N. Solovay. Oxford: Oxford UP, 1995. 269-87. Print.
- Goffman, Erving. *Frame Analysis: An Essay on the Organization of Experience*. New York: Harper, 1974. Print.
- Gorton, J. Terry. *The Uses of Entrapment: Negotiating 'Strange Loops' in Literature*. Diss. SUNY Stony Brook, 2003. *ProQuest*. Web. 11 Mar. 2012.
- Gottschall, Jonathan, and David Sloan Wilson, eds. *The Literary Animal: Evolution and the Nature of Narrative*. Evanston, IL: Northwestern UP, 2005. Print.
- Gracia, J. E., Carolyn Korsmeyer, and Rodolphe Gasché, eds. *Literary Philosophers: Borges, Calvino, Eco*. New York: Routledge, 2002. Print.
- Greiner, Kurt. "The Epistemological Method of Strangification in Constructive Realism: Two Examples of Application." *International Conference Research Methodologies Science, Engineering, Technology* (2006): 23-27. Web. 13 Apr. 2012.
- Grimm, Catherine. "Getting Nowhere: Images of Self and the Act of Writing in Kafka's 'Der Dorfschullehrer.'" *New German Review: A Journal of Germanic Studies* 10 (1994): 119-32. Print.

- Grocke, Denise and David J. Castle. "Music, Music Therapy, and Schizophrenia." *Musical Imaginations: Multidisciplinary Perspectives on Creativity, Performance and Perception*. Ed. David Hargreaves, Dorothy Miell, and Raymond MacDonald. Oxford: Oxford UP, 2011. 399-413. Print.
- Grondin, Simon, ed. *Psychology of Time*. London: Emerald, 2008. Print.
- Hacking, Ian. *The Social Construction of What?* Cambridge, MA: Harvard UP, 1999. Print.
- Hall, John A. *The Sociology of Literature*. New York: Longman, 1979. Print.
- Hardack, Richard. "Consciousness Without Borders: Narratology in *Against the Day* and the Works of Thomas Pynchon." *Criticism* 52.1 (2010): 91-128. *Project Muse*. Web. 11 Nov. 2011.
- Harman, Mark. "Joyce and Kafka." *The Sewanee Review* 101.1 (1993): 66-84. Print.
- Harriman, Lucas. "Flann O'Brien's Creative Betrayal of Joyce." *New Hibernia Review* 14.4 (2010): 90-109. *Project Muse*. Web. 12 Dec. 2012.
- Harris, Sam. *Free Will*. New York: Free Press, 2012. Print.
- Hawkins, Harriet. *Strange Attractors: Literature, Culture and Chaos Theory*. New York: Prentice Hall, 1995. Print.
- Hawthorne, Mark D. "Pynchon's Early Labyrinths." *College Literature* 25.2 (1998): 78-93. *Humanities Full Text*. Web. 6 Jun. 2012.
- Hayles, N. Katherine. *Chaos Bound: Orderly Disorder in Contemporary Literature and Science*. Ithaca: Cornell UP, 1990. Print.
- , ed. *Chaos and Order: Complex Dynamics in Literature and Science*. Chicago: U of Chicago, 1991. Print.

- . *The Cosmic Web: Scientific Field Models and Literary Strategies in the Twentieth Century*. Ithaca: Cornell UP, 1984. Print.
- . *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago: U of Chicago P, 1999. Print.
- . Foreword. *Between Science and Literature: An Introduction to Autopoetics*. By Ira Livingston. Urbana: U of Illinois P, 2006. ix-xi. Print.
- Hegel, G. W. F. *The Phenomenology of Mind*. 1807. Trans. J. B. Baillie. New York: Harper, 1967. Print.
- Heidegger, Martin. *Being and Time*. Trans. John Macquarrie and Edward Robinson. San Francisco: Harper Collins, 1962. Print.
- Heinlein, Robert A. "All You Zombies—." *Masterpieces: The Best Science Fiction of the Twentieth Century*. Ed. Orson Scott Card. New York: Ace, 2001. 36-46. Print.
- Heisenberg, Werner. "Nearer the Truth: The Representation of Nature in Contemporary Physics." *Graduate Journal* 2 (1959): 61. Print.
- Herbrechter, Stefan, and Ivan Callus, eds. *Cy-Borges: Memories of the Posthuman in the Work of Jorge Luis Borges*. Cranbury, NJ: Associated UP, 2009. Print.
- Heusel, Barbara Stevens. "Joyce and the Drama of Cognition: Escher as a Visual Analogue." *Twentieth Century Literature* 34.4 (1988): 395-406. JSTOR. Web. 12 Sep. 2012.
- Hoff, Erika. *Language Development*. 4th ed. Belmont, CA: Wadsworth, 2009. Print.
- Hofstadter, Douglas R. *Gödel, Escher, Bach: An Eternal Golden Braid*. 1979. New York: Vintage, 1980. Print.
- . *I Am A Strange Loop*. New York: Basic, 2007. Print.

- . *Metamagical Themas: Questing for the Essence of Mind and Pattern*. New York: Basic, 1996. Print.
- Hofstadter, Douglas R., and Daniel C. Dennett. *The Mind's I: Fantasies and Reflections on Self and Soul*. New York: Basic, 1981. Print.
- Hofstadter, Douglas R., and the Fluid Analogies Research Group. *Fluid Concepts and Creative Analogies: Computer Models of the Fundamental Mechanisms of Thought*. New York: Basic, 1995. Print.
- Hofstadter, Douglas R., and David Moser. "To Err is Human; To Study Error-Making is Cognitive Science." *Michigan Quarterly Review* 27.2 (1989): 185-215. Print.
- Hogan, Patrick Colm. *Cognitive Science, Literature, and the Arts: A Guide for Humanists*. New York: Routledge, 2003. Print.
- Holland, J. Gill. "George Henry Lewes and 'Stream of Consciousness': The First Use of the Term in English." *South Atlantic Review* 51.1 (1986): 31-39. *JSTOR*. Web. 28 Apr. 2012.
- Holland, Norman. *The Critical I*. New York: Columbia UP, 1992. Print.
- . *The Dynamics of Literary Response*. New York: Oxford UP, 1968. Print.
- . *Five Readers Reading*. New Haven: Yale UP, 1975. Print.
- . *Literature and the Brain*. Gainesville: PsyArt Foundation, 2009. Print.
- Hopper, Keith. *Flann O'Brien: A Portrait of the Artist as a Young Post-Modernist*. 2nd ed. Cork: Cork UP, 2009. Print.
- Huizenga, Johan. *Homo Ludens: A Study of the Play Element in Culture*. 1950. London: Beacon, 1955. Print.

- Hume, Kathryn. *Pynchon's Mythography: An Approach to Gravity's Rainbow*. Carbondale: Southern Illinois UP, 1987. Print.
- . *Calvino's Fictions: Cogito and Cosmos*. New York: Oxford UP, 1992. Print.
- Humphrey, Robert. *Stream of Consciousness in the Modern Novel: A Study of James Joyce, Virginia Woolf, Dorothy Richardson, William Faulkner, and Others*. Berkeley: U of California P, 1965. Print.
- Hurly, Matthew M., Daniel C. Dennett, and Reginald B. Adams, Jr. *Inside Jokes: Using Humor to Reverse-Engineer the Mind*. Cambridge, MA: MIT, 2012. Print.
- Hutcheon, Linda. *Narcissistic Narrative: The Metafictional Paradox*. Waterloo, Ontario: Wilfrid Laurier UP, 1980. Print.
- Huxley, Aldous. *Point Counter Point*. New York: Harper, 1956. Print.
- Inception*. Dir. Christopher Nolan. Warner, 2010. Film.
- Ingarden, Roman. *The Cognition of the Literary Work of Art*. Evanston, IL: Northwestern UP, 1973. Print.
- Irwin, William. "Philosophy and the Philosophical, Literature and the Literary, Borges and the Labyrinthine." Gracia, Korsmeyer, and Gasché 27-46.
- Jaén, Isabel, and Julien Jacques Simon, eds. *Cognitive Literary Studies: Current Themes and New Directions*. Austin: U of Texas P, 2012. Print.
- James E. Irby. *The Structure of the Stories of Jorge Luis Borges*. Ann Arbor: U of Michigan P, 1962. Print.
- James, William. *The Essential William James*. Ed. John R. Shook. New York: Prometheus, 2007. Print.
- . "On Some Omissions of Introspective Psychology." *Mind* 9 (1884): 1-26. Print.

- . *A Pluralistic Universe*. 1907. Cambridge, MA: Harvard UP, 1979. Print.
- . *Principles of Psychology*. 1890. 2 vols. New York: Dover, 1918. Print.
- Jameson, Fredric. *Postmodernism: or, the Cultural Logic of Late Capitalism*. Durham: Duke UP, 1991. Print.
- Joyce, James. *Joyce's Critical Writings*. Ed. Kevin Barry. Oxford: Oxford UP, 2000. Print.
- . *Finnegans Wake*. 1939. New York: Viking, 1982. Print.
- . *A Portrait of the Artist as a Young Man*. 1916. New York: Dover, 1994. Print.
- . *Ulysses*. 1922. Ed. Hans Walter Gabler. New York: Vintage, 1986. Print.
- Juvenal. *The Sixteen Satires*. Trans. Peter Green. New York: Penguin, 1974. Print.
- Kahn, David, and J. Allan Hobson. "Self-Organization Theory of Dreaming." *Dreaming* 3.3 (1993): 151-78. Print.
- Kafka, Franz. *The Castle*. 1926. Trans. J. A. Underwood. New York: Penguin, 2006. Print.
- . *Kafka's Selected Stories*. Trans. Stanley Corngold. New York: Norton, 2007. Print.
- . *The Trial*. 1925. Trans. Willa Muir and Edwin Muir. New York: Schocken, 1974. Print.
- Kandel, Eric R. *The Age of Insight: The Quest to Understand the Unconscious in Art, Mind and Brain, from Vienna 1900 to the Present*. New York: Random, 2012. Print.
- Kant, Immanuel. *Critique of Judgment*. Trans. Werner S. Pluhar. Indianapolis: Hackett, 1987. Print.
- . *Critique of Pure Reason*. Trans. Norman Kemp Smith. New York: St. Martin's, 1929. Print.
- Karl, Frederick R. "Waiting for Beckett: Quest and Re-Quest." *The Sewanee Review* 69.4 (1961): 661-76. Print.



- Karon, Jeff. "Science and Sensibility in the Short Fiction of Kurt Vonnegut." *At Millennium's End: New Essays on the Work of Kurt Vonnegut*. Ed. Kevin Alexander Boon. Albany: State U of New York P, 2001. Print.
- Kassanin, Jacob. *Language and Schizophrenia*. Berkeley: U of California, 1944. Print.
- Kawin, Bruce F. *The Mind of the Novel: Reflexive Fiction and the Ineffable*. Princeton: Princeton UP, 1982. Print.
- Keatinge, Benjamin. "Beckett and Language Pathology." *Journal of Modern Literature* 31.4 (2008): 86-101. *JSTOR*. Web 11 July 2012.
- Kellman, Steven G. "The Fiction of Self-Begetting." *Comparative Literature* 91.6 (1976): 1243- 56. *JSTOR*. Web. 8 Aug. 2012.
- Kelly, James Patrick, and John Kessel, eds. *Feeling Very Strange: The Slipstream Anthology*. New York: Tachyon, 2006. Print.
- Kelso, J. A. S. "Essay on Understanding the Mind." *Ecological Psychology* 20.2 (2008): 180-208. *PsycInfo*. Web. 15 Nov. 2011.
- Kemnitz, Charles. "Beyond the Zone of Middle Dimensions: A Relativistic Reading of 'The Third Policeman.'" *Irish University Review* 15.1 (1985): 56-72. Print.
- Kenner, Hugh. *Joyce's Voices*. Berkeley: U of California P, 1978. Print.
- . *The Pound Era*. Berkeley: U of California P, 1973. Print.
- . *Samuel Beckett: A Critical Study*. New York: Grove, 1961. Print.
- . *The Stoic Comedians: Flaubert, Joyce, and Beckett*. Berkeley: U of California P, 1962. Print.
- Kierkegaard, Søren. *The Sickness Unto Death*. 1849. *Fear and Trembling and The Sickness Unto Death*. Trans. Walter Lowrie. Princeton: Princeton UP, 1974. Print.

- Kilberd, Declan. *The Irish Writer and the World*. Cambridge: Cambridge UP, 2005. Print.
- Kitcher, Patricia. "Kant on Self-Consciousness." *The Philosophical Review* 108.3 (1999): 345-86. *JSTOR*. Web. 11 Oct. 2011.
- Kitching, Gavin. Introduction. *Marx and Wittgenstein: Knowledge, Morality, and Politics*. Ed. Gavin Kitching and Nigel Pleasants. London: Routledge, 2002. Print.
- Klinkowitz, Jerome. *Kurt Vonnegut*. London: Methuen, 1982. Print.
- . *The Vonnegut Effect*. Columbia: U of South Carolina P, 2004. Print.
- Klinkowitz, Jerome, and John Somer, eds. *The Vonnegut Statement*. New York: Delacorte, 1973. Print.
- Koestler, Arthur. *The Act of Creation*. New York: Dell, 1966. Print.
- . *The Ghost in the Machine*. 1967. New York: Arkana, 1989. Print.
- Kohut, Heinz. *Self Psychology and the Humanities: Reflections on a New Psychoanalytic Approach*. New York: Norton, 1985. Print.
- Kornfield, Jack, and Gil Fronsdal, eds. *Teachings of the Buddha*. 1996. New York: Shambala, 2007. Print.
- Korsmeyer, Carolyn. "Literary Philosophers: Introductory Remarks." Gracia, Korsmeyer, and Gasché 1-14.
- Kriegel, Uriah, and Kenneth Williford, eds. *Self-Representational Approaches to Consciousness*. Cambridge, MA: MIT P, 2006. Print.
- Kryszinski, Wladimir. "Borges, Calvino, Eco: The Philosophers of Metafiction." Gracia, Korsmeyer, and Gasché 185-204.
- Kuberski, Philip. *Chaosmos: Literature, Science, and Theory*. Albany: State U of New York P, 1994. Print.

- Kucukalic, Lejla. *Philip K. Dick: Canonical Writer of the Digital Age*. New York: Routledge, 2009. Print.
- Kudszus, W. G. "Reflections on the Double Bind of Literature and Psychopathology." *Focus on the Margins*. Spec. issue of *SubStance* 6/7.2 (1978): 19-36. JSTOR. Web. 11 Sep. 2012.
- Kuhn, Thomas S. *The Structure of Scientific Revolutions*. 1962. Chicago: U of Chicago P, 1996. Print.
- Kumar, Udaya. *The Joycean Labyrinth: Repetition, Time, and Tradition in Ulysses*. Oxford: Clarendon, 1991. Print.
- Kwinter, Sanford. *Architectures of Time: Toward a Theory of the Event in Modernist Culture*. Cambridge, MA: MIT P, 2002. Print.
- Labinger, Jay A. and Harry Collins, eds. *The One Culture?: A Conversation About Science*. Chicago: U of Chicago P, 2001.
- La Forge, Louis de. *Treatise on the Human Mind*. 1664. Trans. Desmond M. Clarke. Dordrecht, Netherlands: Kluwer, 1997. Print.
- Laing, R. D. *Knots*. New York: Pantheon, 1970. Print.
- Lakoff, George, and Mark Johnson. *Metaphors We Live By*. 1980. Chicago: U of Chicago P, 2006. Print.
- Lakoff, George, and Rafael Nuñez. *Where Mathematics Come From: How the Embodied Mind Brings Mathematics Into Being*. New York: Basic, 2000. Print.
- La Mettrie, Julien Offray de. *L'Homme Machine*. 1748. Paris: Henry, 1865. Print.
- Lapidot, Ema. *Borges y La Inteligencia Artificial: Análisis al Estilo de Pierre Menard*. Madrid: Editorial Pliegos, 1990. Print.

- Latour, Bruno. *We Have Never Been Modern*. 1991. Trans. Catherine Porter. Cambridge, MA: Harvard UP, 1993. Print.
- Leeds, Marc. "Beyond the Slaughterhouse: Tralfamadorian Reading Theory in the Novels of Kurt Vonnegut." *The Vonnegut Chronicles: Interviews and Essays*. Ed. Peter J. Reed and Marc Leeds. Westport, CT: Greenwood, 1996. 91-102. Print.
- . *The Vonnegut Encyclopedia: An Authorized Compendium*. Westport, CT: Greenwood, 1995. Print.
- Leeds, Marc, and Peter J. Reed, eds. *Kurt Vonnegut: Images and Representations*. Westport, CT: Greenwood, 2000. Print.
- Lem, Stanislaw. *The Cyberiad: Fables for the Cybernetic Age*. Trans. Michael Kandel. New York: Avon, 1974. Print.
- . "Philip K. Dick: A Visionary Among the Charlatans." *Science Fiction Studies* 2.1 (1975): 54-67. *JSTOR*. Web. 29 Aug. 2012.
- Leverage, Paula, Howard Mancing, Richard Schweickert, and Jennifer Marston William, eds. *Theory of Mind and Literature*. West Lafayette, IN: Purdue UP, 2011. Print.
- Levi, Don S. "The Liar Parody." *Philosophy* 63.243 (1988): 43-62. *JSTOR*. Web. 18 Aug. 2012.
- Levine, Robert. *A Geography of Time*. New York: Basic, 1997. Print.
- Levine, Suzanne Jill. "Notes on Borges's Notes on Joyce: Infinite Affinities." *Comparative Literature* 49.4 (1997): 344-59. Print.
- Lewes, George Henry. *Problems of Life and Mind, Third Series*. Boston: Houghton, 1880. Print.

- Lewis, David. "The Paradoxes of Time Travel." *The Philosophy of Time*. Ed. Robin Le Poidevin and Murray MacBeath. Oxford: Oxford UP, 1993. 134-46. Print.
- Lewis, Wyndham. *Time and Western Man*. New York: Black Sparrow, 1993. Print.
- Lifton, Robert Jay. *The Protean Self: Human Resilience in an Age of Fragmentation*. New York: Basic, 1993. Print.
- Link, Eric Carl. *Understanding Philip K. Dick*. Columbia: U of South Carolina P, 2010. Print.
- Limon, John. *The Place of Fiction in the Time of Science: A Disciplinary History of American Writing*. Cambridge: Cambridge UP, 1990. Print.
- Livingston, Ira. *Between Science and Literature: An Introduction to Autopoetics*. Urbana: U of Illinois P, 2006. Print.
- Llinás, Rodolfo R. *I of the Vortex: From Neuron to Self*. Cambridge, MA: MIT P, 2001. Print.
- Lloyd, Dan. *Radiant Cool: A Novel Theory of Consciousness*. Cambridge, MA: MIT P, 2004. Print.
- Locke, John. *An Essay Concerning Human Understanding*. 1689. Ed. Peter H. Nidditch. Oxford: Oxford UP, 1979. Print.
- Lockwood, Michael. *The Labyrinth of Time: Introducing the Universe*. Oxford: Oxford UP, 2005. Print.
- Löfgren, Lars. "Understandings of Time in Complementaristic Language." Baert 37-51.
- Lopez, Maria Elena. *Borges y Escher: Diversa Entonación de Estructuras Metafóricas*. Diss. U of Iowa, 1982. ProQuest. Web. 15 Sep. 2012.
- Lowenkron, David Henry. "The Metanovel." *College English* 38.4 (1976): 343-55. JSTOR. Web. 24 Aug. 2012.

- Luhmann, Niklas. "The Paradox of Observing Systems." *The Politics of Systems and Environments, Part II*. Spec. issue of *Cultural Critique* 31 (1995): 37-55. JSTOR. Web. 13 May 2012.
- Mackey, Peter Francis. *Chaos Theory and James Joyce's Everyman*. Gainesville: UP of Florida, 1999. Print.
- Mageo, Jeannette Marie, ed. *Dreaming and the Self: New Perspectives on Subjectivity, Identity, and Emotion*. Albany: SUNY P, 2003. Print.
- Malmgren, Carl. "Romancing the Reader: Calvino's *If on a winter's night a traveler*." *Review of Contemporary Fiction* 6.2 (1986): 124-29. Print.
- Mancing, Howard. "Against Dualisms: A Response to Henry Sullivan." *Bulletin of the Cervantes Society of America* 19.1 (1999): 158-76. Print.
- Mandelbrot, Benoit. *Fractals: Form, Chance, and Dimension*. San Francisco: Freeman, 1977. Print.
- Markey, Constance. *Italo Calvino: A Journey Toward Postmodernism*. Gainesville: UP of Florida, 1999. Print.
- Martin, Thomas L. *Poiesis and Possible Worlds: A Study in Modality and Literary Theory*. Toronto: U of Toronto, 2004. Print.
- Martinez, Guillermo. *Borges and Mathematics: Lectures at Malba*. 2003. Trans. Andrea G. Labinger. Lafayette, IN: Purdue UP, 2012. Print.
- Maturana, Humberto R., and Francisco J. Varela. *De Máquinas y Seres Vivos: Una Teoría Sobre la Organización Biológica*. Editorial Universitaria: Santiago de Chile, 1973. Print.
- . *Autopoiésis y Cognición*. Dordrecht, Netherlands: Reidel, 1980. Print.

- Maxwell, Donald R. *Science or Literature? The Divergent Cultures of Discovery and Creation*. New York: Lang, 2000. Print.
- McCort, Dennis. "Kafka Koans." *Religion and Literature* 23.1 (1991): 51-74. *JSTOR*. Web. 9 May 2012.
- McDonald, Rónán. *The Death of the Critic*. London: Continuum, 2007. Print.
- McGann, Jerome. *The Textual Condition*. Princeton: Princeton UP, 1991. Print.
- McGinn, Colin. *The Mysterious Flame: Conscious Minds in a Material World*. New York: Basic, 1999. Print.
- McHale, Brian. *Postmodernist Fiction*. London: Methuen, 1987. Print.
- McKee, Alexander B. *Self-Portrait in a Cracked Looking Glass: The Autographical Impulse in Irish Late Modernism*. Diss. U of California Santa Barbara. *ProQuest*. Web. 8 Nov. 2012.
- McLuhan, Marshall. "James Joyce: Trivial and Quadriivial." *Interior Landscape: The Literary Criticism of Marshall McLuhan 1943-1962*. Ed. Eugene McNamara. New York: McGraw, 1969. 23-47. Print.
- Menary, Richard, ed. *The Extended Mind*. Cambridge, MA: MIT P, 2010. Print.
- Mendelson, Edward. "Gravity's Encyclopedia." *Thomas Pynchon's Gravity's Rainbow*. Modern Critical Interpretations. Ed. Harold Bloom. New York: Chelsea, 1986. 29-52. Print.  
Modern Critical Interpretations.
- Merleau-Ponty, Maurice. *Signs*. Trans. Richard C. McCleary. Evanston: Northwestern UP, 1964. Print.
- Merrell, Floyd. *Unthinking Thinking: Jorge Luis Borges, Mathematics, and the New Physics*. Lafayette: Purdue UP, 1991. Print.

- Metzinger, Thomas. *Being No One: The Self-Concept Theory of Subjectivity*. Cambridge, MA: MIT P, 2004. Print.
- . *The Ego Tunnel*. New York: Basic, 2009. Print.
- Mishara, Aaron L. "The Literary Neuroscience of Kafka's Hypnagogic Hallucinations: How Literature Informs the Neuroscientific Study of Self and Its Disorders." Jaén and Simon 103-23.
- Moger, Angela S. "Godel's 'Incompleteness Theorem' and Barbey: Raising Story to a Higher Power." *SubStance* 12.4 (1983): 17-30. *JSTOR*. Web. 4 Dec. 2011.
- Montaigne, Michel de. "Of Giving the Lie." *Montaigne's Essays and Selected Writings: A Bilingual Edition*. Trans. Donald M. Frame. New York: St. Martin's, 1963. Print.
- Moore, Alan. *Watchmen*. Art by David Gibbons. New York: DC Comics, 1987. Print.
- Morse, Donald E. *The Novels of Kurt Vonnegut: Imagining Being an American*. Westport, CT: Praeger, 2004. Print.
- Moulthrop, Stuart. "Watchmen Meets *The Aristocrats*." *Postmodern Culture* 19.1 (2008): 1-6. *Project Muse*. Web. 12 Dec. 2012.
- Murphy, Neil. "Flann O'Brien." *Review of Contemporary Fiction*. Urbana, IL: Dalkey, 2003. 7-41. Print.
- Mustazza, Leonard. *Forever Pursuing Genesis: The Myth of Eden in the Novels of Kurt Vonnegut*. Lewisburg: Bucknell UP, 1990. Print.
- Nabokov, Vladimir. *Pale Fire*. 1962. New York: Vintage, 1989. Print.
- Nagel, Ernest, and James R. Newman. *Gödel's Proof*. New York: New York UP, 1958. Print.
- Nagel, Thomas. "What Is It Like to Be a Bat?" Hofstadter and Dennett 177-85.
- Nahin, Paul J. *Time Machines: Time Travel in Physics, Metaphysics, and Science Fiction*.



- New York: Springer, 1993. Print.
- Novillo-Corvalan, Patricia. *Borges and Joyce: An Infinite Conversation*. New York: Maney, 2011. Print.
- O'Brien, Flann. *At Swim-Two-Birds*. 1939. Urbana, IL: Dalkey, 2005. Print.
- . *The Dalkey Archive*. 1964. Urbana, IL: Dalkey, 1993. Print.
- . *The Third Policeman*. 1967. Urbana, IL: Dalkey, 1999. Print.
- Olsen, Lance. *Circus of the Mind in Motion: Postmodernism and the Comic Vision*. Detroit: Wayne State UP, 1990. Print.
- Oosterwegel, Annerieke, and Louis Oppenheimer. *The Self-System: Developmental Changes Between and Within Self-Concept*. London: Psychology, 1993. Print.
- Orr, Leonard. "Intertextuality and the Cultural Text in Recent Semiotics." *College English* 48.8 (1986): 811-23. *JSTOR*. Web. 14 Dec. 2012.
- Pagel, J. F. *The Limits of Dream: A Scientific Exploration of the Mind/Body Interface*. Oxford: Elsevier, 2008. Print.
- Palmer, Alan. *Fictional Minds*. Lincoln: U of Nebraska P, 2004. Print.
- Parker, Allene M. "Drawing Borges: A Two-Part Invention on the Labyrinths of Jorge Luis Borges and M. C. Escher." *Rocky Mountain Review of Language and Literature* 55.2 (2001): 11-23. Print.
- Parry, Idris. Introduction. *The Castle*. By Franz Kafka. 1926. New York: Penguin, 2006. ix-xix. Print.
- Peirce, Charles Sanders. *Peirce on Signs*. Ed. James Hoopes. Chapel Hill: U of North Carolina P, 1991. Print.

- Penrose, Roger. *The Emperor's New Mind: Concerning Computers, Minds, and the Laws of Physics*. 1989. Oxford: Oxford UP, 1990. Print.
- Piatelli-Palmarini, Massimo. Introduction. *Language and Learning: The Debate Between Jean Piaget and Noam Chomsky*. Cambridge, MA: Harvard UP, 1980. Print.
- Picasso, Pablo. "Two Statements by Picasso." *Picasso on Art: A Selection of Views*. Ed. Dore Ashton. New York: De Capo, 1988. 3-14. Print.
- Pickering, Andrew. *The Cybernetic Brain*. Chicago: U of Chicago P, 2010. Print.
- Pinker, Steven. *How the Mind Works*. New York: Norton, 1997. Print.
- . *Words and Rules: The Ingredients of Language*. New York: Basic, 1999. Print.
- Plato. "Phaedo." *The Portable Plato*. Trans. Benjamin Jowett. Ed. Scott Buchanan. New York: Penguin, 1977. Print.
- Politzer, Heinz. "The Alienated Self: A Key to Franz Kafka's Castle?" *Michigan Quarterly Review* 14 (1975): 398-414. Print.
- Popper, Karl. *Conjectures and Refutations*. London: Routledge, 1963. Print.
- Porush, David. "Prirogine, Chaos, and Contemporary Science Fiction." *Science Fiction Studies* 18.3 (1991): 367-86. *JSTOR*. 18 Aug. 2012.
- Pourier, Richard. "The Politics of Self-Parody." *Critical Essays on Jorge Luis Borges*. Ed. Jaime Alazraki. Boston: Hall, 1987. 96-108. Print.
- Power, Arthur. *From the Old Waterford House*. Waterford: Carthage, 1940. Print.
- Price-Williams, D. R. "The Kappa Effect." *Nature* 173 (1954): 363-64. *JSTOR*. Web. 15 Jan. 2012.
- Prirogine, Ilya, and Isabelle Stengers. *Order Out of Chaos: Man's New Dialogue with Nature*. New York: Bantam, 1984. Print.

- Pynchon, Thomas. *The Crying of Lot 49*. 1965. New York: Harper, 2006. Print.
- . "Entropy." *Slow Learner*. 1984. New York: Penguin, 2012. 80-92. Print.
- . *Gravity's Rainbow*. 1973. New York: Penguin, 1987. Print.
- Quian Quiroga, Rodrigo. "In Retrospect: Funes the Memorious." *Nature* 463 (2010): 611.  
*Academic Search Complete*. Web. 9 September 2012.
- Rae, John A. "A Bit of Lewis Carroll in *Ulysses*." *James Joyce Quarterly* 15 (1977): 86-89.  
 Print.
- Ramachandran, V. S. *A Brief Tour of Human Consciousness: From Imposter Poodles to Purple Numbers*. New York: Pi, 2004. Print.
- . "A Conversation with Neuroscientist V. S. Ramachandran." *Science Studio*. By Roger Bingham. *Science Studio*, 2007. Web. 22 Jun. 2012.
- Readings, Bill. *The University in Ruins*. Cambridge, MA: Harvard UP, 1997. Print.
- Reed, Peter J. *Kurt Vonnegut, Jr.* New York: Thomas Y. Crowell, 1972. Print.
- Rice, Thomas Jackson. *Joyce, Chaos, and Complexity*. Urbana: U of Illinois P, 1997. Print.
- . "Subtle Reflections of/upon Joyce in/by Borges." *Journal of Modern Literature* 24.1 (2000): 47-62. *JSTOR*. Web. 15 May 2012.
- Richards, I. A. *Principles of Literary Criticism*. London: Routledge, 1924. Print.
- Richardson, Robert D. *William James: In the Maelstrom of American Modernism*.  
 Boston: Mariner, 2007. Print.
- Richmond, Alasdair. "Time-Travel Fictions and Philosophy." *American Philosophical Quarterly* 38.4 (2001). 305-18. Print.
- Ricoeur, Paul. *Interpretation Theory: Discourse and the Surplus of Meaning*. Fort Worth: Texas Christian UP, 1976. Print.

- . *Oneself as Another*. Trans. Kathleen Blamey. Chicago: U of Chicago P, 1992. Print.
- . *Time and Narrative*. Trans. Kathleen McLaughlin and David Pellauer. Chicago: U of Chicago P, 1984. Print.
- Rimbaud, Arthur. "Letter to Georges Izambard, May 1871." *Collected Poems*. Ed. Oliver Bernard. London: Penguin, 1986. 5-7. Print.
- Rizzolatti, Giacomo, and Corrado Sinigaglia. *Mirrors in the Brain: How Our Minds Share Actions and Emotions*. Trans. Frances Anderson. Oxford: Oxford UP, 2008. Print.
- Ross, Andrew, ed. *Science Wars*. Chapel Hill: Duke UP, 1996. Print.
- Royce, Josiah. *The World and the Individual, First Series*. New York: Macmillan, 1912. Print.
- Rubens, Philip M. "Nothing's Ever Final: Vonnegut's Concept of Time." *College Literature* 6.1 (1979). 64-72. *JSTOR*. Web. 28 Apr. 2010.
- Rucker, Rudy. *Infinity and the Mind: The Science and Philosophy of the Infinite*. 1982. Princeton: Princeton UP, 1995. Print.
- Rushdie, Salman. *Midnight's Children*. New York: Penguin, 1980. Print.
- Ryan, Marie-Laure. "Stacks, Frames and Boundaries, or Narrative as Computer Language." *Narratology Revisited II*. Spec. issue of *Poetics Today* 11.4 (1990): 873-99. *JSTOR*. Web. 28 July 2012.
- Ryle, Gilbert. *The Concept of Mind*. 1949. Chicago: U of Chicago P, 2000. Print.
- Sabatini, Federico. "'Esch so eschess': The Non-Euclidean Joyce/Escher Connection in *Finnegans Wake*." International James Joyce Foundation. University College Dublin. Dublin, Ireland. 14 June 2012. Conference Presentation.
- Salih, Tayeb. *Season of Migration to the North*. 1963. Trans. Denys Johnson-Davies. New York: New York Review, 2009. Print.

- Salvadori, Mario, and Myron Schwartzman. "Musemathematics: The Literary Use of Science and Mathematics in Joyce's *Ulysses*." *James Joyce Quarterly* 29.2 (1992): 339-55. *JSTOR*. Web. 15 Oct. 2012.
- Salvatori, Mariolina. "Italo Calvino's *If On a Winter's Night a Traveler*: Writer's Authority, Reader's Autonomy." *Contemporary Literature* 27.2 (1986): 182-212. *JSTOR*. Web. 30 Nov. 2012.
- Sawyer, R. Keith. *Explaining Creativity: The Science of Human Imagination*. Oxford: Oxford UP, 2012. Print.
- Sbragia, Albert. "Italo Calvino's Ordering of Chaos." *Modern Fiction Studies* 39.2 (1993): 283-306. *Project Muse*. Web. 3 Dec. 2012.
- Schatt, Stanley. *Kurt Vonnegut, Jr.* Boston: Twayne, 1976. Print.
- Scholes, Robert. "Joyce and the Epiphany: The Key to the Labyrinth?" *The Sewanee Review* 72.1 (1964): 65-77. *Project Muse*. Web. 5 May 2012.
- . "Ulysses: A Structuralist Perspective." *Critical Essays on James Joyce's Ulysses*. Ed. Bernard Benstock. Boston: G. K. Hall, 1989. Print.
- Scholes, Robert, and Robert Kellogg. *The Nature of Narrative*. Oxford: Oxford UP, 1966. Print.
- Schwartz, Sheila. "Science Fiction: Bridge Between the Two Cultures." *The English Journal* 60.8 (1971): 1043-51. Print.
- Sellars, Wilfrid. *Science, Perception, and Reality*. London: Routledge, 1963. Print.
- Shaffer, Elinor S., ed. *The Third Culture: Literature and Science*. Berlin: DeGruyter, 1997. Print.

- Shea, Thomas F. *Flann O'Brien's Exorbitant Novels*. Lewisburg, PA: Bucknell UP, 1992. Print.
- Shelley, Percy Bysshe. "Mont Blanc: Lines Written in the Vale of Chamouni." 1817. *Percy Bysshe Shelley: The Major Works*. Oxford: Oxford UP, 2009. 120-24. Print.
- Shiloh, Ilana. *The Double, The Labyrinth, and the Locked Room: Metaphors of Paradox in Crime Fiction and Film*. New York: Lang, 2011. Print.
- Shores, Tyler. "Paradox, Dreams, and Strange Loops in *Inception*." *Inception and Philosophy: Because It's Never Just a Dream*. Ed. David Kyle Johnson. Hoboken, NJ: Wiley, 2012. 326-42. Print.
- Sigman, Joseph. "Science and Parody in Kurt Vonnegut's *The Sirens of Titan*." *Mosaic* 19.1 (1986): 15-32. Print.
- Siegel, Mark Richard. *Pynchon: Creative Paranoia in Gravity's Rainbow*. Port Washington, NY: Kennikat, 1978. Print.
- Silko, Leslie Marmon. *Ceremony*. New York: Penguin, 1977. Print.
- Silverberg, Robert. "Heinlein." *Requiem: Collected Works and Tributes to the Grand Master*. Ed. Yoji Kondo. New York: Tor, 1992. Print.
- Simon, Herbert. "Literary Criticism: A Cognitive Approach." *Stanford Humanities Review* 4.1 (1994): 1-26. Print.
- Singer, W. "The brain—an orchestra without a conductor." *Max Planck Research* 3 (2005): 14-18. Print.
- Slethaug, Gordon E. *Beautiful Chaos: Chaos Theory and Metachaotics in Recent American Fiction*. Albany: SUNY P, 2000. Print.

- Slusser, George, and Daniele Chatelain. "Spacetime Geometries: Time Travel and the Modern Geometrical Narrative." *Science Fiction Studies* 22.2 (1995): 161-86. Print.
- Smetana, Ron. "Kafka's *The Castle*." *Explicator* 45.1 (1986): 47-48. *Project Muse*. Web. 15 Nov. 2011.
- Snow, C. P. *The Two Cultures and the Scientific Revolution*. New York: Cambridge UP, 1961. Print.
- . *The Two Cultures: A Second Look*. Cambridge: Cambridge UP, 1963. Print.
- Sokal, Alan. "Transgressing the Boundaries: Towards a Transformative Hermeneutics of Quantum Gravity." *Social Text* 46/47 (1996): 217-52. Print.
- . "A Physicist Experiments with Cultural Studies." *Lingua Franca* 12 (1996): 62-64. Print.
- Sokal, Alan, and Jean Bricmont. *Fashionable Nonsense: Postmodern Intellectuals' Abuse of Science*. New York: Picador, 1998. Print.
- Sokel, Walter H. "Kafka's Poetics of the Inner Self." *Modern Austrian Literature: A Journal of the International Arthur Schnitzler Research Association* 11.3/4 (1978): 37-58. Print.
- Somer, John. "Geodesic Vonnegut; or, If Buckminster Fuller Wrote Novels." Klinkowitz and Somer 221-54.
- Sorensen, Roy. *A Brief History of the Paradox: Philosophy and the Labyrinths of the Mind*. Oxford: Oxford UP, 2003. Print.
- Spencer, Sharon. *Space, Time, and Structure in the Modern Novel*. New York: New York UP, 1971. Print.
- Sperber, Dan. "An Objection to the Memetic Approach to Culture." *Aunger* 163-73.
- Spiller, Gustav. *The Mind of Man*. 1902. Oxford: Oxford UP, 1989. Print.

- Spinka, Marek, Ruth C. Newberry, and Marc Bekoff. "Mammalian Play: Training for the Unexpected." *The Quarterly Review of Biology* 76.2 (2001): 141-68. *JSTOR*. Web. 15 Nov. 2012.
- Spinoza, Benedict. *Spinoza: Selections*. Ed. John Wild. New York: Scribner's, 1958. Print.
- Spolsky, Ellen. *Gaps in Nature: Literary Interpretation and the Modular Mind*. Albany: SUNY P, 1993. Print.
- Sterling, Bruce. "Slipstream." *Science Fiction Eye* 7 July 1989: 4-5. Print.
- Sterne, Laurence. *The Life and Opinions of Tristram Shandy, Gentleman*. 1767. Ed. Graham Petrie. New York: Penguin, 1967. Print.
- Stevens, Wallace. *The Collected Poems of Wallace Stevens*. 1954. New York: Vintage, 1990. Print.
- Stonehill, Brian. *The Self-Conscious Novel: Artifice in Fiction from Joyce to Pynchon*. Philadelphia: U of Pennsylvania P, 1988. Print.
- Strogatz, Steven H. *Nonlinear Dynamics and Chaos*. Boulder, CO: Westview, 2008. Print.
- Strawson, Gaylen. "Against Narrativity." *Ratio* 17.4 (2004): 428-52. Print.
- Sussman, Henry. "The Phenomenology of Jetlag." *Modern Language Notes* 124.5 (2009): 1031-47. Print.
- . "The Writing of the System: Borges's Library and Calvino's Traffic." Gracia, Korsmeyer, and Gasché 149-64.
- Suzuki, D. T. *The Field of Zen*. New York: Harper and Row, 1970. Print.
- Swift, Jonathan. *Gulliver's Travels*. 1726. Ed. Paul Turner. Oxford: Oxford UP, 1986. Print.
- Szanto, George H. *Narrative Consciousness: Structure and Perception in the Fiction of Kafka, Beckett, and Robbe-Grillet*. Austin: U of Texas P, 1972. Print.



- Tabbi, Joseph. *Cognitive Fictions*. Minneapolis: U of Minnesota P, 2002. Print.
- . "Cognitive Science." *The Routledge Companion to Literature and Science*. Clarke and Rossini 77-88.
- . "'Strung into the Apollonian Dream': Pynchon's Psychology of Engineers." *NOVEL: A Forum on Fiction* 25.2 (1992): 160-80. *JSTOR*. Web. 11 Nov. 2012.
- . "Introduction to Focus: Cognitive Fiction—Cognition Against Narrative." *American Book Review* 31.6 (2010): 3-4. *Project Muse*. Web. 1 Dec. 2012.
- Taylor, John. G. *The Race for Consciousness*. Cambridge, MA: MIT P, 1999. Print.
- Thiher, Allen. *Fiction Refracts Science: Modernist Writers from Proust to Borges*. Columbia: U of Missouri P, 2005. Print.
- . "A Theory of Literature or Recent Literature as Theory." *Contemporary Literature* 29.3 (1988): 337-50. *JSTOR*. Web. 27 Aug. 2012.
- Tindall, William York. *A Reader's Guide to James Joyce*. New York: Noonday, 1959. Print.
- Todorov, Tzvetan. *The Poetics of Prose*. 1971. Trans. Richard Howard. Oxford: Blackwell, 1977. Print.
- Tsuang, Ming T., Stephen V. Faraone, and Stephen J. Glatt. *Schizophrenia*. 3rd ed. Oxford: Oxford UP, 2011. Print.
- Tubridy, Derval. "'The Absence of Origin': Beckett and Contemporary French Philosophy." *Literature and Philosophy: A Guide to Contemporary Debates*. Ed. David Rudrum. London: Palgrave, 2006. 24-36. Print.
- Turner, Mark. *The Literary Mind: The Origins of Thought and Language*. New York: Oxford UP, 1996. Print.

- . *Reading Minds: The Study of English in the Age of Cognitive Science*. Princeton: Princeton UP, 1991. Print.
- Vallacher, Robin, Stephen J. Read, and Andrzej Nowak. "The Dynamical Perspective in Personality and Social Psychology." *Personality and Social Psychology Review* 6.4 (2002): 264-273. *PsycInfo*. Web. 22 Apr. 2012.
- Vico, Giambattista. *New Science*. 3rd ed. Trans. David Marsh. New York: Penguin, 2001. Print.
- Vittorini, Elio. *Le Due Tensioni*. Milan: Il Saggiatori, 1967. Print.
- Vonnegut, Kurt. *Bluebeard*. New York: Dial, 1988. Print.
- . *Breakfast of Champions*. New York: Delta, 1973. Print.
- . *Cat's Cradle*. New York: Dial, 1963. Print.
- . *A Man Without a Country*. New York: Penguin, 2007. Print.
- . *The Sirens of Titan*. New York: Dial, 1959. Print.
- . *Slaughterhouse-Five or The Children's Crusade: A Duty-Dance with Death*. New York: Dell, 1969. Print.
- . *Timequake*. New York: Berkley, 1997. Print.
- . *Wampeters, Foma, and Granfaloons*. New York: Delacorte, 1965. Print.
- Wallace, David Foster. *Everything and More: A Compact History of ∞*. 2004. New York: Norton, 2010. Print.
- Wallner, Fritz. "Das Verfahren der Verfremdung." *Wissenschaft in Reflexion*. Vienna: Braumüller, 1992. Print.
- Wang, Huo. "In Memoriam Kurt Gödel: 28 April 1906—14 January 1978." *The Mathematical Intelligencer* 1.3(1978): 182-85. Print.

- Warrick, Patricia S. *The Cybernetic Imagination in Science Fiction*. Cambridge, MA: MIT P, 1980. Print.
- Watts, Alan. *The Book: On the Taboo Against Knowing Who You Are*. 1966. New York: Random House, 1989. Print.
- Watts, Melissa. "Reinscribing a Dead Author in *If On a Winter's Night a Traveler*." *Modern Fiction Studies* 37.4 (1991): 705-16. *Project Muse*. Web. 30 Nov. 2012.
- Waugh, Patricia. *Metafiction: The Theory and Practice of Self-Conscious Fiction*. New York: Methuen, 1984. Print.
- Wegner, David. *The Illusion of Conscious Will*. Cambridge, MA: MIT P, 2002. Print.
- Weiner, Norbert. *Cybernetics, or Control and Communication in the Animal and the Machine*. 2nd ed. Cambridge, MA: MIT UP, 1961. Print.
- Weinrich, Harald. *The Linguistics of Lying and Other Essays*. Seattle: U of Washington, 2005. Print.
- Weiss, Beno. *Understanding Italo Calvino*. Columbia, SC: U of South Carolina P, 1993. Print.
- Wenaus, Andrew. "Fractal Narrative, Paraspaces, and Strange Loops in Jeff Noon's *Vurt*." *Science Fiction Studies* 38.1 (2011): 155-74. *JSTOR*. Web. 15 Apr. 2012.
- Westfahl, Gary and George Slusser, eds. *Science Fiction and the Two Cultures: Essays on Bridging the Gap Between the Sciences and Humanities*. Jefferson, NC: McFarland, 2009. Print.
- Wilson, David L., and Zack Bowen. *Science and Literature: Bridging the Two Cultures*. Gainesville, FL: UP of Florida, 2001. Print.
- Winkelman, John. "An Interpretation of Kafka's 'Das Schloss.'" *Monatshefte* 64.2 (1972): 115-31. Print.

- Wittgenstein, Ludwig. *Culture and Value*. 1977. Trans. Peter Winch. Chicago: U of Chicago P, 1980. Print.
- . *Philosophical Investigations*. 4th ed. Trans. G. E. M. Anscombe, P. M. S. Hacker, and Joachim Schulte. Chichester: Wiley, 2009. Print.
- . *Tractatus Logico-Philosophicus*. 1922. Trans. C. K. Ogden. New York: Barnes and Noble, 2003. Print.
- Wolfe, Cary. "In Search of Post-Humanist Theory: The Second-Order Cybernetics of Maturana and Varela." *The Politics of Systems and Environments, Part I*. Spec. issue of *Cultural Critique* 30 (1995): 33-70. Print.
- Yourgrau, Palle. *A World Without Time: The Forgotten Legacy of Gödel and Einstein*. New York: Basic, 2005. Print.
- Zamora, Lois Parkinson. "Borges's Monsters: Unnatural Wholes and the Transformation of Genre." Gracia, Korsmeyer, and Gasché 47-84.
- Žižek, Slavoj. *The Parallax View*. Cambridge, MA: MIT P, 2006. Print.
- Zúñiga, Dulce María. *La Novela Infinita de Italo Calvino*. San Angel, Mexico: Consejo Nacional para la Cultura y las Artes, 1991. Print.
- Zunshine, Lisa. *Why We Read Fiction: Theory of Mind and the Novel*. Columbus: Ohio State UP, 2006. Print.