SCIENCE IMAGINED | LITERATURE REALIZED: TRUTH AND
FICTION IN CANADA

by

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Abstract

In Canada, writers of long fiction have recently begun to employ representations of science and to use scientific theories to construct narratives that investigate issues of class, race, sexuality, faith, truth and the ontological understanding of human existence. This turn towards science in creative works of art suggests that scientific discourse in the early twenty-first century has become a space from which to respond to questions about the search for truth after the rise of poststructuralist theory and postmodern culture. My work investigates this recent turn towards science in contemporary Canadian literature as a way of reevaluating the idea that science is associated with a teleological movement towards human progress, and to analyze how scientific representations re-imagine faith and ethics from a secular perspective. The recent shift towards science in the literature of Canada in English suggests a questioning of social conditions which place the human within epistemological spectrums between truth and fiction, faith and reason, and the individual and the universal. In my dissertation questions related to belief and truth are bound up in a cross-textual study that looks at how Canadian literature reevaluates important debates among theology, art, and science in order to access a humanist interpretation of different possible realities. My dissertation investigates: The Bone Sharps (2007) by Tim Bowling; Curiosity: A Love Story (2010) by Joan Thomas; The Origin of Species (2008) by Nino Ricci; The Memory Artists (2004) by Jeffrey Moore; Player One: What is to Become of Us (2010) by Douglas Coupland; Atmospheric Disturbances (2008) by Rivka Galchen, and The Evolution of Inanimate Objects: The Life and Collected Works of Thomas Darwin (1857-1879) (2010) by Harry Karlinsky.
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Chapter 1

Introduction

Science and Literature in the Twenty-First Century

By studying science through the looking glass of literature you see the philosophy, history, sociology, ethics and the public perception of modern science. *Darwin Meets Einstein*, Frans W. Saris

The question of interpretation has been unduly neglected. So long as we remain in the region of mathematical formulae, everything appears precise, but when we seek to interpret them it turns out that the precision is partly illusory. Until this matter has been cleared up, we cannot tell with any exactitude what any given science is asserting. *Human Knowledge*, Bertrand Russell

‘I wish our brains were not so good,
I wish our skulls were thicker,
I wish that Evolution could
Have stopped a little quicker;
For oh, it was a happy plight,
Of liberty and ease,
To be a simple Trilobite
In the Silurian seas!’
“Lay of the Trilobite,” May Kendall

I: Science, Reason, Belief, and Literature

The fields we now call *science* and *literature* have had a long historical relationship that has vacillated between equivalence and opposition depending on the
epistemological perspectives and politics of truth in the society or culture that defines such terms. *Science* once simply meant a search for any and all knowledge about the world. At other times it was associated directly with the arts; literature and painting being classified as forms of “science.” It has also been “[c]ontrasted or coupled with conscience, emphasizing the distinction to be drawn between theoretical perception of a truth and moral conviction” (“Science”). Today the popular notion of science is that of specific methodological, institutional, and epistemological practices and theories undertaken by trained individuals; a definition which is usually contrasted with the humanities and the arts. *Literature*, on the other hand, has been associated with the act of learning, of seeking after knowledge, and the act of producing fictions about the world.

The relationship between the epistemological boundaries of science and literature at this moment in history could be defined as *difference*. Nevertheless, Bruce Clarke and Manuela Rossini argue, with regard to science and literature, that “counter-trends towards transdisciplinary convergences-in-difference between the discursive, technical, and natural disciplines have been accelerating for several decades” (*Routledge*, xvi). Scholars have been attempting to re-bridge the ever-widening gap between institutional conceptions of science and literature since the “two cultures” controversy that began with the Rede Lecture given by Charles Percy (C.P.) Snow in 1959. In the lecture, entitled “The Two Cultures,” Snow argued that arts and humanities scholars had little

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1 F. R. Leavis was the most vocal critic of Snow’s argument, although numerous scientists and literary critics have since responded. See Daniel Cordle’s *Postmodern Postures: Literature, Science, and the Two Cultures Debate* (1999), C. P. Snow’s *Two Cultures and the Scientific Revolution* (1959), and F. R. Leavis’ *Two Cultures?: The Significance of C. P. Snow* (1962).
actual knowledge of difficult scientific principles, such as the second law of thermodynamics. A long-running and wide-ranging debate grew out of Snow’s lecture, although most attempts at consilience between the humanities and the sciences since have left little trace of a successful merger.

This pattern of “convergences-in-difference” has recently emerged in the creative interpretations of science in the literature of Canada. The representation of science and the use of scientific theories as narrative devices in twenty-first century Canadian literature are the focal points of this study. My primary objective is to analyze recent Canadian novels that have created a subgenre of fiction that uses postmodern techniques to investigate the loss of faith in universal truth. I argue that the turn towards science in Canadian literature is evidence of a turn towards a post-secular renewal of faith based on human existence, ethics, and reason in a Darwinian world without purpose or progression towards a specific goal. I describe my corpus as postmodern fiction in order to both critique postmodern narrative construction and to mark a shift in Canadian literature that specifically focuses on the conditions of scientific discourse because this discourse is bound up with questions of truth, boundaries, and the social construction of knowledge. Because there is no consensus on a singular definition of postmodernism, and because many attempts to define the term conflate postmodernism with poststructuralism, I highlight Edmund J. Smyth’s definition in his consideration of postmodernism as a response to past ways of knowing, but also a turn towards self-questioning. Smyth argues in his introduction to the anthology *Postmodernism and Contemporary Fiction*:
Postmodernism is considered to be ontological in the sense that it has abandoned the modernist assumption of the possibility of contact with a reality of some kind: postmodernist fiction therefore foregrounds ‘post-cognitive’ questions. … The liberating feature of radical textuality is the extent to which such texts make us confront the ways in which we make sense of the world and how we organize our knowledge of reality. (10-12)

Smyth moves away from simple temporalization between modernism(s) and its/their followers to suggest a more radical break from past cognitive understandings of the human condition, consciousness, and reality. Although it could only ever be a question of degree, there does seem to be a difference between modernist narratives that represent scientific or technological issues as reflecting social and technological change and the more recent shift towards using specific scientific figures and theories as a condition of social discourse to question the nature of human existence.

Historical changes in the acceptance of scientific discourse need to be considered in relation to the unfolding of scientific thought in Canada, and the problem of knowledge and truth with regard to various cultural and ideological beliefs about the world and the human animal. Both A. B. McKillop and Suzanne Zeller have produced detailed studies of the reception, use, and pedagogical spread of scientific knowledge in Canada. However, there has been, as of yet, no study of the literary construction of

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science in Canada. In the following I will try to remedy this by focusing on fictional narratives that are historically, politically, and culturally framed by what could be called the “scientific turn” that has occurred recently in Canadian literature.

My goal is also to renegotiate some of the common notions of what postmodernism itself encompasses. In one sense postmodernism suggests the detritus, traces, and fragments left over from a period that has come before; this does not necessarily mean that we are living in a post-postmodern age, although I do argue that the scientific turn is a response to spiritual lacunae often produced from the inherent skepticism of postmodern theory. In looking at postmodern narratives as a response to the skepticism of poststructuralism, I would like to consider the ways in which a theoretical perspective that both produces a disjunction between culture and nature, and science and literature, and attempts to reconcile them, must now be rethought in light of the changes in science and postmodern theory, which are ultimately changes in knowledge that have produced a shift in cultural production. Thus my dissertation aims to reconsider the idea of postmodernism within a field of literature that uses representations of science to restructure knowledge out of disassociated fragments – bones, traces, atoms, images, beliefs, events – that are connected across a spectrum of epistemologies. I am not suggesting a redefinition of postmodernism, but a questioning of its temporal and spatial mapping of cultural conditions and epistemological systems in relation to belief systems. The texts I look at all consider ways in which science speaks truth about the world, and whether it is even possible to do such a thing without faith in the idea of truth.
Connected to the idea of postmodernism in many of the texts studied in this work is the question of belief, and what has been called the “religious turn” in philosophy and literary studies, which, to me, actually seems to be a cognitive re-turn within a longer history of patterns or “degrees of belief” that are associated with religion, philosophy, mysticism, and atheism. Rather than think of the turn towards science in literature and the religious turn as distinct shifts in epistemological understanding about the world, I have considered the ways in which secular beliefs are closely linked to religious beliefs and thus see a continuum of human behaviour that changes only with regard to its object of devotion. Recent thinking on group selection in the study of evolution suggests religion is a form of cultural bonding that grew, survived, and spread because of its ability to allow for the survival of the community.\(^3\) New studies have also shown how and why people turn towards religious understandings of the universe as opposed to scientific explanations of evolution, nature, and culture.\(^4\) Literature, science, and religion constitute seemingly distinct ways of knowing that have become culturally at odds with each other in part due to the growth and expansion of the Enlightenment’s project of universal rational interpretations of knowledge and the growth of a specific language exclusive to those working within a particular field of study. As Charlotte Sleigh argues, “scientific facts are always embedded in their representation, a phenomenon that is in large part subjective and literary or artistic” (Literature & Science, 5).

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The specificity of language used in science, religion, and critical theory has produced separations among ways of knowing, representing, and questioning truth statements – both fictional and scientific. The questioning of truth has seemingly become a matter of subject-positions and socially constructed perspectives rather than authorial metanarratives about the world. This denial of absolute truth has led some to take extreme cultural relativist positions. Paul Boghossian argues that “to say that some claim is true according to some perspective sounds simply like a fancy way of saying that someone, or some group, believes it” (“What the Sokal Hoax Ought to Teach Us,” 178). Boghossian’s objection to relativism as a functioning model of truth actually tells us something about its close connection to the idea of belief rather than the separation between the two. Brian Massumi points out how poststructuralist theories can be misrepresented in their extreme forms and reads poststructuralist thought on the role of language in human knowledge about the external world as a form of connectedness between nature and culture:

A common thread running through the varieties of social constructivism currently dominant in cultural theory holds that everything, including nature, is constructed in discourse. … Now saying that the quantum level is transformed by our perception is not the same as saying that it is only in our perception; saying that nature is discursively constructed is not necessarily the same as saying that nature is in discourse. Social constructivism easily leads to a cultural solipsism analogous to subjectivist interpretations of quantum mechanics. In this worst-case
solipsist scenario, nature appears as immanent to culture (as its construct).

(*Parables*, 38-39; original emphasis)

Massumi’s interpretation of the nature/culture divide is a radical rewriting that brings together multiple theoretical positions:

The concepts of nature and culture need serious reworking, in a way that expresses the irreducible *alterity* of the nonhuman in and through its active *connection* to the human and vice versa. Let matter be matter, brains be brains, jellyfish be jellyfish, and culture be nature, in irreducible alterity and infinite connection. (39; original emphasis)

Massumi creates a relationship between alterity and connection that allows for an understanding of how nature and culture work together. All epistemologies are intertwined with the factual, the fictional, and the believable in human thinking, the believable being an important aspect of imaginative human cultural production for both scientific and artistic perspectives on the world.

Bruno Latour makes a perceptive link between truth and faith through the idea of relativism when he states that “relativism is an asset, not a weakness. It is the ability to change one’s point of view, to establish relations between incommensurable worlds. This virtue has only one opposite: absolutism” (“Is There Science After the Cold War?,” 126). Latour’s definition of relativism is actually closely connected to that of *reason*, in that reason is also the ability to change one’s mind when confronted with evidence that challenges or disproves one’s beliefs about the world. Yet relativism has been derided for
its close connection to the idea of social constructionism and the inability to know truth beyond a singular subject-position. However, relativism as it is connected to reason may actually be instrumental in producing a wide-ranging, multi-perspective view of human culture, society, and scientific understandings of the mental, physiological, and biological processes that make up both the physical and cultural aspects of human beings and their societies. In many of the texts studied here, individual perspectives, relativism, and reason, are closely linked with science, faith, and belief in the power of truth to explain the world.

In order to trace historical questions about the role of science as a cultural epistemological framework I will focus first on the re-historicized accounts of paleontology in Joan Thomas’s *Curiosity: A Love Story* (2010) and Tim Bowling’s *The Bone Sharps* (2007). Both texts deal with problems that arose from the questioning of religious faith through scientific discovery during the nineteenth century. My reading of these novels will foreground the later chapters, which articulate further issues involved in what I call the spectrum of faith when new knowledge about the world begins to threaten foundational beliefs. Nino Ricci’s *The Origin of Species* (2008) looks at the interconnectedness of evolutionary theory with postmodern and poststructuralist thought through the lens of sociobiology; Jeffrey Moore’s *The Memory Artists* (2004) considers the problem of belief and truth with regard to memory, synaesthesia, and Alzheimer’s disease; Rivka Galchen’s *Atmospheric Disturbances* (2008) represents the human mind through the lens of scientific theories of meteorology; Douglas Coupland’s *Player One*
(2010) interrogates human individualism through an updated interpretation of Cartesian dualism, and Harry Karlinsky’s *The Evolution of Inanimate Objects* (2010) satirizes methodological assumptions concerning the nature of truth in a memoir about a fictional son of Charles Darwin. Although these areas of inquiry may seem to be disassociated, I hope to show that the literary texts I focus on actually share representations of the possibilities and problems of knowing the world through multiple lenses such as science and reason, or what I will show to be their corollary terms: faith and belief.

In using a wide-ranging medley of conceptual generalizations, such as science, truth, reason, knowledge, faith, and belief, I must acknowledge Bertrand Russell’s apt statement in his preface to *Human Knowledge: Its Scope and Limits*:

> One of the difficulties of the subject with which I am concerned is that we must employ words which are common in ordinary speech, such as “belief”, “truth”, “knowledge”, and “perception”. Since these words, in their everyday uses, are vague and unprecise, and since no precise words are ready to hand by which to replace them, it is inevitable that everything said in the earlier stages of our inquiry should be unsatisfactory from the point of view that we hope to arrive at in the end. (xiv-xv)

I am not suggesting that my work is equivalent in scope to Russell’s, but I would like to suggest that it also must suffer from the same imprecision of language in using the terms Russell discusses, along with other literary, scientific, and philosophic terms that may only produce further traces of knowledge from past uses. The goal of this study, of
course, is to use the language of science, religion, philosophy, and literary criticism to produce something grounded in a study of literature that examines the very problems brought about by epistemologies created through human language. In the end, my aim is to analyze how the works studied question recent interpretations of human culture through scientific representations.

Perhaps because science confronts beliefs about the world that are often associated with religion, or perhaps because belief is itself necessary to scientific epistemology, religion, faith, and belief all play a large part in my analysis. The novels I analyze may not all deal explicitly with religious issues; however, all of them do question the philosophical, ontological, and epistemological problems of truth in a world composed of those most problematic of binary oppositions, truth/falsity, nature/culture, subject/object, and material/metaphysical. Because of the complexity of such an analysis it is not easy to point to one methodological apparatus. Like the evolutionary ruptures that produce new species, my study is based on a rupture of scientific representation in Canadian literature at the beginning of the twenty-first century.

Recent studies that investigate the connection between science and literature have come in a number of forms. Some consider the issue from within particular theoretical contexts, such as those offered by Joseph Carroll and Gillian Beer, both of whom study literature through the ideas related to evolutionary theories. Others, such as Eva-Sabine Zehelein and Charlotte Sleigh have produced literary analyses of scientific representation across fields, periods, genres, or nationalities. My thesis will incorporate elements of
literary criticism used by both groups of critics in order to look at the larger contexts of the recent turn towards representations of science in Canadian fiction. This means moving between conceptualizations of the human both through and around the borders of science in order to better understand why representations of science have become a predominant thematic element in literary cultural production in Canada after the ascendancy of postmodernism and poststructuralism.

The deconstruction of binary oppositions has made possible an analysis of spectrums of knowledge. Where once fragmentation of knowledge meant the opposition of different discourses, it can now be considered a form of connection across multiple epistemologies. While the sciences continue to find novel ways of making connections between the fragments of human knowledge, literature has turned towards fragmentation as a device to show connectivity across spectrums of knowledge and belief. The texts in my corpus all use narrative devices that can be generally considered postmodern – a pastiche of narrative perspectives, time periods, and interdisciplinary epistemologies within their plots and characterizations – but thematically they all suggest a turn to a new form of faith beyond poststructuralism. The question of truth, which is so important in deconstructing binary oppositions, becomes a question of belief in a post-religious world.

Both the question of scientific thought in Canada and the problems of truth, perception, reason, rhetoric, and belief I wish to investigate can be exemplified in Christophe Regnault’s 1678 account of the martyrdom of the Jesuit missionary St. Jean de Brébeuf in 1649 at the hands of the Iroquois (“Recit veritable”). In Regnault’s
perceptual and tactile experience of the broken and burned body of Brébeuf, which is then translated into a written account of the wounds, burns, and scars on the body, there arises an empirical, textual account of experience associated with what would now be considered scientific observations of subjective, logical inductive recordings. Karl Popper explains the problem with the kind of perceptual, subjective experience I attribute to Regnault’s empiricism:

Perceptual experiences have often been regarded as providing a kind of justification for basic statements. It was held that these statements are ‘based upon’ these experiences; that their truth becomes ‘manifest by inspection’ through these experiences; or that it is made ‘evident’ by these experiences, etc. All these expressions exhibit the perfectly sound tendency to emphasize the close connection between basic statements and our perceptual experiences. Yet it was also rightly felt that *statements can be logically justified only by statements*. Thus the connection between the perceptions and the statements remained obscure, and was described by correspondingly obscure expressions which elucidated nothing, but slurred over the difficulties or, at best, adumbrated them through metaphors.

Here too a solution can be found, I believe, if we clearly separate the psychological from the logical and methodological aspects of the problem. We must distinguish between, on the one hand, *our subjective experiences or our feelings of conviction*, which can never justify any statement (though they can be made the subject of psychological investigation) and, on the other hand, the
**objective logical relations** subsisting among the various systems of scientific statements, and within each of them. (*Logic*, 43-44; original emphasis)

One of the more important points made in this passage, and one which is substantial to my argument and understanding of the connection between faith and reason in literary representations of science, is Popper’s observation concerning the subjective experiences as “feelings of conviction.” Regnault uses his perceptual and tactile subjective experience as a form of conviction to prove the truth of Brébeuf as a martyr for the cause of European colonialism through the use of writing as a form of authority. His written document becomes an object of experiential truth with regard to the described violence perpetrated against the body of the missionary. Brébeuf’s trial by fire is “proven” by Regnault’s perceptual faculties, although coming nearly thirty years after the event, and thus becomes an accepted documented account for the religious martyrdom of Brébeuf. As a witness to the body, and not to the event that has created the state in which the body is discovered, Regnault converts his perception into a statement of truth. But this statement is always grounded in the cultural acceptance of Regnault as a dependable and authoritative witness. Regnault could be said to represent the rhetoric of the earliest of Canadian “natural philosophers.” The idea that his subjective experiences prove objective events is similar to many of the ideas about belief, faith, science, and truth that occur in my corpus.
II: A Short History of Controversy

In order to explain the theoretical perspective associated with the perceived divide between science and literature with regard to poststructuralism and postmodernism today, I will point out a number of theorists and their arguments to show a broad spectrum of thought that should help lay the groundwork for later critical analysis of the texts studied herein. Central to any discussion of contemporary science/literature debate is Alan Sokal and his infamous hoax perpetrated on the journal *Social Text* in 1996. Sokal, a professor of physics at New York University, published his paper “Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity” in an attempt to show how writing in the humanities and social sciences that used poststructuralist and postmodernist interpretations had become unclear and no longer based on rational argumentation. Sokal’s article is a parody of poststructuralist interpretations of quantum gravity pieced together from quotes by popular cultural theorists taken out of context but used to show how obscurity of language can still produce supposedly important and truthful statements about the world. Shortly after the article was published in *Social Text*, the journal *Lingua Franca* published another article by Sokal that explained the hoax. The responses to Sokal’s articles crossed a spectrum of issues involving peer-review, truth, anti-intellectualism, politics, and, naturally, the divide between the arts and the sciences.5

5 There have been a number of texts written in the last decade on the debate concerning the cultural and theoretical differences between the sciences and the humanities and most will offer an explanation of Sokal’s actions and the subsequent critiques of critical theory that arose from his paper. For a more in-depth analysis of the Sokal hoax see the editors of *Lingua Franca’s The Sokal Hoax: The Sham that Shook*
Today, Sokal’s hoax can be seen as the beginning of the end of poststructuralist and postmodern obscurantism, but it has also produced, however ironically, renewed interest in interdisciplinary divides and the possibility of bridging epistemologies, including connections among science, the philosophy of science, literature, and poststructuralist thought.

In some ways any argument that involves epistemological or disciplinary divides is structured around the idea of who has the authority to discern, know, and speak truth. Moody E. Prior, many years before the Sokal hoax prompted the debate concerning epistemology, theory, and postmodern and poststructural methodologies, writes:

Today, the humanities are in need of a searching revaluation of their role, and it would be reasonable to suppose that one of the most useful sources of criticism would be those learned men trained in a field which has become celebrated for its objectivity and impartiality. Anyone looking with such hopes into the writings of scientists that deal with the failings and limitations of the humanities will experience disappointment. There is too much bias, too little knowledge and understanding of the subject, and too little sophistication of argument. The chief merits of this critical literature are that it is sharp, outspoken, and provocative, and these qualities, coupled with the prestige that is associated with anything that

comes from that quarter, have brought wide attention to the scientists’ criticism of
the humanities and rendered it unusually persuasive. The judgments supported by
these writings are fast becoming the clichés of the current intellectual chatter. The
criticism of the humanities by the scientists thus proves to be doubly frustrating.
Because of its intellectual shortcomings it cannot be very useful to those who
might otherwise have profited from it, and because of its popular success it
burdens the humanities with the distracting and unamiable necessity of rebuttal.

(Science, 70)

Prior’s argument foreshadows the intensity of the Sokal hoax and the public face of
disciplinary division as it was portrayed in newspaper and magazine articles. It offers a
way of seeing Sokal as an authorial figure who was able to speak truth about the
humanities by parodying scholars he thought were being deliberately obscure. Like
Regnault, the scientist is accorded prestige because of his/her socially perceived position
of authority, truth, perceptual ability, and accountability. But Prior is also correct in his
critique of scientific bias against the humanities. Most of the works that deal with the
history of the “two cultures” debate over the last three decades have been inordinately
focused on scientists such as Sokal who see critical theory as being anti-science, when in
many instances scientific principles are employed by those he criticized (Jacques Lacan,
Julia Kristeva, Jacques Derrida, Bruno Latour, and Luce Irigaray among others) to create
metaphorical statements about the world, and do not attempt to prove the truth or falsity
of scientific discourse. Sokal’s hoax was popular because provocative, and unhelpful
because of its negative stance towards critical theory in creating stereotypical interpretations of complex theoretical interpretations of culture. Daniel Cordle points out how the two cultures model itself leads to disciplinary stereotypes:

Finally, the conceptions of literature and science embedded in the two cultures model are, very frequently, stereotypical. As a result two cultures debates frequently do little to advance our understanding of the places of literature and science in our culture, but much to promote a mutual hostility through educational power struggles. It is not always that the stereotypes are wrong (sometimes they have become stereotypes precisely because they capture something useful about the difference between literature and science), but that by constantly opposing the literary to the scientific they fail to encourage a critical awareness of what each term entails. (Postmodern, 43)

Although the sciences and the humanities still exist in an “educational power struggle” today, there has been an attempt to move beyond such a state of affairs. In many ways Sokal opened up a discourse that has allowed for a more engaged understanding of the politics of disciplinary divides and epistemological ideologies, and the renewed attempt at interdisciplinary sharing of knowledge has perhaps been one reason for the recent turn towards scientific representations across many artistic fields.

Bridging seemingly disparate fields of inquiry through similar discursive practices can be difficult, and theoretical divides can exhibit the difficulties in performing literary analyses of texts that are associated with both science and postmodernism. Looking at the
work of Joseph Carroll can help situate the negative extreme of attempts at “consilience” within the spectrum of interdisciplinarity. Carroll is an outspoken critic of postmodern and poststructuralist thought and is known for using theories of Darwinian evolution to study works of literature. He has argued against any consilience between poststructuralist thought and the biological basis of culture:

My argument, again, is that the evolutionary explanation of human experience is relatively true. It is not absolutely true, since no knowledge is absolute, but it is a more complete and adequate theory of the development and nature of life, including human life, than any other theory currently available to us. It thus necessarily provides the basis for any adequate account of culture and of literature. If a theory of culture and literature is true, it can be assimilated to the Darwinian paradigm; and if it cannot be reconciled with the Darwinian paradigm, it is not true. The poststructuralist explanation of things cannot be reconciled with the Darwinian paradigm. It cannot be modified and assimilated to the Darwinian paradigm. It is an alternative, competing paradigm. It operates on principles that are wholly different and fundamentally incompatible with those of evolutionary theory. It should, consequently, be rejected. Let me face squarely the historical and institutional implications of this rejection. If I am basically right in my contentions, a very large proportion of the work in critical theory that has been done in the last twenty years will prove to be not merely obsolete but essentially void. It cannot be regarded as an earlier phase of a developing discipline, with all
the honor due to antecedents and ancestors. It is essentially a wrong turn, a dead end, a misconceived enterprise, a repository of delusions and wasted efforts.

(Literary Darwinism, 25)

This long passage exemplifies the circular logic of Carroll’s argument, which is that he cannot reconcile Darwinian evolution with poststructuralism because of poststructuralism’s radical anti-truth claims. As Carroll states, “[m]y own position, in contrast, is that the doctrines of textualism and indeterminacy are not true and that truth is itself the primary criterion in assessing the validity of all doctrines” (17). Yet, as Carroll himself argues, truth is relative “since no knowledge is absolute,” a circular condemnation of his own theoretical methodology.

Evolution, as Elizabeth Grosz sees it, is the radical hostility of time and the material world to all structures of life: natural, conscious, inert, and cultural. To claim that poststructuralism is set radically apart from evolution is to miss the point that evolution is itself based on structures of difference and opposition in the struggle for survival. Grosz finds poststructuralist thought and evolution inherently connected:

The question of how to represent or understand the origin of species is intimately bound up with the question of how to understand the identity, or unity, of the object of biological and historical investigation. This is among the most complex and underdiscussed elements of Darwinism, the point where Darwin’s own account uncannily anticipates Derridean différance. What is the minimal unit, the scientific object, of investigation: the individual, the group, the species, or life in
its generality? How species develop and undergo modification over the passage of
time is closely linked with the criteria of differentiation between one group and
another closely allied with it. What differentiates one species from another? How
do we tell where one species ends and another begins? How small or large must
the differences between them be for us to designate the emergence of new species
from already existing ones? (Nick of Time, 20-21)

Grosz’s interpretation of the connection between evolution and poststructuralist thought
is a methodological path I will follow in my study. Looking at texts that represent
scientific theories of evolution, paleontology, meteorology, and biology I attempt to show
how the recent turn towards science has been directly associated with both the theories
and decline of postmodernism and poststructuralism.

My goal is to discover where truth ends and belief begins, where science becomes
literature, and literature becomes an element of scientific discourse. Like Grosz, I value
the possibility of connectedness, and although there can be no absolute line drawn
between truth and belief, nature and culture, the body and the mind, the aim is to discover
what such representations of these binary structures and ideas can tell us about the
cultural turn towards science, and perhaps discover that representations of science in
literature today are responses to the radical discontinuities of postmodern thought across
spectrums of belief, faith, and knowledge. Eva-Sabine Zehelein suggests:

The number of novels and plays published and produced over the last two
decades, which somehow or other engage with the natural sciences, appears
substantial enough to suggest a recent trend … [and] “somehow or other” is not a stylistic glitch occurring right in the first sentence, but rather a cautious way of designating the diversity of modes in which novelists and playwrights have attempted to incorporate the natural sciences into their work. (Science: Dramatic, 1)

Zehelein argues that the turn to science in contemporary literature crosses both generic and national boundaries, and can be found in the film, poetry, painting, photography, and literature of numerous countries. I believe that it is important to investigate why Canadian literature has also made this turn, as it seems to involve a sudden shift associated with a renewed desire for faith. This is not to say that there is a thematic element cutting across Canada that sums up a larger Canadian neurosis, although it is somewhat interesting that Margaret Atwood’s influential thematic critique of Canadian literature would take ‘survival’ as the dominant “single unifying and informing symbol” (Survival, 31) of Canadian identity. Looking at Survival from the twenty-first century, despite its generalizing of all Canadians under one thematic identity, Atwood may have had a point in singling out one of the key aspects of evolutionary theory in her reading of Canadian literature.

Zehelein argues that the difficulty in reconciling the “two cultures” of sciences and arts in a postmodern world lies in the relationship between objectivity and subjectivity:
Whatever definition of ‘truth’ one may wish to adhere to, and however we judge the role of the subject as part of and at the same time distinct from the surrounding world, it is certainly safe to state that in contrast to literature, science is an activity, and not a mass of diverse texts, although science, too, relies on language as a mode of description and expression. Science is not a logically coherent body of knowledge in the strict sense, but a cluster of material and cognitive practices. (Science: Dramatic, 29)

Truth becomes the measure of difference between science and literature in poststructuralist and postmodernist interpretations because language is how we communicate truth across multiple divides. The argument between activity and discourse seems to collapse when one considers that not only is science a “cluster of material and cognitive practices[,]” but so too are literature, philosophy, psychology, theology, and so on, and so forth.

Elizabeth Grosz, in her attempt to reconcile the natural and the cultural without resorting to either extreme constructionism or extreme materialism, writes in Time Travels:

In short, I am interested in the ways in which time, movement, change, the irresistible push to the future – as fundamental biological and material forces – affect culture and the technological developments that derive from it, and impel them to differ from themselves and to undergo more or less continuous, more or less uncontrolled, becomings – that is, the ways in which nature does not contain
culture but induces it to vary itself, to evolve, to develop and transform in ways that are not predictable in advance. (44)

Like Grosz, Brian Massumi sees cultural connections within a space of becoming based on possibility and sharing already in practice in both the sciences and the humanities. He argues that science and philosophy “naturally, continuously feed into each other, in different ways” and put simply, “[t]here are not ‘two cultures[,]’” but “process lines plying the same nature-culture continuum” (Parables, 245). Massumi may privilege philosophy here, but his overall argument is premised on the connections among philosophy, art, popular culture, cultural studies, and other forms of perceiving and knowing.

My dissertation is intended as a starting point from which a dialogue can begin concerning the issues and problems related to representations of science in Canadian literary works. It is also meant to bring together a number of theoretical perspectives that may help to integrate the languages that heretofore separated the sciences and humanities, truth from fiction, in order to share common methodological interpretations of the unique questions about human nature and the natural sciences in literary productions. Massumi argues: “Words are invisible yardsticks” (Parables, 169). This cryptic and poetic interpretation brings together science and literature through the idea of measurement, language, and perception. My goal in this work is to use words to measure how truth and fiction work together through scientific representation in literary products of contemporary culture in Canada.
Chapter 2

Paleontological Disturbances: Tim Bowling’s *The Bone Sharps* and Joan Thomas’s *Curiosity: A Love Story*

What fantasy it is that strikes our wits
With terror in our waking hours or sickness
Or in sleep’s sepulcher, so that we see,
Or think we do, and hear, most audible,
Those whose dead bones earth holds in her enfolding.

*De Rerum Natura*, Lucretius

The will is subject to something outside of itself, something greater, not to a God but to impersonality, the hugeness of eternity, the weight of all the past and the open expanse of all of the future, that is, to its own limits, its own mortality.

*The Nick of Time*, Elizabeth Grosz

To accept a statement as a law of physics is to believe that it is a law of physics. From inside the belief, there is no belief, only knowledge of how things are.

“Reading and Relativism,” Gabriel Stolzenberg

Tim Bowling’s *The Bone Sharps* (2007) and Joan Thomas’s *Curiosity: A Love Story* (2010) both look back to historical periods of emerging scientific discoveries that offered possible answers to questions about the origins of the Earth, but which also produced questions about the “truth” of paleontological proof of the mutability of the
species, about time, and about biblical interpretations of creation and the existence of God. Although Bowling’s text is concerned with late nineteenth-century fossil discoveries in North America, and Thomas’s text goes back even further to the discovery of fossil fragments in pre-Darwinian England, both novels look at actual historical figures who shaped the understanding of time and space with regard to biological species on earth, and in doing so, tell us something about our own period of scientific discoveries, beliefs, and social structures. Both texts also take a rather revisionist approach to history concerning scientific understanding. This is not to say that the fictional accounts offered by the authors re-write scientific history, but rather that they rearticulate some of the processes of discovery that are part of the traditional accounts of paleontology, and of the larger historical narrative of the expansion of the discipline of science.

*The Bone Sharps* and *Curiosity* foreground two distinct concerns in the philosophy of science. The first is the connection between science and religion, and the scientific requirements of proving truth through experimentation and empirical evidence, or agreeing to a general consensus on a truth, while disregarding personal and social bias and convictions of faith that are associated with religious belief. The second is the remediation of the role of both lower-class workers and female scientists in a period when scientific inquiry was a male-dominated endeavour undertaken by the social elite in highly regulated social spaces. Yet, at the same time, both novels seem to suggest that the historical accounts of past procedures could be considered allegories for the social processes that involve the sciences today, and thus both texts politicize the problems of
scientific institutionalism, gender inequality, and the patriarchal construction of history. Although my critique will focus on the questions concerning religious belief in opposition to scientific truth that are foregrounded in both texts, I will also interrogate the social nature of gendered work by considering how the texts articulate the ways in which new cultural systems do not simply arise from paradigm-changing knowledge about the world, but rather are produced from already held beliefs about the world.

Moody E. Prior suggests in *Science and the Humanities* (1962) that science is a neutral discipline when it comes to the final product of its search, as well as to the use of the product discovered (21). He argues that there exists a
distinction between the ultimate products of scientific and humanistic creativity,
[and] that the formulations of science are necessarily indifferent to the question of their human use or meaning; they convey no direct or implicit comment on the goals which men may choose or the means which they may employ to attain them. (16)

Shifts in perspective have occurred since Prior’s time in the understanding of the history of science. The first is the shift in the ethics of science; although the product of science may be neutral in and of itself, post-Kuhnian science has become invested in the question of the “human use or meaning” of the final product.6 Second is Prior’s recognition of the products which “men may choose or the means which they may employ to attain them”

6 Thomas Kuhn’s *The Structure of Scientific Revolutions* (1962) explained the idea of the paradigm shift with regard to scientific knowledge and cultural conditions of scientific practice. His theory was itself revolutionary, but has not been accepted by all. One problematic area is the definition of “paradigm,” and the social, material, and epistemological borders within which a paradigm can be identified.
(16). Although Prior’s text was written before the arrival of poststructuralism and postmodernism in the late twentieth century, the privileged male-gendered perception that claims the scientific gaze in his understanding of the political neutrality of science frames an ongoing historical unfolding of scientific enquiry despite attempts to reclaim the importance of both women and non-elite workers. The distinctly male scientist in Prior’s analysis is of thematic concern to the confrontation that occurs between women, workers, and those who control the power accrued from knowledge in both *The Bone Sharps* and *Curiosity*.

Both A. B McKillop, in *A Disciplined Intelligence* and *Contours of Canadian Thought*, and Suzanne Zeller in *Inventing Canada*, a work influenced by McKillop’s study, agree that the influence of the Scottish “Common Sense” philosophy was integral to the construction of early educational practices in Canada. According to McKillop this meant that the mid-nineteenth century British North American university system was typically structured on a model of scientific and intellectual curiosity that did not threaten the theologically-based moral code that regulated knowledge/power:

In Scotland, Common Sense provided a means of preserving the British empirical tradition (in a transmuted form) without undermining metaphysics. The virtues of Baconian empiricism (then dominant in science) could be extolled, yet the intuitive judgements of the “moral faculty” could at the same time be allowed to prevail. (*Disciplined*, 27)
By “moral faculty” McKillop means the Christian moral code that was not supposed to be transgressed by the critical philosophy or scientific evidence of teachers, scholars, philosophers, and scientists. What was important to educators in British North America was the instilling of moral values, and, in that sense, the connection among science, literature, theology, and philosophy was such as to produce a version of critical inquiry that was always already in effect a product of a culture devoted to a specific belief system. And although this kind of tautology is characteristic of any attempt at critical inquiry, what makes the case unique in Canada is that its particular belief system went against the Enlightenment values of scientific rationality that were overturning philosophical and scientific foundations elsewhere. McKillop explains that the philosophical inquiry of Scottish educational values, the bridging of science and the humanities, as well as other modes of inquiry, when transported to the colonies actually produced a reverse interpretation of the goals of the British educational system:

[I]n the nineteenth century this educational ethos was marked by a double irony. First, it became a significant influence upon Anglo-Canadian university curricula at a time when it was under severe attack in England. Second, mental and moral philosophy were in Scotland a decidedly liberalizing force. In Canada they came to be used to enforce the arguments for Christian orthodoxy. (Disciplined, 25)

While McKillop argues that the Canadian model was similar to that of the United States, Canada clearly produced an educational system that was shaped by theological interpretations of natural philosophy.
The early Canadian education system was based on the idea that the natural and physical sciences, literature, theology, and philosophy were distinct only in so far as they used different methods to get to similar ends. And the endpoint, reached through scientific and philosophical investigation, was often the proof of God’s existence:

While men of religion in Canada sought to lay the appropriate religious foundations for the study of nature through the teaching of their own adaptations of natural theology, some of the leading scientists in the colony sought, in their lectures and writings, to build, upon the edifice so carefully constructed by their colleagues, a science in accordance with the orthodox Christianity of their day. (McKillop, *Contours*, 45)

Scientific discovery in Canada, in other words, was meant to prove closer relations between the works of the Creator and nature, not disrupt the cultural foundations upon which social life, education, and politics were based. Discussing the work of James Beaven, a nineteenth-century scholar who wrote about the uses of natural philosophy, McKillop argues:

The revealed word of God was of course the primary source of religious truth, hence, certainty. But another was even antecedent to revelation: the evidences of religion in nature. And these could be perceived through simple observation and reflection. … [E]ven those not so favoured by revelation could – by simple observation of the natural world and due reflection upon it – perceive, however
imperfectly, evidences of the existence of the moral power who is the Author of the present state of things and who governs the world. (Disciplined, 68)

This same perspective can be seen in the two works discussed in this chapter, a perspective that shapes the ways in which scientific rationality confronts, and is confronted by religious interpretations of the world.

In reaching back to early figures in what is now considered paleontology, both Bowling’s and Thomas’s works take an approach to scientific history that connects with the early Canadian practices of scientific research as expressed in the works of Zeller and McKillop. It is in showing how science can be used to prove opposing beliefs that both works integrate their historical scientific narratives into present-day politics of the ethics, practices, and areas of inquiry. The Bone Sharps uses a narrative time-frame that jumps across different periods of history (1876, 1916, and 1975) to signal both shifting and continuous perceptions of scientific knowledge between religious and secular views of the world. As the novel focuses on the rupture between science and religion as it occurs during the First World War, there is a connection to other social movements in Canada around the same time period, such as nationalism, modernism, and a growing secularism. One of the main characters, Charles Hazelius Sternberg, is figured through fragmented and non-linear representations of his past and present life that place him within the infamous “Bone Wars” between Edward Drinker Cope and Othniel Charles Marsh.7

7 Edward Drinker Cope and Othniel Charles Marsh were two American paleontologists who competed with each other between the 1870s and the 1890s over the finding and naming of fossils. Their individual successes in the field of paleontology were matched only by their follies, with both men bankrupting themselves in order to defeat the other.
Sternberg’s personal experiences also place him between faith in a Creator and his growing doubts about the existence of a divine being. This narrative structure allows the action of the story to move between the “bone fields” of America and Canada and the fighting fields of the Western Front during the First World War, creating a link between the technological and spiritual Zeitgeist.

By linking the Great War with the Bone Wars, Bowling’s work marks a shift away from the stereotyped scientist as a gentlemanly scholar in search of pure knowledge, towards the more insidious physical, political, and social violence associated with certain scientific endeavours. Where Cope and Marsh historically depleted their financial resources to outcompete each other for the precious fossils buried under the grounds of the North American West, the constant shelling of the trenches during the First World War, as represented in Bowling’s text, suggests an analogous moral, spiritual, and material depletion. Furthermore, the link made in the text between the bone fragment and the Christian God in which both Cope and Sternberg believe, and on which belief they base their readings of the bones, becomes tenuous when contrasted with the link between the technological progress of modernity and the horrors of trench warfare.

Marsh and Cope started their careers on a cordial basis, but the relationship soured over an incident involving Cope's fossil of Elasmosaurus. As Cope was proudly showing Marsh the impressive skeleton, his guest pointed out that the vertebrae (backbones) were oriented backwards. After a sharp exchange they both agreed to have Joseph Leidy decide who was right. Upon seeing the specimen Leidy promptly removed the head from one end and placed it on what Cope had thought was the tail. … The rivalry between Cope and Marsh went from bad to worse. Their desperate race to discover, describe and name new species drove both men to extremes. Cope's rushed work was often plagued by careless errors. Marsh was somewhat more careful in his work, but he often resorted to bribery and bullying in the pursuit of specimens. Their exchanges in print were filled with poisonous charges and countercharges of errors, distortions and fraud. At first these exchanges were limited to scientific journals, but later they made their way to the newspapers. (“Bone Wars: The Cope-Marsh Rivalry”)
Ultimately, the absence of God, or, more precisely, the presence of violence in a world made by God, is not consistent with Sternberg’s and Cope’s belief in the mysteries of a benevolent Creator, a Creator who is manifest in the fossilized remains of dinosaurs that are associated with the violence of an extinction event, which is compared with the violence of human war.

As Sternberg looks out at the badlands of the Red Deer River Valley in Alberta in 1916, “[he] stared into the immensity, the richest bone bed of all, the nightly visible proof of God’s glory and power” (12). The nightly stars are “[a]nother of the Creator’s great mysteries” (12), along with the fossils hidden from Sternberg’s view under the earth. To see and to find, to touch and to wonder - the experience and goal of the paleontologist, in Sternberg’s view - is to seek, preserve, and acknowledge the truth of the proof in the found object that is visible to the eye. Yet Sternberg is already predisposed to think of the fossil beds as simply another “mystery” of God’s creation because the existence of such bones goes against the 6,000 year history of the earth as recorded in the Bible. For Sternberg, the majesty of science involves the nature of the mystery itself. The bones he unearths are, of course, empirical proof of the scientific theories of evolution and geological formation, yet Sternberg’s science is couched within the view of the creation of the universe by a divine being. His religious beliefs discount any rational aspect of any possible scientific endeavor he undertakes as someone seeking new knowledge about the “mystery” of the world.
Sternberg is not formally educated as a scientist, and he bases his scientific beliefs on the ideas of Edward Drinker Cope, who hires him to find and collect the fossilized bones. As a mentor and employer Cope becomes the authority, who speaks from a position of truth, not because he may know answers to questions about the world but because of his cultural capital in relation to Sternberg. At one point, Cope explains:

A man should not be all intellect. That is the danger in science. Darwin, Wallace, Huxley, that damnable Marsh – such men believe they can reason their way through life. But how, how, faced with the glories of the Creator, can they reason away the cosmos, bird flight, a woman’s heart? Doth experience teach them nothing? And mystery is no enemy to man – it is his greatest friend. Without it, we are as the extinct beasts whose bones we seek. Imagination and feeling. God has given us these faculties to praise and honour, not to deaden. (218)

The mystery itself thus becomes the proof of the divine mystery, a tautological and anti-empirical logical construction. Passion and imagination become the conduits for worship of the creator’s works, as well as for the foundation of Cope’s scientific theories. All scientific theory that does not accord with Cope’s belief in a God weakens the belief in a Creator, and thus also deadens the imaginative faculties of the believer. Cope’s style of reasoning signals that any discovery of evidence will always already be subject to pre-existing theories concerning their origins. The mystery of the existence of the bones invokes the mystery of God, a pattern of scientific thinking that privileges instinct and imagination over science and reason.
When placed alongside the narrative of the First World War, however, Cope’s logic founded on religious belief becomes an ironic reading of how truth is constructed through the use of the various scientific methods. The fictional Scott Cameron, a young man who also helped Sternberg as a bone sharp in the badlands of Alberta, enlists in the army and finds himself staring out at another bed of bones under the earth. The bones buried near the trench in which he waits to fight are mostly not fossilized, but come from the bodies of the soldiers who have recently died on the Western Front. Here, technology and scientific advancement, as well as human feeling and imagination, are inserted into an imaginative space of mystery that cannot be considered a place of praise or honour to the creator, but rather of the human atrocity of warfare. Matter, the physical material of the world, is now mixed with history, or memory, in relation to the understanding of the evolutionary unfolding of both this specific narrative, and the knowledge of the world according to the characters inhabiting its fragmented story space. Dinosaur bones may be a mystery to Cope and Sternberg, but the human bones of the soldiers fighting in the war produce a palimpsestic rewriting of natural history. If God created the bone fields in which Sternberg and Cope search for evidence of His existence, then God must also have created the fresh bone fields where Scott waits, wanders, and watches.

In a symbolic representation of such a re-writing of a theological basis for scientific truth, Scott and two of his fellow soldiers dig through a barn filled with wheat

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8 I use the term “mostly” here because Scott does carry with him a large fossilized bone found by a group of engineers. His care of the bone underlines his devotion to science and knowledge even under extreme conditions, and juxtaposes the process of extinction, burial, and discovery between humans and dinosaurs.
in order to “unearth” a Bible lost by Scott’s friend Wheeler (127-42). This ironic scene of struggle during a period of rest from the fighting suggests both a futile undertaking in seeking an object with no apparent use-value in relation to the men’s situation, but which holds an emotional value within its materiality, and the ingrained superstitions and centrality of belief in an individual’s worldview. Wheeler will not accept another Bible to replace the one that has been lost, because the loss of this particular Bible suggests a truly spiritual absence of God in the midst of violence and the loss of connection to his mother who has signed the Bible, making it “a special Bible” (133). The Bible, like the bones discovered by the fossilists, reflects the nature of the material object as proof of certain truths about the world, and how such truths are shaped by the beliefs held about them, despite the fact that, as Scott argues, in another Bible, even a French one, “the words were still the same” (134).

The mixture of matter and memory in Bowling’s novel suggests both a shift between different ways of knowing (the paradigms of science), and between the cultural events that produce such shifts in knowledge. Bowling’s text is premised on the unfolding of history as the movement between epistemological shifts in human understanding about evolutionary and physical processes taking place in the world. According to Christopher McGowan, Richard Owen, an early fossilist and popular lecturer on fossils and geology, “attributed the apparent succession of life seen in the fossil record to repeated waves of creation and extinction. These, in turn, were attributable to the successive revolutions of physical change that had swept the globe”
(Dragon Seekers, 157). This suggests a non-linear process of creation (and destruction), rather than the linear progression from simple to complex life forms needed to sustain a belief in Judeo-Christian interpretations of creation. Bowling’s text suggests an even greater connection between creation and extinction in the fossil record, with the addition of human culture into the balance of evolutionary ebbs and flows. By representing history as a disjointed series of temporal leaps, such as those that occur in The Bone Sharps and Nino Ricci’s The Origin of Species, which I discuss in Chapter 3, Owen also expresses the importance of the individual’s perspective on scientific thought in relation to a paradigmatic understanding of scientific belief.

The Bone Sharps foregrounds how knowledge does not cross all boundaries at once, re-shaping the entire world for every individual seeking answers to the larger questions, but is expressed across time and space through individuals and material objects that shape particular beliefs, not always convincingly, and certainly not immediately for every single individual. For Scott’s friend, who is so desperate to retrieve his lost Bible that he undertakes a form of labour he instinctively abhors, the loss is not only material but also a loss of faith, of connection with God. Where Scott sees the Bible as an object without inherent significance, as nothing more than a book that can be replaced by a similar copy, Scott’s friend sees its material existence as Cope or Sternberg would see a dinosaur bone; it is both evidence of God’s existence and a mysterious object filled with the evidence of creation. Wheeler actually makes the connection between the materiality of God’s word and the materiality of evidence found in a dinosaur bone, and discounts
Scott’s belief in the ability for translated accounts to speak the same truths: “You think it’s a game, like finding dinosaur bones. You think it’s just words. You don’t know anything about it” (135). Truth for Wheeler is really faith in the physical text he believes keeps him from harm. Scott’s lack of faith places him in the position of not knowing the truth as Wheeler sees it, because Scott cannot accept the words as evidence of a further truth, in the same way that the dinosaur bones offer proof of evolutionary theory. Of course, Bowling connects the two forms of truth through the process of digging for objects buried and invisible from view, frustrating any attempt at absolute knowledge based on material data.

The violence of war in *The Bone Sharps* is analogous to the violence of nature. The mystery of religion and the mystery of nature are intertwined in technological and epistemological advances that trouble the belief in the existence of a Creator, or a purpose in nature. Laura Otis writes in the anthology *Literature and Science in the Nineteenth Century* that Gerard Manley Hopkins’s 1888 poem “That Nature is a Heraclitean Fire and of the Comfort of the Resurrection,” “resist[s] science’s claim to replace religion as a provider of inspiration and enlightenment. Science deprives people of a sense of purpose, [he] suggested, promising true knowledge but delivering neither knowledge nor justice” (239). Invoking Heraclitus’s belief in fire as the fundamental element of the universe, Hopkins’s poem appeals to a representation of nature’s violent and dark elemental force:

Cloud-puffball, torn tufts, tossed pillows | flaunt forth, then chevy on an air –
Built thoroughfare: heaven-roysterers, in gay-gangs | they throng; they glitter in marches.

Down roughcast, down dazzling whitewash, | wherever an elm arches,
Shivelights and shadowtackle in long | lashes lace, lance and pair.
Delightfully the bright wind boisterous | ropes, wrestles, beats earth bare
Of yestertempest’s creases; in pool and rut peel parches
Squandering ooze to squeezed | dough, crust, dust; stanches, starches
Squadroned masks and manmarks | treadmire toil there
Footfretted in it. Million-fuelèd, | nature’s bonfire burns on. (1-9)

Hopkins’s depiction of nature as a violent assault is consistent with both the Romantic and religious belief in the sublime power of an uncontrollable other, in which the human individual is helpless in the face of greater forces. Like Sternberg in Bowling’s text, Hopkins’s narrator strengthens himself against the violence of nature by arresting this vision of nature’s uncontrolled fury and seeking comfort elsewhere: “Enough! the Resurrection, / A heart’s-clarion! Away grief’s gasping, | joyless days, dejection. / Across my foundering desk shone / A beacon, an eternal beam” (16-19). Turning away from uncontrolled fury, or the belief in the purposelessness of nature, and the chaotic, the narrator becomes one with Christ, an “immortal diamond” (24), stating that he is “all at once what Christ is | since he was what I am” (22). John Coulson argues that this language reflects a symbolic representation of reality that is grounded in a search for understanding by the reader:
This use of language – irreducibly symbolic and metaphorical – challenges the reader by its unqualified assertion of reality. The unity of being expressed by the poet does not depend upon a prior unity of culture (as Yeats assumed), but is for Hopkins as it is later for Eliot the consequence (or reward) of religious assent. Although this is language that is conservative of faith, it is of a faith which seeks understanding: ‘the symbol gives rise to thought’. (“Religion and Imagination,” 20)

This is no evolutionary path from Christ to the narrator but a religious belief in the truth of God’s word in the face of the mystery of nature through literature. Again, like Sternberg, the mystery and violence of life are made controllable by the turn towards God despite, not because of, scientific proof that goes against such a conception of creation.

The violence of Hopkins’s poem as a rhythmic repetition of nature’s fury may tell us something about Sternberg’s view of science and nature in relation to God, but it is also comparable with Bowling’s representation of the human chaos of the First World War. While Scott sits on the front lines of the war in 1916, a long list of events breaks the novel’s realist prose style into a shape more aligned with Hopkins’s vision of nature:

…marching, singing, packs always heavier, then quiet, then silence, then shells, bodies at the roadside, disembowelled, stinking horses, old bones sticking out of old trenches, caught briefly in a Verey flash, French bones, bits of blue cloth stuck to them, and newer dead, stink, slime, the relieved wounded crying, moaning, the unwounded blank-eyed, staggering out, and always the question – is
it my turn, is my number up? – not me, it won’t be me, and the long, held stare at the dead men as if to hear them answer the question you haven’t asked about death because you don’t really know it, muscles tensed at the parapet, in the listening posts, on sentry, head down, lice in your fingers, their blood your blood, crack crack, like a tiny shell just invented, cold beef, gas water, stench, black smoke, tea, rum, cutting wire, zing of bullets… (37)

The rhythm of this sequence expresses the violence of human beings using advanced technology to play the role of Hopkins’s invisible God, overtaking nature to replace the violence of the unknown with the violence produced by human knowledge. Christ arises out of this same account of violence, but only as the fear-induced curses of the soldiers, suggesting a connection between Christ, and thus God, and the motivation of fear in producing belief from the unknown. The reversal of praise, in God’s name, is literally reflected in the reversal of the novel’s thematic and symbolic play on belief and knowledge: “[S]hell-burst behind the lines, eighteen killed in a dugout, the moans, Oh Christ please shoot me shoot me I’m blinded oh Jesus Christ!, the mandatory religious service, the padres and their patriotic prattle, for the glory of God the just cause the loved ones” (37). Where Sternberg and Cope unearth bones to prove God’s existence in the name of science, here science and technology are used to put new bones into the earth in the name of God. This is the larger analogical structure the novel plays with in line with Cope’s peculiarly logical view of science.
Such reversals raise the issue of subjective experience and belief in relation to epistemology, truth, and empirical data. Patricia Fara argues in *Science: A Four Thousand Year History* that “The Victorian scientists who fought for social authority were not trying to eradicate faith, but rather to prune their community from within by excluding anyone who based scientific hypotheses on religious arguments” (269). Scott’s secular interpretations of paleontological discoveries places him in opposition to characters such as Wheeler who have no chance of participating in the same scientific culture as Scott does to begin with, and in opposition to characters such as Sternberg who participate in a scientific practice but are held back from viewing their discoveries from a secular interpretation of nature. Scott is thus symbolic of a theoretical, intellectual, and temporal shift in the field of science and epistemology, and represents Fara’s “Victorian scientist” emerging alongside Canada’s growth as a modernist secular nation.

Fara further states that geology, and I would argue the closely associated field of paleontology, produced a shift in the human relation to time and space and forced individuals to question their place in the universe: “This expansion of geological time not only rocked science but was also a major transformation in European thought. Like placing the Sun instead of the Earth at the centre of the Universe, it radically diminished the significance of human life” (271). In connecting scientific discovery with human violence Bowling suggests a similar shift in the changing view of human life. He parallels the discovery of proof of the Earth’s long geological history, as opposed to a literal biblical account of the Earth’s existence, with the violence of the First World War.
Science and violence shape similar events in which human life is renegotiated in the hierarchy of value within a new conception of nature without a Creator. In other words, science threatens the foundations not only of religious belief, but of the social structures, moral and ethical bonds, and specific values of individuals and communities sharing a system of knowledge. In *The Bone Sharps* culture and nature overlap through violence, allowing for a reading of science and religion as a complex web rather than a simple divide.

In David Bergen’s novel *See the Child* the protagonist, Paul Unger, loses his teenage son Stephen when the boy collapses and drowns in the rain-soaked fields of Manitoba. Recalling his experience at a later date, Unger reflects:

> Nature was heedless. Nature did not covet or seek revenge or hunt down the guilty or reward the pure. Nature simply was. Paul understood that. He remembered the day he learned of Stephen’s death and how he had felt that the sun should stand still, or the sky should bleed, or at least a tree should fall in memoriam. But, nothing. Only the sun and the moon and the sun over and over until one night Paul stood on the back stoop and lifted his voice to the sky and cursed the silence, the constancy, the conspiracy of another sunrise. (135)

Bergen’s human being is faced with having to accept the indifference of nature to human existence, as opposed to Hopkins’s vision of maintaining faith in nature despite its possible violence towards humanity. In Bergen’s representation nature is void of a moral
code, and despite Unger’s solipsistic desire to have nature respond to his suffering, neither nature nor a voice from the wilderness speaks back to him.

I allude to Bergen’s view of nature as indifferent because it details nicely the fracturing in Bowling’s text of the epistemological links connecting science, faith, and ethics. Jean-François Lyotard argues that “[i]t is generally accepted that nature is an indifferent, not deceptive, opponent, and it is upon this basis that the distinction is made between the natural and the human sciences” (Postmodern Condition, 57). For Lyotard, the natural sciences deal with a “mute” subject, one that can be perceived but which does not respond, whereas the human sciences deal with an agonistic subject that does speak, believe, act, and control situations. In both fields, however, Lyotard sees a need for a model of knowledge based on an ethical “politics that would respect both the desire for justice and the desire for the unknown” (Postmodern Condition, 67). In Bowling’s representation of the rise of paleontology in America and Canada, an ethical politics of science is grounded in the Judeo-Christian tradition, while still representing the search for the “unknown.” Yet the religious beliefs of the bone sharps overpower the “mute” nature of the unearthed bones. The bones themselves become tools for those who find, name, and classify them. They open up a space and provide a material foundation for the fossilists to speak about the origins and nature of both the bones and humans. The silence of nature, in other words, is filled by those who control nature’s role in human affairs.

David Knight points out how the ethics of science intersect with religion at the level of scientific practice:
Traditions and practices are more important in many religious traditions than are beliefs, and the same may be true of science. Ethical questions about science and technology would thus seem to be some of the most profitable ones for outsiders to ask, and it is thus weird that fundamentalists seem more concerned with scientific beliefs than with scientists’ and technologists’ sometimes alarming practices – perhaps because the bible does seem to justify exploiting nature.

*(Science and Spirituality, 6)*

Knight privileges practice over belief in order to arrive at an ethical crux in the relationship between science and religion, but it is important to recognize tradition and practice also perpetuate beliefs by enabling interpretations of truth and reality through social and educational systems. In the case of Bowling’s bone sharps the “exploitation of nature” involves making religious claims for the existence of a Creator based on beliefs that have coalesced into scientific practice and thus masking other possible interpretations.

In recent years the divide between science and religion has again come to the forefront of institutional and public life in the Western world, most controversially within the debate between creationism and evolution through the rise of Intelligent Design theories of creation. Various scientists, politicians, pop-philosophers, humanists, and fundamentalists have all sought public platforms to express their views on the relationship between theories of creation and evolution. Some argue that there is no reason why science cannot embrace a religious view of the world, while others, on both
sides of the debate, have fiercely repudiated any perspective that would problematize their own views and beliefs about knowledge and faith. Although theories of science have changed throughout the centuries, practitioners of science and religious organizations have often been theoretically pitted against each other in their attempts to explain the origins and functions of natural phenomena. By focusing on a specific historical moment in the larger debate concerning religion and science, Bowling’s novel speaks about the ongoing relationship between culture and nature, and how the human animal produces cultural beliefs from natural elements of the environment.

Eva-Sabine Zehelein troubles our idea of cultural heritage and individual perspective, however, by examining the role of information sharing between individuals and groups:

As Gillian Beer and others have argued more recently, the term culture should be defined and applied in a much broader sense [than the “two cultures” model]. A common culture does not mean a shared amount of information or facts, but is rather characterized by crisscrossing networks and simultaneous memberships in various specialized groups in different contexts, each group characterized by internal homogeneity. Therefore, the fissure between science and literature is limited to a specific context, and not a gap separating certain groups in an irreconcilable manner. (32)

The “two cultures” model is flawed precisely because rather than a plurality of “crisscrossing’ cultures it assumes two exclusive cultures, a dichotomy that C. P. Snow’s
famous lecture produced by aligning science and literature with particular political parties. Religion is the type of culture that pervades the “crisscrossing networks” of knowledge, and which specifies the contextual elements of a shared group, or the gap between groups who hold certain beliefs. In that regard, Bowling’s text, like Joan Thomas’s Curiosity, posits a contemporary problem of historical significance (i.e. the troubling nature of Darwinian science for religious believers), while marking a wider space between personal, group, and cultural beliefs within the unfolding or discovery of knowledge, and the uses to which such knowledge is put.

The Bone Sharps shows how belief influences social knowledge sharing through the discovery of fossils, which fulfils a number of symbolic purposes within the narrative. First and foremost their discovery represents the material and physical evidence for something that existed within a distant historical period of time on the Earth. They are objects that can be touched, seen, and smelt. But they are also cultural objects, or socially constructed objects, as soon as they are put in the hands of their discoverer. In other words, they can be used in more than one way to produce evidence of a theoretical position from their very material embodiment. Sternberg’s belief that the bones he discovers are evidence of God’s existence comes from the higher authority of Cope, which is then echoed by Lily, Scott’s beloved and fellow bone digger. The continuity of belief in the divine origin of the bones expands from the personal beliefs of each individual character to a larger social continuity of inherited belief. When Lily comes across a small skull buried in the bone fields of Alberta, she senses a divine purpose
behind it, and asks Sternberg to be allowed to unearth it and send it to Scott, who has, by this point, left Alberta for the war. She explains to Sternberg: “‘I’ve never had such a feeling before. It was as if, as if …’” She lowered her head briefly. When she looked up again, her jaw was fixed. ‘As if I’d received instruction from God’” (23). Lily’s religious beliefs do not change and when the narrative jumps sixty years forward to 1975 and she unpacks the skull for the first time in many years, she feels “the presence of God enter the room” (42). Where Sternberg and Cope are portrayed as historical representatives of nineteenth-century cultural beliefs, Lily continues such a line of thought into the later twentieth century. This positions Lily as a not exclusively rationalist thinker who incorporates intuition and belief into the practice of science. She represents Cope’s theory of the scientist as a passionate and imaginative creature, not one who uses reason as a way to analyze evidence, but rather a scientist who premises his/her findings on the basis of faith over reason, and of belief over evidence.

Lily’s religious beliefs are premised on a seemingly intuitive spiritual understanding of the power of the skull to aid Scott during his time at the front. The skull takes on properties that go beyond the symbolic to become a device connecting Lily with Scott, and the physical with the metaphysical. This is, of course, exactly how Wheeler perceives his lost Bible, marking a connection between the bones discovered under the ground and the “Word” of God re-discovered under the hay at the French farm. The analogy between the buried objects positions science as a conduit for truth back to the Logos through this symbolic connection between fossilized bones and the symbolic
material value of the Bible’s words. At one point Scott watches Wheeler as he “stroked his Bible and mouthed its words” (153). The text thus figures more as a conduit between the written word and its expression in reality, suggesting Wheeler’s link to God is manifested in the act of reading the words aloud. Through Lily’s belief in the spiritual significance of the skull, she also represents spiritual belief over the rational knowledge of science. There is, however, actually no suggestion within the text that Lily perceives herself as a scientist. Rather, her characterization is built around her love for Scott, and, ultimately, her desire to unearth the skull in order to help him spiritually during a crisis transfers her role as a scientist working in the field to that of an individual motivated by subjective interpretations of physical evidence because of external events.

Scott’s belief in God contrasts with that of Lily, in much the same way that his understanding of the bones he discovers contrasts with Lily’s belief in the spirituality of the skull. Scott sees God, much like the war, as an impediment to his scientific work:

Like many soldiers, he was irritated by the army’s insistence on mandatory attendance of church services and by the chaplains’ unearned exhortations to fight because “God was on our side.” (139)

Scott seems to spend as much time thinking about, or actually looking for prehistoric bones during the war as he does fighting in it, and thus he is set up, in opposition to Lily, as a devoted scientist risking his life to uncover the truths behind the great mysteries of the world. Where Lily represents continuity of cultural belief, Scott’s worldview is one marked by changes. The First World War is used in the narrative to signal a rupture
between the past and the present of history, as well as the past and present of the
fragmented narrative itself, and thus cultural upheaval becomes synonymous with
epistemological rupture. Science and the figure of the scientist in the novel are enmeshed
within larger cultural processes and beliefs, informed by changes in the knowledge base
of the society in which the characters move, as well as historical events that seem to
immediately produce new ways of understanding the physical evidence found in the bone
fields.

Perhaps it is erroneous to label the characters in Bowling’s *The Bone Sharps* as
scientists at all. Sternberg is not trained as a scientist, and engages in the search for bones
only because of his love for, and skill at, uncovering new specimens. Cope is the
representative scientist of the text, but his method is tinged with madness, and the
religious overtones in his speeches are beyond even Sternberg’s. Science and religion are
expressed in the novel as practices and experiences that reach beyond institutional
boundaries, marking both forms of reasoning as natural ways of knowing, due to their
close relationships with natural phenomena. The practices undertaken by the characters
literally take place in the field, whether it is a bone field or a killing field, and the
romanticization of scientific knowledge becomes closely related to the natural
environment in which the novel’s characters live out their beliefs. But perhaps it is in
such a romanticized world, a world where symbolic ruptures such as scientific discovery
or ritualized war come to represent historical forces of cultural change despite empirical
evidence to contrary positions, that Bowling’s text may be most closely associated with
Thomas’s novel, in which romance becomes a central analogue of the scientific practice of paleontology.

Bowling’s Lily may be aligned with the character of Mary Anning in Joan Thomas’s *Curiosity: A Love Story* primarily because Mary is also a female figure working within the male-dominated discipline of paleontology, or “fossiling” as it was known during her time. Like Lily’s, Mary’s story is told through a narrative that thematizes a possible sexual relationship between characters working within the scientific field in order to express the conditions of labour, of religious belief, and of scientific activity. In *Curiosity* the characterization of the historical figure Mary Anning creates a political and social reading of the female scientist working under the conditions of the Judeo-Christian religious belief in creationism to articulate how class and gender are intertwined within the institutional boundaries of knowledge production and scientific discourse. Mary and Lily’s love stories produce two very opposite readings of the social and cultural dimensions of scientific work within historical paradigms framed by conventions that either stimulate or stifle discussions about scientific evidence.

The representation of romantic relationships in the two texts points out the ways in which science, and the work associated with science, becomes gendered. David Knight

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9 Mary Anning (1799-1847) was born and lived in Lyme Regis, England. Her father, Richard, was a fossil hunter and dissenter who died in 1810, leaving the Anning family in serious debt. According to Hugh Torrens, Richard’s death led directly to Mary’s career as a fossilist despite her young age, seeing as her father had taught her the necessary skills of the trade, and the family was in dire need: “The remarkable ‘first’ fossil discovery [of an Ichthyosaurus], which was later to make Mary Anning's name, was made under these circumstances, at a date variously given between 1809 and 1811 and at any age between 10 and 12 years old” (Mary Anning [1799-1847] of Lyme,” 259). Anning went on to discover the first Plesiosaur, and although she was able to sell her fossils to institutions and collectors, she was barely recognized for her work during her lifetime.
writes in his work *Science and Spirituality* with regard to the division between science and religion that “Religion seemed in the nineteenth century to be traditional and female, science innovative and manly” (170). Knight also points out that Victorian science was a form of “spectator sport” that sexualized the discipline, which articulates well the role of perception and penetration in the practice of knowledge production and desire (170). Speaking of the British chemist Humphry Davy and his scientific lectures, Knight observes:

> Behind his rhetoric lurks the idea of carnal knowledge as an exemplar of what men of science did. Knowing meant handling, delicate or violent; it meant penetration and mastering. By contrast, deep religious knowledge was acquired through grace rather than striving or hectic activity: God spoke to Elijah not in the earthquake, whirlwind or fire, but in the still small voice; and peaceful contemplation and concentration were required of those of either gender who would be handmaids of the Lord. (170)

Knight’s positioning of science within a gendered reading of passivity and active movement intersects with the politics of Thomas’s own representation of Mary Anning as positioned within the gendered and epistemological binaries that Knight mentions: masculine/feminine; science-religion. Thomas repositions Mary as a little-known figure in the history of science due to the social and political conditions prevailing at the time with regard to class and gender boundaries in both science and interpersonal relationships, while remediating the cultural history of science that denies a figure such as
Mary Anning an active role in having shaped human knowledge. Mary never chooses science over religion in her interpretation of creation and evolution, but her questioning of both epistemologies places her in-between the gendered positions of science and religion. The romance narrative as an analogy of science enables the reader to question the social forces that create these dichotomous epistemologies throughout the novel.

The subtitle of Thomas’s novel places the romance narrative alongside the story of Mary’s scientific discoveries, thus producing an analogous union between curiosity as an activity of science and curiosity as an exploration of one’s sexuality. In aligning romance with science, Thomas’s novel investigates the cause and effect processes of scientific reasoning and the cultural conditions that allow for the production and dissemination of knowledge during a period in which Enlightenment reasoning was shaping the social landscape in often contradictory ways: perpetuating traditional values while at the same time producing new models of society. Thomas’s version of Mary’s story, set in the early nineteenth century before the publication of Darwin’s *On the Origin of Species*, reinforces the characterization of Mary as a neglected scientist because of her social and gender position by linking scientific activity with the cultural conditions of romantic attachment and sexual possibility between members of different classes in England at that time. The opening section of the novel, which contains a possible illicit sexual encounter, also suggests a shift in the greater social conditions in stating that “*Something quavers in the order of things*” (2; original emphasis). This instability of order involves a new understanding of geological, biological, and social processes, as
evinced by the fact that in the future “Someone will unearth their bones, their long, straight limbs crossed and mingled, their supple bones gone to stone, gone all to stone instead of dust” (2; original emphasis). Scientific theories of fossilization intermingle with religion in the exchange of stone for dust subverting the biblical interpretation of genesis and finality.

Thomas remarks in her author’s note that “The efforts to establish Mary Anning’s scientific credentials did not begin until the 1930s” (405). She further explains that the journal of Mary’s friend Anna Maria Pinney “is one of our richest sources of information about Mary Anning” (401) and that Anna Maria’s journal contains the suggestion of a romantic attachment between Mary and an unnamed person: “Anning scholars, perhaps reluctant to see romantic speculation overshadow Anning’s long-delayed scientific reputation, have tended to dismiss these entries as the fantasy of an over-excitable teenager” (402). Thomas’s explanation of her intention in reimagining Anning as a sexualized figure tells us something about why she would choose to privilege the romantic story over the scientific narrative that “Anning scholars” want to foreground. Thomas explains that “All the individuals working with the fossils at Lyme Regis were confronted with the need to profoundly revise their view of the world and their place in it” (403-04) and that she chose the historical Henry De la Beche10 as Anning’s possible suitor because the “challenges for Henry De la Beche were more personal and profound” (404). Of course the challenges for Henry are far less crucial than Anning’s struggle

10 Henry De la Beche (1796 – 1855) was an English paleontologist and geologist. His work on the Ichthyosaurus and Plesiosaur coincided with Mary Anning’s fossil discoveries.
simply to survive the dangers that come from poverty and hunger, yet Thomas’s imagined romance between these two socially disparate figures creates a wide-ranging interpretation of knowledge, power, truth, and belief in relation to science and religion. Where Bowling’s Lily is static in her beliefs about the social and material world, Thomas’s Mary is represented as a force of change, evolution, and the rupture between the past and possibility for the future.

Thomas places Mary’s work within both gendered and class boundaries set up by the political and scientific authorities and the larger social groups that participate in and consent to such boundaries by fictionalizing a romantic relationship that suggests a possible transgression of such social barriers. In a definitive biographical work on Mary Anning, Hugh Torrens adds a third reading of the term “curiosity” by pointing out that Mary was named after a sister who had been burned to death in a fire, and had herself survived being struck by lightning (“Mary Anning [1799-1847] of Lyme,” 248). Torrens reverses the direction of the idea of curiosity from Mary as subject to Mary as object by arguing that “With these two juvenile crises, Mary Anning’s curiosity was ensured” (248). It is, in fact, Thomas who performs the reversal of the term, acknowledging Torrens’s work on Mary, while also maintaining the suggestion that Mary was herself an object of curiosity. In Thomas’s text Mary becomes the revolutionary Dr. Frankenstein that Margaret Atwood suggested connects the sciences with fiction, a figure that upsets social structures in the desire for both love and knowledge, “a disrupter of social norms, a
breaker of laws, a subversive idealist, a feverish believer in the new and the potential”
(Ground Works, ix-x).

In opposition to Mary as a figure of curiosity stands Henry, the fictionalized object of Mary’s affections, who comes from a colonial, West Indies plantation-owning family that uses slave labour when laws against slavery have already come into effect. Henry’s social position allows him to move through London as a privileged member of the community, and to participate in social, educational, and scientific activities that are denied Mary. This social distancing between the two main characters produces a juxtaposition between the personal choices that the characters are allowed and the scientific discourses of those who are authorized to speak about such things. In other words, Henry’s privileged position becomes ethically questionable, while Mary’s poverty becomes contentious when understood as a consequence of the social structure that refuses to recognize her as an important fossilist. The social distance between Mary and Henry actually places them in analogous positions as representatives of the extremes of gender and social hierarchies. And, as in Bowling’s text, the social status of the speaker constrains how his or her truth claims to knowledge are accepted.

As Thomas has explained, her version of Henry and Mary’s relationship is not based on factual evidence, but is used to create a romantic narrative that runs parallel to the story of Mary as an early paleontologist:

I was irresistibly drawn to Henry De la Beche as a fictional subject, and I wrote Curiosity not as a historical argument regarding his relationship with Mary
Anning, but as an attempt to imagine what such a romance, so impossible and so full of possibility, would have meant to both of them. (403)

Thomas’s privileging of this “meaning” as an important element in the narrative is, of course, directly associated with the problem of what the unearthed bones “mean.” In Curiosity the intersection of the search for scientific evidence and for romance allows Thomas to dissect the historical conditions of science in relation to both social and biological evolution. Mary’s fossiling work opened the way for the material evidence of evolution as distinct from the theoretical work that had been accomplished up until that point. Mary’s situation as an impoverished, uneducated female working towards furthering her knowledge and moving upward socially in the sciences is representative of social changes that would begin to occur late in the nineteenth century. The connections drawn by Thomas between Mary’s scientific discoveries, her social position in relation to Henry, and the appropriation of her work by “men of science” create a critique of how scientific discourse was, and is, produced, disseminated, shaped, and altered as paradigmatic shifts in knowledge occur.

Thomas’s portrayal of Mary creates a link between cultural and biological evolution in much the same way as Bowling’s text conflates science and culture under the more general concepts of belief and faith (in both religion and science). To Mary the link between the fossilized creatures she finds and the creation of the world is not necessarily a question of science versus religion. Perhaps more importantly to the ethical argument of the text, Mary’s early views concerning the discovered creatures are a problem relating to
the forces of good and evil, marking an ethical conundrum that becomes symbolic of later class and gender issues: “Everything you saw was made by man or God or the Devil … Some of God’s works were to serve man and some were to test him and punish him. So how could you be certain where the works of God ended and the works of the Devil began?” (16). This is the voice of Mary as a child, but it sets the tone of her line of reasoning throughout the novel, even as her knowledge expands and her perspective shifts as new evidence is brought to bear on her worldview.

The idea of change in perspective is related to the social conditions that frame Mary’s life. The ability to perceive correctly is associated with recognizing the other appropriately: “The degrees of the poor Mary could tell at a glance, but she was not skilled in the degrees of the rich” (15). Mary’s inability to see differences in the class positions of the rich, despite the fact that she understands the minute differences among the poor, symbolizes the empirical nature of her eventual growth from fossil collector as labourer to that of a figure at least partially recognized as a scientist. In the reverse condition of class blindness, the rich cannot generally tell the difference between the specific degrees of poverty that Mary discerns. The inability to perceive the other as equal exemplifies the binaries of good and evil, God and the Devil, and the social conditions that produce an inability to distinguish within the classes. Thomas draws a parallel between the assertions of hierarchical class difference and the taxonomic system of classification and the evolutionary question regarding the origin of species, which is: when and where is the line drawn between species? For Mary this question is bound up in
her work, her life, and her beliefs. The social equivalent of the scientific problem of difference resonates in Mary’s attempt to cross the distinctly drawn lines of social classification. Mary’s social conditions represent the problems of distinguishing right from wrong, good from evil, man from woman, slave from master, and human from animal. Curiosity effectively takes the larger question of belief that is so important to The Bone Sharps, and distills it into specific binary oppositions that symbolically weave a disturbing social fabric that can only become untangled by those who can see beyond their fundamental beliefs about the world.

With regard to the religious theme that runs throughout Thomas’s novel, the line is drawn early in the text by the historical William Buckland, a clergyman and scholar at Oxford University who correlates the natural landscape with “the Lord’s chapel” (37; original emphasis), marking nature as evidence of God’s creation and thus bridging the divide between science and faith based on a complicated, and often contradictory, reading of nature. Buckland is a pious man who believes that God has made all earthly creatures, but he distinguishes between the acts of “wickedness” caused by humans and the supposed works of evil that others see in the “monsters” found in Lyme Regis in so far as they are creations of the devil (37). Yet Buckland is also distinguished by his views on rational science, which are based on rationality as a negative epistemology. His version of science is based on the ability to integrate empirical knowledge with absolute faith. Although Buckland considers a biblical hermeneutics appropriate to science, he distinguishes between true and false belief in relation to the order and origin of creation.
Buckland breaks down the divisions among cultural belief, religious belief, and the political order by suggesting that French scientists use the faculty of reason in opposition to the Bible’s authority on natural history, marking Mary Anning’s work as part of a shift in scientific method which eventually comes to the forefront of scientific discussion when Darwin publishes his theory of evolution based on a hypothetico-deductive interpretation of the fossil evidence.

Darwin’s method of interpretation that led to the idea of evolution and natural selection was just as controversial as the fact that evolution could be seen as a replacement of a religious interpretation of existence. The borders between scientific method and religious interpretation were complex, however, and things were not always clear. A. B. McKillop argues:

In British North America, as in Great Britain and in the United States during the first half of the nineteenth century, convictions as to the nature of the scientific endeavour were marked not as much by any overt antagonism between science on one hand and religion on the other, as by the continuing presence of religious assumptions within the domain of science itself. (Disciplined, 61)

Both Thomas’s and Bowling’s novels consider this question of religious belief within the scientific domain, but their works also suggest a historical opposition to religious influence within the field of science due to a changing perception of scientific method, and the analysis of empirical evidence. In Curiosity Henry, writing about his time in Paris, describes the differences between British and continental scientific theories:
And so I learned that I have cavalierly dismissed scholars regarded on this side of the Channel as titans of science, and that I have done so on the word of one dogmatic Oxford don. Here on the banks of the Seine, a whole different conversation is being enjoyed. [Étienne Geoffroy Saint-Hilaire] has given himself licence to set aside divine revelation and look openly at the phenomena before him. He alludes to a created prototype, but the process of biological development that follows is reckless and chaotic (unsupervised, one might say), so as to have nothing of the divine in it. While we perched on ancien régime chairs and sipped cognac, Geoffroy spoke of the transmutation of forms with no consciousness of blasphemy, not even looking around to see who might be overhearing! (309-10; original emphasis)

Henry’s reaction suggests that he himself has entertained theories that go against divine interpretations of natural phenomena but that he is constrained by social forces acting upon him. We can compare his Parisian experience to an earlier conversation he has with Mary:

“The world is abuzz with the notion that the strata of the earth were formed gradually over vast periods of time,” he explained, “and we were seeking to refute this theory.” She was especially curious as to whether he had ever been to Oxford University, so he told her about his decision not to enrol, in spite of the cajolery of his mother and stepfather. “The entire institution is consumed with the Articles of Faith. How can a university be a place of inquiry when dogma is its chief
concern? There is, furthermore, an unbefitting preoccupation with rank. In all the dining halls, you find separate tables and even separate entrances for noblemen, gentlemen commoners, and commoners. Such distinctions are made in the very chapels!” (206; original emphasis)

Henry is positioned between two competing theories, and he intuitively makes the connection between science and religion in his understanding of the role of theology in scientific education. His understanding of geology and fossils reflects his understanding of science and religion, and class and knowledge, and enables him to move beyond the normative view of each.

Henry’s scientific thinking is connected to Mary’s in that he takes a progressive view of scientific evidence. His views are founded upon experiences such as his father’s whipping of the slaves, and his own voyeuristic gaze upon the Hottentot Venus when she is “displayed” in London. The public display of the woman is symbolically linked with the public display of the bones Mary unearths. The paleontological evidence and the body of the African woman are linked to the white male power structure that allows certain individuals to gaze upon, classify, and study the “objects” under consideration in the name of science. As Henry points out, “They were charging two shillings. So it was not the low and ignorant who came out in numbers to gawk at this woman; it was people with means” (50). The private scholar and the public spectacle collide in Henry’s supposed but actually non-existent emancipationist views of slavery after seeing the Venus stare back at him as an equal: “Her eyes were puffy and yellowed, tired, full of rage and knowing,
and they met his with instant recognition” (50). I suggest that this returned gaze, and Henry’s recognition of it as coming from a human equal, separates him from the other scientific figures in the text, who maintain consistent beliefs in the creation of the world by preserving the epistemological hierarchies that are slowly shifting.

It is also in the image of slavery that the issue of private property is brought to bear on the question of scientific knowledge. When Mary and her brother Joseph uncover their first plesiosaur skull on the beach, she realizes that she may not have the right to sell it to Buckland, and the first question she asks of Joseph is: “Whose property is the shore?” (154). Their social position reduces their ability to participate directly in collecting fossils if someone else owns the land upon which they are found. Their dilemma becomes clear when Joseph and Mary consider the question of how they will haul the massive fossil up to their cottage from the dig site at Black Ven:

Private ownership rose up around them and hemmed them in. Their house, which they let from Mr. Axworthy. The market, where you had to pay a half-crown to put up a stall. The commons, all divided up now by hedges and gates. The hares and grouse and woodcocks hunted by no one but the Squire. Everything owned, everything in the town fenced and paved over, everything belonging to the gentlemen who tipped their top hats to each other outside the Assembly Rooms. One of them owned Black Ven. [Mary] had broken into his cellar and she was plotting to haul away the treasure she’d found there. Who from the town could they recruit into such thievery? (154)
Where *The Bone Sharps* considers the First World War to be the decisive event dividing religion and science, *Curiosity* positions science as an epistemological phenomenon that is linked to more individualistic and quotidian cultural, economic, and social conditions. Science, in Thomas’s work, is a paradigmatic condition that changes according to the accumulated knowledge of those who control its gaze and those who control the ownership of property. Race, gender, and class are associated with the ways in which individuals and communities function, as well as with the conditions that allow for scientific activity to take place. Instead of considering herself a participant in scientific activity, Mary’s social position reduces her to the role of a thief stealing bones from the ground.

Private property and ownership are also linked to the penetration of the male scientific gaze that pervades *Curiosity*. William Buckland is historically known as an eccentric who attempted to eat every creature known throughout the animal kingdom. The collection of specimens that he accumulated throughout his life is a symbolic devouring of scientific evidence as much as his gustatory appetite is literally a devouring of the other. In a similar, yet metaphorical way Henry De la Beche gazes out at Letitia Whyte, the object of his desires (and eventual wife) and sketches her image from a distance as a voyeur (100). The illustrations that Henry makes of fossilized specimens, a detail of one of which is used for the cover of the first edition of *Curiosity*, suggest a link between scientific collecting and the social behaviour of human beings in that the images are themselves aesthetic objects worthy to be gazed upon. The male gaze produces a
taxonomy of value in both scientific study and heterosexual relationships. It is, in other words, able to penetrate into the environments and epistemological theories that are barred to the female gaze.

Mary acknowledges the gendered dichotomy from a young age when she points out the educational divide between herself and her brother: “There was an indignity here: Mary, who was of a stature to receive letters from scientific gentlemen, was unlettered, whereas Joseph, who had no interest in scholarship at all, had been sent to the grammar school at six” (52). Mary eventually counteracts this indignity, the rights of property ownership, and her social position by seeking the objects associated with the dangerous and male-gendered space of the fossil dig site and taking them away. As well, her illustrations become antagonistic to the male gaze, as they are forms of anti-gendered scientific documents that are recognized as valuable to the male scientists in order to create their own theories, but which are still not displayed for their scientific value.

However, to suggest that Mary is reduced to a subservient role because of her sex may go against her own vision of herself and of her work. Shelley Emling writes, in her imaginative biography of Mary Anning:

Not only were Mary Anning’s finds extraordinary, but so too was the fact that she was out of step with her times, a rebel who carved out her own niche in a highly stratified and sexist society. All around her were learned men who were trying to reconcile the gap between religious beliefs and scientific evidence - and they were using her fossil finds to do it. Indeed it was Mary’s spectacular marine reptiles
that pushed them into finally contemplating a different explanation for the world’s origin. (The Fossil Hunter, xiii)

Emling points out that although Mary was never formally recognized by scientific societies of her day for her work, she was nevertheless respected by individual scientists and knew that she was known “throughout the whole of Europe” for her finds (xiii). Thomas positions Mary in such a way as to produce a figure that is both de-sexed by her masculine scientific activities, and re-sexed by the narrative’s attempt to uncover the mystery of Mary’s lover. Mary’s life becomes a story of the history of science at the time of shifting theories about the age of the earth, the connection between humans and animals, and the secularization of scientific reasoning. In a discussion between Henry and his wife, Letitia, about Mary wearing a man’s top hat, gender, class, and knowledge come together and are overturned by Mary’s refusal to accept the social norms that reduce her to an inferior position within the social hierarchy:

“She parades her lack of femininity,” says Letitia. “What can be her motive? It must provoke disgust even in men of her own class.”

“It is not the top hat that accounts for our discomfort with Mary Anning,” says Henry. “It is Mary Anning’s superior knowledge in all subjects related to her field. It is her refusal to pander to male vanity and pretend that the gentlemen with whom she discourses have come to this knowledge before her. That is the true challenge Mary Anning presents to men of every class.” (339; original emphasis)
Although seemingly de-gendered as feminine through her masculine attire, Mary is in fact proven to be far more provocative in her female sexuality by refusing to accept the social norms that would reduce her to a labourer for the benefit of the male intellectual. Henry effectively summarizes the greater challenge posed by Mary as an equal, if not superior, because she steps outside the traditional female role.

Linda Hutcheon argues that “much Canadian fiction presents itself as investigating the relationship between art (and language) and what we choose to call ‘reality’, between the discourses of art and the structures of social and cultural power” (Canadian Postmodern, 10). This is true of Thomas’s novel, where the historical fiction becomes a lens through which to look at the social conditions of power that allow for, or deny, the possibilities of knowledge. The real in this sense is the ability to question aspects of truth within larger social networks of power and knowledge. The foregrounding of the love story in the novel’s title signals a shift away from the actual history of Mary Anning, towards a reading of the history of science as a socially constructed institution that involved, and continues to involve, rules and regulations concerning who could, and could not, participate.

Richard G. Delisle produces an apt summation of the various interpretations of the social construction of science that have been put forward in recent years:

[Philosophers of science hold that the scientific enterprise is rarely about comparing competing explanations in order to decide once and for all which one is the more appropriate. Instead, it is argued that knowledge is a historical process]
being slowly elaborated over time by gathering empirical facts but also by
building theoretical contexts. If this is the case, then the scientific quest is not so
much about comparing full-grown theories but rather about comparing much
more complex and changing entities best called paradigms (Kuhn, 1970), research
programs (Lakatos, 1978) or research traditions (Laudun, 1977). In this
perspective of science, it becomes difficult to fully and definitely prove or
disprove an explanation, because future discoveries (empirical or theoretical in
 nature) may change the assessment we have of it. (Debating, 36)

Statements such as this are at the heart of the “two cultures” divide, and thus it is
important to point out that Thomas’s rewriting of Mary Anning’s life history connects
with postmodernism at this intersection between science and poststructuralist ideas of
social construction. In The Bone Sharps, the divides between nature and reason, and
science and religion, are brought about through the characters’ various beliefs, whereas in
Curiosity, Henry questions the very possibility of finding any answers at all in nature:
“There was a day when he saw science as the most manifest expression of reason. But
really, it’s a cauldron of bubbling lava; without warning, it will spill over and destroy
them all” (360). This apocalyptic view of science is more in line with a postmodern
decentering of science as a “grand narrative” and places the text within the more recent
debate about the social construction of science, as well as the ethical conditions that
underlie scientific practice. Henry further considers this debate when he thinks that
“[a]sking nature to explain itself is pointless. Ask nature a question and it replies with a
bank of navy clouds or the red dots in a frond of seaweed, it explains mystery with mystery. [Henry] will not ask; he will observe and chart. Others can theorize, those equipped by temperament or circumstances to afford that luxury” (360-61). Henry’s musings bring together science and its relationship to religion in the nineteenth century, and bring us back to the idea of the “mystery” brought forth in The Bone Sharps. For Henry, those able to theorize are also those who continue the attempt to explain nature through the Bible. Henry not only abandons his belief in science, but he also questions the ability of religion to supply an answer to the mysteries of the world. His desire to observe and report, to catalogue without theory, is his response to a nature that he comes to believe may only be explained by facts, not because facts are true per se, but because facts can be distorted for the benefit of those who control access to the power structures, positions, and institutions involved in fact-making in the first place.

In choosing not to participate in the theoretical side of science, Henry is also choosing a different version of time than those who believe in a biblical understanding of the Earth’s origin. As opposed to Judeo-Christian time, most specifically the linear movement of time in the Bible, Henry chooses to believe in what could be considered an early theory of evolutionary time. In a discussion with Mary, Henry describes an experience he has with a group of fossilists, who see evidence of God’s creation throughout nature: “‘It was not God I saw … but the earth itself, terribly old, constantly changing by its own processes. It seemed the deeper truth” (287). Mary suggests that she believes in a similar theory of evolutionary time: “The world is every day creating itself”
Both Mary and Henry’s conceptions of ever-changing creation are opposed to biblical time, as well as to an omnipotent creator, and such a perspective ultimately creates a different social space. Johannes Fabian, in *Time and the Other*, a critique of anthropology from the perspective of time-based philosophy, argues:

> As soon as culture is no longer primarily conceived as a set of rules to be enacted by individual members of distinct groups, but as the specific way in which actors create and produce beliefs, values, and other means of social life, it has to be recognized that Time is a constitutive dimension of social reality. No matter whether one chooses to stress “diachronic” or “synchronous,” historical or systematic approaches, they all are *chronic*, unthinkable without reference to Time. Once Time is recognized as a dimension, not just a measure, of human activity, any attempt to eliminate it from interpretive discourse can only result in distorted and largely meaningless representations. (24; original emphasis)

I would argue that Thomas’s Mary and Henry share Fabian’s view of time as a formal dimension of culture. Their mutual desire to transcend social boundaries reflects their view on the geological evidence for a larger process of creation and destruction. The social and the scientific come together in their individual perspectives on the ethical questions of science, but, in the end, even science cannot change the time needed to cause large social upheavals:

> They’d had no common ground to stand on to learn each other’s language, [Mary] and Henry De la Beche. She had thought science was a common ground, but it
was not. Even if she managed to write a scientific text in words that did not offend, her mere name on the frontispiece would. She had been drawn into believing that a massive new continent was about to heave into sight on the horizon, that this last autumn was the beginning of something. It seemed a kind of madness had seized her, a reptilian logic. (398)

The bridging of the social gap that separates Mary and Henry is described through the process of geological time, in which the continental plates move at a speed fast enough to produce a new continent. This impossible rate of speed is linked, and compared with the social rupture, the volcanic upheaval represented by the love between Mary and Henry that simply cannot occur because of social constraints, and, of course, the actual act of consummation that occurs in the forest, well away from society through a return to the non-social space of nature.

Mary’s interpretation of her relationship with Henry as analogous with geological and evolutionary time expresses a shift from religious to secular interpretations of cause and effect. Fabian argues that a historical shift occurred in human relations to time that marked a distinction between religious and secular “spaces” of time:

Enlightenment thought marks a break with an essentially medieval, Christian (or Judeo-Christian) vision of Time. That break was from a conception of time/space in terms of a history of salvation to one that ultimately resulted in the secularization of Time as natural history. … [I]t is important to realize that this not only entailed a change in the quality of Time (sacred vs. secular) but also an
important transformation as regards the nature of temporal relations. (26; original emphasis)

In *Curiosity* “temporal relations” are expressed in the social conditions that prevent Mary and Henry from forming a public relationship. Mary’s lower-class existence is contrasted with Henry’s position as a gentleman. Of course, both positions are shown ironically throughout the text, and the attempt to move beyond sacred time into a secular time that would allow for a relationship between Mary and Henry is symbolized through the scientific readings and misreadings that occur throughout the novel. The representation of love becomes a symbolic marker of change in relation to the perception of the other under social conditions.

In creating connections among faith, religion, belief, science, knowledge, material evidence, class, gender, and labour, both Thomas’s and Bowling’s novels investigate the more fundamental question concerning epistemology and scientific culture: how do we know the truth? Although *The Bone Sharps* and *Curiosity: A Love Story* are historical fictions, both works interpret present-day issues regarding the nature of epistemology. Science could be called the religion of the twenty-first century, with its own mythic views on the natural world that change in light of new information, with its encoded cultural practices, and ideological conventions. In looking at the history of science through a paleontological lens, these two texts re-imagine the role of human imagination and “curiosity” in the unfolding, or unearthing, of human knowledge. *The Bone Sharps* conflates time and space to create a historical continuity between periods of belief, and
*Curiosity* uses social status as a way of marking the continuities between culture and nature. Both texts use historical connections between science and religion to produce connections between binary oppositions, moving away from knowledge-based truths towards multi-positional versions of truth and knowing. By re-writing historical scientific figures from a twenty-first century vantage point on science, class, gender, and labor, both texts re-imagine the role epistemology plays in producing the cultural spaces that allow for beliefs, laws, and ideologies to act on individuals and societies.

Where *Curiosity* makes a clear distinction between the sciences and religion, and the problems that accrue when scientific rhetoric and theory are infused with religious belief, *The Bone Sharps* takes a more nuanced look at where the dividing line actually occurs. By refusing to side with one interpretation of life over the other, *The Bone Sharps* produces a sustained analysis of how science and religion can be considered similar forms of epistemological reasoning. Although historically we can argue that science has eclipsed the mythological underpinnings of religious creation theories, we can still never be certain that the scientific truth that we know today is the ultimate truth. This is the crux of science, and the crux of postmodernism; where they meet is in the gap between our desires to know the fundamental truth of the world and our deepest and most insecure realization that we may never know the truth at all.
Chapter 3

Theories of Evolution: Nino Ricci’s *The Origin of Species*

Human beings and their societies are much more complex than any simple theory can account for.

*The Malaise of Modernity*, Charles Taylor

Since there is no sharp frontier anywhere between the lowest animal and the most profound philosopher, it is evident that we cannot say precisely at what point we pass from mere animal behavior to something deserving to be dignified by the name of “knowledge”.

*Human Knowledge*, Bertrand Russell

The origin can be nothing but a difference!

*The Nick of Time*, Elizabeth Grosz

Nino Ricci states in the acknowledgments section of his Governor-General Award-winning novel *The Origin of Species* (2008) that Robert Wright’s *The Moral Animal* (1994) was one of a number of scientific works researched during the writing of his text. *The Moral Animal* stands out from the other sources mentioned because it is a work produced from the theories associated with the controversial discipline of evolutionary psychology. Ricci’s use of Wright’s ideas of evolutionary psychology might tell us something about the connections in the novel that trouble the discourse between
postmodernism and science. Wright’s work derives its arguments from a number of associated fields, but the predominant thesis of *The Moral Animal* is based upon the tenets of sociobiology, which Wright makes clear: “Understanding the often unconscious nature of genetic control is the first step toward understanding that – in many realms, not just sex – we’re all puppets, and our best hope for even partial liberation is to try to decipher the logic of the puppeteer” (37). Wright builds directly upon the work of evolutionary biologist Richard Dawkins (*The Selfish Gene*, 1976) and sociobiologist E. O. Wilson (*On Human Nature*, 1979). Sociobiology has been criticized since its inception in the 1970s for its social-scientific theories based upon universal human genetic and biological traits. Such theories are themselves implicated in social and political understandings of gender, race, and class. Wright points out that in response to the critical assault on the tenets of sociobiology many scientists distanced themselves from the discipline, but continued to work under a number of different rubrics, one of the most predominant being evolutionary psychology. According to Wright, sociobiology has gone “underground, where it has been eating away at the foundations of academic orthodoxy” (7). What Wright means is that sociobiology, under the less controversial label of evolutionary psychology, argues that human culture is produced by, and is analogous with, the basic units of human biology. In other words, a scientific knowledge of human biology tells us more about human culture than human culture tells us about itself. Evolutionary psychology seems to stand in direct opposition to theories of human culture associated with poststructuralism and postmodernism.
Wright, however, argues that, in fact, evolutionary psychology is deeply involved in postmodern thought: “Indeed, Darwinism comes close to calling into question the very meaning of the word truth” (*Moral Animal*, 325; original emphasis). He further states that “We believe the things – about morality, personal worth, even objective truth – that lead to behaviors that get our genes into the next generation” (324-25). And finally he makes the move that to my mind undermines his argument:

Already many people believe what the new Darwinism underscores: that in human affairs, all (or at least much) is artifice, a self-serving manipulation of image. And already this belief helps nourish a central strand of the postmodern condition: a powerful inability to take things seriously. (325)

To know is one thing, to be able to speak the truth another, but to not be able to “take things seriously” does not readily explain how evolution and human genetics are connected within a postmodern paradigm. Wright seems to make this leap because he argues that morality does not exist in nature, and that any human moral system has arisen from evolutionary hence self-serving or amoral processes. This is where Ricci’s text and Wright’s work come together most closely. *The Origin of Species* focuses on questions of postmodernism, evolution, and ethics in relation to what Wright argues is part of the postmodern condition:

Indeed, the commonsense way of thinking about the relation between our thoughts and feelings, on the one hand, and our pursuit of goals, on the other, is not just wrong, but backward. We tend to think of ourselves as making judgments
and then behaving accordingly: “we” decide who is nice and then befriend them; “we” decide who is upstanding and applaud them; “we” figure out who is wrong and oppose them; “we” figure out what is true and abide by it. (324)

Rather than argue that Wright’s work is true or false, or that it is inherently flawed because of contradictory statements about postmodernism (and genetic determinism) I aim to look at Ricci’s use of evolutionary psychology as a thematic framework for *The Origin of Species* in order to pursue the questions that arise from it. Ricci’s acknowledgment of *The Moral Animal* elicits certain questions about *The Origin of Species*: what form of evolutionary theory is it modeled on? In what way does a cultural model of evolutionary theory impact biological models associated with postmodern theory? And, does Ricci’s novel actually critique the sociobiological model of cultural evolution, or does it attempt to reconstruct the sociobiological discourse in such a way to create a model of cultural evolution based upon biological models of human evolution and adaptation? Any analysis of Ricci’s text must recognize that either it is based on the contentious model of sociobiology or on a particular historical document that is open to critique within the novel proper. Ricci gestures towards such a critique by quoting Walter Benjamin in an epigraph to the first part of the novel: “There has never been a document of culture which was not at one and the same time a document of barbarism” (1).

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11 As I have pointed out Wright suggests that the theories of sociobiology are still used in evolutionary psychology. As *The Origin of Species* takes place during the 1980s Ricci uses the term sociobiology. Although it is not necessarily true that evolutionary psychology and sociobiology are the same thing, Wright’s work seems far closer to sociobiology than evolutionary psychology, and thus I use the term sociobiology throughout in order to avoid confusion.
Because Darwinian evolutionary theory creates an essential break with theories of life that are tied to a fundamentalist creationism, the literary tradition in Canada can be remapped from a Darwinian perspective that conflicts with the problems of belief, knowledge, and truth in place through other epistemological models of knowledge, such as religion. The late eighteenth and early nineteenth century animal stories of Charles G. D. Roberts and Ernest Thompson Seton, the satiric tale of James de Mille’s *A Strange Manuscript Found in a Copper Cylinder* (1888), Frank Parker Day’s *Rockbound* (1928), where the resources required for the survival of the species are both naturally and culturally mediated, and Margaret Atwood’s *Life Before Man* (1979) all involve an inheritance from Darwinian evolutionary theory. The choices made by characters in such works are represented as to seem cultural, but are often revealed to be biological, premised on the struggle for survival and genetic replication. Such representations suggest that the ideas associated with evolutionary discourse have been present in Canadian literature for some time. It is not until the late twentieth and early twenty-first century, however, that representations of evolutionary theory are used explicitly by Canadian writers. Novels by Michael Wayne, Nicole Brossard, and Paul Quarrington, as well as most of the texts I will be looking at in this study, all involve direct references to evolutionary theory, suggesting that the discourse of evolution has become an important vehicle for the aesthetic representation of ontological and epistemological questions. In general, the late twentieth century and the early twenty-first century have seen a shift towards more explicit uses of science as a narrative device itself.
One of the problems with attempting to map a specific Darwinian influence on Canadian literature, as opposed to pre-Darwinian ideas concerning linear progress and growth, or post-Darwinian social Darwinism, is that, as George Levine has stated, there have been numerous interpretations of Darwin’s works, and “[t]he contingencies of history and the peculiarities of those who interpret ultimately determine the way Darwin’s ideas are interpreted” (Darwin, 21). Levine argues that Darwinian theory can be shaped to conform to different sides of various binary social structures and perspectives, from the secular and religious, to the extreme right and left of political ideologies. However, he also notes that “[w]hichever social interpretation gets chosen, there is one thing certain about Darwin’s theory, ... it unequivocally and unarguably gave support to the idea that the fundamental elements of life, and particularly of human life, are explicable in terms of natural processes” (Darwin, 21). Levine’s goal is to discover in Darwin a secular way of perceiving the world along the lines of an epistemology that does not require a metaphysical creator, yet his analysis raises the problem of undertaking any analysis of evolutionary theory: who is using the theory and for what reasons? As most of the novels in this study will show, representations of science in fictional narratives almost always bring about the question of ethics in relation to how science is used.

Science may not be the backdrop to the forward momentum of Canada as a nation, yet it is a discourse invested in the desires and fears that produce policies of inclusion, or exclusion, in relation to race, gender, or class identities. Canada’s growth as
a nation has been directly related to the Enlightenment’s teleological movement so bound up with reason, technology, and knowledge. All of these are expressed in postmodernism as the breakdown of narratives of linear progress; the absence of purpose that secularism invokes can be directly related to the absence of the teleological growth towards complexity in evolutionary thinking. As Gillian Beer notes in Open Fields, one of the problems inherent in both science and literature is the implied teleology of time and space: “The enterprises of scientist and of writer both act out the paradox that narrative implies teleology even when its argument denies it” (165). Wright offers an example of Beer’s theory, in a chapter entitled “You Call This God?” in his work NonZero: The original meaning of the word “evolution” was “unfolding” or “unrolling” – as in, the unrolling of an ancient scroll to get to the end of the story. There is something to be said for this long-lost sense of the word. Though neither biological nor cultural evolution is scripted, inexorable in the way that a written narrative is inexorable, both have direction – even, I’ve argued, a direction suggestive of purpose, of telos. The unfolding of life on this planet may be a story with a point. (318)

Here we can see sociobiology’s attack on “academic orthodoxy” that Wright mentions: sociobiology reinvests life with a purpose based on the genetic units of human evolution, in a way analogous to the unfolding of literature, but unburdened by the teleologies of human cultural institutions such as religion or nationalism. Biological materialism and the unit of the gene become the predominant answer to questions of how culture is
formed, shared, and altered. Ricci’s novel takes a different approach, one more closely related to Beer’s analysis of non-teleological growth, by producing a non-linear narrative arc. Ricci’s narrative discontinuities trouble the sociobiological interpretation of human culture by representing processes of cultural adaptation as highly complex interactions that are not easily reduced to one universal law.

*The Origin of Species* is clearly the most ambitious of Canadian literary texts to deal explicitly with evolutionary theory. Through its narrative of postmodern evolutionary discourse it investigates the politics of difference in relation to Canadian nationalism, sexuality, class, and race. Taking its title from Charles Darwin’s seminal work, *On the Origin of Species*, it constructs a world in which characters are faced with important social decisions in environments bound by various theories of evolution and postmodern theories of social constructionism. Ricci’s work raises questions pertaining to the relationships between cultural theory and evolution by having the characters engage in activity within a seemingly hostile “red in tooth and claw” environment. The question to ask of Ricci’s text is not so much whether it is a truthful account of Darwinian evolution, but, rather, what the text says about the problematic relationship between culture and nature, biology and society, and science and literature. Set in Montreal, the novel inquires, for instance, into the significance of urban apartments as a cultural product used to reduce human subjects to passive agents in the political process. This brings to mind Herbert Marcuse’s ideas in *One-Dimensional Man* (1964), a text that also divides the sciences and arts at the point at which technological evolution surpasses the
necessary requirements of the biological human body. Marcuse argues that truth is itself a form of ethical engagement with the world, and that the epistemological search for truth, in whatever form, is inevitably ethical:

Inasmuch as the struggle for truth “saves” reality from destruction, truth commits and engages human existence. It is the essentially human project. If man has learned to see and know what really is, he will act in accordance with truth. Epistemology is in itself ethics, and ethics is epistemology. (125; original emphasis)

The search for an absolute truth becomes embedded in the political and social ways in which human beings interact on a larger scale. This is where postmodern thought and scientific rationality become embroiled in a back-and-forth struggle between universal law and individual belief. As I will argue in later chapters, ethics, science, and literature are all involved in an ongoing reshaping of the cultural fabric.

Ricci’s Origin involves a multi-layered narrative constructed through a fragmented timeline that questions the relationship of cause and effect from multiple perspectives in order to produce a disjunction between what can be considered the “natural” and “cultural” forces of evolutionary theory and poststructuralist theory. Such a structure, which is in itself neither original nor necessarily postmodern, allows for the examination of the particulars of social and biological evolution revolving around opposing epistemological paradigms, and theoretical perspectives. The main narrative is focalized through the character of Alex Fratarcangeli, a PhD candidate at Concordia
University in Montreal, whose thesis topic involves a “way to bring the arts and sciences together [...] a sort of Grand Unified Theory” (6). But Alex is struggling to complete his dissertation, as he has been interrupted by a number of events that evoke questions of biology, technology, science, and knowledge. Alex comes to believes that “His original notion, of finding a way to link evolutionary theory to theories of narrative, had foundered, largely because of his almost total lack of grounding in the sciences” (9). Instead of producing an original thesis on the consilience of multi-disciplinary theories, Alex is left dealing with “overworked territory like social Darwinism” (9). Ricci depicts how ruptures of violence, disease, and politics produce a world in which a form of cultural Darwinism grounded in biological essentialism seems to be the normative explanation for human action. Through Alex’s attempt to discover the relationship between the seemingly disassociated epistemologies of the sciences and the arts, these ruptures shape a critique of scientific rationality and human existence in late-capitalist consumer society.

Alex exemplifies the intellectual division between the sciences and the humanities at the paradigmatic shift of what Wright claims his work is mostly interested in: “a new science” (Moral Animal, 11). Alex forces the reader to question multiple aspects of the human mind and epistemological interpretations of human behaviour because he is contradictory in most of his choices and actions. He represents a sort of “Everyman” in relation to the psychological, social, and biological characteristics of his existence considered through a sociobiological lens. Wright’s work is interested in the political
aspect of a Darwinian ethics, integrating problems of morality, social behaviour, the human animal, and political control in a web of theoretical possibilities for understanding why humans behave the way they do, and under what circumstances. Ricci’s novel incorporates the same types of linkages, questioning sociobiology while investigating problems of local and global politics, morality, social behaviour, and biological influences.

*The Origin of Species* is bounded by a specific interdisciplinary approach to evolution that is based on a psychological investigation of human motivation. Wright’s view of evolution can be summed up in the questions he puts forward in his work, and the answers he immediately proposes:

Can a Darwinian understanding of human nature help people reach their goals in life? Indeed, can it help them choose their goals? Can it help distinguish between practical and impractical goals? More profoundly, can it help in deciding which goals are worthy? That is, does knowing how evolution has shaped our basic moral impulses help us decide which impulses we should consider legitimate?

The answers, in my opinion, are: yes, yes, yes, yes, and, finally, yes.

*(Moral Animal, 10)*

Wright suggests that anyone who disagrees with his answers confuses Darwinism as a biological process that has produced an adaptation for psychological traits and ethical imperatives with the theory of social Darwinism. I, however, find the problem lies more with his vague terminology, which is meant to replace other psychology-based ethical...
arguments in favour of evolutionary ones. What does it mean to have a “legitimate” impulse? Who decides what is “worthy” in relation to future evolutionary possibilities that we cannot predict in advance? As Elizabeth Grosz argues,

Darwinian evolutionary theory is fundamentally retrospective, reconstructive, piecing together fragments to provide a narrative or story that is already over: given what exists now, we may be able to provide links and tracks that describe an evolutionary path, or even, in the most hypothetical forms, the evolution of all of life from its simplest origins. But given a moment in this history, it is impossible to predict what will follow, what will befall a particular trend or direction, let alone a particular individual, what will emerge from a particular encounter, how natural selection will effect individual variation, and how individual variation will respond to and transform natural selection. (*Time Travels*, 38-39)

Unlike Grosz’s, Wright’s theory of evolution falls into a naturalistic fallacy by presupposing that our understanding of past adaptations can lead us to future predictions about normative ethical answers. Gillian Beer points out the problem of reading human linear progress into evolutionary theory by explaining the ways in which the notion of the “survival of the fittest” has been misread:

The ‘survival of the fittest’ seems at first sight one of the few single-direction stories in evolutionary thought – but its tautological structure makes of it a satire on organismism. It is (with a vengeance) as Coleridge said narrative should be, a
serpent with its tail in its mouth. The survival of the fittest means simply the survival of those most fitted to survive; this implies not distinction, nor fullest development, but aptness to the current demands of their environment – and these demands may be for deviousness, blueness, aggression, passivity, long arms, or some other random quality. So chance re-enters the potentially deterministic organisation of evolutionary narrative. (Darwin’s Plots, 109)

Grosz and Beer’s responses undermine Wright’s thesis and fundamentally devastate the notion of linear intentionality in nature, or the human capability of predicting future evolutionary models of adaptation to the environment.

Looking at the connection between Ricci’s novel and Wright’s work, one can see how the fragmented structure produces the narrative of the past that Grosz considers the fundamental aspect of Darwinian theory. In explaining how sociobiology differs from past readings of Darwinian theory, Wright makes a claim for a new model of understanding the human:

Evolutionary theory, after all, has a long and largely sordid history of application to human affairs. After being mingled with political philosophy around the turn of the century to form the vague ideology known as “social Darwinism,” it played into the hands of racists, fascists, and the most heartless sort of capitalists. It also, around that time, spawned some simplistic ideas about the hereditary basis of behavior – ideas that, conveniently, fed these very political misuses of Darwinism. (Moral Animal, 7)

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The issues associated with Darwinism that Wright mentions are made explicit in *The Origin of Species* through cultural representations of the division between the French and English in Montreal, the Chernobyl disaster, immigration problems, the war in El Salvador, neo-Nazism, communism, capitalism, AIDS, multiple sclerosis, sadomasochism, rape, xenophobia, racism, and homophobia. Produced from this mix of local and global politics are social bodies that are acted upon by what could be termed a cultural evolutionary unfolding. The building in which Alex lives becomes an “ailing body” (155), and the earth, or the northern hemisphere at least, becomes a larger body faced with the fallout of the Chernobyl nuclear disaster. On a more local level are Esther’s body, which is slowly disintegrating from MS, and Félix’s body, which Alex believes may have AIDS, marking him, in Alex’s eyes, as diseased, and deadly.

*The Origin of Species* portrays Alex’s reality as a negotiation between sociobiology as scientific, and thus truthful, answer to human nature and human culture on the one hand and the problems of truth that arise from postmodern thought on the other. Are social processes acted upon in the same way evolution acts on the biological bodies of organic matter? For Wright, the answer is, once again, a resounding yes. He follows E. O. Wilson and Richard Dawkins in believing in cultural evolution as a hyper-intensified form of biological evolution. It is more difficult to make a truth claim about Alex’s version of consilience between nature and culture, however. Although the narrative itself does investigate the possibility of such a connection, the interdisciplinary nature of Alex’s literary analysis creates a divide between a truly sociobiological model,
and a number of other possible readings of cultural evolution: Marxist, capitalist, environmentalist, Freudian, Derridean, feminist.

Alex’s dissertation, which is written during the latter half of the 1980s, arises directly out of sociobiology’s textbook definition of consilience between the sciences and humanities:

The real breakthrough, though, had come when he had finally braved an excursion into the natural sciences and stumbled upon the sociobiologists: here was a whole netherworld of unabashed trend-buckers, people who put the words “science” and “art” in the same sentence without fearing they would rend the very fabric of the cosmos. It was all total anathema to the literary purists, insofar as they even deigned to notice anything so reactionary – it was just biological determinism writ large, they said, the worst sort of regression, a heartbeat away from social Darwinism and eugenics – but that didn’t mean it wasn’t true. (398)

Alex seems to agree with Wright that Darwin’s “dangerous idea” allows for possible explanations of human behaviour, which may make us uncomfortable about who we are, which may go against any beliefs one has about egalitarianism and social equality, and which, more importantly, go against some of the more contentious theories used by humanities scholars, and which can be lumped together for the purposes of this novel as “postmodernism.” But there is a problem with practitioners of sociobiology placing the terms “art” and “science” together. Typically, sociobiologists discuss art, or culture, as having arisen from the ancestral evolutionary environment through changes in human
genetics, whether by natural selection or through environmental factors. Biological, genetic evolution, according to the reductionist materialist concepts of sociobiology, is the seat of human culture, and if we are to understand the behaviour of human beings and their cultural artefacts, we must look for answers to human behaviour through a biological analysis.

Alex’s thesis is similarly based on the idea of cultural artefacts acting in the same way as genes (biological), or, as Dawkins calls them, memes (cultural): “Narrative, like everything else, was a strategy. Get it right, and, like Scheherazade, you survived” (401). The socially constructed narrative for Alex is actually an evolutionary survival strategy that arose out of the ancestral environment, or perhaps even further back in the primordial beginnings of the universe, in pre-conscious, pre-linguistic human-animal genetics. This is where postmodernism and evolutionary psychology truly collide, where the most contentious elements of cultural evolution are played out in scholarly debate over the nature/culture divide. Alex’s thesis is just such a contentious reading. Social constructionism and biological evolution are brought together to critique the social production of knowledge itself. The status quo is undermined by looking beyond normative interpretations of human nature, even if those normative interpretations are socially progressive.

Wright argues: “Altruism, compassion, empathy, love, conscience, the sense of justice – all of these things, the things that hold society together, the things that allow our species to think so highly of itself, can now confidently be said to have a firm genetic
basis” (*Moral Animal*, 12). There is clearly something missing in this analysis of moral behaviour, such as the many distinctions between human instinct, consciousness, behaviour, and social choices. Wright does touch on the distinction between feelings and behaviours, but this does not necessarily explain the distinction between the selfish (or selfless) gene and modern moral behaviour in a complex post-industrial society. Philip Kitcher, who strongly renounces the methodologies and theories of sociobiology, points out: “We know, in a dim and unsystematic way, that features of child rearing and of cultural history can make profound differences in the behavior of individual human beings. What eludes us is the detail, the behavioral counterpart to the adjustments of pH or the nitrogen content” (*Vaulting Ambition*, 29). Kitcher’s overall argument is that sociobiologists and their counterparts make large leaps between sets of data to produce exciting, but scientifically inaccurate theories of human behaviour.

In Ricci’s novel, Darwinian origins are placed alongside critical theory discourses within a narrative that examines how one individual interprets seemingly random events in his life. As an example of one of the critical discourses used by literary scholars to determine “origins” in the text, Alex discusses his visit to his Freudian therapist, Dr. Klein, who tells Alex that one reason for his spending an entire session discussing a dusty old shoe rack his father had built is possibly that he is “still blaming [his] father for the fact that [he was] poor” (20). Klein’s psychoanalytic diagnosis of cause and effect regarding Alex’s memory of the shoe rack is then undermined by Alex’s belief that Klein is too young to be of help to him, and by Alex’s own intellectualized summary of his
situation. He responds to Klein not by articulating his own beliefs, and thus sharing his feelings, as would be appropriate to the situation, but by thinking to himself:

Wrong, wrong, wrong[.] … Why did everything have to go back to some childish sense of grievance? Surely it had to be possible to look beyond your little Oedipal struggles to the occasional bigger question – about the way things were in the world, for instance, and what they might mean. (20)

The way things actually are in Alex’s world are quite chaotic. The text opens with Alex telling a neighbor, Esther, who he discovers has multiple sclerosis, to be cautious of the potentially toxic rain from the recent Chernobyl disaster. Alex’s personal psychoanalytic interpretation of his behaviour and beliefs is thus set off against cultural events linked with scientific knowledge (nuclear power), and based on his fears of random chaotic events (radiation poisoning).

The question of connectivity between cultural and biological evolution is exactly what Ricci’s text confronts, and it thus requires an interpretation open to uncomfortable questions about human nature. Elizabeth Grosz argues in *Time Travels*:

It is not clear that Darwin wanted to differentiate natural and cultural systems in his understanding of the differential selection of surviving variation. Evolution functions through reproduction, variation, and natural selection: as such, it should also, in principle, be able to explain the function of cultural phenomena such as languages, technologies, and social practices as readily as it can natural systems or biological species. (26)
This is about as controversial a statement one can make about evolutionary theory and its connection to human and non-human culture, and is very close to Wright’s argument about human behaviour in *The Moral Animal*. However, Grosz does not reduce culture to the gene, placing more emphasis on how Darwinian theory can help us understand a more complex reading of cultural evolution. Numerous scholars on both sides of the various culture wars have raised questions concerning the connections between nature and culture, and the short, if not violent, history of social Darwinism has left such questions closed off in a politically correct climate that sees ideas of universal laws as not only invalid but totalitarian. Grosz understands the possibility that such questioning could be construed as conservative and backward-looking, and she premises her argument by stating: “[Darwin’s] refusal to restrict the forces of evolution to biological or natural categories and activities, while deeply resented and questioned by some feminists, may prove to be part of the strength of his understanding, and its value for feminist and cultural theory” (*Time Travels*, 27). In a similar vein, Ricci’s narrative places Alex in a divided position between possible theoretical models for questions related to the social and cultural evolution of the human under such conditions as transhumance, translation, and violence.\(^{12}\) The novel forces the reader to consider whether Darwinian evolutionary theory can say something about cultural evolution, and the connection between science and social constructionism, without reducing Alex to a caricature of the essentialist arguments that arise out of sociobiology.

\(^{12}\) Transhumance is “*the seasonal transfer of grazing animals to different pastures, often over substantial distances*” (*Oxford English Dictionary*).
One of the key questions the text investigates throughout is: what does it mean for a body obviously shaped by biological evolution to also be shaped by cultural forces? An example of this culture/nature question can be seen in Alex’s revulsion towards the free antipasto he is offered at the local Italian restaurant: “Ever since his overexposure to fish in the Galapagos, any kind of seafood and he’d feel his gag reflex kick in” (38). Such a response is neither biologically innate nor culturally produced. Rather, it is a product of an individual experience that makes Alex’s body physically deny him the desire to eat fish. This is not a genetic or cultural response to eating fish. If it were genetic, or biological, Alex’s body would “naturally” believe that fish could be detrimental to his reproductive capabilities. If it were a cultural response, it would be premised on his fears/desires to be part of/separate from the cultural groups in which he lives. But neither of these is what causes Alex’s physical reaction to seafood, which is based on his “overexposure to fish” during an earlier experience.

By moving between the past and the present, and having Alex anticipate future possibilities concerning his sexual life, his dwelling space, his academic work, and his role as a parent, The Origin of Species investigates the effects of seemingly common experiences elevated to life and death scenarios. Time, as represented by the cyclical structure of the text, becomes the link between culture and nature, between the arts and sciences. During an early visit to Dr. Klein, Alex mentions a number of people and experiences whose importance only becomes clear in later sections of the novel:
Eleven minutes remaining. Still enough time, perhaps, to bring up something of import. Ingrid’s letter was the really pressing thing, he knew that; everything else was just noise. … Eight minutes. *Blah, blah, blah.* Liz this and Liz that. What he did not say was the truth: that Liz was not to blame in any way. … Fuck, he thought, fuck, and then, where his mind always bottomed out, *Fucking Desmond.*

(25; original emphasis)

At this point, the reader has not been acquainted with Desmond and Ingrid, the circumstances explained in Ingrid’s letter, and why Liz is not to blame. All of these mysteries become clear through a fragmented narrative that cycles between different time periods, and thus makes connections between all of the characters and events through information relevant only to events at later sections of the novel. Ricci’s narrative foregrounds the temporal aspect of causality because it investigates how evolution can only occur through the unfolding of time. But time is not necessarily universally accepted as just a linear flow from past to present, but also as a space of becoming. Elizabeth Grosz writes in *The Nick of Time*:

> [T]ime is not merely the attribute of a subject, imposed by us on the world: it is a condition of what is living, of matter, of the real, of the universe itself. It is what the universe imposes on us rather than we on it; it is what we find ourselves immersed in, given, as impinging and as enabling as our spatiality. (4)

Here we can see connections between *The Origin of Species* and Joan Thomas’s *Curiosity*, as well as the connection between Grosz and Fabian in their analyses of time.
and its relation to space. Extrapolating from the Deleuzian virtual, Grosz’s analysis of the function of time in evolution helps connect the literary representations of the causal relationships between nature and culture. Like Fabian, Grosz considers time as a space in which difference occurs. Evolution as a physical and material event that occurs because of the nature of time is foregrounded in *The Origin of Species* by Alex’s experiences, and those of the people around him, many of whom are faced with important life and death choices.

Alex is a pivotal foil for the other characters’ struggles. Félix is one such character, a Québécois businessman who hires Alex away from the Berlitz school to help him learn English. Alex makes a number of assumptions about Félix that typically contrast with his own life, and with reality. Because of Félix’s work and his beliefs concerning Québec sovereignty, Alex assumes he is conservative by nature, going so far as “waiting for Félix to slip up, for the true fascist to show himself beneath the cultured façade” (388). When Alex runs into Félix “in the gay ghetto, of all places” (388), Alex’s friend Louie tells him “[Félix] is a dead man” (389). Asking Louie what he means by this, Louie explains that Félix has “got it. The virus. The bug. You can smell it” (389). Alex believes this may be true, based solely on Louie’s radically subjective interpretation of Félix’s medical condition, and begins “wondering at Félix’s intentions” (390) when invited to a dinner party at Félix’s house. While cooking dinner Félix accidentally cuts his finger with a knife: “At the sight of the blood Alex instinctively started back. It puddled on the cutting board before Félix managed to stanch it with a dishtowel. André had
caught Alex’s reaction” (391). That Alex “instinctively start[s] back” heightens the tension between Alex’s biological, or physical, reaction and his cultural reaction. Alex’s relationship with Félix moves between his fear of the taint of the possibly gay, possibly sick man, and his desire to escape into a middle-class culture of stability, safety, and friendship. Darwin’s argument in *The Descent of Man* that “No doubt it is often difficult to distinguish between the power of reason and that of instinct” (75) brings to mind Wright’s interpretation of evolution as having produced a social blindness about the relationship between our beliefs and our actions. There is also a connection here between Alex’s reaction and his belief that the answers to the big questions sociobiology asks about human nature may make one uncomfortable, “but that didn’t mean [they weren’t] true” (398). In Alex’s instinctual response to Félix’s blood the truth of the matter is complicated by Louie’s possible misdiagnosis, Alex’s knowledge of HIV, and the social settings in which the events take place, such as the gay bar in which Alex meets Félix: “What really bothered him, what had left the bitterest taste, was how he had recoiled like the worst sort of homophobe when Félix had cut himself. That André had caught him doing it” (395). There is a disconnect here between how Alex thinks he would react, and how he actually does react. This disconnect suggests that Alex’s instincts of self-preservation are not based in truth, as the social events that lead to the situation are all only possibly true statements about reality. From the perspective of sociobiology, Alex’s reaction would have been produced from an evolutionary genetic impulse that allows Alex to preserve his life in order to pass on his genes at a later date. From a
postmodernist perspective one could argue that it is the social circumstances that have produced an instinctual reaction in Alex. It is in this blending of possible truths that Ricci’s novel seems to question our ability to recognize a difference between the two interpretations.

*The Origin of Species* cuts away the lines between the metaphysical and the physical to reduce Alex to an instinctual being reacting to events and only later analyzing his actions through theoretical frameworks. Alex’s dissertation supervisor, Jiri Novak, explains how Alex’s thesis is a similar break from the metaphysical: “When you think of someone like Derrida or Lacan, they’re not really doing anything different than you are. They’re just drawing a shape in the air, that’s all. But yours has an actual physical base” (173). In a similar way, Alex articulates that his dissertation is about the “idea that there’s a whole structure in our minds that controls how we think. Except instead of language or binary opposites or something like that, it’s genetic” (75). Both Jiri and Alex see his dissertation as being about a historical reconnection of language to the material world. Robert Keefe argues in his article “Literati, Language, and Darwinism” that Darwin’s writings, and in particular *The Descent of Man*, worked to sever the relationship between a metaphysical grounding of language and a physical grounding of language that the Romantics had tried so hard to maintain:

By returning to the subversive linguistics of French skeptical thought, Darwin took away that Romantic linguistic ground. With a single brilliant stroke, he delivered a telling blow to both Carlyle’s linguistic transcendentalism and Mill’s
linguistic materialism. He cut away the lines to heaven and the external world, leaving only the tether to human instinct. (132)

As language and nature are so vital to Alex’s own intellectual project and his worldview, his instincts come to express the disconnections between what he believes and how he reacts. Alex’s interpretation of reality serves as a microcosm of the larger social processes that the text explores, suggesting that both biological and social constructionist interpretations of human nature can only explain parts of a whole, and are unable to answer the larger question of what makes people behave the way they do. The narrator explains that in writing his dissertation Alex “wanted something a little less metaphysical [than literary theory], something that might take account of Darwin’s bony haunch, otherwise what was the point? Somewhere in literature’s dark beginnings there had to be real blood on the page, there had to be real bodies being sacrificed or being saved” (82). Alex’s bridging of literature and science allows biology and culture to be seen as interrelated and not in a binary opposition to each other. In other words, the genetic determinism of sociobiology collapses when Alex’s reactions are shown to be based on false beliefs about the world, and social constructionism fails to explain the nature of Esther’s illness or his reaction to the sight of Félix’s blood.

Because the text focalizes on Alex’s perspective, he is obviously the main conduit for the study of evolutionary discourse in the novel. Yet because of the text’s fragmented construction, any analysis of Alex is fraught with possible misreadings of his ontological becomings. Alex’s relationship with Ingrid, a Swedish woman he meets while traveling
one summer in Europe, and who informs him a number of years later that she has given
birth to his child, is an example of how the narrative allows for events to build in concert
with other events, and thus explain how cause and effect work in non-linear time:

All that seemed far from him now, that summer with Ingrid. He’d lived a lifetime
in a matter of weeks, from child to man, then had spent all his time since
regressing: he was slightly older now than Ingrid had been when he’d first met
her, yet he felt less wise, less grown, than he’d felt then, still awaiting some
beginning to his life that would set it on course. Maybe he’d missed his chance –
if he had stayed, he might have saved himself all his false starts. (67)

Time in this passage is foregrounded by its backward-looking focus, but Alex’s memory
of the past is also placed in relation to distance, growth, knowledge, and truth. Alex may
be growing older in linear time, but he recognizes the disjunction between aging and
growth. Alex regresses as he ages, from a point at which he once “knew” to a later point
at which his self-knowledge has become degraded.

Such passages exemplify the search for origins that permeates the text. In its
cyclical temporal narrative, and in Alex’s personal life, the attempt to produce a cause
and effect analysis is both sought after and frustrated. The uncomfortable feeling brought
about by sociobiological theories of human nature can also be seen in Alex’s worldview.
Alex may believe in a leftist, progressive ideology that is related to his position as a
humanist scholar living in a secular society founded on the belief in human rights and
equality for all; he may believe in multiculturalism and altruism, but, more often than not,
Alex’s actual reactions are explicitly sexist, racist, homophobic, and elitist. Ricci seems to create a distinction between one’s cultural beliefs and one’s actual instinctual (genetic? biological?) reactions to specific situations that are social in nature. Alex is not represented as a static figure reduced to an ever-present cultural worldview, but is what Henri Bergson would see as a being in becoming, a figure whose present circumstances are shaped by the past, or, in Bergson’s terms, the actual of Alex’s life is premised on the virtual of his past, or as Alex considers in relation to Darwinian evolution, “All forms were fluid, each contained part of the last and the next” (397).

Alex is thus not represented as a blank slate upon which culture enacts itself. As the novel unfolds, Alex’s experiences shape his beliefs about the world and his interpretations of the past. The separation of Alex’s behaviours from his thoughts, his spoken words from his beliefs, creates a space between thought and language, nature and culture. His instinctual reaction to Félix’s blood is seen as a homophobic reaction by André, but for Alex it is based on the instinctual desire for self-preservation. This idea of self-preservation is underscored in the novel by Jiri’s experience in communist Czechoslovakia. Jiri’s father, Alex is told by another Czech exile, testified against eleven men, all of whom were executed because of his testimony: “All innocent, of course, but his father did it for Jiri. For his son. How do you think Jiri got his education?” (408). The links between cause and effect become associated with genetic replication as much as they are about social and political expediencies that shape how genetic replication is even possible. Alex may feel that his time with Ingrid is simply a sexual adventure, but the
birth of their child produces a more complex understanding of sexual gratification that is not based on personal desires or sexual fantasies. Alex’s instinctual responses are predicated on his beliefs at the time an isolated event occurs to him. In this way, instinct is socialized into event-based experiences. The natural and the cultural become enmeshed in a model of contradictory, yet integrated aspects of Alex’s behaviour. Alex does not choose to have instinctual responses to events any more than he chooses his body.

Alex has a number of relationships with women, each of which suggest differing responses to questions about the social and the biological, human behaviour and natural selection. Esther wants a sexual relationship with him, but he is revolted by her disease (97). Ingrid is older than Alex by about ten years and is the mother of his child. María, a Salvadoran refugee and student of Alex’s, is an idealized object of his sexual desires. Alex is attracted to her but her beauty and intelligence tend to make him feel infantilized. Amanda, with whom Alex has a sexual relationship while still involved with his partner Liz, commits suicide. Alex’s feeling of guilt over her death are parallel with his feelings of guilt over the death of Desmond, the researcher he meets in the Galapagos Islands, who dies when he falls from the boat they have chartered. Finally, Liz is one of Alex’s main partners, and the one about whom he consistently thinks during times of crisis. The devolution of Alex and Liz’s relationship leads to what must be considered rape by Alex, a “feeling” he himself acknowledges has taken place because of the way in which their sexual experimentation leads to progressively ever more uncomfortable experiences that culminate in non-consensual intercourse. Alex does not feel that he is the type of person
to commit rape, but his actions tell another story in relation to the ethics involved in the encounter:

He still had his pants around his ankles when he rolled off her onto the floor.

His head was spinning.

“Fuck.” He hung his head between his knees. “Fuck.”

He wouldn’t look at her. He was trying not to think, was waiting to see how she would cast the thing, waiting to see what it had been. (119)

The socially sanctioned legal definition of rape is questioned with regard to Alex’s experimenting with aggressive sex with Liz. However unpleasant it may be to consider Alex’s sexual behaviour as a natural phenomenon, both Alex and Liz do consider it to be such in their sexual experimentation, up until the last encounter, when both begin to question the nature of their actions. Ricci’s text takes on a most political interpretation of instinctual behaviour in this episode, producing a difficult reading of sexual relationships with regard to moral behaviour.

Along with sexuality as a human process that problematizes the cultural and natural interpretation of human behaviour, there are also a number of other threads that connect with Alex’s vision of the divisions between nature and culture, science and literature, and mind and body. The main subsidiary threads are: 1) the politics of the building Alex lives in; 2) the eruption of political violence in El Salvador; 3) the body politics of Félix and Esther; 4) the nuclear disaster at Chernobyl; 5) the attempt by Desmond to produce false evidence for his scientific theory of evolution. All of these
threads are distinct in the narrative, yet they are all closely aligned with Alex’s interpretation of evolution. Representing specific elements of the nature/culture divide Alex attempts to bridge, they produce a reading of evolution in line with Grosz’s analysis:

The struggle for existence is precisely that which induces the production of ever more viable and successful strategies, strategies whose success can be measured only by the degree to which they induce transformation in the criteria by which natural selection functions. Evolution and growth, in nature as in culture, are precisely about overcoming what has happened to the individual through the history, memory, and innovation open to that individual and his or her group. This is true of the survival of species as much as it is of the survival of languages and of political strategies and positions, historical events, and memories. Darwin makes clear that self-overcoming is incessantly, if slowly, at work in the life of species. Politics is an attempt to mobilize these possibilities of self-overcoming in individuals and groups. The logic by which this self-overcoming occurs is the same for natural as for social forces. (Nick of Time, 89)

The self-overcoming of the Salvadoran rebels is thus connected with the self-overcoming of the housing committee set up in response to the new owners of Alex’s apartment building, who want to raise the rent. Esther’s body is confronted by the desire to survive as much as the political parties of El Salvador, and the Chernobyl accident is as much an
evolutionary rupture as Esther’s degeneration. For as Alex’s dissertation suggests, evolution is closely associated with culture:

> Human roads, as it happens, often follow animal ones, like the ancient transhumance paths of Europe by which early shepherds, following the yearly migrations they saw in the wild, learned to move their domestic flocks between mountain and plain. Again, the narrative predates us. Like Derridean writing, it can be thought of not as belated, as an afterthought, but as originary, before speech, before language itself.

> If narrative predates us, as its traces everywhere in nature suggest, if it is not the product of our self-knowing but perhaps only a means to it, then we must perforce begin to sever the sacred link we have always made between narrative and that seat of all our self-knowing, human consciousness. A booby woos his mate with a story of abundance; a bee dances out a story of food. Whatever line we draw between instinct and awareness does not change that the story is there from the outset, long before there are poets to recite it or scribes to record it. (399-400)

In this passage we can see how *The Origin of Species* investigates evolution as a force that shapes both nature and culture, but one which does not reduce the human to a genetically determined being.

As opposed to the explicit connection represented between these oppositions in Alex’s dissertation, the non-explicit connections in the text between science and
literature, nature and culture, are expressed in Alex’s indecision concerning the politics of evolution, and the evolution of politics. Jean-François Lyotard writes in relation to science and postmodernism:

Postmodern science – by concerning itself with such things as undecidables, the limits of precise control, conflicts characterized by incomplete information, “fracta,” catastrophes, and pragmatic paradoxes – is theorizing its own evolution as discontinuous, catastrophic, nonrectifiable, and paradoxical. It is changing the meaning of the word knowledge, while expressing how such a change can take place. It is producing not the known, but the unknown. (*Postmodern Condition*, 60; original emphasis)

*The Origin of Species* intersects with a larger debate about ontology and epistemology through Alex as a figure of indecision. Alex’s life exemplifies the discontinuous, the catastrophic, and the limits of control, all of which are characterized by opposing interpretations of causality.

Lyotard’s critique concerns postmodern science specifically, but, like Herbert Marcuse’s description in *One-Dimensional Man* of how technology comes to dominate the epistemological possibilities of human thought, it also speaks to the cultural, social, and political frameworks that allow science to maintain its position of authority in a late-capitalist environment. In Ricci’s *Origin* such a politics of science is represented as a teleological accumulation of knowledge, power, and technology. Such a reading of evolution is based on the misreading of Darwin by late nineteenth-century philosophers,
ethnologists, zoologists, theologians, and others who struggled with the theologically-based ethical understanding of the unfolding and progression of humans, technology, and civilization. Ricci’s text opens with the rupture that was the Chernobyl disaster, which took place on April 27th 1986, in what was then known as the Ukrainian Soviet Socialist Republic. This technological rupture in the history of science becomes, in the text, a moment of origin from which all of Alex’s life unfolds. The narrative, however, does not create a linear understanding of cause and effect but places the Chernobyl disaster within an epistemological rupture of becoming associated with Alex. The story begins with an event that has changed our present, and the possibilities of the future. In a sense, the opening of the text erases the past in that the rupture of scientific knowledge produced from the meltdown of a nuclear facility has produced what Grosz would call a “nick” in time of human evolutionary thought in relation to Alex.

By cyclically moving through Alex’s past and present, the narrative produces a network of connections between such ruptures as environmental disaster, sickness, death, and birth, not so much to produce an evolutionary cause and effect analysis as to critique normative understandings of cultural evolution and its possibilities of becoming. Grosz argues that

History, both natural and cultural history, is the accumulation of a past that preempts the paths but doesn’t predetermine them, that generates the future. The future is built on what of the past has survived into the present and with the virtual or potential left in those that do not survive; there is no other future, for Darwin,
than that prefigured and made possible by but not contained in the terms of the present. The future brings what has been led up to but has never been defined by the past. Darwin makes the concept of emergence central not only to his conception of life, but to all of its effects, its products. *(Nick of Time, 96)*

Alex’s past does not produce an understanding of the present, although Alex does attempt to do so using Freudian psychoanalytic methods, which, according to Wright, have been superseded by Darwinian genetic models of psychology.

Alex’s thesis, like Wright’s, is based on a belief in the emergence of human behaviours from the ancestral environment. In particular, Alex argues that transhumance, the movement of peoples from one area to another on paths created by the movement of animals from one elevation to another, is symbolic of a human narrative device. It is his belief that narrative arises directly from the use of such paths in a theoretical move between early human movement and later human culture. Couched in Derridean poststructuralist language, Alex’s theory is meant to create a link among past human action, genetic evolution, and present day human behaviour. Rather than being what Jiri calls a “worm’s-eye view of literature” (404), it is a bird’s eye view of history, one which looks upon events taking place between one period and another as having produced changes in the genetic makeup of individuals without being able to actually see those changes, or prove they exist, like a just-so story. In other words, the focus of Alex’s theory on the material foundation of language expresses the possibility of cultural
connections between science and literature while troubling the sociobiological reduction of culture to the level of the gene.

The novel’s complex interplay between science and literature, and biology and culture, points out the difficulty in making truth claims about the world based on a single interpretation. Consider Alex’s more mature beliefs:

Earth at the centre; sun to the side. Little circles and circles within circles to explain the anomalies. That had been the Ptolemaic World, all this figuring and working out just to buttress people’s pigheaded assumptions, as if knowledge was always merely the handmaiden to belief. Who knew what circles they were drawing now, to explain away what they had misunderstood. It was all darkness and ignorance, Alex figured, more profound than the human mind could fathom. …

Note: The end point of evolution, if there was one, would be the perfect creature: contradictory impulses resolved, no thoughts, no needs, no rage; able to see through rocks; to survive without eating; to change things by force of will. To live forever. It would be exactly what it had displaced. It would be God. (470)

There is an irony to this passage that suggests a critique of Wright’s sociobiological interpretation of a teleological human evolution. Alex’s idea that human beings would become omnipotent and omniscient if evolution was progressive “displaces” past understandings of human existence. Science, in other words, returns to questions of religion. My epigraph from Charles Taylor argues that it is difficult to make singular
theories about human nature, that, in fact, there is no single theory that can explain human behaviour. The complexity of human behaviour requires a multiple perspective understanding that refuses to privilege theories that want to distill biology, culture, psychology, and nature down to something as simple as the genetic unit, without considering the myriad other living processes that go into making life on Earth. Wright argues that his work is not based on genetic determinism because the environment also plays a role in human social life. However, Wright does not take into account how the human mind works to produce non-material interpretations of the world that are creative, imaginative, and outside scientific rationality:

Of course, you can argue with the proposition that all we are is knobs and tunings, genes and environment. You can insist that there’s something …something more. But if you try to visualize the form this something would take, or articulate it clearly, you’ll find the task impossible, for any force that is not in the genes or the environment is outside of physical reality as we perceive it. It’s beyond scientific discourse. (Moral Animal, 348; original emphasis)

The reduction of all human social activity to genes and environment cancels out all mythic, fictional, and imaginative human creative processes that produce social structures that are not materially based in reality. Religion is one such example, literature and art another. Ricci may acknowledge Wright’s work in The Origin of Species, but it seems clear that Ricci’s own work troubles simplistic readings of human nature and the complex
social, material, biological processes involved with the role of genetic evolution in producing human culture.
Chapter 4

Jeffrey Moore’s *The Memory Artists*: Synaesthesia and the Science and Art of Memory

When we pass from pure perception to memory, we definitely abandon matter for spirit.
*Matter and Memory*, Henri Bergson

We must remember that at bottom the generalisations of science or, in common parlance, the laws of nature are merely hypotheses devised to explain that ever-shifting phantasmagoria of thought which we dignify with the high-sounding names of the world and the universe.
*The Golden Bough*, James George Frazer

What species and languages share is a reliance on the concept of genealogy. Both are fundamentally temporal processes, capable only of retrospective rather than prospective analysis, which involve the hypothetical reconstruction of a past that has left only fragmented and decaying traces or remnants, modes in which order, timing, and precedence are irreducible factors, in which historicity and the movement forward of time are necessary considerations.
*The Nick of Time*, Elizabeth Grosz

Jeffrey Moore’s *The Memory Artists* (2004) is about human memory and its role in the creative and epistemological processes related to conscious existence, as well as human memory set within scientific, social, and political readings of disease, aging, and medicalization. Art, memory, and science are interwoven in a way that disrupts linear
readings of progress through paratextual devices that force the reader to move between disjointed and fragmented periods of time, space, and identities of the characters, and by doing so (re)construct events out of multiple possible readings. Moore’s focus on how memory works to create an understanding of both the past and the present functions as a critique of ontological and epistemological issues of truth, event, body, and mind. The text uses a number of biological conditions as counterpoints to the understanding of memory: synaesthesia and hypermnesia and Alzheimer’s disease and amnesia. This binary opposition between hyper-memory and memory loss is expressed via the medical industry and the politics of science, medicine, and care, but it also encompasses a philosophical understanding of human existence and ethical questions concerning consciousness and the construction of the self through memory.

The novel is a pastiche of various narrative devices, genres, and media that create a seemingly fluid, yet actually disconnected, understanding of events that take place in Montreal at the turn of the twenty-first century. This patchwork construct is ostensibly the memoirs of the “Neuropsychologist and Professor Emeritus [in the] Department of Experimental Psychology [at the] University of Quebec” (2), Dr. Émile Vorta, who has hired a ghostwriter: “The professional writer-translator assigned to recount [this] story has combined ‘dramatic reconstructions’ with interviews, laboratory notes and diary entries” (1). Vorta explains, in the foreword to his memoirs, that the events are based on “a true story” (1), in a typically postmodern play on authority, authorial intention, and

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13 I use the British spelling of synaesthesia rather than the American “synesthesia,” which is in line with Moore’s use of the term.
factuality. However, because the novel focuses on questions of truth and fiction within an understanding of human memory as a spectrum of possible interpretations, it also brings together these supposed binary oppositions by showing how scientific truths are bound up with authority. By making claims to factuality Vorta’s knowledge of the events that shape the text can be said to be scientific in that the text comes from the authorial and authorized position of the scientist whose work reaches above and beyond the stories of the characters themselves. Vorta’s text, despite its fragmented perspective, is ultimately the master narrative of the multiple interpretations of the characters’ actions, feelings, memories, and motivations. Although the text uses diary entries and other personal documents written by the characters, there is a suggestion that Vorta is the man behind the curtain, witness to, and author of the events themselves despite, and because of, the way in which the text continually creates layers of authorship for the reader to uncover and disentangle.

Noel Burun represents augmented, or hyper-memory in The Memory Artists. Noel’s parents discover his talent for memorization as a child, and take him to see Dr. Vorta where it is discovered that he has synaesthesia. Noel’s gift both enables and impedes him, making it “difficult for Noel to take any course, or hold onto any job” (12). According to the memoir, “[i]f it weren’t for a certain saviour in his life – someone who guided him, wrote letters of recommendation, hired him as a lab assistant, treated him as a son – Noel may have ended up in an asylum. This saviour was Dr. Émile Vorta” (12). Synaesthesia, according to Taber’s Cyclopedic Medical Dictionary, is “[a] sensation in
one area from a sensation applied to another part” or “[a] subjective sensation of a sense other than the one being stimulated. Hearing a sound may also produce the sensation of smell” (“Synesthesia”). *The Memory Artists* details one of the most common synaesthetic experiences, which is to experience colours associated with words. Katherine E. Kickel, in *Novel Notions: Medical Discourse and the Mappings of the Imagination in Eighteenth-Century English Fiction*, offers another account of the term “synaesthesia”:

“Synaesthesia is a Greek word meaning literally ‘union of the senses,’ derived from *syn* meaning ‘union’ and *aesthesis* meaning ‘sensation’” (93). The point here is that one sensation does not replace another sensation for synaesthetes but is added to the existing sense, producing a multi-sensory experience. Noel’s synaesthesia is directly related to his hypermnesia, which is defined as “[a] great ability to remember names, dates, and details [and] [a]n exaggeration of memory involving minute details of a past experience” (“Hypermnesia”). Together, hypermnesia and synaesthesia enable Noel to experience the world through sensorial system that suggests great possibility for enhanced creativity and knowledge.

The representation of memory loss, on the other hand, occurs through Noel’s mother, Stella Burun, and her slow degeneration from Alzheimer’s disease. Alzheimer’s disease is the degeneration of memory, disabling the sufferer to the point of loss of individuality. Stella is told by her doctor to keep a journal to record how her memory is functioning on a day to day basis in order to gauge the effects of Alzheimer’s on her body. As the journal slowly unfolds along with the increasing effects of the disease, the
typewriter ribbon she uses to type it slowly begins to fade. She is, of course, unable to recognize the significance of the fading ribbon. Towards the end of the journal the text becomes barely legible to the reader, having moved from a solid black, to grey, to the eventual near-white of the page, intimating the loss of memory. This loss of colour is clearly in opposition to the brilliant colour panel used to describe Noel’s synaesthesia in the paratextual notes at the back of the novel. The intensity and loss of memory are thus respectively represented as typographic, and thus imagistic, and linguistic, representations of how memory is constructed. The journal, as a medical “device,” and its ability to chart the flow of the disease, becomes entangled in the very nature of the literary narrative. The written word is itself a memory device from which one can reference the past. The fading text signals not only the unfolding of the disease in Stella, but also the symbolic erasing of the past as a way of knowing the present. This symbolic loss of the past is represented in the novel as the search for a medical answer to Stella’s condition, bridging the practice of science with the written literary tradition.

Stella’s journal is just one device among many in Moore’s text, which includes footnotes, newspaper articles, colour illustrations of Noel’s synaesthesia chart, chemical compound diagrams, Noel’s diary, and a rewritten chapter from Noel’s friend Norval Blaquièr’s award-winning novel Unmotivated Steps, all of which are subsumed under Vorta’s “memoir.” The memoir is obviously crowded and confused by these multiple perspectives, essentially playing on the impossibility of memory to completely reconstruct events. Vorta’s notes are often attacks on the very narrative he has produced,
as he allows other people’s perspectives to exist supposedly unedited in his memoir.

When one of Vorta’s patients describes the doctor’s physical stature, for instance, Vorta’s note counters the description: “Can 5’8½” be considered ‘dwarfish?’” (314). Some of Vorta’s other attempts to produce a truthful explanation of events include him arguing that “I have never used chimpanzees in my research” (300); “I have never ‘chemically whitened’ my beard” (304), and, in note 33, “I am not using chloral or chloral hydrate in any of my studies, either for amnesia or brain cancer” (308). The tone of the notes produces a Nabokovian response to the narrative itself, and indeed Vorta notes that Nabokov was himself a synaesthete, and “Nabokov’s parents, wife and son, interestingly enough, were all synaesthetes” (311).

The nod to Nabokov is more than just a way to associate synaesthesia with art. It is a central connection linking poets, novelists, and artists to the field of science.¹⁴ Numerous other synaesthetic artists, musicians, and writers are mentioned throughout the novel, but more importantly, quotes and epigrams from poems and novels are used throughout the novel both to bolster scientific claims and to discover a cure for Alzheimer’s disease by looking at ways in which writers have historically and artistically

¹⁴ Interestingly, Nabokov has recently been acknowledged for his scientific work as an authority on Lepidoptera, due to recent findings in genetics that have helped prove one of his theories concerning butterfly evolution and migration. According to an article in The New York Times, “He was the curator of lepidoptera at the Museum of Comparative Zoology at Harvard University, and collected the insects across the United States. He published detailed descriptions of hundreds of species. And in a speculative moment in 1945, he came up with a sweeping hypothesis for the evolution of the butterflies he studied, a group known as the Polyommatus blues. … Few professional lepidopterists took these ideas seriously during Nabokov’s lifetime. But in the years since his death in 1977, his scientific reputation has grown. And over the past 10 years, a team of scientists has been applying gene-sequencing technology to his hypothesis about how Polyommatus blues evolved. On Tuesday in the Proceedings of the Royal Society of London, they reported that Nabokov was absolutely right.” (Zimmer)
represented memory loss and represented particular plants and medicines taken to prevent it. Vorta explains his reasoning for producing a patchwork memoir by pointing out how the collection of fragments produces a form of truth:

These records have not been altered, even when unflattering to me personally; in the interests of science, and as a matter of historical record, I have considered it my duty to disguise nothing and suppress nothing. Because post-postmodernism is not my “bag” (my slang may not be current) and English not my “strong suit” (my mother tongues are French and German), I have made only minor revisions to the prose, excising weak or superfluous passages when sure that excision would improve, and bolstering the text with brief endnotes (keep a bookmark in page 299!). (1)

This passage clearly suggests a problem with narrative authority within the text, but it is also redolent of the argument about the relationship between science and literature. Where Vorta argues that he is producing the work in the interests of science, he is also devaluing the work of science by suggesting that revising the work of others, however “minor,” will not detract from the truth of the memoir. Vorta’s editorial stance ultimately problematizes the reader’s knowledge of events and thus opens up questions of history, memory, and truth and their potential erasure.

Moore’s play with the binary oppositions of objectivity and subjectivity as expressed through the idea of memory in the novel shows the problems of understanding what exactly memory consists of, and what role it plays in our understanding of
biological and social human nature. Elizabeth Grosz argues in *Time Travels* that memory and matter (and here she is dealing exclusively with Henri Bergson) are certainly not exclusive forms of human perception:

Mind or life are not special – or vital – substances, different in nature to matter. Rather, mind or life partake of and live in and as matter. Matter is organized differently in its inorganic and organic forms: this organization is dependent on the degree of indeterminacy, the degree of freedom, that life exhibits relative to the inertia of matter. It may be for this reason that Bergson develops one of his most striking hypotheses: the brain does not make humans more intelligent than animals; the brain is not the repository of ideas, mind, freedom, or creativity. It stores nothing, it produces nothing, and organizes nothing. Yet it is still part of the reason for the possibility of innovation, creativity, and freedom insofar as it is the means for the interposition of a delay between stimulus and response, perception and action, the explanation for a capacity for rerouting and reorganization which characterizes innovation[.](98-9)

*The Memory Artists* uses the oppositions between amnesia and hypermnesia to create a space in which artistic creation and science unfold in varying degrees of interrelatedness. Memory becomes the focal point of experimentation, which is so vitally linked to creation, expression, knowledge, and possibility. Noel, Norval, their friend Jean-Jacques Yelle (known as JJ), and Vorta all actively seek out material ingredients in order to alter the chemical processes of the brain. Memory is thus marked as a material object, a
physical presence that can be altered through chemical means. The production of art and
the possibilities of science are conflated in the text by the presence or absence of
memory. Vorta himself states that both his scientific experiments and his self-published
writings are based on both science and art:

   By now the reader will have noted my interest in the arts. My publishing house,
   although specialising in scientific texts, also publishes poetry, novels and short
   stories dealing with scientific themes. For one of the chief purposes of art lies in
   its cognitive function: as a means to acquiring truth. [Noel Burun’s] father, Henry
   Burun, went farther: he considered art the avenue to the highest knowledge
   available to man, to a kind of knowledge impossible to attain by any other means.
   (304)

   In Vorta’s assessment, art performs a vital function alongside scientific knowledge not
   only because it allows for memorization to take place, but also because of its intrinsic
   capability to express concepts about the world that science simply cannot explain.

   For Noel, who attempts to produce a drug that will alleviate his mother’s
   Alzheimer’s disease, the connection between art and science is direct. In speaking with JJ
   about potential cures for the disease, his mind begins to trace a path through his memory
   of literary texts:

   When [Noel] was tired his mind could wander badly; a single word could propel
   him into another time, into the back pages of his youth. With the word rosemary,
   Noel’s cortex lit up like a Christmas tree. After mad Ophelia (“There’s rosemary,
that’s for remembrance”) came *The Three Musketeers* … Then Don Quixote …

And finally Jules Verne’s *The Mysterious Island*. (133-34)

Noel’s hypermnesia allows him to make connections between texts that he has read, although rarely does this ability to memorize allow him to produce something new from the fragments of memory. Where Norval sees in Noel the makings of a great artist, Noel himself sees only an ability to remember, without being able to create. Norval explains Noel’s condition to their friend Samira:

>Noel has a photographic memory, preternaturally vivid and persistent. With self-generating links and catalytic images that spawn other memories, right back to his suckling hours. He’s a hypermnesciac – he doesn’t forget a goddamn thing. He’s like Proust, like Proust squared. He’s got a million megabytes of memory, a million emotions and sensations and images and God knows what else to draw on. He’s not there yet, but he’ll be a great writer one day, greater than Proust. Or perhaps a visionary artist-poet like Rossetti or Blake. Mark my words. (92; original emphasis)

When Samira later asks Noel why he does not simply memorize everything there is to know, he answers: “There’s no room left. My brain’s crammed to the bursting point. And besides, my problem has always been using the stuff I remember, making a synthesis, something new” (180; original emphasis). Despite Noel’s inability to create something new under his own terms, Noel does use his memory to create links between literary texts in order to discover a cure for Alzheimer’s, which suggests Vorta is correct in his
argument for art as a form of truth in Noel’s use of literature as a site of scientific knowledge about the world. In this case truth arises from making connections between past knowledge and its representation in art.

Henri Bergson argues in *Matter and Memory* that “To picture is not to remember” (173; original emphasis). His claim is that to truly remember is to bring the past into the present through a physical memory such as bodily pain. To picture, on the other hand, is only related to the past in that one needs to find an image from a past experience without producing sensations associated with a particular event from the past. In other words, true memory is to re-experience the past in the present. According to Bergson’s terms, Noel’s inability to create original ideas from his hypermnesia means that his mental map is not based on memories proper, but on images that can be brought back more quickly than others can. In this regard, Noel as the figure of the potential artist (a new Nabokov or Proust) is replaced by the representation of past knowledge as a material object from which one derives information: “How did he do it? Noel had two methods, one involving ‘photographs’ of coloured letters, the other involving ‘maps’” (10). Noel is represented as the pure scientist seeking answers through past understandings, or images, of factual data and observed events.

The textual relationship between Noel and Norval is a complex representation of both their physical similarity and intellectual differences. Norval, who has published a successful novel and starred in a film, is represented as a Byronic hero. Noel is also associated with Byron through his ancestry, his last name, Burun, being the “ancient
Scottish form of Byron” (9) according to his parents. Noel and Norval’s physical similarity is described in their first encounter: “It was not a wary, mutual sizing-up; it was more bewilderment at how much they resembled each other. Like standing before a mirror almost” (29). This mirror image reflects their physical, material similarities while underscoring their psychological and mental differences: “Norval exuded confidence and cleverness, Noel diffidence and dimness” (30). Where Noel has the potential to be an artist, Norval already is one, and where Noel uses his ability to make scientific advances, Norval uses the language of science to participate in an ethically dubious art project in the “erotological tradition,” titled “The Alpha Bet” (120). Through this project Norval’s views on the romantic tradition are underlined by materialist, scientific leanings. In a conversation with Noel concerning his view on love, Norval observes that “Love exists for only one reason – to spread the genes of the person doing the loving. It may boil down to a chemical called oxytocin” (220). The artist here sees love as a neuromodulator aligned with a Darwinian influence, where Noel, as a figure of science, seeks answers in the pages of the world’s literature. This contradictory play on art and science suggests that Moore’s postmodernist approach to the problem of epistemology within different disciplines expresses the ambiguous line drawn between truth and fiction as a form of memory work itself.

In a passage from Creative Evolution, Bergson argues that physico-chemical understandings of the world will never offer us the “key to life” (33). He argues that
A very small element of a curve is very near being a straight line. And the smaller it is, the nearer. In the limit, it may be termed a part of the curve or a part of the straight line, as you please, for in each of its points a curve coincides with its tangent. … In reality, life is no more made of physico-chemical elements than a curve is composed of straight lines. (33)

Here we can see how the relative nature of truth and the Bergsonian influence on postmodern discourse coincide with a scientific perspective on the nature of life itself. In *The Memory Artists*, the idea of perception as relative to the subject position is extended to the collaboration, or what I call relationality, between multiple individuals working within the traditions of science and art to create new understandings of the world. Of course, this relationality is disrupted by the very physico-chemical makeup of the individuals involved, as their abilities to remember fluctuate throughout the narrative.

Yet the novel as a whole reveals a possible misunderstanding of the function of memory, and, most importantly, the problem of basing ethical values on a reading of the human as a collection of material objects and processes. In his work on synaesthesia, a work that Moore acknowledges as a source of information for his novel, Richard E. Cytowic points out problems that arise from science having superseded other moral codes:

I realize that science has done much for humanity and that we largely owe to it the state of the world today, good as well as ill. While often munificent, science can also be addictive and corrosive. Because people hold exaggerated expectations of
technologies they can only superficially comprehend, science has replaced other means by which individuals could make judgments with its own narrow standards. Eons before modern science spawned the pervasive trust in objective certainty that now dominates our thinking, humanity was guided by other kinds of knowledge such as moral, aesthetic, and judicial values that outlined one’s relationship to nature and to fellow humans. (*The Man Who Tasted Shapes*, 202)

Science, for Cytowic, is not a neutral endeavour because it has become a dominant ethical model alongside its growth as an epistemological system of truth-telling. In *The Memory Artists*, science without ethics is shown to be a flawed and potentially fatal science for those in need of medicine that is regulated by corporate interests and research institutions. The recent turn towards science as both a moral and epistemological system is recognized in the novel, but whether either system is ethically sound is questioned.

Ethical questions arise in the novel through the problem of understanding and misunderstanding that occur through the practices of reading. Brian Massumi, in *Parables for the Virtual*, argues that perception and action are intertwined in a Bergsonian understanding of epistemology. More importantly for my purpose, Massumi argues that the act of reading is akin to a synaesthetic experience of the world:

The acts of attention performed during reading are forms of incipient action. It was asserted in the last chapter that action and perception are reciprocals of each other. If as Bergson argued a perception is an incipient action, then reciprocally an action is an incipient perception. Enfolded in the muscular, tactile, and visceral
sensations of attention are incipient perceptions. When we read, we do not see the individual letters and words. That is what learning to read is all about: learning to stop seeing the letters so you can see through them. Through the letters, we directly experience fleeting visionlike sensations, inklings of sound, faint brushes of movement. The turning in on itself of the body, its self-referential short-circuiting of outward-projected activity, gives free rein to these incipient perceptions. In the experience of reading, conscious thought, sensation, and all the modalities of perception fold into and out of each other. Attention most twisted.

(139; original emphasis)

This long passage is important to my understanding of Moore’s work precisely because the novel is bounded by the practices of reading; both in terms of structure – as seen in the paratextual apparatus – and theme. Noel is read to by his father, which allows him to remember important texts later in life. Noel then reads to his mother when she begins to suffer the effects of Alzheimer’s, often from memories of texts read to him. Such reading practices are meant to be converted into actions; Noel’s father reads to him in order to turn him into an artist, and Noel reads to his mother to restore her ability to remember. Reading becomes an action that is linked to memory through both visual and auditory perception.

This connection among memory, reading, and action is linked to the material world, especially the world of the artist. In Beyond the Word Donald F. Theall argues that there have been different types of “memory systems” throughout human existence:
In the classical period, an elaborate memory system was worked out that persisted throughout the Middle Ages and the early Renaissance. This memory system associated topics (topos, place) with actual physical locations, selected from within specific buildings or along roadways, or from works of art, architecture, and visual design, and with the specific real or imaginary images which were situated in the chosen physical locations. (194-95)

This is a perfect description of Noel’s hypermnesiac memory system, suggesting a link between art and memory that culminates in practices of movement, action, or creation.

Noel describes how he memorizes words:

It’s like you’re taking a walk inside your head, like in a dream. You see yourself going on a trip, right? And you drop the words or sometimes big chunks of words at different spots. Like down the hall you come to a vent, right? So you put some words down the vent and then you come under a picture, so you put some words there, and then you come to the door, or the stairs or maybe a room. […] Or you could use the attic or crawlspace too, or you could go outside, on the sidewalk, or through fields or parks or parking lots, or gardens, and you could put words at certain trees or flowers, or down manholes, or at traffic lights or stores or churches … Every memory trip is different. (10)
The visual and the physical nature of Noel’s memory practices turns reading into an alternate form of sense perception. Words become connected to physical spaces rather than associated objects. His memorization technique becomes its own form of artwork although it is visible only to him. Theall argues that such a memory system moves beyond simple memorization: “An art of memory based on the visualization of images is not the same as the visibility of writing trying to provide a mnemonic substitute through recording” (195). Theall further states that the “art of memory” he describes led to the practice of “Renaissance alchemy” and “had a central impact … on the history of the rise of science in the sixteenth and seventeenth centuries” (195). *The Memory Artists* incorporates the “art of memory” as described by Theall in representing both science and alchemy as producing ways of knowing through the reading of literature and the search for the drug that will restore Stella’s memory. JJ in particular stands out as an alchemist who stands between the arts and sciences, incorporating both into a form of mad creation brought together in “The Alchemical Poets of Persia Society” (118), made up of Noel, Norval, Samira, and JJ.

In opposition to Noel’s memory practices of reading, Norval’s art project stands out as a form of reductive simplification of language and art. *The Alpha Bet* is a twenty-six-week long project in which Norval attempts to have sex with twenty-six different women, all with names that begin with a different letter of the alphabet, beginning with A

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15 Noel’s memorization activity is similar to the classical memorization technique known as the method of Loci. Frances A. Yates discusses this technique in *The Art of Memory* (1966), a work that also points out the scientific method as the most recent form of memorization technique.
and moving towards the end point Z (which suggests a parody of art, the social construction of language, and the supposedly teleological linear processes of reason and evolution). This particular artwork allows us to consider the relations of science and art, as well as make a more focused interpretation of the epistemological implications of creativity and knowledge. Reading is not simply the act of looking at the forms of letters and words, but at material objects that become symbolic within a certain society. In opposition to Norval’s linear alphabet stands Stella’s fading journal, the end of which turns into typed gibberish after making an attempted reference to “the quick brown fox” (56), the famous English-language pangram sentence that includes every letter of the alphabet. The construction of a sentence from the alphabet rearranges the social practice of reading in a linear fashion. Nevertheless, Norval’s description of his “performance art” articulates a similar and ironic reading of linearity:

In the erotological tradition extending from Apuleius to *The Thousand and One Nights*, from Boccaccio to Byron and Baudelaire, this abecedarian series of intromittent acts heuristically deconstructs the teleological codes of courtship and monogamy, the illusory Modernist pursuit of objective truths by linear paths, and the mythological ideal of Romantic love promulgated in such decentred phenomena as cyber-matchmakers, the unstable sign-referent engine of which is calibrated to confuse the simulations with the simulacra of pursuit and seduction. (120)
*The Alpha Bet*, as a linear practice that overturns notions of linearity, and Stella’s pangram are analogous to the binary division set up in the text between the totalitarian pharmaceutical companies and the underground alchemical attempts by Noel and JJ to produce a cure for Stella. In this way science and literature are linked by the undermining of social constructions, attempts at objectivity, and normative truth. As Massumi puts it, as question and answer, “What else does a human see in a flower? Besides pharmaceuticals? Poetry, for one thing” (*Parables*, 95). In Norval’s performance art reading encapsulates the differences between erotic subjects faced with a choice between the medical and poetic, or between the ridiculous and the truly original.

Vorta’s psychological and medical control over Noel allows him to access Noel’s father’s notebook, which contains the recipe for A-1001, a drug which helps stop the deterioration of the brain from Alzheimer’s. The theft is a clear example of scientific malpractice, which is further suggested by Vorta’s erasure of Noel’s hypermnesic state through a course of medical experimentation. Violence, untruths, ulterior motives; the ethical implications of both art and science are intertwined in a play with the boundaries between truth and fiction in the novel. The difference between the drugs that either help, or hinder, the user in the novel (from a date rape drug to the homemade cures that JJ produces), is also connected to the possibility of creative work or violence towards the other. Noel’s father’s notebook and Norval’s art project are engaged in the practice of writing and reading; that is, both are part of a signifying process in which each step in the
process leads to an ultimate conclusion: for Norval the end of the project and his potential
death, and for Noel, and more importantly, for Dr. Vorta, the cure for Alzheimer’s.

Silvan Tomkins argues that our experiences in the physical world are founded on both perceptive ability and cognitive error, which eventually lead to growth, learning, and change:

The selective sensitization of the human being’s memory, reason, and perception by very intense affect, which guarantees that objects are found or constructed, does not necessarily create error. In a moment of anger, characteristics of the love object which have been suppressed can come clearly into view. In a moment of sympathy, the positive qualities of the rejected object may be equally illuminated. There is a real question whether anyone may fully grasp the nature of any object when that object has not been perceived, wished for, missed, and thought about in love and in hate, in excitement and in apathy, in distress and in joy. This is as true of our relationship with nature, as with the artifacts created by man, as with other human beings and with the collectivities which he both inherits and transforms. There are many ways of “knowing” anything. Only an animal who was as capable as man could have convinced himself that the scientific mode of acquaintance is the only “real” mode through which he contacts reality. (Shame, 55)

There are a number of points to consider in this passage which reflect on Moore’s novel. First and foremost is the role of affect in our ability to remember, create, love, and produce knowledge. For Tomkins affect is the fundamental experiential component of
our cognitive being, but we can never gauge absolute truth from our affective system. Affect, according to Tomkins, is what allows for cognitive error, or the acceptance of false beliefs, in order for the human being to achieve freedom from misunderstanding. Although this sounds contradictory, what Tomkins points out is the impossibility of ever truly knowing an object, person, or event without seeing it from multiple perspectives. Thus the affect system produces cognitive error in the very first attempt to understand an object, person, or event. In the case of Moore’s novel, the obvious example of cognitive error would be the novel itself as memoir, translated, and pasted together from multiple perspectives, but still not offering the totality of information needed to make definitive statements about the order and causality of events in the lives of the characters.

In the sense that affect is related to both the emotional and cognitive representations of human existence, affect is also directly related to the ability to both reason and create. Noel sees art as the link between the creativity of human life and the possibility of understanding the natural world. In a section of Noel’s journal, he describes the effect of a joke told to him by his friend Norval:

None of [Norval’s] jokes, I grant, are particularly funny (except in their unfunniness or delivery), and this one is no exception. But for some reason, after laughing politely this morning, I’ve been thinking about it all day. Perhaps because it points to a main difference, or divide, between science and art. Our “rational” side sees the humour of the punchline because it’s self-contradictory, absurd, at variance with common sense. Our “artistic” side, however, sees a vein
of truth within it – regarding imaginary fears or invisible barriers – because paradox is the currency of poetry. But science has room for paradox as well, as Einstein will tell you. “Don’t be in thrall of reason,” my father once said, “or you’ll never invent anything, never be a great scientist. The pursuit of sanity can be a form of madness too, don’t forget.” (198; original emphasis).

As Tomkins argues, the contradictory nature of the human affective system can actually produce opposing reactions to the objects and people we interact with. The “paradox” of this system is what Norval considers the truth behind art; a truth he seems to suggest cannot be found in the rationalized attempt at objective reality through the scientific method.

This is not to claim, of course, that poetry is superior to science; hierarchical rankings of epistemological conditions simply reinforce imagined binary divisions. The point I am arguing is that there is an ethical imperative in making truth claims that may be, at the foundation of the human condition, contradictory in nature. In other words, truth may actually be closer to fiction, and extreme objectivism nothing more than a subjective belief about the world that is conditional only on the knowledge we have at the moment of its conception. History has shown how science has mistakenly made truth claims about the world that are now rejected, but which were nevertheless important to our social, cultural, and political conception of the world. On the other hand, I make no claims for extreme social constructionism, in which science is simply another cultural object devoid of truth. Once again, it is important to stress the very nature of the
argument, which is that one cannot experience truth from one perspective. Art and science, as Moore’s text bridges them, align to create greater epistemological arguments than if one looks at only one side of the supposed binary for answers about the world.

The problem of the sciences and the arts making claims to truth is not simply a binary opposition of objectivity and subjectivity, but also one between individualism and universalism. What may seem important to the individual becomes less so when brought to bear on the species. Like Bergson’s analogue of the straight/curved line, the historical understanding of human consciousness is based on what we know of it, meaning that only human consciousness can explain human consciousness. Tomkins and Bergson together produce an argument for the materiality of memory and the importance of affect in the role of memory, and show how affect can either produce epistemological bias or produce new ways of knowing the world.

Jean-Paul Sartre investigates a similar perspective through the phenomenology of Maurice Merleau-Ponty. Sartre points out a fundamental contradiction about creative work much like the one I have attempted to show in Moore’s *The Memory Artists*:

It is true that one might, by convention, confer the value of signs upon [colours, sounds, objects]. Thus, we talk of the language of flowers. But if, after the agreement, white roses signify “fidelity” to me, the fact is I have stopped seeing them as roses. My attention cuts through them to aim beyond them at this abstract virtue. I forget them. I no longer pay attention to their mossy abundance, to their
sweet stagnant odor. I have not even perceived them. That means that I have not behaved like an artist. For the artist, the color, the bouquet, the tinkling of the spoon on the saucer, are things, in the highest degree. (What is Literature?, 8; original emphasis)

A number of issues related to The Memory Artists can be found in this passage. The most obvious is Sartre’s reversal of the subjective nature of art to show how objective perception is the foundation of artistic creation, rather than conventional abstraction. This is in line with Bergson’s idea of pure perception. But what is truly interesting about Sartre’s argument is his idea that moving into abstract signification creates a state of forgetfulness. Not only does one forget, in Sartre’s view, but one does not even perceive the object in the first place. In Sartre’s arrangement the artist must be able to perceive the “thingness” of the object before it can be used as art. Seeing the object first as an abstract signification would produce false associations between an object and its sign. If we extend Sartre’s analysis beyond the purview of art, the artist and the scientist are both, at the same time, seeking the “truth” of the world by studying as closely as possible the makeup of objects, events, and individuals. In this view, to argue that artists are the opposite of scientists is to miss the fundamental similarity between their methods of information gathering.

In The Memory Artists, the similarity between artists and scientists is represented in the novel’s multi-dimensional perspective on knowledge through Noel and Stella’s respective conditions. Noel writes:
On a Sunday in winter when I was not yet 5, during a game of Remembrance, I told my father about the colliding colours I had in my brain and how hard it was to escape them. He called it a “collideorscape.” I liked the sound of this, and we used the code name for years. (It was from Finnegans Wake, I learned later.) I think of this now because I have begun to see my mother’s mind as a kind of kaleidoscope as well: the slanted mirrors inside her are reflecting pieces of her past and present – names, faces, events, dreams, – which are rotated by some mysterious hand to make new patterns, new connections: her husband’s face appears with my name; our neighbour’s breast cancer becomes hers; her father returns to life; a dream is confused with reality ... And then the kaleidoscope turns again, and the mirrors create yet another warped view of reality, yet another helter-skelter mosaic. (192; original emphasis)

The shifting of reality under the opposite conditions of hypermnnesia and amnesia represents the extremes of science and literature. Massumi argues that “[t]he distinction between kinds of things and levels of reality is a question of degree: of the way in which modes of organization (such as reflection) are differentially present on every level, barring the extremes” (Parables, 38). For Massumi there are two extremes from which reality can be seen, however: “[n]either extreme can be said to exist, although each could be said to be real in entirely different ways: the quantum is productive of effective reality, and the divine is effectively produced as a fiction” (38). There is a similar problem that underlies the question of multiple epistemologies and the differences between art and
science in relation to ethics. The degrees of memory-ability within Moore’s text are analogous to degrees of ethics that are produced from different perspectives on truth and fiction. If God, or the divine Creator, is an extreme fiction that humans use as a framework for evaluating moral conduct, then so too must science and literature play a role in the spectrum of moral possibility.

In *The Memory Artists* art and science represent two opposing epistemologies. However, there is a relative scale that can be symbolically linked to the fact that every synaesthete may see letters as colours, but every synaesthete also has different colour patterns for each letter. Differences of degree rather than kind begin to emerge in the representation of memory and knowledge in the text. Perspective, rather than objective claims to truth, come to define what is real and what is fictional. But the idea of opposition between internal and external reality, subjective and objective reality, is also questioned in the novel through the characters’ use of curative and recreational drugs, with each character offering different interpretations on how drugs affect human memory and behaviour. Memory-enhancing drugs, psychedelic drugs, drugs that could induce Alzheimer’s, each of these are produced from external material resources that, once ingested, change the nature, or behaviour, of the individual. As the drugs in the novel are aligned with one form or another of the “natural” chemical and biological state of individuals, there is a suggestion that the dividing lines between nature and reason, an external nature and an internal nature, subjectivity and objectivity, are themselves simply
matters of degree rather than kind. To return to Bergson, the curve is always a curve, but the closer one approaches it, the more likely one is to also see a straight line.

Jean-François Lyotard argues that postmodern science is itself a form of “imaginative invention” (60) that has shifted from the “grand narrative” of power to the “little narrative” of imagination:

We no longer have recourse to the grand narratives – we can resort neither to the dialectic of Spirit nor even to the emancipation of humanity as a validation for postmodern scientific discourse. But as we have just seen, the little narrative … remains the quintessential form of imaginative invention, most particularly in science. (Postmodern, 60)

Lyotard’s idea of the little narrative is founded on the paradoxical nature of scientific discourse, which has moved from universal laws to the unpredictable chaotic nature of life itself. If science now focuses on the limitations of its ability to predict, then it too is producing “fictions” about the world. Despite Lyotard framing his optimistic view of science within a cultural discourse that can be critiqued from the outside, science could still be considered one of the dominant political discourses of the twenty-first century in relation to social, medical, and institutional models within Western society. Moore’s novel plays on the postmodern aspects of science while investigating the politics of science as the dominant mode of truth. This is not to argue that Moore’s novel discounts the scientific method, or science’s ability to predict, shape, and change human existence. On the contrary, The Memory Artists shows the indebtedness of science to the arts as a
form of knowledge production. Literary history and scientific knowledge are seen as components in a larger process of human enlightenment rather than as opposed discourses that struggle for domination in a hierarchical binary opposition. The novel aligns science with what Jacques Derrida would call the *pharmakon*, in that the cure is also that which harms the individual (“Plato’s Pharmacy,” 70). The idea of the *pharmakon* is expressed explicitly through a number of potentially deadly ingredients that JJ and Noel consider as possible cures for Stella’s Alzheimer’s. It is also expressed in a more subtle discourse on binary oppositions that speak from the double voice of allegory, such as in the idea of the labyrinth, in which, “When you find the exit, death is waiting. You’re dead on arrival” (180). The labyrinth becomes an allegory for life itself, and can be interpreted also as a binary structure that produces a *pharmakon* in that the development of life leads towards death, just as the more memories one has, the more memories one has to lose in the end.

*The Memory Artists* is ultimately a playful and, at the same time, serious interpretation of how science and art are intertwined in an uncomfortable relationship between extreme social constructivist and hard materialist views of human memory. Moore’s novel disturbs conventional notions of scientific practice and ideas of intelligence, creativity, and truth. In using the genre of the memoir, Moore reconsiders the role of human memory, writing, and influence on our biological and material conditions. In doing so, Moore also considers how closely ethics is related to perspective, in the sense that I have attempted to show occurs from the ideas of Bergson, Tomkins,
and Sartre. The shift from religion-based to secular ethical positions arises from changing perspectives about the material makeup of the individual and the world. The process of knowledge acquisition through affective experiences allows for perception to shift between different epistemological paradigms. Science and fiction are two modes of producing discourses about the human experience within a material world, and neither one can be privileged because both require fundamentally similar processes of seeing the world. Both art and science are based on the ability to perceive the world as it exists in one’s own mind and then cognitively analyze it. In *The Memory Artists* Moore creates a similarity between the arts and sciences to show how the biological human being is influenced by memory and matter.

But it is not simply the similarities between the arts and sciences which are depicted in the novel under the umbrella of memory. Moore also produces a larger structure of similitude between amnesia and hypermnesia that extends to ideas of differences of degree of human perception. I would argue that Moore attempts to show how individual human beings and larger social groupings are defined by conceptions of the other that are premised on one-sided accounts of difference. Two individuals may seem very different if looked at closely (like Norval and Noel), but as one moves back towards a larger perspective of human life, the similarities begin to take on greater significance. At the extreme of human knowledge concerning existence lies the realm of science: universal laws described by hypotheses of physical, chemical, and biological processes. But as science turns towards questions about relativity, chaos, and uncertainty,
it also creates a loop back to its own inability to fully explain truth, and begins to re-express itself as only one epistemology among many.

Using Sartre’s explanation of literature as a form of seeing based on fundamental aspects of the external world, one can see how science and the arts speak the same language. Apparently oppositional discourses begin to bleed into one another when one considers the metaphysical basis of both fiction and science. Differences among objects, people, and ideas begin to fade as more knowledge is attained. Elizabeth Grosz, using a Bergsonian conception of difference between matter and memory, argues:

Matter and Memory, the present and the past, space and duration, the inorganic world analyzed by physics, and the physical world of lived experience are all different names for or angles on this fundamental opposition between quantitative and qualitative multiplicities, differences of degree and differences in kind. … The distinction between these two kinds of multiplicity or difference is itself qualitative and nonoppositional; the terms provide extremes of a continuum, a difference of tendency or impetus, an “endosmosis,” that is, a difference of degree. Matter will turn out (in Bergson’s more mature work) to be memory in its most dilated form; memory will be understood as the contracted expression of matter; space in its global or cosmological form becomes, ages, has a history, is subjected to duration; and time itself is the condition of the simultaneities that contract to constitute space. The difference between differences of degree and differences in kind itself becomes a difference of degree. *(Nick of Time*, 163)
Once again the questions of perception, belief, and difference come together to produce a complex and contradictory understanding of epistemology and the human ability to know what truth is. One of Noel’s final entries in his diary points out that his power of memorization was not peculiar to him as an individual: “Like the ancient Greeks I simply combined, in a novel way, work that others had done before me. I saw previously overlooked patterns, made ‘irrational’ connections, saw beauty, nothing more” (293; original emphasis). In showing how the chemical makeup of an individual produces different ways of knowing the world, and what can arise from different perspectives, Moore’s novel forces us to question what separates human knowledge from the material body in which it arises. Memory and knowledge become processes that are linked to both a scientific interpretation and the power of art to aide us in producing “novel” ways of expressing our individual perspectives. Memory and matter, science and art, the fictional and the factual, all cross the boundaries of individual perspective to create a sliding scale of difference of degree within the postmodern construction of *The Memory Artists*. 
Chapter 5

Douglas Coupland’s *Player One: What is to Become of Us: Science, Religion, and the Spectrum of Faith*

We therefore need a scientific culture that can learn from differences of class, gender, race, and biology, and that can transform notions like progress and objectivity in order to address these differences and the social inequalities created in their name.

*Strange Weather*, Andrew Ross

It appears that only humans are fully conscious of being alive. We are aware that we are aware, and we feel there is something special within us that makes us who we are. The soul or spirit is considered by many to be central to our being, our life principle. But we don’t know what it is.

*Life As It Is*, William F. Loomis

In the Judeo-Christian tradition Time has been conceived as the medium of a sacred history. Time was thought, but more often celebrated, as a sequence of specific events that befall a chosen people. Much has been said about the linear character of that conception as opposed to pagan, cyclical views of Time as an *éternel retour*. Yet such spatial metaphors of temporal thought tend to obscure something that is of more immediate significance[.] … Faith in a covenant between Divinity and one people, trust in divine providence as it unfolds in a history of salvation centered on one Savior, make for sacred conceptions of Time.

*Time and the Other*, Johannes Fabian

Douglas Coupland’s *Player One: What Is to Become of Us* was originally written for “the 2010 Massey Lectures, broadcast in Canada in November 2010 as part of CBC Radio’s Ideas Series” (248; original emphasis). The plot takes place over the course of
five hours, each of which is separated into its own chapter, a structure that corresponds to the Massey Lectures, which comprise five hour-long lectures spread out over five days. The majority of the action in Player One takes place at the Toronto Airport Camelot Hotel cocktail lounge and involves a number of individuals dealing with identity crises who arrive together at the same moment that an apocalyptic oil crash leads to social anarchy and forces the group to barricade the lounge from toxic clouds and a maniacal gunman. There are five main characters in the novel, each of whose stories are given as multiple subdivided sections in each chapter. The subdivided sections are titled with their names: Luke, Rick, Rachel, Karen, and Player One. Through the characters’ experiences with such issues as loss of faith, neurological disorders, and loss of individuality, the novel explores the idea of the essence of human selfhood. Player One investigates both human materiality and human spirituality through the concepts of religion, faith, and science.

Player One is a caricature of human beings faced with a human-created apocalypse. The caricature is made explicit in Coupland’s references to cartoon characters, superheroes, and video game avatars. The eponymous character, Player One, is actually Rachel’s avatar in the game Second Life. Rachel and Player One are thus the same characters, but they are separated in the narrative by Coupland’s use of the subdivided sections that signal individual perspectives. Rachel/Player One’s dual characterization suggests that Player One may actually be the narrator of the entire text, sometimes taking a third-person perspective that suggests authorial omniscience and
control, and sometimes a first-person approach in which Player One speaks directly to the reader: “This is Player One here with your story upgrade. I know that you, as this story’s user, may be curious and wondering what are the next sequences to come, so I will not tease” (85). Thus, while Player One speaks as the authority of the text, often articulating in the future tense about events that come up in later sections of the novel, neither Rachel nor the other characters are able to do so until the very last subsection of the novel, where Rachel and Player One come together to speak as “Rachel/Player One” (204). This last section of the novel’s narrative (there is a glossary titled “Future Legend” that comes at the very end) is a final bridging of the biological body with the “spirit” that erases Player One’s ability to know the future while, at the same time, allowing Rachel to awaken to a feeling of being human - a feeling she has never experienced before because of numerous neurological conditions that place her on the autism spectrum.

Coupland updates the idea of Cartesian dualism by integrating the “second self” as a mind within a virtual existence that is connected with, but in opposition to the material body. Whereas Rachel stands in for the biological physicality of human existence, Player One, as a video game avatar, represents the disembodied mind. This updated Cartesian philosophy allows Coupland to examine contemporary issues of faith and individuality within the turn towards scientific representations of the human. Engaging, as it does, in a postmodernist investigation of belief and truth, Coupland’s work questions the role of faith in a world where ethics is bounded by science, technology, and capitalism rather than religion.
Rachel/Player One, Karen, Luke, and Rick, are all interested in and invested in the ideas of human existence, the possibility of an afterlife, and the material nature of the human body and consciousness. Because of the random and uncontrollable nature of the apocalyptic oil crisis, and the subsequent social upheaval, the questions of existence, evolution, and God come to play a central role in the discussions that occur among the characters while they defend themselves against a sniper, attempt to keep the toxic cloud from entering the room, and tell each other stories about their lives and their desires. Each of the characters has different faith-based interpretations of existence, some of which are oppositional and others which cross multiple boundaries, but every character holds at least one perspective about human nature that questions truth in relation to belief. In the end, I argue, each character is related to a form of secular faith that Andrew Tate, reading Jacques Derrida, calls the “messianic” in Coupland’s fiction.

In a recent study, Bastiaan T. Rutjens, Joop van der Pligt, and Frenk van Harreveld found that individuals were far more likely to believe in a Creator if they felt that their life was uncontrollable. On the opposite end, individuals felt comfortable believing in the theory of evolution if the explanation of the theory showed that it was not a chaotic or random interpretation of nature. In the end, the study showed that human beings’ fundamental beliefs about the world, and their ability to accept scientific theories about the world, may depend on their desire to be able to exert free will within a controllable environment:
Results of this study indicate that a control-threat increases belief in a controlling designer ([Intelligent Design]; order, agent), but only in the absence of other options that help to create order in the world. When other viable options are available (in the present case [Conway-Morris Theory of Evolution]; order, no agent), the threat-induced increase in religious belief is not present. Control-threat also increased preference for an orderly perspective on evolution when it was compared to the original Theory of Evolution (randomness, no agent). Thus, in the current study, affirming order provides … the same need as affirming belief in a supernatural agent, and consequentially nullifies increases in belief in such an agent. (“Deus or Darwin,” 1079)

In other words, belief in a divine Creator is elevated when there is a less stable foundation for truth about the world, and decreases when fundamental questions about nature can be answered by epistemological frameworks other than religion. The study may help to explain both the historical struggle between science and religion, and the recent turn towards faith in what could be called the post-secular period that has come after the postmodern scientific paradigm in which randomness, uncertainty, and relativity are associated with the most dominant scientific theories about the nature of the universe and human existence.

Luke, who is a pastor at “The Church of New Faith” (21), is the direct representation of loss of religion in the novel, having had a sudden conversion to Darwinism “[b]ecause one morning [he] saw a sparrow yawn” (32). The “New Faith”
that Luke now experiences is Darwinism. Rather than show a complete break from everything that made Luke who he was before, Player One suggests continuities of thought expressed in the idea of faith; something that I call the “spectrum of faith” which is analogous to Rachel’s placement on the autism spectrum. Luke robs his church of twenty-thousand dollars, flees to Toronto, and finds himself, once again, facing a serious crisis of faith when the oil crisis leads to a worldwide collapse of civilization, and the money he has stolen becomes useless, effectively negating wealth as a form of evolutionary status symbol that will convince Rachel that Luke can provide for any future child they may create. For Luke science and religion come together in a world which offers a choice between accepting the randomness of life or nature and the desire to maintain control over one’s existence through belief in a greater metaphysical power.

Rachel is stunningly beautiful to the people around her, “Cartoon beautiful” (28; original emphasis) according to Luke, but she herself has “prosopagnosia, which is an inability to tell faces apart” (40-41), ultimately rendering her incapable of recognizing what other people call “beautiful.” Rachel has numerous other neurological disorders that separate her from those she calls “neurotypical” (35). According to Rachel’s doctor she has “multiple structural anomalies in [her] limbic system that affect [her] personality” (40). She has difficulty touching or even being around others, but also has the ability to remember sequences and patterns in a way others cannot (41). When she first meets Rick, Luke, and Karen, all of them think she behaves like a robot or an alien. She is thus “inhuman,” and symbolically represents a highly rational scientific point of view:
Identifying the unique threads of the human condition is not something Rachel approaches lightly, and she is not deceived into thinking that high technology is an activity that makes humans different: complex human activities such as enriching uranium, for example, are, by extension, elaborate means of generating heat and of fighting – and there’s nothing special to humans about that. … But music, art, and humour? Rachel has to take it on faith that these human qualities exist. (34-35; my emphasis)

Rachel’s rational view of human behaviour seems to contradict her faith-based view of human emotions, overturning Cartesian dualism and the primacy of self-knowledge. Rachel’s need for faith in the existence of human emotion satirizes the idea of faith in a Creator while it problematizes the ontological truth of human existence. Her disorders, as I have mentioned, place her on the autism spectrum, which can be considered analogous to the spectrum of faith-based interpretations in the novel in that the idea of faith crosses multiple epistemological understandings of what it means to be human. Faith, in other words, remains a constant throughout the novel, but there is a spectrum of faith that effectively shows how faith works across different beliefs about the world, most especially between the extremes of religion and Darwinism.

Rachel’s inability to feel human because of her biological and neurological conditions leads her to rationally question what it means to be human, and then to actively attempt to become human. She begins her attempt after overhearing her father discuss the likelihood of her never marrying or having children (33). Extrapolating from
her father’s desire for Rachel to lead a “normal” social existence premised on intercourse and reproduction, she “sees childbirth as a profoundly human act” (33-34), and seeks out a mate in order to conceive. She originally considers Luke in this role when she first sees him in the cocktail lounge. Speaking with Rachel, Luke feels as though, “he was speaking with someone not even human, temporarily given human form” (30). Luke’s recent loss of religious faith is juxtaposed with Rachel’s inability to even consider religious interpretations of existence to show extreme positions of faith-based interpretations along the spectrum. Rachel tells him: “I have no orthodox beliefs. I have no pictures of an afterworld for myself. In the past, I have tried to convince myself that there is life after death, but I have found myself largely unable to do this” (30). Rachel’s inability to believe in an afterlife, to feel human emotions, or to know what other human beings feel places her in a position where she must have faith in the things that other people implicitly acknowledge as true because feelings are what make human beings recognize their existence.

Rachel’s inversion of faith as a theological question about the nature of God is reflected in her understanding of sin as a social construct: “I believe only in human behaviour. And I think that if your brain forces you to believe in sin, then you at least ought to calibrate sinning. Religions seem to have no Richter scale of what’s worse than something else” (31). Rachel’s understanding of sin reflects a view of sin as being measurable in degrees. Luke has spent most of his life considering the reality of sin, and in opposition to Rachel, Luke makes a direct connection between sin and humanity:
Even with his faith recently nullified, Luke believes in sin. He believes that what separates humanity from everything else in this world – spaghetti, binder paper, deep-sea creatures, edelweiss, and Mount McKinley – is that humanity alone has the capacity, at any given moment, to commit all possible sins. (111)

Like Rachel, Luke also sees sinning as a question of degree. However, where Rachel sees the punitive elements of the religious moral code as being placed on one end of the “Richter scale,” Luke thinks that the catalogue of sins “needs updating” to accommodate the evolutionary and technological advances of humankind:

Luke thinks sins badly need updating, and he keeps a running list in his head of contemporary sins that religions might well consider: the willingness to tolerate information overload; the neglect of the maintenance of democracy; the deliberate ignorance of history; the equating of shopping with creativity; the rejection of reflective thinking; the belief that spectacle is reality; vicarious living through celebrities. And more, so much more. (112)

Luke’s updated list of sins satirizes contemporary society through the language of religion. Politics, reason, knowledge, and the entertainment industry become, to Luke, contemporary problems that require the introduction of a new moral code. Presumably, this moral wasteland is an effect of the loss of God in the modern world, and thus a loss of a religious ethical position; without a supernatural being to turn to, contemporary existence has become devoid of spirituality. But for Luke, and for the other characters in the novel, this crisis is more about the loss of faith owing to the inability to distinguish
what makes a human an individual being, than it is about the existence of a supernatural Creator.

In *Player One* scientific interpretations of the human are used to reflect on theological and philosophical questions about the soul. Karen, “a receptionist for three psychiatrists” (101), believes that human DNA may be the foundational element of human individuality. While flying towards the cocktail lounge in Toronto to meet Warren, a man she has met on a “Peak Oil Apocalypse chat room” (54), she fantasizes that the people around her suddenly begin to vaporize, leaving behind only the most basic component of their individuality, whether that be a spirit, a soul, or whatever material element makes up a human being (3-4). After going through a list of physical characteristics of the human and its material construction (clothes, bones, bacteria, water) she realizes that “If [she] were to look deep into a sample cell, say a skin cell, it would become clear that only her DNA is actually *her*” (4; original emphasis). In my view, reducing human beings to the essential element of their DNA robs them of all individuality. It tends towards an extreme end of human individuality that reduces the individual to a materialistic interpretation of the complexity of human emotion, behaviour, and thought. It undermines the notion of a spiritual self by playing up the idea of the gene as the fundamental unit of human existence. Karen’s musings on DNA are particularly effective in frustrating the question of the human “self” by redefining the human between oppositions of science and spirituality. If human DNA is what makes us truly individual, according to Karen, then the fact that we share most of the genetic
makeup of our DNA with others may make us human, but not necessarily individuals:

“And then Karen is humbled, because she thinks of how little there is that makes her
different from other people, a puff of dust” (4). For Karen, the question of individuality is
about perspective, and the degrees of difference that arise from seeing things from
different positions. Karen’s interpretation of DNA as a possible object of human
individuality is a reductive materialist perspective that she later contradicts in her attempt
to explain the individual as made up of “everything” (123).

The question of degrees of difference among individuals as biological entities
extends to questions of difference according to postmodernism. Andrew Tate suggests
that Coupland’s fiction, associated as it so often is with the idea of the apocalypse, offers
an understanding of religious issues through a reading of contemporary issues of faith:

[O]rthodox spiritual subjects, related to salvation and the presence/absence of
God in human suffering, for example, explicitly or implicitly stimulate most of his
characters. Their quests, however, are much more likely to be conducted outside
of traditional, collective arenas of religious truth: churches, mosques, temples and
synagogues are replaced by hospitals, forests, bars, automobiles and, with an echo
of mystic traditions, desert spaces. (Contemporary Fiction, 110)

Tate makes a number of connections between the religious turn in Coupland’s fiction and
postmodernity, one of which focuses on Kevin Vanhoozer’s reading of Derrida and the
messianic. Kevin Vanhoozer argues:
Derrida’s affirmation of the impossibility of justice, and the gift, is a gesture not of nihilistic despair but rather of faith: the desire for something other than what obtains in the present world order. Some such expectation of the “other to come” is inscribed in the very structure of deconstruction and what gives it its “messianic turn.” Postmodernity abolishes conceptual idolatry, one might say, in order to make room for faith. However, Derrida distinguishes the “messianic” from “messianism,” where the latter stands for the belief that a particular Messiah has already come. The messianic, by contrast, has to do with what cannot (at present) be determined. The messianic is a structure of experience, apparently universal, that opens us to an unknown future. The faith of deconstruction is “through and through a messianic affirmation of the coming of the impossible.” The messianic is the unforeseeable, the beyond that is always desired but never attained. On this view, the postmodern condition is essentially, that is, structurally, messianic: constitutionally open to the coming of the other and the different. Faith, not reason – faith in a religionless (viz. messianic) religion – is thus endemic to the postmodern condition. (“Theology and the Condition of Postmodernity,” 18; original emphasis)

Vanhoozer and Tate suggest how the question of truth, or “what cannot be determined,” must be problematized when faith is seen, as it is in Coupland’s text, as a vital component of the human cognitive function. In this context, Vanhoozer’s claim that faith “is endemic to the postmodern condition,” broadens to the view that faith is endemic to the “human”
condition. This condition is related to *Player One* in that each character focuses on different objects of faith that are related to the idea of the messianic. Each character waits for a person to arrive or event to occur in order to reawaken them to the reality of existence that they each seem to have lost. For Rick it is his fascination with the self-help guru Leslie Freemont, to whom he is about to give up his savings to purchase the “Power Dynamics Seminar System” in order to have a “dynamic new way of seeing the world!” (58). For Karen, it is the Apocalyptic Oil crisis she has been discussing with others on the internet. For Rachel it is the pregnancy that will finally make her human. And for Luke it is simply the future without eternity, “[b]ecause Luke no longer believed in Eternity, [so] he had only the future” (72). Coupland’s characters struggle to find a semblance of “normality” across a complex divide between truth and faith on which to ground their selves while waiting for a future event to occur or person to arrive. This idea of faith without religion, or more appropriately faith in something other than religion, is actually part of the condition that arises out of postmodernism and the poststructuralist decentering of truth.

Although each character in *Player One* has faith in a different entity, they are brought together through the question of *time*. For Luke, who sits at the bar with the twenty-thousand dollars he has stolen from the Church of New Faith in his pocket, time is literally money:

And the reason Luke is thinking about time and free will is because he believes that money is the closest human beings have ever come to crystallizing time and
free will into a compact physical form. Cash. Cash is a *time crystal*. Cash allows you to multiply your will, and it allows you to speed up time. Cash is what defines us as a species. Nothing else in the universe has *money*. (22; original emphasis)

Karen considers how time plays a role in both human existence and storytelling: “*Our curse as humans is that we are trapped in time; our curse is that we are forced to interpret life as a sequence of events – a story – and when we can’t figure out what our particular story is, we feel lost somehow*” (5; original emphasis). But shortly after expressing this thought the narrator, focalizing on Karen, states: “We run out of things that make us individual very quickly; all of us have far more in common than we do not have in common” (7). Karen’s idea of time is drawn from her reflections on DNA and echoes the evolutionary query undertaken by Rachel, but extends this role of time to questions of individuality and narration by suggesting that the ability to create stories is what truly makes us human. Player One, who narrates future events in the text, explains what is happening in the lounge:

> Time speeds up, time speeds down, always time, always rattling our cages, taunting us with our never-ending awareness of its presence, our only weapon against time being our free will and our belief that life is sacred and our hope that we have souls. … What makes humans unique? Our ability to experience time? Our ability to sequence our lives? Our free will? What single final Russian roulette gene sequence condemns us all? We’re so close to other animals, and yet we’re so utterly different. (168-69)
Player One weaves together the threads of time, genes, belief, and storytelling in a complex understanding of both individuality and difference. Time becomes both the way in which human individuality emerges in the way that we are able to “sequence our lives,” while it also expresses, through the idea of speciation and the evolution of the human, that the human animal is not as separate from other creatures and objects as it may seem. As the novel suggests, commonalities quickly become obvious after the initial markers of human uniqueness have been catalogued – a perspective that is at the center of evolutionary theory itself.

The novel’s focus on time as a human commonality questions the very nature of the epistemological divide between science and religion. Rachel’s rational scientific view of the world is threatened when she has an epiphanic moment while helping Rick close a window against the toxic chemicals coming into the bar. Holding Rick’s legs so he does not fall down, Rachel suddenly has a “feeling” (162). She links this feeling to being human, but also to God, so she asks God for help: “Dear God, oh please, for once in my life let me be like the others – just this once and I’ll never bug you again. I might even believe in you. … And God gave Rachel what she wanted” (162). What Rachel “wanted” was to have intercourse with Rick in order to get pregnant, and to get pregnant in order to feel human. Because of this process Rachel feels that it was God who began the causal chain that led her to feel “normal.” Once Rachel converts to a belief in God, she becomes a figure of contradiction between rational and faith-based knowledge. When Rachel admits that she still believes in evolution despite her newfound belief in a supreme
Creator, Karen asks her: “‘Doesn’t one belief cancel out the other?’” (164). Rachel argues that it does not, but the narrator explains that “Rachel was secretly loving God. She loved the way God could be used to answer all questions. She no longer had to think things through – although this was probably not the spirit in which one was supposed to embrace belief” (164). Coupland’s ironic view of the rationality of religious belief suggests that Rachel/Player One is not simply a divided figure in her role as a real/virtual self, but also in relation to human consciousness and the ability to theorize rationally and scientifically while imaginatively accepting fictions as possible moral ways of knowing the world through the idea of a messianic faith. As Rachel states during a vision she has, in which she takes the voice of a prophet foretelling the arrival of the “Third Testament” (170), “Our time has come. Now we move onward. Fiction and reality have married” (170-71).

Rachel uses religion in order to avoid questioning the world; this is Coupland’s satire on organizations or individuals that use faith to manipulate others into passivity and, typically, a loss of individuality. In the “Future Legend” that comes at the end of the novel as a paratextual supplement to the novel’s plot, Coupland defines “Anorthodoxical Isms” as: “The isms that pose the greatest threat to inflexible religious orthodoxies: Humanism[,] Cultural Relativism[,] Moral Relativism[,] Secularism” (217). Luke’s theory concerning sin corresponds to Rachel’s radical identity shift in that his own conversion to atheistic thought allows him to make connections between Rachel’s post-conversion method of analysis (static, close-minded, and irrational), and larger societal
questions of social practices that require faith, but which are non-religious (celebrity worship, spectacle over reality, virtual relationships). Rachel is in a unique position because of her cognitive inability to understand metaphor. Like Noel in The Memory Artists, Rachel is unable to make logical connections among objects, events, or ideas, but is able to remember, recite, and recycle them without creating anything new in the process. In Rachel’s case her religious conversion is not based on faith in a Creator at all, but rather on a cognitive acceptance of a convenient solution to otherwise similar problems. She has simply swapped one rational interpretation of causal experience for another.

Where Rachel seems to fluctuate from one extreme of the faith spectrum to the other, from a belief in Darwinian evolution to a belief in the power of God to manipulate events, Luke’s conversion moves him in the opposite direction. Where he once considered God to be the creator of life, he comes to consider DNA the fundamental building-block of human existence. Like Karen, Luke comes to believe that social degradation, violence, and suffering are not exactly caused by human beings, but by their DNA:

I’m not even going to single out human beings as the Number One disaster on this planet – I’m going to single out our DNA as the criminal. Our DNA is a disaster. Everything we make is the fault of our evil little DNA molecule. Hi, I’m a little DNA molecule. I build cathedrals and go to the moon – heck, I harnessed atomic energy! Take that, viruses. (197; original emphasis)
This caricatured representation of DNA is troubling in its insistence on the genetic determinism of evolutionary theory. Rachel/Player One will later suggest that nurture and the environment also play a role in evolution and human social and biological life (210), but for the most part Coupland’s characters see the gene as being responsible for evolutionary progression towards the apocalypse. Luke is not simply arguing for human DNA as the fundamental makeup of the biological human; he is arguing that DNA is a biological force in human cultural evolution as well. The argument places science and culture (religion, literature, technology, celebrity) within the spectrum of faith.

Culture, as represented in the novel, is also connected with the idea of evolution through time and storytelling. The search for human uniqueness in Player One is often suggested by the desire to explain oneself through storytelling (especially confession). Rachel is able to sequence information, to the point of being able to recite pi to the thousandth digit, but she is unable to “understand poetry” (68). When told by a teacher that she “should write stories” (87), Rachel responds by arguing that “[t]hings go from A to B to C, … [c]alling it a story changes nothing. It’s just a sequence. That’s all it is” (87). Rachel’s linear thought process is devoid of emotional content and causality, a parody of the inhuman figure the other characters take her for, and in opposition to her authorial role as Player One. Her logical movement from “A to B to C” to find the answer at the conclusion of the sequence suggests a “plotless” world in which spirituality is subsumed by the rational search for truth without imagination.
In *Player One* Karen, in particular, suggests that the environment, biology, and culture are intertwined. As Karen explains to Rachel,

I think we’re everything: our brain’s wiring, the things our mothers ate when they were pregnant, the TV show we watched last night, the friend who betrayed us in grade ten, the way our parents punished us. These days we have PET scans, MRIs, gene mapping, and massive research into psychopharmacology – so many ways of explaining the human condition. (123)

Karen’s multitude of possible answers to the question of human existence once again erases any form of individualism. Although she begins by focusing on the question of individual experiences with the world, such as “the TV show we watched last night,” her argument ends with the dehumanizing psychopharmacology industry, which effectively erases the individual in the process of creating drugs that work for all human bodies rather than for individual humans.

Having already looked at the possibility that the human is only defined by our DNA, Karen now considers whether we are made up of “everything,” and thus difficult to distinguish from each other. In the end Karen, as well as Luke, must confront the idea that being human involves both the desire and the inability to be unique across degrees of difference. As Karen tells Luke, “feeling unique and being unique aren’t the same thing” (201). This is more than just a pseudo-psychological explanation of the human condition. Karen’s suggestion is actually one of the more in-depth analyses of evolution, culture,
and religion in the novel. Rachel/Player One echoes Karen when she makes a connection between memory and individuality:

Sometimes I think humans don’t even exist as discrete persons. Rather, there is only the probability of you being you at any given moment. While you’re healthy, that probability remains pretty high, but when you’re sick or old, it shrinks. Your chance of being “all there” becomes less and less. When you have Alzheimer’s, like Luke’s dad and Karen’s mom, the probability of being you drops to almost zero – and then you die, and it really is zero[.](209; original emphasis)

For Rachel/Player One, memory not only determines individuality, but is linked to the spectrum of possible positions that determine the uniqueness of individuality. The problem for human beings is that our perception of the world does not always inform our understanding of how we perceive the world. Mind/body dualism and social constructionism arise from the inability to see ourselves as products of our interactions with the material world.

As Edward Slingerland states, it would be almost impossible for us to live permanently in a world where we see “ourselves and others as determined physical systems fully subject to the laws of nature, rather than as autonomous souls merely inhabiting physical bodies – our own built-in cognitive mechanisms seem to be working against us” ([What Science Offers, 26](#)). In other words, humans have evolved to use storytelling, mythmaking, and religion to confirm the uniqueness and individuality of the human being, despite the way in which all three endeavours actually speak to the
universality of the human experience. Coupland expresses this in a different manner in his definition of “Aloneism” (215) in the “Future Legend”:

A recognition of the fact that it is a burdensome amount of work to be an individual, and also that many human beings were not necessarily cut out to be individuals and are much happier being lost inside a collective environment or a self-denying belief system. Individualism may, in fact, be a form of brain mutation not evenly spread throughout the population, a mutation that poses a threat to those not possessing it, hence the ongoing war between religion and secularism. (215-16)

Coupland here bases the idea of individuality in the biological, rather than the social, suggesting that human behaviour arises from neurological, chemical, and material processes. Socially constructed institutions, such as religious organizations, take on new meanings when placed within an understanding of human behaviour as a biological response that is both predetermined, and future-oriented towards evolutionary goals.

The idea of the individual is considered outdated in Coupland’s vision of the future, as Rachel explains during her final monologue as Rachel/Player One. At this point she is able to understand metaphors and explain ideas beyond simple sequencing. There is no single reason given for why Rachel/Player One becomes a unified character, but it seems partly to do with a number of reasons: being shot by the gunman, getting pregnant, and her conversion of faith. Rachel/Player One claims that she is “no longer a part of the world, but … not yet a part of what follows” (204). This cryptic explanation suggests that
Rachel/Player One’s state of consciousness has been altered by a form of messianic epiphany that has brought together her spiritual human self with her material human form. She discusses the future of humanity and what she calls the “New Normal” (211) as a time when “we need to strip ourselves of notions of individual importance” (211). Her vision belongs to a postmodernist discourse, in which there exist “Multiple endings” and “Non-linear stories” (211). In the future human state, according to Rachel, “[s]omething new is arising that has neither interest in nor pity for souls trapped in twentieth-century solipsism” (211). But what form of solipsism is suggested here? Does religion create a solipsistic individual because it argues for the existence of the soul? Or is it the virtual/celebrity/simulacrum culture which Luke suggests is the cause of malaise and emptiness in the world that creates solipsistic individuals? Or is it both? If we follow Slingerland, such a prophetic perspective implies not simply a cultural shift in which humans give up religion, celebrity, and virtuality for something more meaningful (what is more meaningful is never articulated); what is suggested is an evolution of the human being into a whole new species that can interact with others in an entirely new way: “Let us reach out to shock and captivate people into new ways of thinking” (214). What these new ways of thinking are, and on what they will be based, is not explained in the text; there is just the assumption that the present is not perfect, but the future could be. This is faith with religionless religion.

Daniel Dennett argues in *Darwin’s Dangerous Idea* that what believers in both epistemologies “share, in spite of the differences in their deepest creeds, is a conviction
that life does have meaning, that goodness matters” (18). This too is a faith-based suggestion concerning human existence; although we may not find meaning in God or nature, there is always the hope for the possibility of finding indeterminate meaning. In Coupland’s case, meaning is associated with the idea of the “story,” that is, the human story; an individual story, yet not above that of any other in a hierarchy of value or significance. Coupland’s strategy is to produce an ethical version of human culture within the faith-based spectrum, including the biological, social, and creative foundations of faith in the twenty-first century.

Dennett’s vision of evolution as a dangerous idea is based on the proposal that science and religion are at odds with one another, even if religion is just one belief system among many: “In a single stroke, the idea of evolution by natural selection unifies the realm of life, meaning, and purpose with the realm of space and time, cause and effect, mechanism and physical law” (Darwin’s, 21). If evolution can ascribe meaning and purpose to natural law, then religious moral codes are no longer needed to sustain an individual faced with the loss of control suggested by Darwinian misinterpretations of nature as chaotic, and red in tooth and claw, without a moral foundation on which “goodness” could be measured. The novel’s attention to the real and the virtual, the biological and the cultural, the material human and the spiritual soul, allows for an extended view of the ways in which difference can play a role in shaping how culture is produced from a biological foundation. The identity issues that the various characters express throughout the text, ultimately leading to a suggestion of a morally superior
identity-free future, are comic in their extreme fluctuations. The difference between individuals may not be as pronounced as we think, either biologically or culturally. Differences of belief, according to Coupland’s text, may actually not be polarized at all.

*Player One* investigates the role of science in culture, while mapping out possible ways in which scientific explanations speak a truth about differences among human existence. Coupland’s text suggests a renewal in faith that is premised on a humanistic moral code that goes beyond religion. This is Coupland’s definition of “Godseeking”:

An extreme version of Christmas Morning Feeling. Significant scientific literature has postulated that religious experience stems largely from a God module based in the temporal lobe. Additionally, for those who believe, as many physiatrists do, that our ideas of God are heavily influenced by our infant memories of giant, all-powerful, beings – our parents – the hippocampus, encoder of those memories, must also be important for religious experience. And finally, there is evidence that the parietal lobe plays an important role in all mystical experience. All of which leads us to the primary objection to localizing religious activity in the brain, the reductionist “nothing but” argument: that if religious states are brain states, they are nothing but brain states, and the experience of God is simply a neurological phenomenon. (226-27)

Rather than critiquing faith in the unknown as a useless model of epistemological understanding about the world, Coupland’s text weaves a network of similarity between oppositional discourses to produce a wide-ranging understanding of the ways in which
human beings come to question and accept ideas concerning human existence in an ever-changing environment. *Player One* suggests that there is a need for a new “first-person” within a new technological environment in which the individual is no longer a unique or fragmented individual, but a part of a collective of individuals that share recognized universal characteristics across a spectrum of difference that offers the possibility for an ethics based on a religionless faith in human nature.
Chapter 6

Rivka Galchen’s *Atmospheric Disturbances*: A Meteorology of the Mind

When he finally brought himself to say all this to Sophia, he also said that there were those who would bridle at the very word, “poet,” in connection with mathematical science. And others, he said, who would leap at the notion all too readily, to defend a muddle and laxity in their own thinking.

“To Much Happiness,” Alice Munro

Problems in science are sometimes made easier by adding complications.

*Darwin’s Dangerous Idea*, Daniel Dennett

One difference between poetry and bald statement is that poetry seeks to take the reader behind the words to what they signify.

*Human Knowledge*, Bertrand Russell

Bertrand Russell’s consideration of the role of language in science and literature questions how the theoretical expansions of both scientific and literary theories in the twentieth century helped fuel new ways of approaching epistemological and philosophical problems concerning knowledge and belief. As Russell argues, to “take the reader behind the words” (*Human Knowledge*, 91) is to give him or her access to a kind of truth that resides behind the literal truth offered by language. If literature offers a way of seeing that is decidedly different from scientific practices, perhaps it is because
“[i]magined events are not included in knowledge or error, because of the absence of belief” (*Human Knowledge*, 90). However, Russell points out that imaginative literature can produce knowledge and truth, but that “in order to define ‘truth’ and ‘falsehood’ we must go behind sentences to what they ‘express’ and what they ‘indicate’” (*Human Knowledge*, 102). I have already considered the idea of “going behind sentences” to discover the relationship between the idea of “truth” and the actuality of a particular “truth” with regard to the oppositional fields of science and religion in previous chapters.

Moving away from religious belief in relation to the practices and theories of science, Rivka Galchen’s *Atmospheric Disturbances* (2008) offers a psychological view of complex human beliefs through the conceit of the science of meteorology. Written from the first-person perspective of the psychiatrist Leo Liebenstein, *Atmospheric Disturbances* suggests a metaphorical link between individual perspectives on reality and attempts to predict both the weather and human behaviour through Doppler radar.

Ostensibly *Atmospheric Disturbances* is about loss, the desire for control, and Leo Liebenstein’s consciousness as he possibly descends into a state of psychological disorder. Issues of belief, reality, and perception are bound up in Leo’s search for truth through the practice of meteorology. Because Leo narrates the novel, the possibility of making judgments about the truth of Leo’s situation can only ever be based on his reality, but the first-person narration is used in *Atmospheric Disturbances* to investigate the ways in which truth unfolds from such a narrative. Even Leo admits that his reality is questionable:
And I admit that I didn’t entirely believe myself either. If I’d looked up at the ceiling and saw in the drips there an arrow pointing me out the door – well, then I would think I was imposing a self-deluding order onto chaos. If I’d seen three fallen buttons on the floor and perceived them as a triangle pointing me in a particular direction – again I wouldn’t have trusted my perceptions. If I heard voices. If I had a fever. Or any neurological signs. Or feelings of grandeur. Or if all the articles in the newspaper seemed to bear messages especially for me. Even just if the weather had been on when the simulacrum turned on the TV, and I took that fact too seriously – even then, I would have doubted myself, wondered about the selectiveness of what I noticed. But none of that was happening. (70)

Leo thus forces us to go “behind the words” he offers us, words that are often both metaphorical and symbolic in so far as they relate to meteorological theories, in order to make connections between the “truth” that Leo sees, and the truth that resides in his understanding of belief and reality.

Leo describes himself as a “fifty-one-year-old male psychiatrist with no previous hospitalizations and no relevant past medical, social, or family history” (5). Because this information comes to us from Leo his foregrounding of an absence of a medical history suggests that Leo’s sudden, self-acknowledged, mental breakdown is based on truth. There are, however, moments when Leo’s version of reality slips, such as when he describes his mother’s erratic behaviour, suggesting that there is, in fact, a known medical family history, but one which Leo does not recognize (68). Leo is most definitely
an unreliable narrator, but I am cautious about using such a term for this particular text, as any suggestion that Leo’s interpretation of reality is not true would undermine the possibility that the events he recounts are not, in fact, happening to him. In other words, to call Leo unreliable is already to make truth conditional on a version of reality that might be illusory. Leo’s version of truth can be compared with scientific truth, which is characterized in the novel by what Leo calls the “consensus view of reality” (14). Although Leo uses this term to describe his patient Harvey’s belief that he can control the weather, among a number of other seemingly strange beliefs about himself, time, and others, the term could be used to describe a concern of the text as a whole; the text, in other words, plays with postmodern conceptions of reality in order to question the consensus view of reality in a number of different manifestations. The consensus view of reality permeates the text with regard to love, loss, desire, and belief in a narrative structure that is not open to consensus, because it is told from a single perspective. 

*Atmospheric Disturbances* foregrounds problems of interpretation arising from a singular perspective, and hence how communication between individuals can cause interpretive misunderstandings. When Leo’s wife Rema explains to him that a “bad feeling” he experiences is due to having eaten “[l]amb after eleven” (19), she misunderstands that Leo is speaking to his emotional feelings and not his physical feelings. Leo’s explanation of his condition has not been specific enough for Rema to understand that what he really means to say is that the “bad feeling” he has is related to his concern with the plan Rema has formulated to deal with Harvey’s illness. The plan
involves an elaborate lie about Leo being a secret agent of the Royal Academy of Meteorology to stop Harvey from wandering away from his home in order to fulfill his own, supposed, duties as a secret agent for the Royal Academy. According to Harvey, the Royal Academy is at war with the “49 Quantum Fathers,” a mysterious organization that manipulates the weather across multiple parallel worlds. In order to prevent large-scale destruction, Harvey participates in “missions across the country” on orders from the Royal Academy sent “through Page Six of the New York Post” (13). The fantastical nature of the deception Rema and Leo perpetrate is clearly in opposition to normal psychiatric practices, and thus Leo’s emotional response to Rema’s proposal seems justified. Rema’s response to Leo’s worries, however, ironically reflects an objective and material interpretation of Leo’s physical condition. Leo understands that her response speaks both to material reality and misinterpretation of reality:

But about Rema’s lamb after eleven comment. Although I didn’t think she was right in that particular instance of my “bad feeling” before meeting with Harvey, I thought that her general idea – how we misinterpret our own pain – I thought that was very right. (21)

Leo shifts the materialist interpretation of his physical state towards a philosophical, idealist interpretation of illness, and reality in general, when he marks the distinction between Rema’s hypothesis and his own belief in misinterpretation. He thus acknowledges the possibility of multiple perspectives on the world, not all of which could be accurately associated with truth in a general sense of the term.
The consensus view of reality in this particular case would most likely be associated with Leo’s belief that his “bad feeling” arises out of an affective response to the project they are about to undertake. Rema explains to Leo that the story they are making up in order to help Harvey is ethical, because although “You lie, […] it is to benefit another. So it is a lie that is ethical” (15). Although Leo does feel that the lie will be unethical, he decides to go ahead with it in order to please Rema. Leo’s misleading psychiatric experiment ultimately subverts the consensus view of reality within the doctor/patient relationship. In taking on the role of a secret agent for the Royal Academy of Meteorology, Leo confirms Harvey’s belief that there is a conspiracy taking place by the 49 Quantum Fathers who “abducted [Harvey’s] father many years ago, [and] stashed him away in a parallel world” (14). Leo’s experiment is designed to keep Harvey from his frequent disappearances, but at the same time, it creates an “unreal” world for both Harvey and Leo, in which the forces of nature can be controlled across space and time by shadowy agents from a sinister agency that, as Leo points out, is “not confirmable as existent by a consensus view of reality” (12; original emphasis).

Leo’s dishonesty is complicated by his belief that his wife, Rema, has suddenly been replaced by a doppelganger. The reader is expected to believe one of three possibilities: that Leo has suddenly experienced a shift in his view of the world; that he has always had a similar view of the world but that because the novel begins in media res we cannot know what he previously believed; or that his view of the world is correct and Rema has actually been replaced by a simulacrum who looks, talks, and acts just like the
original. Despite Leo’s narrative devolving towards a truly fantastical worldview it is impossible to decide which version of reality corresponds to Leo’s interpretation except through possible narrative slips that let the reader see behind Leo’s perspective. In other words, any argument about Leo’s beliefs and behaviour will come up against the fact that the reader’s beliefs about what constitute “reality” and “fiction” are at work at the same time. Furthermore, in true postmodern fashion, the text steps outside of its fictional borders when Leo, in an attempt to prove to Harvey that he has an authoritative link to the Royal Academy of Meteorology, chooses a “real” member of the academy with whom to correspond. That person, Tzvi Gal-Chen, is the author’s, Rivka Galchen’s, real father. Layers of truth and fiction, reliability and unreliability, belief and disbelief lie behind the words of the text to produce a narrative voice that questions the very nature of reality itself.

The study of meteorology becomes connected to psychological readings of the human mind and human behaviour through Leo’s conception of the world through Tzvi Gal-Chen’s actual meteorological work. It is in the theories of weather patterns that the instability of both reality and truth becomes apparent in Leo’s narrative. To be clear, Tzvi Gal-Chen was a real meteorologist whose published articles include “Initialization of Mesoscale Models: The Possible Impact of Remotely Sensed Data,” “A Theory for the Retrievals of Virtual Temperature from Remote Measurements of Horizontal Winds and Thermal Radiation,” “Can Dryline Mixing Create Buoyancy?,” and “Retrieval of Thermodynamic Variables within Deep Convective Clouds: Experiments in Three
Dimensions.” The last article is associated with *Atmospheric Disturbances* when Leo “discovers” the article in a library:

> My pulse rose; my fingers went cold. Then the light went out; I crawled along the shelving to turn it back on. I know the ordinary often masquerades as the extraordinary, that if you put thirty people together in a room, the likelihood that two have the same birthday is over ninety percent, that when you learn a new word and it then seems suddenly ever present it is only because you have just begun to notice what was there all along. […] For all I know, maybe Tzvi Gal-Chen and Buenos Aires were both already pervasive terms and I’d simply stumbled across two examples of Baader-Meinhof phenomenon. But the fitting together of so many elements – sometimes that really happens, a stray orange peel, a necklace, and a certain joke about iceberg lettuce once converged to reveal a girlfriend’s infidelity – convinced me that I was perceiving something real, that I was not myself in any way cracked, that only my world suddenly was. (59)

Having already decided to correspond with Gal-Chen, Leo sees his discovery of one of his articles as more than coincidence. Rema is from Buenos Aires, and the article “was originally presented at a conference in Buenos Aires” (59). Leo considers this connection a form of external validation for his theory concerning the disappearance of Rema. Leo’s construction of external evidence is something he does often during his search for the real Rema. In seeking patterns that confirm his reality, Leo produces a new reality that can only be validated by other perspectives.
Galchen uses meteorology to produce a reading of human behaviour through the conceit of weather patterns and the inability to accurately predict future states based on data from a present. She creates a link between the psychology of mind and meteorology by foregrounding Leo’s understanding of the world through a reading of the Doppler effect, and later, Gal-Chen’s theory of single-Doppler radar:

Doppler radar turns to advantage what is known as Doppler effect, an oft-misunderstood concept. Doppler effect describes an apparent – as opposed to actual – change in frequency or wave-length. It is the change perceived by an observer who is, relative to the wave source, in motion. Textbook example: as a speeding car approaches, the sound it emits appears to go up in pitch, in frequency. But in actuality, the emitted frequency – the car’s trembling of the air around it – does not change at all. It only seems to change. (44)

The conceit of meteorology could be considered a distortion that problematizes any truthful account of Leo. Yet, like the distorted reality that occurs due to the Doppler effect, reading Leo through meteorology might produce a more accurate analysis:

Being aware of [the Doppler effect’s] distortion of perception allows scientists to take advantage of the distortion itself in order to gather accurate data about the actual, and not just the perceived, world. In fact, more and better data than could be gathered if the distortion did not exist. Doppler effect refers to these distorted perceptions, and Doppler radar’s utility relies on savvy interpretations of these
distortions that, properly understood, enable a more accurate understanding of the real world. (45)

In other words, Galchen removes meteorological principles from their purely scientific use in order to reflect on the unpredictability of human behaviour. As Leo explains to the Rema simulacrum, “Forget ... about forecasting; even nowcasting is near impossible” (90). Leo describes another example of Doppler effect that uses a diagram in which multiple stick-figure Remas pass by a similar stick-figure Leo. As the Remas approach Leo and become a rapid succession of images, there arises a connection between Gal-Chen’s idea of single-Doppler radar and Leo’s belief that Rema has been replaced with a simulacrum. The appearance of a new Rema is the Doppler effect functioning on Leo’s psychological position within a meteorological understanding of the single-perspective narrator of the text.

Leo’s construction of reality is metaphorically represented by Gal-Chen’s theory of single-Doppler radar, in opposition to the standard dual-Doppler model of meteorological study. Dual-Doppler radar research involves “two radars, distant from each other, looking at more or less the same volume of air from perpendicular angles so that real-world information can then be divined through triangulation” (43). Gal-Chen’s use of single-Doppler radar is based on his theory that “Perfectly coupled radar systems are rare, if they exist at all.” And ‘dual-Doppler analysis requires accurate calibration of radar antennas and simultaneous operation of both radars’” (43). Translated into human
behaviour, these two models of weather analysis and prediction become for Leo, and the reader, ways of knowing reality:

I had no one I could really turn to for advice about Rema’s replacement, no one whom I could simply call upon as a friend, as a second. Except for Rema, and Rema wasn’t there. I admit that it’s generally better to consult another person, to adjust for a limited perspective, for the distortions of perception. If I’m wondering, for example, “Do I look haggard?” it would be useful to have another person’s eyes on me; between the two of us we might be able to settle the question near the truth. (44)

Viewed in terms of the Doppler metaphor, Leo’s narrative perspective exists as a single-Doppler interpretation of his world, and it is only in juxtaposition with the conversations of others that a dual-Doppler reading of Leo becomes possible.

After reading the works of Gal-Chen, Leo recognizes a singular epistemic problem with meteorology, which is the “Initial Value Problem” (85). According to Leo, the Initial Value Problem can be summarized by the idea that “we can’t predict tomorrow’s weather accurately if we have the wrong ideas about what the weather actually is right now” (152). The Initial Value Problem extends to Leo’s search for Rema in that the absence of an original Rema makes it difficult to understand the “new” Rema. The question of who Rema actually is becomes impossible to answer, because there is no original Rema in the text. This process is further articulated when Leo travels to Argentina in his search of his wife. Leo seeks out and stays with the original Rema’s
mother, Magda, lying to her in saying that he is a mere friend of Rema’s, and a
meteorologist. While looking through Magda’s photo albums and seeing early
photographs of Rema, Leo thinks to himself:

Only: those photos seemed photos of other Remas. And I suppose, in a certain
very straightforward sense – regardless of certain other possibilities – that was
inarguably and precisely true: I didn’t know those younger versions of her. But I
was unsettled and didn’t know what to do with that unsettlement, didn’t know if it
was an ordinary everyday kind of unsettlement, or the paradox that is simply the
most visible part of a profound error in an entire worldview. (92)

Leo’s inability to distinguish the “new” Rema from the Rema he believes is real finds its
origins in his inability to know earlier Remas. The Initial Value Problem thus becomes a
question of beginnings, and the problem of truth in relation to the ability ever to know
reality. It becomes the problem of determining an origin or beginning from which one
can claim to produce a whole from multiple parts.

It is in the idea of the whole that the Initial Value Problem extends to a larger
argument about knowledge, science, and religion, in that an objective stance from which
a prediction of future events can be made is akin to being God. Bertrand Russell argues:

Space and time, however, as human beings know them, are not in reality so
impersonal as science pretends. Theologians conceive God as viewing both space
and time from without, impartially, and with a uniform awareness of the whole;
science tries to imitate this impartiality with some apparent success, but the
success is in part illusory. Human beings differ from the theologians’ God in the fact that their space and time have a here and now. (Human Knowledge, 11; original emphasis).

Russell argues that the present is always more recognizable than the diminishing past because of the unfolding of time, but also because a human being can only focus on a small part of the world at any one time. Leo’s search for Rema often results in his frustration with not being able to either express or capture the “whole.” Lying on the kitchen floor stroking the simulacrum’s foot, Leo thinks:

I feel like I can say that, that the foot at least, that was really Rema’s. Or probably not really. Or so only in that every foot becomes, in my mind, Rema’s foot slightly varied. And Rema’s foot is like Rema entire; her foot alone is enough to recall her to me whole. (41)

Later, Leo expresses his frustration with the simulacrum because he cannot communicate to her the truth of the situation: “And I found myself saying to this other Rema, calling out to her across the apartment … that I wanted to tell her the whole truth” (63; original emphasis). This idea of the whole becomes the crux of the Initial Value Problem, and we can see how the conflict between religion and science is based on a search to replicate, if not replace, the belief in an omnipotent figure through data and knowledge accumulation for the purposes of future prediction because only such a position would allow for a knowledge of beginnings that stretches back far enough to encompass the totality of the universe.
Although the Initial Value Problem does not necessarily prove that truth is a completely subjective interpretation of events, it does illustrate that we cannot know whether what we believe, or even what we know, is true. Leo articulates this problem in the novel through the idea of “completion error” (157), in which observers must complete an incomplete sign according to what they see on the page:

The basic point – which can also be illustrated by considering the phenomenon of the blind spot – is that with any incomplete perception – and needless to say all perceptions are incomplete – the observer “fills in” by extrapolating from experience. Or from desire. Or from desire’s other face, aversion. So basically, we focus fuzzy images by transforming them into what we expect to see, or what we wish we could see, or what we most dread to see. By what, in other words, already exists in our mind, what we already have available on file, however dusty the folder. (158)

According to studies of perception and affect, and in common sense philosophy, Leo’s interpretation of completion error connects with the difficulty of individual perception and knowledge production. Taken further, to larger beliefs about the world, whether they be Ptolemaic interpretations of the universe, a belief in God, or quantum physics, the problem of Initial Value based upon a gap in our own empirical perception of the world could still be said to be shared by postmodern interpretations of knowledge, subjectivity, and the problem of truth. Leo’s perspective could very well be based on Russell’s:
In considering the reasons for believing in any empirical statement, we cannot escape from perception with all its personal limitations. How far the information which we obtain from this tainted source can be purified in the filter of scientific method, and emerge resplendently godlike in its impartiality, is a difficult question, with which we shall be much concerned. But there is one thing that is obvious from the start: only in so far as the initial perceptual datum is trustworthy can there be any reason for accepting the vast cosmic edifice of inference which is based upon it. (*Human Knowledge*, 13)

The Initial Value Problem and completion error, the theories that ground the psychological and social relations in *Atmospheric Disturbances*, could also be said to articulate the relationship between art and science, between religion and reason, and between our subjective perception of the world and the objective material world that surrounds us.

Leo offers a definition of a scientist and his or her role in seeking truth when he discovers that, although he has been receiving email responses from a “Tzvi Gal-Chen” who is apparently associated with the Royal Academy of Meteorology, Gal-Chen has actually been dead for many years. *16* Leo has been filling in the gaps between his Initial Value Problem and his beliefs about the world by accepting the messages he receives from Gal-Chen as real:

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*16* The real Tzvi Gal-Chen died in 1994, 14 years before the publication of *Atmospheric Disturbances*. 
If one wishes to be a true scientist – an explorer not in search of what one desires to be true but rather in search of whatever truth there is – then one must be willing to accept, to engage, even to pursue further the most unwelcome and confounding data. One must be willing to make discoveries that shatter one’s most deeply held beliefs. Maybe it turns out that Earth is not the center of the universe. Or that monkeys are our relatives. Maybe we discover that a man is not an expert on himself, or maybe it turns out that we’ve been speaking to the dead.

A true scientist knows to explore, not dismiss, these uninvited discoveries.

Leo’s conception of science, and the role of discovery, questioning, and the ability to move past one’s foundational beliefs concerning the world, is related to similar questions that have been asked in different ways by philosophers of science throughout history. I would suggest that Atmospheric Disturbances models Leo within a poststructuralist analysis of science though Leo’s unique view on reality. Leo’s narrative demands complex analytic interpretations that frustrate the reader’s desire to complete the gaps in the story and make claims to Leo as a psychologically disturbed individual who cannot understand reality. Atmospheric Disturbances asks the reader to question the very nature of reading practices by highlighting how human beings perceive the world differently.

Galchen’s text suggests a reading of the schizo-rhizome of Deleuze and Guattari mixed with the postpositivism of Karl Popper and Thomas Kuhn. In many ways this is the exemplary mix of postmodern thought that moves beyond postmodernism towards a
new idea of knowledge of the human mind after neuroscience offers an understanding of
the materiality of existence and mind. Leo may be an unreliable narrator, but he is a
reliable representation of certain elements of the knowledge-finding processes of
philosophy, psychology, and science. Here is how Leo summarizes his own logical
processes:

[S]omething clouded over my handheld electronic’s moonlight glow, and I turned
to see what, and although my pupils’ contraction near blinded me, I made out the
silhouette of the simulacrum. Her blotting out of screen glow made me think
about the powder on sticks of chewing gum, then the powder in urns, and then
gunpowder, and then the Chinese, and then fireworks, and the feeling was of my
mind tripping along an infinitely winding and meaningless path. (151)

There are a number of ways to interpret Leo’s “winding and meaningless path.” The first
would be to argue that the connections that Leo makes are based on a metonymic
progression from experience to idea, idea to word, word to object, from object to place,
and so on. There is nothing particularly meaningless in connecting three terms that use
the word “powder.” However, Leo’s original idea of “powder” is not logically connected
to his experience of having the light dimmed by another’s presence. Perhaps there is a
logical connection, but the reader does not know, and is not told what that is; if it does
exist, it exists only for Leo, offering up an Initial Value Problem for the reader in
interpreting the chain of connections produced in Leo’s mind. The text seems to play on
the idea of Plato’s cave, moving away from the less-than-ideal image of the shadow’s
representation of the truth to a bathetic, misconstrued interpretation of the simulacrum’s silhouette as a reminder of chewing gum powder. This connection to Plato is made explicit in Tzvi Gal-Chen’s work, as quoted by Leo:

The article had begun by discussing numerical prediction models but then, suddenly, read: *Plato was apparently the first to state that what we are sensing are only images of the real world.* Clearly an unnecessary sentence in a radar meteorology article. Appeals to antiquity naturally, well, appeal, yes, but deploying such a rhetorical move in such a context was highly unusual; clearly it signaled something; it would be foolish to contend otherwise. (86; original emphasis)

Leo believes that Gal-Chen makes another curious intellectual argument concerning the mathematician Carl Friedrich Gauss:

_Gauss, the passage continued, was apparently the first to formulate a mathematical theory of prediction_ — something then to do with the inaccuracy of our observations hindering accurate extrapolation to future states. Again the “apparently.” Under a noise cloud of percolation I continued reading: *In Gauss’s work observations and models were combined to predict the trajectory of a celestial body* – which struck me as a rather inappropriate way of referring to Rema. (86; original emphasis)

Leo’s misreading suggests a form of illusion about reality as represented in Plato’s cave parable. He completes Gal-Chen’s interpretation of meteorology by making a connection
between the text and his own life. Leo creates his reality by reading beyond the words on the page to a reality that exists only for him.

Leo’s thoughts also represent a form of a non-teleological process that is neither chaotic nor principally ordered by scientific methods of classification. To be able to move from chewing gum to fireworks is both an imaginative and socially constructed process that requires having experienced certain elements of each step along the path that leads from one image, or idea, to the next. Some steps are semantically connected, others historically, and still others culturally. But the connections are subjectively ordered through Leo’s experience of the world. The simulacrum and the real begin to blur in a subjective experience of truth in which multiple possibilities exist to explain events. The appearance of the “real,” the ultimate singular truth, begins to crack under such conditions. Hannah Arendt argues that appearances may actually work to conceal what lies behind them:

[T]he truth is, not only do appearances never reveal what lies beneath them of their own accord but also, generally speaking, they never just reveal; they also conceal – “No thing, no side of a thing, shows itself except by actively hiding the others.” They expose, and they also protect from exposure, and, as far as what lies beneath is concerned, this protection may even be their most important function.

(*The Life of the Mind*, 25)

In *Atmospheric Disturbances* the quest for the real, the authentic, or the original is bound together with a search for a future, and knowledge of possible events as figured in the
metaphorical relationship between psychology and meteorology. The search for the “real” Rema and the attempt at meteorological predictions are connected through the distorted appearance of an object that always already conceals itself from view. There is no “real” Rema in other words, no singular, unchanging, original individual that one can see directly from one position. The sense of loss that Leo feels at the disappearance of Rema and the appearance of a simulacrum is metaphorically the loss of the ability to objectively understand the material and physical world in which human beings live.

Galchen’s representation of science through the conceit of meteorology thus becomes a critique of extreme objectivism even as it uses the language of science to create an aesthetic interpretation of human loss. Language becomes the site of possibility, such as in the concluding chapter, where the narrative perspective shifts to the future tense, and hints at possible future scenarios for Leo and the “unreal” Rema, where normality repositions itself to accommodate the new truths of the world:

As time passes, I will begin to wonder how far my collaboration with the simulacrum might, or could, or should, or shouldn’t go. Perhaps we’ll eventually find ourselves wholly making believe as if she is the original Rema, as if nothing had happened. That is perhaps what we were meant to do. Be partners in solving a poorly defined crime. Appear normal. (237)

Of course, such a prediction is a single-Doppler perspective, rife with possible errors and noise distorting the data, that suggests other possible endings to Leo and Rema’s
relationship. What Leo calls “future work” (236) is really just an imagined scenario that may or may not occur.

Despite the ambiguity in Leo’s final predictions, and the real possibility that Leo has become delusional, his loss of grounding in fact does not mean that his predictions are untrue. Leo states:

Toward the end of his retrievals paper Tzvi wrote: “Are these errors a reasonable simulation of those actually present in Doppler radar data? Is there any way to recover useful information from the resulting fields?” Naturally these questions came to mind when I was deciding whether or not to return with the simulacrum to the apartment that I shared with Rema. (236)

Meteorological problems of prediction become problems of both psychological analysis for Leo and literary analysis for the reader. Although all evidence in the text points towards Leo’s mental instability, I would argue that Leo’s belief in the truth of his distorted reality is evidence of the difficulty of moving past one’s beliefs to see a different order of truth. As Rema says to Leo, “[your view of reality] doesn’t make sense to anybody, at least not to anybody else that I know […] Not even to Harvey. It’s just you […] Doesn’t that make you wonder when something is just only you?” (235; original emphasis). Russell points out that the error of an individual perception is solved in the sciences by a form of consensus view of reality:

Science deals with [differing perceptual] matters by assuming a normal observer who is to some extent a fiction, […] but not so completely a fiction as to be
practically useless. When a normal observer sees a difference between two objects, for example that one looks yellow and the other looks blue, this difference is assumed to have its source in a difference in the objects, not in the subjective perceptive apparatus of the observer. If, in a given case, this assumption is erroneous, it is held that multiplicity of observations by a multitude of observers will correct it. By such methods, the physicist is enabled to treat our perceptive apparatus as the source of a constant error, which, because it is constant, is for many purposes negligible. (*Human Knowledge*, 184-85; original emphasis)

In Leo’s case, his single-Doppler radar view of the world, marked by distortions and noise, is complicated by the consensus view of reality that is put forth by other characters. However, the lies that permeate the narrative further complicate any true consensus view of reality based on fact, which Leo points out when he realizes that he may have “become the worst kind of literalist and could no longer be startled past the surface of things” (123). Leo brings this idea of literalism and lying back to language and miscommunication: “As if I really believed in a world where Tzvi didn’t know about Rema, a world where people, oddly enough, meant just what they said” (123). Because of the Initial Value Problem and distortions of individual perspectives, and because Leo realizes that language cannot guarantee truth statements, he maintains a single-Doppler perspective that furthers his inability to move past his beliefs.
Leo seems to have reverted to a form of solipsism that involves a dualistic separation of the mind from the individual’s material, biological being. In other words, Leo cannot engage with reality without reinterpreting the evidence of his senses through an intellectualized vision of his own world. Leo argues that when it comes to completion error, “we can do more than recognize our errors of interpretation; we can examine those errors as clues to the contents of – the preoccupations and desires of – our own minds” (159). Furthermore, such errors tell us something about the reality of the world of the person who, according to Leo, may “author” his or her own perspective of that world:

We can similarly consider the “errors” of a suspected psychosis, the discrepancies between the presumably psychotic vision of reality and a consensus view of the same. Such an examination could (occasionally, conceivably) reveal something other than prismatized fragments (taste of powdered milk + old woman with cataracts + holes in a navy sweater + fresh pretzels = navy poisons milk that the old pretzel factory workers drink down blindly) of the presumed psychotic’s mind. Because although psychosis is often popularly conceived of as an infection or a kind of foreign body, a psychosis is in fact as personal, as eccentric, as interpretable as a dream. Its content comes straight from the mind of its victim, even as its form may be an aberration. … And so although we can call the process of transforming reality into an alternate reality “madness,” we should not forget that the landscape of that alternate reality, all the molecules that make it up, come from the banalities of the life of the madman himself. Therefore each psychotic
experience is singular, a fingerprint. … [I]f the “psychosis” were text, whom would you surmise to be the author? If the text reflects the fears, desires, or expectations of the “afflicted,” then most likely he or she has authored his or her own vision. (159-60)

Leo’s interpretation of completion error and the individual perspective of reality creates links between the material body, the social body, and language. Creativity and textual analysis become linked to a material world through possible distortions of the reality of the material individual:

If a story seems too random, or perhaps too brilliant, for a “madman” to have conceived of it himself, then consider that the “author” might be reality and the “madman” just the reader. After all, only reality can escape the limits of our imaginations. (160)

Here the interpretative error shifts from the writer to the reader, playfully confusing a reading of Leo as a psychotic “madman” who no longer understands reality. The meteorological and philosophical principles that underlie this reading (single-Doppler radar, Doppler effect, Initial Value Problem, consensus view of reality, completion error) all situate the sciences within an understanding of both the nature of fiction and the nature of human behaviour.

Edward Slingerland undertakes a similar reading of interpretation in discussing the inability of individuals to move past perceptions of non-material dualism:
In asking us to give up a dualistic model of the person, the appeal for vertical integration … calls into question what seem to be deeply engrained assumptions about consciousness, creativity, the language-thought relationship, and human agency. Accepting this new, “embodied” model of the self has been likened to the Copernican revolution, although striking much closer to home. … Human beings … cannot help but believe that they inhabit a universe full of other soul-bearing human beings, as well as animals endowed with various degrees of consciousness, anthropomorphic gods, angry seas, and threatening storms. (19)

In Slingerland’s analysis we can see a connection between the belief in a spiritual human soul and the creative construction of fictional reality through the act of anthropomorphizing the world outside of the body. Taking this idea further Leo has moved beyond the soul-based reading of creativity in his interpretation of fictional reality as a possible construct of a material dualism that is based on the human inability to ever truly experience reality. Reality, in other words, can only ever be a single-Doppler interpretation of a world in which we have no Initial Value on which to base our findings. If we consider Russell’s perspective on the importance of the multitude as a precursor to the acceptance of the “normal” perspective, we can see that under misguided notions of truth, especially those that are socially constructed or mandated by organizations, institutions, and government that control access to information and technology, even multi-observer perception can actually be a non-realistic interpretation of “truth.”
Atmospheric Disturbances uses the language of science within a narrative that is defined by the solipsistic nature of the individual perceiver and the problem of the single-individual perception within a model of the universe that is based on dualism and consensus. As I hope to have shown, Galchen argues for the aesthetic nature of scientific discourse despite, and perhaps because of its meaninglessness, and thus its ability to be used playfully to create new ways of knowing. Russell points out a similar opening in the language of science when he invokes a philosophical approach to language, logic, and science and argues for the need to “go behind” the language to perceive other truths that make scientific truth possible.

In Galchen’s text, fiction performs this role for science. Meteorology becomes a new interpretative device from which we can understand the fictional makeup of Leo’s character. Through the conceit the reader is able to go behind the language of science to experience the social makeup of Leo’s reality. Andrew Ross, in Strange Weather: Culture, Science and Technology in the Age of Limits, argues that weather reporting is as much a fiction of the world as it is a representation of the real-world processes occurring outdoors: “It is clear that this fictional world of the Weather Channel is selectively shaped by a social and political mapping of the world as much as it is determined by the atmospheric map of shifting fronts and air-masses” (240). Meteorology, in other words, is part of a socially mediated consensus view of reality. Science helps explain how fiction produces truth, while fiction provides an interpretation of science and reality.
Russell points out how fiction and science are connected by attempting to define the problem and issue of interpretation with regard to time and physics:

In mathematical physics, time is treated as consisting of instants, though the perplexed student is assured that instants are mathematical fictions. [...] Instants were not always regarded as fictions; Newton thought them as “real” as the sun and moon. When this view was abandoned, it was easy to swing to the opposite extreme, and to forget that a fiction which is useful is not likely to be a mere fiction. There are degrees of fictiveness. Let us, for the moment, regard an individual person as something in no degree fictive; what, then, shall we say of the various aggregates of persons to which he belongs? (*Human Knowledge*, 210; original emphasis)

In *Atmospheric Disturbances* Leo’s fictive membership in a fictive organization in order to create a bond with Harvey ends up producing a “real” relationship with Tzvi Gal-Chen that is, in the end, discovered also to be fictive. The layers of untruths end up producing something that could be called a Doppler effect of truth. Truth is a matter of movement rather than stable, material reality, it can be approached, but it can never be touched, and therefore, never shared. In Leo’s reality, truth can only be shared through language, and language is found to be full of noise and distortion. For, as Leo himself points out, one cannot discount the truth of his sense of reality in relation to the fictiveness of his situation. If the reader chooses to assume that Leo’s construction of reality is flawed, then he or she is only doing so because of the desire to judge the fictionality of the text by
his/her consensus view of reality. Leo’s reality is the only reality the reader can ever know; any other interpretation would be based upon attempts at “completion.” Leo’s narrative effectively provides a single-Doppler interpretation of events that allows for a critique of interpretation as a definition of truth and falsity, or science and fiction, as represented in the work itself, and in a larger critique of belief and truth.
Chapter 7


People sometimes say that science is just a systematization of empirical observations, or nothing more than the careful application of common sense. However, it also has the ambition and the potential to show that our senses deceive us and that our basic intuitions may lead us astray.

*Science and Religion*, Thomas Dixon

MAN, n. An animal so lost in rapturous contemplation of what he thinks he is as to overlook what he indubitably ought to be. His chief occupation is extermination of other animals and his own species, which, however multiplies with such insistent rapidity as to infest the whole inhabitable earth and Canada.

*The Devil’s Dictionary*, Ambrose Bierce

Indeed I can see no hope for the Erewhonians till they have got to understand that reason uncorrected by instinct is as bad as instinct uncorrected by reason.

*Erewhon*, Samuel Butler

That Darwin’s theory of evolution was not readily accepted by Canadian academics, theologians, and lay people should not come as a surprise if we consider the currents of religious devotion that tied early Canadian settler society together, and the
predominant method of inquiry in British North America at the time. Scholars decried the fact that Darwin had challenged either the role or the existence of God in his theory of natural selection over time periods that were incompatible with those based on biblical exegesis, and, more importantly, had used a scientific method that had not been proven to offer a truthful account of the world (McKillop, *Disciplined*, 106). Darwin’s influence upon epistemological, ontological, and theological questions, which suggested an absence of a Creator and evolutionary change without purpose created radical alternatives to the socially accepted understanding of human origins and the way in which science was “performed.” In many ways, Darwin rewrote what was then a shared history of human existence amongst Judeo-Christian societies. Harry Karlinsky rewrites Darwin’s own history in his novel *The Evolution of Inanimate Objects: The Life and Collected Works of Thomas Darwin (1857-1879)* (2010) by creating a fictional child of Charles and Emma Darwin. The fictional Thomas Darwin travels to Canada in 1879 only to be incarcerated in an insane asylum and die of tuberculosis. The fictionalization of “Darwin” arriving in Canada provides a comedic reading of the influence of Darwinian theory in the settler colony, while, at the same time, it satirizes the uses and misuses of science in general, and evolutionary theory in particular.

*The Evolution of Inanimate Objects* is structured in much the same way as Jeffrey Moore’s *The Memory Artists* in that the text is designed to signal its “truthful” nature
through a literary postmodern pastiche of scholarly work.\textsuperscript{17} Written as a historical biography of the fictional Thomas Darwin, the novel comprises diary entries, letters, photographs, illustrations, footnotes, a chronology, and a bibliography, among other items of supposed value to the text’s function as a source of scholarly, factual knowledge. However, in contra-distinction to its framework, the language of the novel is ironic, and the comedic nature of the events that make up Thomas’s life clearly signals the intentional fictionality of the biographical form. The satire plays on actual elements of Charles Darwin’s life and theory, and encourages a reading of science as a socially mediated process. An example of this intertwining of fiction and reality within the novel can be seen in the descriptions of Thomas’s upbringing:

When available, Thomas’s favourite outdoor play-fellow was his father, but Charles seldom had the energy to engage in child-driven games. For more consistent fellowship, Thomas relied on the cows, pigs, and ducks that also resided on the eighteen acres upon which Down House stood. During Charles’s “pigeon phase,” Thomas spent considerable time in his father’s pigeon house, where he quickly learned to mimic a number of pigeon sounds, including their warning call of distress: \textit{coo roo-c’too-coo}. Thereafter, and with the amused collusion of his father, Thomas would loudly sound \textit{coo roo-c’too-coo} each time a member of the clergy called upon the Darwins. A forewarned Charles could then

\textsuperscript{17} This is true of the text in all its aspects except in the use of the term “A Novel By Harry Karlinsky[,]” which is printed on the cover and the title page, as well as the “Author’s Notes and Acknowledgments” section, in which Karlinsky “emphatically!” explains that the text is “a work of analogy and fiction” (208).
hurriedly retreat to his bedroom with an apparent exacerbation of any number of physical symptoms, much to Emma’s annoyance. (40-41)

Thomas’s mimicking of the pigeons replaces the mirror that Darwin, in actuality, had installed outside his study at Down House in order to avoid having to entertain certain guests. However, two of Thomas’s sisters soon recognize Thomas’s potential in their bid to access their mother’s jewelry:

As the key fitted badly, Henrietta and Emma often resorted to violently shaking and bashing the [jewelry] box before it would open. Again, Thomas’s skills as a pigeon were required as he timed loud calls of *coo roo-c ’too-coo* to mask the sounds arising from his sisters’ inept thievery. These calls had the unintended consequence of also sending his well-trained father scurrying to his room only to emerge some time later, uncertain as to whether any of his physical symptoms were still required. (42)

Thomas’s mirroring of pigeon sounds replaces Darwin’s physical mirror, while, at the same time, his mimicry produces a mirror image of animal behaviour in both Thomas and Charles, one speaking in animal voices, the other “scurrying” away from social contact.

*The Evolution of Inanimate Objects* suggests a connection between social behaviour and evolution by pointing to the “origins” of particular human behaviour. In one such example, a young Thomas watches from his crib while Charles plays “peek-a-boo while galloping on an oversized rocking horse” (26). Unfortunately, “[o]n the evening of April 10th, 1858, … Charles and the horse unexpectedly toppled quite
violently. Thomas’s moment of surprise quickly transformed into stupefied amazement and then fear” (26). Thomas then cries whenever the game is further attempted, and thus Charles no longer continues with it. There is no suggestion that the event was of major consequence until ten years later, when Charles is out riding:

Charles enjoyed [horseback riding] until one day in early April, 1869, when his “quiet cob Tommy stumbled and fell, rolling on him and bruising him seriously.”

Thomas witnessed the misadventure and was traumatized. Shaken, he retreated into his bedroom for a number of days, consoling himself with repeated games of shadow puppets. Thereafter, he had an aversion to horses and experienced significant anxiety in their presence. Although Charles Darwin never raised the matter with either Emma or Thomas, he was privately convinced the earlier rocking horse incident was responsible for his son’s brief, but otherwise puzzling, regression. (54)

Charles links Thomas’s behaviour to an original moment at which his fear became a part of his character. In such a scenario the idea of social evolution as progressive is reversed. This reversal is linked to another event that occurs a few months prior to Charles’s incident. Thomas and his brother discover some ancient coins in a field near Down House: “One, which appears the older, depicts the image of a head on its obverse; on the reverse there are a chariot and four horses[.]. The depictions on the second coin are much less detailed. On the obverse there is a wreath; a single horse on the reverse” (52).

Illustrations of the coins are supplied in the text, showing that from the perspective of
evolution, the supposedly “older” of the two contains far more detail, and suggests a society that has progressed from the image of a single jumping horse, which is on the “newer” coin, to that of a complex social entity involving animal domestication. Thomas reverses the order of social evolution because he believes that things tend towards less complexity. In Thomas’s interpretation of the coins through the theory of evolution, culture does not progress, but regresses towards a natural state.

Progression and regression through use and disuse are the two movements that make up Thomas’s theory of “The Evolution of Inanimate Objects” (140): “My father believes it probable that, throughout nature, disuse has been the main agent in rendering organs rudimentary; so too, I believe, in the world of artefacts” (120). Thomas argues that the increased use of the lower tine on a pastry fork created a new form of cutlery: “Due to the agency of increased use, the lowest tine expanded significantly and the pastry fork – a new and distinctive variety of the dessert fork – has evolved into being” (134). At this point in Thomas’s theory he has simply made, as Charles points out to him, analogies that reflect his father’s theory of evolution (113). But Thomas expands his theory into a truly “fanciful analog[y]” (113) when he makes claims to having discovered the process by which artefacts evolve:

I will now propose a far different mechanism for variation due to a process that I will term spontaneous mechanical fusion. It is not generally recognized that artefacts are capable of self-propagation. However, in the process of spontaneous mechanical fusion, two distinct artefacts are, as it were, combined. The hybrid
offspring of these spontaneous acts of fusion, I have come to realize, are the most important source of novelty in the artefact world. The mixing of the characteristics of both progenitors produces an abundant supply of variation in every generation. (140-41; original emphasis)

Thomas Darwin’s belief in the sexual congress of different “species” of cutlery leading to new variations is clearly scientifically unsound. However, the same cannot be said for his scientific method.

Thomas’s method of analysis involves two distinct tests. The first is a study of the supposed expansion of the tines of a dessert fork:

Throughout the remainder of his second year at Cambridge, [Thomas] consumed fruit pastry for dessert at the conclusion of each evening meal, using the same dessert fork. He then faithfully recorded a measurement of its lowest tine width prior to retiring each night, no doubt hoping to document a gradual expansion.

(135)

Thomas’s second scientific study involves attempts at documenting spontaneous mechanical fusion: “I laid the handle of a dessert fork end-to-end with the handle of a dessert spoon. After twenty-four hours, the two utensils could easily be separated” (144). Thomas’s negative results, even after twenty-three attempts, are dismissed by him as “parallel to the well-known futility of efforts to breed many animals in captivity” (145). Thomas’s confidence in his theory leads him to write and submit an article to the journal Nature, summarized by his biographer: “Judged on scientific terms, the kindest critique
of Thomas Darwin’s manuscript would begin by acknowledging the two valid premises contained within its opening paragraph” (147). However, despite the validity of his premises, “Thomas’s conjecture was literal. In his mind, artefacts were not sterile physical objects” (148). The biographer then sums up the entire problem with Thomas’s theory: “Inexplicably, Thomas had overlooked the role that man played in overseeing and controlling the manufacture of artefacts in his ‘fusion’ speculations” (148). Thomas’s theory is the focal point of the novel’s satirical thrust at issues of truth, reason, knowledge, and ultimately sanity and insanity. In creating an analogy between biological evolution and cultural manufacturing, Thomas’s theory allows the reader to question the line between scientific theory and fantasy.

Thomas’s theory is mirrored most directly by Richard Maurice Bucke. Although the novel focuses on Thomas Darwin as the biographical subject, it contains a subversive reading of Bucke, an actual Canadian doctor, mystic, and “disciple” of Walt Whitman.18 Karlinsky’s novel frames the fictionalized elements of the text with similarly incredible actual events that took place around the same period of time in Canada. Richard Maurice Bucke’s role in the text is extrapolated from his real life as a doctor of medicine working at one of the largest psychiatric institutions in Canada during the nineteenth century, the Asylum for the Insane in London, Ontario. Bucke was born in England in 1837, and his family moved to London, Ontario shortly afterwards. According to Artem Lozynsky, after an adventurous early adulthood roaming the western United States, “in 1858

18 See R. M. Bucke: Journey to Cosmic Consciousness (1994) by Peter A. Rechnitzer for a detailed biography of Bucke.
[Bucke] returned to Canada and McGill University” (Richard Maurice Bucke, 22). Bucke’s academic career seems to have been productive: “He was graduated as a doctor of medicine in 1862. His thesis, ‘The Correlation of the Vital and Physical Forces’, showing his early interest in the relationship of the spiritual and the physical, won the Governor’s Prize and was published” (Richard Maurice Bucke, 22). Bucke’s academic interests moved beyond the medical and scientific, and he brought together numerous areas of study in his reading practices:

[After McGill] Bucke then left Canada for two years of study in England and France. A portion of his diary, for the years 1862 to 1866, has survived and provides a record of his day-to-day reading, which was both systematic and extensive. Along with medical books he read philosophy and literature. He read Auguste Comte almost daily, but his most detailed diary notations concern fiction and poetry. Although he read the classics systematically, he reserved his commentaries for contemporary literature. (Richard Maurice Bucke, 22)

Through Bucke’s diverse interests, in science and literature, medicine and art, philosophy and faith, a pattern emerges that leads Bucke towards something beyond previous interpretations of existence. Bucke brought together modern scientific understandings of biology, and in particular the human mind, with philosophical ideas of human existence that engaged with both the physical and the mystical.
The idea that Bucke began formulating from his readings went far beyond his sources, however, as he states in a letter to his English friend Harry Buxton Forman in 1871:

It will be nothing less than a new theory of all art and religion and I am sure a true one. It will furnish a sound basis for poetical and other art criticism, not but that taste and ability will be needed to work on this basis. It will supply a new theory of the universe and of men’s relations to the external universe and which being as a religion as positive as positivism and will supply more hope for mankind and will not shut up men’s faculties in the known and present in the same way that positivism does. (qtd in Lozynsky, 29; original emphasis)

Bucke’s thesis, which is based on his idea of “cosmic consciousness,” was eventually published and expanded upon in two separate texts: Man’s Moral Nature: An Essay in 1879 and Cosmic Consciousness: A Study in the Evolution of the Mind in 1901. Stepping away from scientific reason, Bucke created a mystical vision of human immortality, peace, and love that came from a power that religion (and science) could not define. One important element in his theory was a physical moral system within the human body that had evolved through natural selection. Time and the forces of evolution had allowed certain human beings to reach a state of enlightenment never experienced before. Only certain people throughout history had experienced cosmic consciousness completely (fourteen known for certain according to Bucke, with other possible cases including Bucke himself), and those individuals were prophets. Bucke listed Walt Whitman as one
of the fourteen individuals. Upon Whitman’s death Bucke proclaimed in a letter that “The Christ is dead! Again we have buried the Christ!” (Lozynsky, 184). Bucke represents a mind that creates patterns, ideas, and complex structures of worship that cross disciplinary lines. For Bucke, literature, science, and religion come together in a human consciousness based on unknowable truths that nevertheless can be experienced, or felt, by individuals.

Karlinsky’s fictional Thomas Darwin works as a foil to compare the complicated and fascinating figure of Richard Maurice Bucke. Thomas may maintain an implausible belief in the nature of cultural evolution, but in many ways his theory is based on a logical, if unsound argument (with echoes of Richard Dawkins’s *The Selfish Gene* and his theory of memes). In a letter, Charles Darwin responds to his son’s ideas about the evolution of cutlery by offering some advice concerning unpopular theories:

I rejoice in your independent mind and your determination to make a contribution to the field of science. Further, I am impressed with the potential application of the evolutionary analogy to the world of artefacts, provided fanciful analogies are not drawn. (Be aware, however, of the persecution and ridicule that awaits the public presentation of new ideas.) If I reflect on my own success as a man of science, whatever this may have amounted to, I believe it has largely been determined by these same mental qualities which you so amply possess. I hope this will be seen more as a comfort than a concern. Hurrah for the forks and for the knives and for my son Thomas. (113-14)
Here we can see a connection between the historical Charles Darwin, the fictional Thomas Darwin, and the historical and fictional Richard Maurice Bucke. Karlinsky connects Bucke and Thomas, Darwin and Whitman, science and literature, reason and faith through the limits of human thought and its possible states of sanity and insanity of the human mind. By situating the bridge between disparate areas of knowledge in the insane asylum, Karlinsky’s text, like others I have considered in this thesis, decenters the notion of a singular “sane” definition of truth. Thomas Darwin’s mental “regression” into insanity is thus a central conceit for the problems of knowledge, faith, science, religion, and fiction.

Thomas Darwin is born on December 10, 1857 and dies just shy of twenty-two on October 23, 1879. Bucke’s role in Thomas’s life would, on the surface, appear marginal, in that he is only involved with the young man for a short period of time: “Under the subsequent care of Dr. Richard M. Bucke, Medical Superintendent, Thomas’s tragic confinement within the London Asylum spanned just four months, from July 2nd to October 23rd, 1879” (85). Yet Bucke’s role in the fictional biography is prominent, with a number of photos of the London Asylum displayed throughout the text, as well as a photograph of Bucke alongside a photo of Walt Whitman, showing their uncanny similarities of appearance. Letters from Bucke to Darwin, as well as Bucke’s diary, all fictional, create a perspective on Thomas Darwin through both their views on his condition and Bucke’s view of the nature of the world. Ultimately, the line between Bucke and Thomas is drawn as a question of insanity and reason, and the fictional
biographer states: “Charles Darwin must often have pondered the fine line that separated his son’s creative insights and his madness. And perhaps wondered whether, like Thomas, he, too, had teetered between the worlds of reason and unreason” (196). Or, as Charles Darwin states, “My [Father, Dr. Robert Waring Darwin,] says there is perfect gradation between sound people and insane. – that everybody is insane, at some time” (196). Thomas’s “regression” into unreason is made glaringly obvious in his belief that spoons, forks, and knives are able to reproduce, and thus evolve, sexually. Because the line is far less clear in Bucke’s case, he is a perfect model for Karlinsky’s critique of human epistemology.

Artem Lozynsky argues that “Bucke’s grand synthesis was based on two concepts: the scope and physiological foundation of man’s moral nature, and the all-pervasive force of evolution” (35). This is the simplest and clearest evaluation of Bucke’s line of reasoning. However, Lozynsky elaborates:

On the surface, [Man’s Moral Nature] appears to be a philosophic treatise, directed to an audience of non-specialists, in which the author ranges over many areas of knowledge to develop, illustrate, and prove his thesis. His method appears to be inductive; that is, by carefully examining the nature and function of the sympathetic nervous system, he will establish the origin, operation, and evolution of man’s moral nature. … As a philosophic treatise based on the inductive method, the book is unconvincing on the popular level and inept on the serious level. It is really an attempt at metaphor, rather than an attempt to
establish a philosophic system. Bucke was a mystic: at the age of thirty-five, he experienced a vision of the nature of the universe and man’s relation to it. From that day on, he devoted his life to finding evidence for what he knew in his heart to be true, proceeding from illumination to example. Unfortunately, he was no poet: he did not find an objective correlative for his illumination but tried to demonstrate and justify it to others by means of an unwieldy philosophic structure. (34)

We can begin to see the character of Thomas Darwin arising out of the figure of Richard Maurice Bucke and his grand scheme of the universe. By basing his thesis on an existing scientific theory and an emotional personal vision, Bucke incorporates the epistemologies and practices of poetics, science, and religion to create a new model of the universe. Thomas Darwin employs the same logical methods to link evolutionary theory and his fascination with cutlery to produce a theory of cultural evolution.

Richard Maurice Bucke’s thesis, and by extension, Thomas Darwin’s, are not new or original. They fit comfortably within the controversial yet important field of theory known as vitalism. Vitalism is a tradition of thought reaching back centuries that takes the view that non-physical forces act on objects to create such phenomena as consciousness. Vitalism questions the very nature of life, its origin, and its evolution, and has moved between the mystical and the scientific through such fields of inquiry as philosophy, psychology, chemistry, biology, and theology. L. Richmond Wheeler elaborates on the definition from the Oxford English Dictionary:
[Vitalism is “the] doctrine that life originates in a vital principle distinct from chemical and other physical forces.” But such definitions are too brief and vague to be satisfactory[.] Science only knows “life” in the concrete, in living things. The definition quoted suggests biogenesis, the fact that living things are produced only by already existing organisms. But this is inadequate, for every historical theory of vitalism implies not only origin but growth and metabolism through some distinctive agency which might be termed “vital principle.” (Vitalism, vii)

Bucke’s interest in the ability of organic matter to arise from inorganic matter, the creation of life itself, and its progression towards more complex structures, undertakes a similar project. Peter A. Rechnitzer explains Bucke’s view of “The Correlation of Vital and Physical Forces” as expressed in Bucke’s published article in the British American Journal:

Bucke’s hypothesis was that the distinction between inorganic and organic form (mineral vs. animal/vegetable) is simply a difference in the way forces acting on those forms are transformed. Physical forces such as heat and light become altered into vital life forces (forces peculiar to a living organism) in the cell by virtue of a chemical change. The type of vital force depends on the nature of the cell: a nerve cell converts a non-biological stimulus such as heat or light into a nervous force carried to its destination by the nerve. (35)

Bucke states clearly in his essay that his focus is not on medicine, despite the fact that the thesis led him to obtain his degree as a medical doctor from McGill. Bucke was interested
in the underlying makeup of conscious existence, and the growth of consciousness in the individual and the species. “Furthermore,” Bucke states in his introduction,

the subject I have chosen though not strictly a medical one, yet must be acknowledged to lie at the basis of all branches of medicine; to be in fact the trunk of the great medical tree; for as it has to do with the nature of life, so it is the very ground work of Physiology and Pathology, and as such underlies the whole subject of the practice of medicine; and I think it is not too much to say, that until we have some clearer understanding of life than we at present possess, the great blank which lies between the knowledge of the nature of medicines on the one hand, and their obvious actions on the other, will never be much encroached upon; and until our knowledge covers this, the practice of medicine can never be truly a science. (“Correlation,” 161-62; original emphasis)

Bucke thus argues that the fundamental problem within the study of medicine was knowledge of the origin and distinction of organic life. If medicine did not undertake the essential question of life seriously, then it was not to be considered a science. The interesting fallacy of Bucke’s inquiry is in its rhetorical attempt to equate medicine, science, philosophy, and general inquisitiveness under a value-laden rubric of hierarchy.

Science, it seems according to Bucke’s analysis, is at the pinnacle of the disciplines, and only those areas of study that lead to certain understandings or knowledge about the world can be labelled as such. Yet vitalism crosses the boundaries of science and mysticism, and Bucke’s theory is really evidence of his early attempt at bringing
numerous theories together to create a larger, more complex, if generally unscientific, view of life.

Karlinsky’s novel does not expressly discuss vitalist theories of the universe, but they underlie the novel in their connection to questions of morality in relation to evolution. *The Evolution of Inanimate Objects* integrates Bucke’s theory of moral evolution in *Man’s Moral Nature*, and in doing so, creates a link between Bucke’s theory of cultural evolution and Thomas Darwin’s theory of the evolution of inanimate objects. Thomas’s biographer states:

> Ironically, Bucke’s notion that the forces of natural selection could operate on more than the physical characteristics of animals and plants was the same guiding principle that Thomas Darwin had imported into his own terrain of interest – in his case, not morals, but the world of inanimate objects. (165-66)

The connection between Thomas and vitalism is thus entrenched through a shift from questions of metaphysical problems of human evolution towards a materialist conception of cultural evolution. The biographer, in explaining Thomas’s main thesis of material evolution, observes:

> Thomas also recognized that one form of the inventive act can be viewed as “combining existing and known elements of culture in order to form a new element.” Or, stated another way, Thomas recognized that the process of fusion was a blueprint for innovation. When features of A are fused with those of B, the novel product C emerges. Thus, when the fork and spoon are fused, it is the olive
spoon, the ramekin fork, and the oyster fork-spoon that are generated – each new utensil highly advantaged in specialized circumstances. The explicit documentation of a formula for invention was a legitimate contribution by an early student of technological innovation, an area of study in which Thomas was a pioneer. (191)

Thomas’s theory of the evolution of inanimate objects is a parody of cultural evolution as a straightforward parallel to the biological evolution of species. Thomas’s interpretation is a genuine analysis of cultural evolution (that is, the logic behind the theory, not its argument for the sexual life of cutlery) which accurately describes how inanimate objects come to survive or disappear within cultures. Karlinsky’s novel reveals the delicate construction of the epistemological problem of truth that is represented between belief and reason, faith-based and scientific ways of knowing, and the fine line that resides between sanity and insanity.

Thomas’s theory also returns the reader to the problem of Bucke’s interpretation of Darwinian evolution from the perspective of human morality:

In *Man’s Moral Nature*, Bucke offered a proof of moral evolution based on his detailed comparison of documents and artistic works of the nineteenth century to those he viewed as morally inferior from earlier times. Bucke’s mechanism of explanation for man’s “upward” moral evolution was based on Charles Darwin’s theory of natural selection. Bucke argued that well-developed and superior morals aided survival or reproductive success. An individual with a well-developed sense
of fear was more likely to live longer; an individual with a well-developed
capacity for love was more likely to find a reproductive partner. As Bucke stated,
such individuals who possessed an advanced moral nature, “must necessarily
encroach upon the inferior individuals and races with whom they come into
competition in the struggle for existence.” (164)

Both Thomas and Bucke have thus used the Darwinian theory of natural selection in
attributing biological processes to cultural practices. Neither the invention of novel
cutlery nor the ever-changing moral landscape of any human culture can be explained
directly from the Darwinian theory of natural selection. There is no “moral system” in the
human body, as Bucke suggested, and cutlery cannot mate. The novel satirizes Bucke’s
analysis of religion, science, and truth.

In collapsing science and religion, Bucke produced a theory that integrates the
scientific methodology of empiricism and prediction into the emotional desire for a
religious connection with a universal power. Rechnitzer explains Bucke’s views:

[Bucke] expressed his belief that man’s ability to articulate more complex
concepts would not have been possible without his refinement of language. He
saw fairly recent evolutionary acquisitions such as colour perception as evidence
of further development. This led Bucke to make the case for yet untold future
intellectual advances of which we are not yet aware. He saw it simply as part of
the evolutionary journey to cosmic consciousness, at present the prerogative of
the special few including Whitman, but accessible to increasing numbers in future generations. (85)

Like Thomas Darwin, Bucke uses empirical scientific evidence of biological evolution to make further, less empirical associations between the past and the future. The hypothetico-deductive analysis of Charles Darwin in Bucke’s texts becomes the mystic-religious interpretation of superior moral beings. In Bucke’s view the methodology of scientific observation conforms to his own mystical illumination, a highly personal, subjective experience for which Bucke sought out an explanation.

Rechnitzer helps to explain Bucke’s role within Karlinsky’s novel when he discusses the possibility that cosmic consciousness might actually be a delusion:

Bucke pondered the possibility that the attainment of cosmic consciousness was a delusion, as individuals who suffer from a delusion are certain of its reality. But there are important differences. Individuals who attain cosmic consciousness are moral; their sense of morality is further exalted by the experience, whereas the psychotic view of the deluded is often immoral or amoral. … Finally, Bucke argued, that since all great civilizations rest on the teachings of such enlightened men as the Buddha, Jesus, Mohammed and Whitman, it follows that if these leaders were deluded, then all our civilizations would be delusions. (207)

Rechnitzer intuitively, if not accidentally, encapsulates the crux of The Evolution of Inanimate Objects; he grasps the central problem between science and religion in their attempts to be purveyors of truth. It follows from Rechnitzer’s analysis that if Ptolemy
was wrong, or, more importantly, if Darwin was wrong, then our knowledge concerning
the position of the Earth in the universe, or how evolution takes place, is wrong as well.
The worship of doctrine through central religious figures and the belief in science’s truth
based on the hagiography of individual human figures are connected through Bucke’s
misreading of both science and Whitman.

Karlinsky credits a number of “streams of legitimate scholarship” (209) feeding
into his creation of the fictional manuscripts and thoughts of the Thomas Darwin. His
acknowledgment includes the works of Charles Darwin, *The Evolution of Technology*
(209). Petroski’s chapter on “Form Follows Failure,” which presents the thesis behind
Petroski’s text as a whole, discusses Basalla’s ideas concerning cultural evolution as it is
connected with biological evolution:

Basalla dismisses the “traditional wisdom” that attributes technological diversity
to necessity and utility, and looks for other explanations, “especially ones that can
incorporate the most general assumptions about the meaning and goals of life.”
He finds that his search “can be facilitated by applying the theory of organic
evolution to the technological world,” but he acknowledges that the “evolutionary
metaphor must be approached with caution,” because fundamental differences
exist between the made world and the natural world. In particular, Basalla admits
that, whereas natural things arise out of random natural processes, made things
come out of purposeful human activity. Such activity, manifested in

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psychological, economic, and other social and cultural factors, is what creates the
milieu in which novelty appears among continuously evolving artifacts. (24)

Two important points can be taken from this explanation: the first is that, according to
Basalla, biological evolution can be compared to cultural evolution through the rhetorical
device of the metaphor, which parallels Darwin’s idea of the analogy between biological
and cultural evolution; the second point is the suggestion that the difference between
natural and cultural worlds or processes resides in the notion of “purpose.” If human
beings produce things for a certain purpose, nature, according to Basalla, is random and
has no teleological movement.

This seemingly non-controversial argument becomes controversial when it is
applied to faith-based epistemologies. Charles Darwin himself was troubled by the
implications of his theory of evolution with regard to religious beliefs. His wife Emma
Wedgwood was a devout Christian, and Darwin struggled throughout his life with his
own agnosticism and his desire to respect his wife’s beliefs. Today, pseudo-scientific
organizations utilize scientific methodologies to counter evolutionary theory in order to
“prove” the existence of a divine Creator. Science and religion become intertwined in a
game of truth-telling based on the conundrum produced by the distinction between nature
and culture, or, between humans as creators with a purpose, and nature as purposeless,
unmotivated, and void of a Creator. Nature and culture, biological evolution and cultural
evolution, are the sites of inquiry that cross at the threshold of “insanity,” or the inability
to distinguish fact from fiction, truth from reality, and science from religion. Bucke
represents this unstable position within Karlinsky’s text as both a scientist turned mystic, and as the head of the London Asylum for the Insane, who is certified to analyze Thomas Darwin’s belief in the evolution of inanimate objects as “insane,” while, at the same time, believing in his own theory of human moral evolution based on a similar theoretical analogy between scientific method and faith in reality.

Due to the satiric connection between fiction and reality in the novel, it is not surprising that the biographer in The Evolution of Inanimate Objects places the majority of the blame for Thomas’s ill-conceived notion of the evolution of inanimate objects on literature in general, and a certain novel in particular. “In Erewhon,” the biographer states, “[Samuel] Butler applied the idea of Darwinian evolution to the world of machines. Machines were evolving towards reproductive systems, he argued, provided one was willing to extend the definition of what a reproductive system encompassed” (148). “Thomas,” he continues, “failed to grasp the satirical intent of Erewhon” (150). Karlinsky layers a secondary satiric quality on to Butler’s novel by metaphorically re-inverting Butler’s title to the absent space that is “nowhere,” a satirical reversal Karlinsky uses to express the difficulty of creating truth from analogy. In other words, the proof required for the conditions of scientific knowledge is missing for Thomas Darwin because of his inability to register the fictional proof of the fictional Erewhon as satire. Thomas Darwin misreads a text that already, albeit on purpose, misreads evolutionary
theory in order to critique the nature/culture divide. Satire, which speaks from behind the truth in order to show a different perspective to the audience, becomes the vehicle as it takes on a complex interplay between reality and fiction in *The Evolution of Inanimate Objects*. If satire is used to speak falsely in order to speak truth then Thomas and Burke represent the idea that neither science nor religion can escape the fact that they too are always possible sites of analogy, metaphor, and fiction. Like Thomas More’s *Utopia*, which is a place that is no place, Butler’s “nowhere” gestures towards the close connection between truth and untruth that gives rise to satiric representation. The real Bucke comes close to actually producing a satiric description of nature in explaining the existence of an afterlife. According to Rechnitzer, in an attempt to help those who could not conceive of an afterlife necessarily different from our earthly existence, Bucke used the analogy of a society of unborn babies. A society of foetuses whose world was dark and warm and soft could not imagine a life of breathing air, independent of a placental blood supply. (85) Bucke, it seems, could very well have been writing fiction in his attempt to prove scientific reality through analogical interpretations of human existence.

Yet it would be inappropriate to dismiss Bucke out of hand, as many have done for both his work as a medical doctor and as a disciple of Whitman. Rechnitzer points out

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19 Bucke performs a similar misreading of Walt Whitman’s *Leaves of Grass* in making a connection between the metaphysics of Whitman’s poetry and his own belief in an eternal afterlife.
that Bucke’s view of insanity was more progressive than other contemporary interpretations:

If asked about the nature of sanity, [Bucke’s colleagues] would likely dismiss the subject by simply saying that sanity consisted of thoughts and feelings which were in accordance with the truth of things.

Bucke challenged this view by pointing out that in several important areas the perceptions of the so-called sane person were not in accord with reality. His first example was our distorted perception that we, our houses and our surroundings are stationary objects on a stationary earth unaware of our movement through space. (118; original emphasis)

Bucke judged fact from fiction based on either the ability or inability to perceive and sense the world, and this is where Bucke lays claim to a privileged position as scientist and philosopher. By creating a link between his theory of sanity and evolutionary theory, Bucke’s thesis produces a teleological reading of humanity progressing towards a more evolved state. However, what is truly at stake here is that in arguing from the perspective of the illusion of truth, Bucke was able to shift his argument from the view that science could be proven wrong to the more fallacious argument that faith could be proven right.

In Karlinsky’s novel, Bucke initially hesitates to believe that the young Thomas Darwin is, indeed, the son of the eminent Charles Darwin, because he has had a previous experience of “misdiagnosing” the character of another patient of the asylum:
His mistrust stemmed from a misdiagnosis that occurred two years prior to Thomas’s admission. Bucke’s appointment at the London Asylum was on the basis of political patronage, rather than any expertise or even aptitude. When he first arrived as a novice medical superintendent at the London Asylum in 1877, Bucke had virtually no psychiatric training and was remarkably naive. One of his first patients with mania presented with a grandiose delusion that she was a relative of Queen Victoria and convinced Bucke to petition for her release directly to Ontario’s Provincial Secretary. This proved to be an enormous political embarrassment, and Bucke was harshly chastised by Inspector J. W. Langmuir to whom he directly reported. (88)

Bucke learns from the deception that truth goes beyond either mere appearance or statement. In order to believe something to be true, Bucke discovers, material evidence and persuasive rhetorical language must be present at the same time.

In Samuel Butler’s *Erewhon*, the protagonist visits the fictional society of Erewhon where everything is a reversal of the typical British Victorian social perspective. The people of the country have foregone constructing mechanical objects because of the fear that they will ultimately develop consciousness through natural selection and become dangerous to humans. Thomas’s theory of the evolution of inanimate objects is thus a reflection of Butler’s satiric view of biological evolution. The philosophical elements of the earlier text are exploited in Karlinsky’s novel in an analogy of truth and faith. For instance, when the protagonist and narrator of *Erewhon* introduces
himself to the reader, and explains the point of his tale, he suggests that it may be “doubted” unless he were to “tell the whole of it” (2). Because the tale is so incredibly fantastic, he explains: “My chief consolation lies in the fact that truth bears its own impress, and that my story will carry conviction by reason of the internal evidences for its accuracy. No one who is himself honest will doubt my being so” (2). Butler renegotiates the terms of truth in this instance by making claims on the reader’s honesty as symbolically, if not materially, linked with the truth of his own story. Rather than doubt his story, which would go against the understanding of truth from the perspective of faith, Butler suggests that the reader must recognize the physical manifestation of truth in the story through the honesty of his or her self. Like begets like, proof begets proof, as long as one has faith in the idea of truth. In the case of Thomas Darwin, Butler fails to prove his case effectively because satire affects only those who can see the meaning that lies behind the text. In this way, Karlinsky’s references to Butler comment on the nature of truth as a form of faith when appropriated by epistemological systems of truth-telling such as literature, science, and religion.

Ultimately, The Evolution of Inanimate Objects questions the nature of truth as it is related to science and faith. The most cutting element that informs the ethical nature of science in the text is the question of Thomas Darwin’s sanity and the decision to place him in the asylum because of his theory of the evolution of inanimate objects. Here we have the problem of political and social authority and hierarchy in relation to truth. As I have pointed out, Thomas’s worldview does not conform to the predominant strand of
thought concerning inanimate objects and their ability, or inability, to reproduce despite having a somewhat logically coherent argument that is comparable to that of R. M. Bucke, his incarcerator.

Charlotte Sleigh points out that the search for truth does not always need to end in a final point of absolute certainty concerning phenomena:

Truth is not just a question of factuality: in most cases it also possesses a weight of worth. When we speak of ‘seeking the truth’, we don’t mean merely looking for verifiable facts, for these could be trivial. Instead the phrase implies something much more significant – that the quest will have moral substance. [...] Just as it is in literature, so truth in science is also a broader thing than simple factuality.

Before we decide whether or not to believe particular claims of science, we have to agree [on] the general criteria for believing and valuing them. (22)

Sleigh complicates the issue of ethics within science and literature by placing ethics within the sociality of language use. Karlinsky’s novel performs a similar interpretation of ethics by placing Thomas Darwin in the hands of those who produce the social processes that determine what is true and what is false.

Samuel Butler’s Erewhon prefigures Karlinsky’s critique of ethics through Thomas Darwin. The traveler and narrator of Erewhon, Higgs, describes the country’s justice system by detailing a number of cases that he witnesses during his experience. As

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20 The narrator is not actually named in Erewhon, but Butler provides it to the reader in the sequel: Erewhon Revisited Twenty Years Later Both by the Original Discoverer of the Country and by his Son (1901).
would be expected from a satire, the actions that are considered criminal in Erewhon are an inversion of British legal customs and values. Thus in Erewhon one is considered a criminal for being physically unwell, and goes to a “straightener” to relieve such symptoms as theft or embezzlement (94-5). Higgs expresses his feelings concerning insanity in Britain:

Again, take the case of maniacs. We say that they are irresponsible for their actions, but we take good care, or ought to take good care, that they shall answer to us for their insanity, and we imprison them in what we call an asylum (that modern sanctuary!) if we do not like their answers. This is a strange kind of irresponsibility. What we ought to say is that we can afford to be satisfied with a less satisfactory answer from a lunatic than from one who is not mad, because lunacy is less infectious than crime. (122)

Butler’s maniac is an apt description for Thomas Darwin in that the diagnosis of insanity is based on his inability to respond accurately to the external world. In fact, Butler’s satiric view of Erewhon and its inhabitants is founded on Butler’s own view of evolutionary theory and the question of scientific practice and belief. Bernard Lightman, in “‘A Conspiracy of One’: Butler, Natural Theology, and Victorian Popularization,” argues that despite Butler’s belief in evolutionary theory and questioning of natural theology and religion in particular, he could not bring himself to accept Charles Darwin’s science: “Butler rejected the statement in the Times that Darwin’s discoveries were due to his rigorous adherence to proper scientific method. ‘The great method which Darwin
used,” Butler declared, ‘was personal social influence and a plausible manner – but this is not a new discovery’” (113). Thus Butler, at least partly, based his reading of Darwin on the way in which Darwin argued his theory, and the way in which he was socially positioned to do so. Butler has, in effect, taken a stance on the ethical implications of the cultural dissemination of truth, and the consequences of truth on areas of knowledge such as religion, natural theology, literature, and, of course, science. Karlinsky’s Thomas is thus positioned as the double-sided Darwin; he is both fictional and real, insane and brilliant, a satirical object and icon, a representation of truth and of untruth. Thomas comes to represent both his real father, and his father’s very real fear of insanity in his family.

Charles Darwin never travelled to Canada. Not in reality, nor in Karlinsky’s novel, in which it is suggested he will actually do so in order to help his son. But Darwin’s theory of evolution did “arrive” in Canada at a particular point in history, and it, too, had to be proven to be a “sane” description of the world in a society that privileged theological narratives concerning the nature of nature itself. Thomas Darwin, it could be argued, is a fictional representation of Darwinian theory in Canada with regard to the struggle for expression required to make evolutionary theory an accepted narrative about biological life. Thomas Darwin is also representative of the ongoing struggle between theological and scientific narratives to lay claim to the objective truth concerning life. The main biographical section of Karlinsky’s text ends with a somber look at the Darwins: “In the end, Charles Darwin lies buried in Westminster Abbey, his
son Thomas on the grounds of the London Asylum. One long argument. One step further” (196). The fictional and the real intertwine in this passage in both the characters and the theme of the novel. The “one step further” suggests that the recovery of Thomas’s life is itself part of the “long argument” taking place between those who believe and those who do not. At the same time, the text as fiction inverts the reality of such a claim, as it actually complicates what scientific discourse would call truth. Of course, Karlinsky’s satiric perception of science, literature, mysticism, insanity, and religion frustrates any possible claim to truth that could be made. The “one step further” is the rhetorical strategy used by Karlinsky to engage with the argument, even if the truth of the argument comes about through the fictional nature of the narrative.

*The Evolution of Inanimate Objects* is an apt work with which to conclude my study as it correlates many of the issues considered by the other texts in my corpus, and also because it problematizes the history of science in Canada in a way that suggests further work is needed in the area. Rather than offer conclusive proof of historical continuities and truthful encounters between disciplinary epistemologies, the texts in my corpus all express the need for further analysis of the area of human knowledge that lies between truth and fiction. Contemporary Canadian works of fiction offer unique perspectives on changing cultural interpretations of the human being through the metaphysical threads that connect the sciences with religion and literature.
Chapter 8

Conclusion

The art historical object from long ago – a vase, painting, or sculpture – is still art today, however much tastes have changed. But the scientific object from long ago – curing by leeches, the ether, a geocentric solar system, and so on – isn’t science at all. It is myth or fiction.

*Always Already New*, Lisa Gitelman.

Ever since quantum mechanics, miracles have gone from this world.

*Darwin Meets Einstein*, Frans W. Saris

All science approaches universality, certainty, and predictability as its goal, though it is at the same time recognized that there may never be an end to the road leading there.

*Science and the Humanities*, Moody R. Prior

In Rivka Galchen’s *Atmospheric Disturbances* readerly authority is undermined by the difficulty in seeing behind the narrator’s beliefs about the world, pointing to problems of truth and perspective. In Tim Bowling’s *The Bone Sharps* the biological body becomes a site of contestation between binary oppositions when fossil hunter Charles Hazelius Sternberg asks: “[b]etween the dead and the living, how much difference did the body make?” (160). Authority, perspective, and questions of difference and the degrees between differences all bear on the representations of science I have
looked at in this study. I have shown that the problem of truth and fiction amounts to the problem of determining who is asking questions about the nature of existence, and who is answering such questions. Moody R. Prior has proposed a number of questions about the divide between the arts and sciences:

What is science? What are the humanities? What distinguishes these two forms of creativity, these two ways of bringing order and meaning to the data of experience? What are the methods peculiar to these disciplines, the boundaries by which each is circumscribed, and the special qualities and powers characteristic of each? (Science and the Humanities, 3)

The questions Prior asks offer us the possibility of searching for, and perhaps finding, ways of knowing, but never reaching an endpoint to the problems of ontology and epistemology. As I have illustrated in my readings of Harry Karlinsky, Joan Thomas, Rivka Galchen, Tim Bowling, Douglas Coupland, Nino Ricci, and Jeffrey Moore, perhaps the reason individuals never find the same answers to life’s questions is that the perspectives we hold, the beliefs that are foundational to our understanding of the world, and the methodologies we use to determine truth produce different responses to the environments in which we live. Jeffrey Moore’s The Memory Artists shows how memory and individual interpretation influence human behaviour, reading practices, and knowledge of the world; Douglas Coupland’s Player One is an examination of the degrees of difference and the problem of individuality among human beings across spectrums of truth, belief, and biological materialism. The texts I have studied in this
work all offer a similar response to questions about the role of science in the contemporary world: they all represent problematic readings about how the individual experiences the world, how the physical environment shapes his or her worldview, and how human beings interpret, both emotionally and perceptually, the evidence that is found through, and beyond, the senses.

By showing how science is represented in contemporary works of Canadian fiction that employ postmodern perspectives on epistemology, I hope to have presented how poststructuralist discourse is in dialogue with recent interpretations of science that tend towards a more inclusive understanding of multiple discursive viewpoints. The specificity of knowledge that is important to institutional practices today has produced a separation among epistemological “departments.” If one shifts perspective from the local area of study that produces a singular work through an individual research program, one can see that science, literature, religion, and all other ways of expressing knowledge are simply that: ways of knowing.

Steven D. Hales argues in *Relativism and the Foundations of Philosophy*, through a complex and philosophical meditation on the nature of truth, that his own work reaches an uncomfortable conclusion about relativism and knowledge. Hales argues that rationalist discourse offers no privileged position on a truth about the world and that mind-altering ideas and substances such as religion and hallucinatory drugs can offer similarly valid ways of discovering truth (184). Hales’s proposition is that “truth values of philosophical proposition are relative to doxastic perspectives, and may be true in one
perspective and false in another” (184). What is interesting about Hales’ conclusion is the way in which he accepts the outcome of his argument despite his underlying beliefs about the world. In arguing against the truth of divine revelation and the experience of hallucinogens he states:

These methods seem primitive and absurd to me, prescientific, barbarian methodologies that anachronistically survive in the modern world. … And yet I am persuaded by the arguments I have given that the truth about what my moral obligations are, the existence and nature of God, the nature of art, the analysis of knowledge, and the rest are all relative truths. (184-85)

Hales is, of course, focused on the nature of philosophical enquiry, and not necessarily the scientific method, but there are a number of ways in which his conclusion can help shed light on my own argument concerning the recent turn towards representation of science in the English-language literature of Canada. The first is that sometimes our beliefs actually blind us to other ways of knowing, or, if we are open to uncomfortable notions, at least make us anxious that our own knowledge of the world is incorrect. The second, and more straightforward way in which Hales’s argument compares to my own, is in the notion of relativism. Although I do not subscribe to an extreme social constructionist view of moral and political relativity, in the discourses of science and literature (as well as in philosophy, theology and all other forms of epistemological inquiry) there is a commonality of perspective in that all allow for a critical engagement with seemingly divided points of view. Joan Thomas’s Curiosity shows how science and
religion can come together to produce knowledge, but that privileging one over the other can also blind one to the mysteries of nature that could lead to different explanations about the world.

The literary works I have presented share a thematic or metaphorical use of actual scientific methodologies and theories. At the same time, they all look at larger questions related to the cultural aspects of scientific inquiry with regard to issues pertaining to both the social and biological individual. Although most of these works are interested in different areas of scientific inquiry, there is a still a shared questioning of human consciousness and the epistemological problems that arise from human knowledge systems in relation to issues of faith and belief. From memory, history, and synaesthesia, to time, space, and creation, all of the texts confront the role of science in the social world of the human being produced from non-rational and non-empirical responses to material phenomena. Science, as a theme in the works studied here, is portrayed in an agon against fiction, while, at the same time, it is shown to be part of, and party to, the very fictions human beings create to explain their place in the world. Nino Ricci’s *The Origin of Species* makes a direct link between science and literature through Alex’s reading of transhumance and the origins of storytelling; Harry Karlinsky’s *The Evolution of Inanimate Objects* shows how literature and science inform each other in a satirical reading of truth as a form of madness. The use of science in Canadian literature responds to the uncertainties and paradoxes that plague the everyday experience, as well as to the
ethical challenges posed to material, biological beings in a social world built upon knowledge of truth and fiction, good and evil, and other binary divisions.

David L. Wilson and Zack Bowen point out that literary criticism, and by extension literature, allows for unbounded questioning of truth:

True that each of the humanistic disciplines has its own approach to human concerns, and we in literature seem to have our finger in every pie—art, aesthetics, philosophy, religion, even music, and more recently, politics, anthropology, psychology, and the biology of gender difference—in short, the whole hodgepodge of unregulated interests and attractions of human experience. If we have any “Laws” they are intuitive and perhaps, from a scientific perspective, unprofitable for a linear march to the truth. However, they are open-ended parameters of a discourse that recognizes few boundaries in its search for knowledge of the human condition and free (in theory at least) from such self-imposed constraints as the scientific community has adopted. (*Science and Literature*, 41)

Although I would argue that scientific “laws” are built upon the very same intuitions that are expressed in creative works, Bowen and Wilson do articulate clearly the multi-faceted approach of transdisciplinary epistemological questioning that allows for a different model of “truth” via multi-narratives than do singular representations or binary models produced by metanarratives.
My final claim thus rests on the idea that the texts studied herein contain narratives defined by the ideas of postmodernism in dialogue with the skepticism of poststructural theory through representations of science. In looking back, I can only claim that the postmodern fragments that do actually exist in the texts studied could be more appropriately termed “postmodern remnants.” The fact that postmodern literary techniques bleed into such recent texts is explained by the lingering influence of postmodern theory and narratives, but the turn to science and the re-evaluation of religious belief suggests to me that these texts are more exemplary of a turn away from literary postmodernism. That a movement away from the radical skepticism towards truth in the form of grand narratives, metanarratives, religious orthodoxy, and all such totalizing ideas and ideologies about the world should produce a re-questioning of the values, ethics, and issues that arise from the loss of such historically relevant social markers of knowledge about the world is not at all surprising. I argue then, that the turn towards representations of science in Canadian literature, and the multi-perspective connections among the various epistemologies of science, art, and religion are evidence of a period of writing in Canada in which writers are returning to important and difficult questions about the human, while moving towards a perspective of human existence that comes after the radical skepticism of postmodernism and poststructuralism in bridging faith with scientific truth.
Bibliography

Primary Texts:


Secondary Texts:


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Outlining Literature.


