Consciousness, Literature, and Science Fiction

By Kathleen Ann Goonan

This article explores the connections between language, literature, and consciousness. The first section discusses the possible origins of literature. Section two focuses on the literature of the twentieth century and how it reflects a change in the way reality was perceived by a great portion of the scientifically and culturally informed public. It includes a discussion of C.P. Snow's "The Two Cultures" lecture given at Cambridge in 1959, which explicated a split between the ways in which science and literature perceived reality after Einstein's revolutionary early papers, and relates this to Stephen Pinker's contention, in The Blank Slate, that the trends of Modernism and Postmodernism have impeded the scientific sophistication of both the general reading public and academe. The conclusion points to science fiction as an important literature, which links these, two cultures.

> "(Stanislaw) Lem suggests that it is within such realms of storiness that we live out individual and collective lives, using words to create reality as we go along . . . . there seems to be no escape from storiness. Telling/writing and hearing/reading tales seem to give us ourselves and guarantee that we exist." [1]

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Language, Consciousness, and Literature

Language and its more permanent sister, literature, attest to the existence of that which we call consciousness in ourselves and in others. Literature springs from that ability which most defines us as humans: language. Language could be said to be the truest indication and reflection of consciousness, since consciousness is shot through with and almost indivisible from language. Our innermost thoughts reverberate with unsaid words, fleeting fragments of supposition, memories, plans. Literature is consciousness rendered portable and transferable, a potent key to the nature of consciousness, its fellow traveler since the dawn of recorded thought. The origins of language, the use of symbols, and the flourishing of literature are intertwined in a single braid.

We are a communicative species. The very basis of our form of consciousness, our awareness of our own existence in time, is posited on feedback. For virtually all of us, much feedback is in the form of language, and we have developed ways to use even touch to decipher it.

We are also storytellers. Our feedback is not limited to information about our immediate environment, like the biological feedback of microbes, bees, or even other mammals. Instead, our stories can be as precise and limited as records of crops harvested and taxed, or as emotionally complicated as a Shakespeare play. We all shape reality through narrative. The schoolchild tells her father what happened in kindergarten, fashioning a story, re-membering it, re-animating it, casting what may have been pure motion and pure thought into words, and at the same time finding out that her report becomes, in some measure, what actually happened--because what really happened is gone. Many stories are necessary to survival, as we are communal animals: it is important that we coordinate our efforts, and try to avoid coming to blows and sapping the resources of the community with physical recovery or with permanent loss of vital skills. Human history, and present-day politics, is a grievous record of what happens when speech fails, or when our stories are not rendered in a persuasive fashion. By externalizing our stories and recording them, we have been able to accumulate vast stores of information crucial to our survival as a species, and have virtually taken over the earth and its resources for our own use.

Through sharing a system of meaning-packed symbols, humans have created cultures, civilizations, and sciences far too complex for any single one of us to remember or use in its entirety.

Once we acquired a certain facility with language, and particularly in creating a record of language, our rootedness and isolation in time was banished, or at least tremendously modified. Chunks of time--subjective time, at least, which Einstein showed is really the only kind of time--can be moved from mind to mind. We transform what is fleeting—verbalized thought—into a concrete object to which we can return again and again without loss or degradation of the original information, thereby making it possible

to record edifices of complex reasoning. Moreover, we are able to combine these elements in an infinitely variable manner. It is this ability to signify, to modify the signals, to delight in their plasticity and rhythmic beauty, and to record them that sets us apart from the rest of the living world.

Literature, though, is more self-aware than mere storytelling. It is a deliberate placing of word against word until there is an edifice of thought, an exercise almost impossible unless one has not only a symbolic system, but also the means to re-create and preserve symbols. Literature--from the Latin for "letter"--is external, communal consciousness, loosed from dependence on one frail biological entity and from that person's limited lifespan. It is representative of time lived--real or fictional--and has the power to free both the writer and the reader, if not from time itself, then from a limited sense of time. Memory--accessed by an object, a vision, a flavor--is explored, recast as empowering myth, a warning fable, a rich expansion of our own time to include a fictional other's sense of life; another's consciousness. We can invent as many new conjunctions of event and emotion as there are moments of awareness. This exploration of temporality—and our conquering of it, at least in some measure—is one of the most important aspects of literature. Utterly dependent upon time, we are biological orchestrations that fall apart when any one of billions of exquisitely timed biochemical interactions is disrupted. Our seeming freedom from this dependency when we use language to go forward, backwards, and sideways in the strange medium of time, space, and biology from which we spring, is the heart of literature's power. Literature is the conscious manipulation of metanarratives, and is arguably the art form closest to consciousness itself, as authors concern themselves with trying to represent the thoughts of their characters.

The sense of self is a sense of movement, a constant calculus, as Buckminster Fuller proclaimed when he stated, "I am a verb." Even when we do not move, as in sleep, we dream motion. Literature is like a dream in that the motion therein is also purely cerebral, and invites us into, and infuses us with, the temporal dreams of others. Some dreams we find so real, so compelling, so truthful, that we revere the dream and the dreamer, the book and the author, the tribal tale and the bard. In dreams, we live outside of time; the

stuff of our lives is compressed, rearranged, by a facility which we do not seem to control. Literature gives us control of the image-and-thought-stream of life and our representations of life, our stories.

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The Two Cultures

But language is slippery, non-objective; not easily revealing repeatedly verifiable information, as does science. It is not even composed of irreducible symbols, and is, in fact, completely composed of metaphor. Words stand for something else; the Oxford English Dictionary is simply a compilation of exhaustive lists of examples of word usage, and the astonishing mutability thereof, through time. In the timestream of words, meaning ebbs, flows, changes. Perhaps this has something to do with the present splintered state of affairs between what C.P. Snow called, in his 1959 Rede lecture at Cambridge, "The Two Cultures and the Scientific Revolution."[2] His subject was the difference between those who study words--which are exclusively the product of the human mind, and the shifting ways in which they can be assembled--and those who study the rest of nature. To describe what they have observed, scientists have invented new languages and borrowed the language of mathematics. But until recently, the study of consciousness was not seriously attempted by science. With the advent of the attempt to quantify consciousness, an intersection of these two cultures is not only useful, but inevitable.

Snow, a research scientist who worked with Lord Rutherford at the Cavendish Laboratory in the 1930's as well as a successful novelist, states in his talk, "Literary intellectuals (are) at one pole--at the other scientists, and as the most representative, the physical scientists. Between the two, a gulf of mutual incomprehension – sometimes

(particularly among the young) hostility and dislike, but most of all lack of understanding. They have a curious distorted image of each other. Their attitudes are so different that, even on the level of emotion, they can't find much common ground."[3]

Peter Watson, in *The Modern Mind*,[4] points out that although the arts incorporated the sciences during the first half of the twentieth century, art did not feed into the sciences in any meaningful way. Though it now seems obvious that this should be the case, this split is actually a new thing in history. Information and connections in the sciences gained phenomenal velocity beginning in the late nineteenth century. It was not until decades later that anyone in the sciences even tried to communicate the depth and importance of what they were about, although the fruits of what they were learning, in the form of technological change, were everywhere.

In his book *The Blank Slate*,[5] Stephen Pinker blames the Modernists and Postmodernists for the insularity of the humanities in academe, for the fact that the "two cultures" of science and the humanities have grown so far apart. He also states that, in the main, those in the humanities would have the hardest time accepting that there is a genetic basis for much of who we are and what we do. He takes particular note of Virginia Woolf's 1924 essay, "Character in Fiction," (though he references "Mr. Bennett and Bennett and Mrs. Brown," an essay which, in its originally published form in 1923, did not contain this phrase) in which she states . . . "on or about December 10 1910 human nature changed."[6] Pinker says, "She was referring to the new philosophy of Modernism that would dominate the elite arts and criticism for much of the twentieth century, and whose denial of human nature was carried over with a vengeance to Postmodernism, which seized control in its later decades… Woolf was wrong. Human nature did not change in 1910, or in any year thereafter."[7] Pinker assumes that "the philosophy of Modernism" was a largely artificial movement made up out of whole cloth by Woolf and other arbiters of taste--essayists, critics, and artists.

The situation is actually a bit more complex. Although Pinker insists that, because of their evolved biological traits, humans prefer art that includes understandable landscapes,

recognizable human faces, and novels that tell stories in the traditional fashion, it seems obvious that whatever Modernism and Postmodernism are, appreciation of them springs from biological roots as much as does appreciation of simpler modes of communication. He downplays another interpretation of the changes in the human psyche which Modernism concretely manifested – the fact that, due to changes in knowledge about ourselves and the world, and the use of new technologies which emerged from this knowledge, our reflection of these changes in art, literature, and architecture became radically new. Art emerges from humans, from some mysterious stratum intermingled with consciousness in ways which sometimes elude direct awareness. Art that is purely intellectual and calculated rarely finds as large an audience as did Modernism in all of its manifestations.

Pinker's blame of literature for the intellectual impasse at which we find ourselves, and in particular the contention that Modernism and Postmodernism "caused" this impasse, are in some respects straw men. Science and the humanities differ in fundamental ways, particularly in the fashion in which they approach fact and knowing. Yet, it is in journals such as the one in which this paper appears that differences between "The Two Cultures" can be discussed so that there can begin to be a melding of the richnesses and insights of these two cultures, to everyone's benefit. Just as scientific progress in many fields, including that of consciousness studies, is crippled by lack of communication between specialized, but extremely knowledgeable people, so the idea that human progress in all academic fields can be given a boost by a cross-culturization of information seems plausible. It might, therefore, be useful to have more information about the change Woolf noticed, and how the change--if not in human character, then perhaps a change in what people thought of as human character, came about.

Literature reflects zeitgeist; the spirit of the age is embedded in every literature that has ever been produced. Literary forms change as societal views change. Our modes of thought and representations of such are directly related to the culture in which they arise, whether that be medieval Germany or Postmodern America.

In 1913, seven years before Woolf published her observations, the Italian futurist F.T. Marinetti wrote about

> "…The complete renewal of human sensibility brought about by the great discoveries of science. Those people who today make use of the telegraph, the telephone, the phonograph, the train, the bicycle, the motorcycle, the automobile, the ocean liner, the dirigible, the aeroplane, the cinema, the great newspaper (synthesis of a day in the world's life) do not realize that the various means of communication, transportation and information have a decisive influence on the psyche."[8]

Even Henry James suggested that it is impossible for us to know how anyone in an age previous to the age when technology changed the human experience of time and space actually saw the world. And he further stated, in 1904, that "The notion that even the truest formula may be a human device and not a literal transcript has dawned on us."[9]

To Virginia Woolf, the Post-Impressionist Exhibit of 1910 as well as the changes she observed in fiction were a testament to the changes that new scientific discoveries had brought about not in consciousness itself, which of course did not change, but in the contents of consciousness. A new lens through which to view the world and human nature had come into existence, and this new way of seeing time, space, matter, and human nature, as well as the new technologies thereby spawned, necessarily changed humanity, as Marinetti observed.

The Moderns (who for the use of this paper are mainly James, Woolf, Proust, Joyce, Stein, and Eliot, though there were many more, both major and minor) realized that great changes were afoot; they lived through them and had the need to express their observations.

Artists are like the canary in the coal mine, but instead of being harbingers of doom, they are, instead, often exquisitely attuned to the new. They have a need to eclipse previous boundaries. Of course, nothing can be completely new or else it would be unintelligible, a

claim some make for *Finnegan's Wake,* various forms of poetry, or extreme visual art. One's ability to understand that which is on the edge in the arts depends, as does understanding of science, on previous training. For instance, the Modernism and Postmodernism that Pinker criticizes could be seen as utterly etiolated, and therefore unavailable to the uninitiated. Most people are not trained in appreciation of art and literature; there must be exposure, excitement, and, particularly in the appreciation of literature, adequate reading skills. This does not negate the fact that many people deeply enjoy literature, and, in particular, Modernist and Postmodernist work. If the vast majority of humanity prefers landscapes unlayered with meaning, or simple stories of vengeance that include a lot of explosions, or love stories with the usual complications, this does not mean that those who prefer more complexity are poseurs, as Pinker seems to insinuate. It only means that there are not many of them, just as there are relatively few astrophysicists, cutting edge biologists, and accomplished mathematicians. Those who are at the top of their field and inclined (or able) to communicate what they know in language understandable to laypeople are very few indeed. So it is, perhaps, with the biological predilection for the study of extreme literature. The pleasures are there to be experienced, but it is difficult to communicate the reasons for this pleasure to the uninitiated.

That which we know, or believe, about reality and about nature deeply informs society and, in its turn, literature and art. In the late nineteenth century, issues of class began to dissolve before the bare fact that evolution is the product of pure chance, and has no peak, no pinnacle. This theory is so counterintuitive that it is still not widely understood, and is rejected outright by more people than accept it. But Darwin's radical work, which was a completely new way of looking at nature, seemed to remove theological and God from "Creation," and had a huge influence on how people regarded themselves in relation to the rest of the natural world.

Because of this change, a new energy began to pervade literature, and all of the arts--an energy that reflected the new, scientific spirit of the time. The literature of the Victorian age, which concentrated on the vagaries of class and of class distinctions--the idea that

that the wealthy are rich because they have a divine dispensation that originated with God and then made its way "downward" through queen to burgher to peasant--receded, and literatures in which individuals, and their thought processes, came to the forefront. The Romantics, with their mystical vision of a meaning-infused landscape, were also eclipsed. Western literature's focus was no longer about perfecting the self and the soul in order to become more Christlike. Just as Darwin demolished the mirror of God in which Western civilization had seen itself for millennia, literature stopped reproducing a social order that descended from God and began, instead, to look inward at this strange, new, disturbing phenomenon--the human being, no longer outside of the natural world, but produced by it. This was truly a new and astonishing idea, and was still astonishing when Francis Crick published *The Astonishing Hypothesis: The Scientific Search for the Soul,*[10] which encompasses this idea and the magnitude of social, emotional, and mental upheaval it continues to engender.

Calvino, in *The Uses of Literature,* says, "The power of modern literature lies in its willingness to give a voice to what has remained unexpressed in the social or individual unconscious: this is the gauntlet it throws down time and again."[11] Instead of sailing from continent to continent and encountering new external wonders, authors began to examine what was close at hand, previously unexplored by science, and utterly mysterious: consciousness. Henry James brought psychology, another new field, into literature. James' lush sentences expand to include multitudes of introspective thoughts in which the protagonists attempt to understand their motivations, their actions, the power of their memories, and how such attributes affect the actions of others.

In Woolf's work, consciousness is a kind of cloud which she as the author accesses at will, almost as if the thoughts of everyone are blending, in some unseen, invisible place, in the aether, in the newly-discovered place where relativity is not a thought-game, but reality itself. Stein attempts an even deeper dive in an attempt to fix on the place where thought is rendered into language, that mysterious, almost divine crux where thought and matter seem to be one, where Keat's Grecian Urn is pure thought, platonic perfection, and still an everyday object in the world.

For Joyce, all of existence is language--foreign, perhaps, but charged with deep meaning, the meaning of rock, seaweed, color. "Ineluctable modality of the visible: at least that if no more, thought through my eyes. Signatures of all things I am here to read, seaspawn and seawrack, the nearing tide, that rusty boot. Snotgreen, bluesilver, rust: coloured signs."[12]

Far from being ultra-refined or removed from real life, as Pinker would have it, the Moderns were the first to attempt not just to tell stories and relate those stories to God, the gods, morals, or societal constructs, but to get to the center of the mystery of consciousness. They grabbed hold of the line wavering downward, inward, through the pellucid, curiously liquid attribute we call awareness and pulled themselves into the depths. Literature no longer took the reader on a concrete and satisfying timebound trip of morals or manners or the exterior facts of the protagonist's life. Instead, the moderns sought to go deeper into the well of consciousness, to deconstruct it as scientists were deconstructing the mysteries of time and space. The physical world was just a jumping-off place, engendering thoughts that rippled and eddied through the medium of the mind like waves from a stone cast into a pool. Modern literature is an attempt to fathom, to recreate, the state of an individual's awareness, many steps back from the artifices of fortune and society, so that the bare temporal act of consciousness itself is rendered at the first waypoint from which it bubbles forth: our thoughts, just barely caught in the net of verbalization.

This seems like no mean task--indeed, the work of the Moderns seems like the first non-religious attempt at a true study of consciousness. All study begins with observation, and this is what the Moderns did.

A new interiority, combined with the division of matter and its necessary companion, time, into finer and finer unseen particles and energies, is paralleled by Joyce's and Woolf's division of consciousness into ever more fine units of time. In the same stroke, with Einstein's theory of relativity, time lost adherence to any solid touchstone, and instead expanded and contracted according to laws that only those deeply initiated in

mathematics and physics could begin to understand, but to which Proust's long life-work, In *Search of Lost Time,* owes much.

At the same time, Freud's concept of the Unconscious took the place of God. Modern literature, like Freud, looked inward for the first time beyond social scrims, to the unconscious, the pre-conscious, the not-so-prettily-formed-and-edited conscious basis of thought, dreams, and action. It began to examine territory previously reserved for poets and philosophers. It tried to get down to what senses actually perceive and piece together to form the still-there "I," contrasting with the latter-day Postmodern "not-I," the fractured I, the empty place inside that past ages believed so immutable: the soul.

The soul--or at least, the sense of a person, nebulous though that person/soul may be--still exists in much modern literature, particularly in Woolf's. But it is accepted as being human, rather than God-related, and in this it is something new in the world, or at least, something not much seen since the Greeks. Pulled loose from God, known to have sprung not from heaven but from accidental combinations of matter, this essence of humanity is a new thing, an object that can be observed from the inside. Every person is seen not as a cog in society but as a complete and mysterious individual whose motivations and actions come from a place unseen.

Modern literature is an attempt to get at the assemblage of the thing, and story, like the humans and the rest of the natural world, at this point becomes infinitely more complex. When the ideas propelling the Twentieth Century's scientific and intellectual direction were being formed, humans were definitely not seen as a blank slate, as Pinker would have it. In the art of the early Twentieth Century, the self is <u>something.</u> The Moderns want to find out what that self is, to excavate and reveal the self, not fill it up or smother it with predigested ideas. However, the soul, or whatever one wants to call the sense of one's own interiority, now finds new territory: not God, but science and technology.

Modernism is exterior as well as interior; the wonder and the speculation extend in all directions.

> "Away and away the airplane shot, till it was nothing but a bright spark; an aspiration; a concentration; a symbol (so it seemed to Mr. Bentley, vigorously rolling his strip of turf at Greenwich) of man's soul; of his determination, thought Mr. Bently, sweeping round the cedar tree, to get outside his body, beyond his house, by means of thought, Einstein, speculations, mathematics, Mendelian theory--away the airplane shot."[13]

Woolf, Joyce, Eliot, Stein, and Proust access what might be called a halo of consciousness, comprised of all that the history of human culture has to offer, and all that time's immediacy imprints upon the senses. The characters in their books realize that they must work harder to make sense of things, because the previous comfortable sense of what life is has been eclipsed by irrefutable discoveries about the natural world. A sense of freedom, wonder, and potential pervades their work, as well as the despair communicated by Woolf and Eliot and Lawrence which has to do with the realization that all of the darkness of the world--war, economic insufficiencies, and even interpersonal pain, are not created or mediated by God. Instead, they are entirely human creations, or at least, manifestations of humanity previously blamed on supernatural agencies.

As previously mentioned, Pinker argues that humans require what he calls "beauty" of their art, and claims studies show that beauty means recognizable landscapes and stories with a beginning, middle and end. He claims that Modern literature forswore such artifice in favor of another approach. However, this accusation could more supportably be leveled at Postmodernism. Most works of Modern literature, from *Ulysses* to *Mrs. Dalloway,* have beginnings, middles, and ends, although the middles swell to include, because of the nature of closely observed consciousness, a vast array of remembered, invented, or imagined time. Moreover, the point of what one is reading might not be quite as didactically imposed upon the reader as in other literatures. But, certainly, there is something about Modern literature which caused Thomas Hardy to observe, "They've changed everything now . . . there used to be a beginning and a middle and an end."[14]

Human preference for certain forms or thoughts does not confer any particular value on such forms or thoughts. Most humans prefer to believe that God exists; a universe with God in it seems to be a more beautiful and perfect and even more sensible conclusion, for them. Like belief in God, the preference for recognizable landscapes in art and simple stories springs from our biological past—as does everything about us. This does not mean that we are therefore, as Pinker would have it, incapable of appreciating and assimilating purely imaginary or intellectualized combinations of information. Our biology underlies everything we think and do, including our appreciating forms of art that he seems not to enjoy. A propensity to develop or fall into any particular pattern of thought or way of looking at reality does not mean these patterns are useful, fruitful, or true. Even mathematicians concede that their abstract thoughts, in the end, might not necessarily be universally true. In the case of art, though, which could be said to be unnecessary (like belief in God) in terms of living one's life, people do have a choice, which they exercise: probably ninety-nine percent of literature that is published today is traditional rather than Postmodern or even Modern.

Perhaps because it is an examination of abstract thoughts rather than anything replicable and outside of ourselves, the study of literature seems like a dead end to a lot of people. However, it can be revelatory in very satisfying ways.

Stefan Collini, in his 1998 introduction to *The Two Cultures*, points out that critics and academics are actually the "scientists" of literature, in that they study the organized manifestations of human minds. The necessity of being an initiate in order to appreciate the artform fully is implicit in all literature. Just because many of us can read does not mean that we have, are capable of having, or would even want to have, the same kind of reading experience as everyone else. We differ in our intellectual hungers and abilities. The distance between high and low art is predicated on the participant having privileged knowledge in order to understand and appreciate high art, and on low art being something that a relatively unsophisticated reader could enjoy. In this sense, the vaunted flattening of the world in Modernism, and in Postmodernism's incorporation of low and high, are somewhat illusory.

If literature is a mirror of consciousness, then the changes that have taken place in the literature of the twentieth century mirrors changes in, if not consciousness itself, then in the contents of our shared social consciousness as determined by history--two devastating world wars fueled by ideological differences--and in technological changes such as the birth of the atomic bomb. In fact, I would postulate (and many have probably done so) that the bare fact of the existence of the atomic bomb gave birth to Postmodernism in all of its diversity. Another change in our understanding of consciousness, and concurrent changes in literary fashion, has to do with our ever-expanding understanding of biochemistry, and questions about how biochemistry engenders consciousness.

Pinker claims that science now shows that personality is, for the most part, an irreducible and inescapable given. Agreeing that we are assigned personality through our genetic makeup does not change our individual, conscious experience of reality, but the literature of today certainly reflects an individual becoming infinitely more complex as matter becomes more finely grained, less and less visible to the naked or uninformed eye, more puzzling. Consciousness is decreasingly seen as a matter of id and ego, and increasingly seen as a function of biochemistry. Personality and consciousness, in today's popular and scientific view, are manifestations that are not under the control of a central principal, whether that principal is called God or the individual. Instead, the fragmentation of matter possible when atomic energy is unleashed is mirrored in the fragmentation of the human being. And if we can blame our genes for that which we count as faults of character (antisocial behavior, a propensity to violence, rape, or murder, or even simple rudeness), responsibility for our behavior could be claimed to be at an end. Philosophy has wrestled for centuries with the question of whether we have free will, and various waves of scientific research in the past fifty years seem to say, "No." We still have no final consensus.

If we were to visualize ideas about the origin of personality and how they affect literature, the pre-Moderns were at the center of a series of concentric circles. The Moderns were a lot of individual circles immersed in the same soup, bent on turning that

soup into something individual through the medium of their consciousness. The Postmoderns are books/whole universes giving forth signals that may or may not reach some target, and in which the target can then interpret as they wish, find what meaning she can, depending on what she brings to the work. But the meaning has not necessarily been deliberately assembled by the author.

Postmodernism is substantially different than previous artistic attempts to represent or fathom reality. "Realistic fiction presupposed chronological time as the medium of a plotted narrative, an irreducible individual psyche as the subject of its characterization, and above all, the ultimate concrete reality of things as the object and rationale of its description."[15] The concept of reality as something that everyone agrees upon has given way to the idea that one's own point of view yields a singular and ever-changing reality which no one else can share in its entirety. This ever-changing and unique point of view apprehends and interprets the literary object. Italo Calvino states, "The spirit in which one reads is decisive: it is up to the reader to see to it that literature exerts its critical force, and this can occur independently of the author's intention."[16]

One manifestation of this movement is the attempt to leave authoring to the reader. This impulse, though, can never be purely executed. When Borroughs arranged his cut-ups, he was still acting as an author. The negation of the author is just a sleight-of-hand, another technique, with roots in Twentieth Century Modernism, presaged by Surrealism. We cannot help authoring meaning in our lives, and when meaning fails, often we cannot survive its loss. We read meaning and connections into the most random events, a biological predilection upon which Postmodernism capitalizes. Burroughs is showing us that this is the case. We even invest meaninglessness with meaning; nihilism and existentialism are isms that give form to various philosophies and lifestyles. We cannot escape ourselves.

Postmodernist works still assume that a centralized single consciousness/reader is assimilating what is put forth. If we sit down with the intent to disarrange our senses with

a Postmodern novel, the experience resembles the enjoyment of an acquired taste as for an exotic cheese. Some people take to it; some people don't.

Despite this, Postmodern literature is more overtly self-conscious than modern literature. Instead of dealing mostly with emotion, it is intellectual in nature. Postmodern literature often attempts to mirror sensory input rather than interpret it, rather than rearrange and infuse it with author-bound meaning. But the writing practices of Kerouac – arguably a bridge to the Postmodern – in the fifties and sixties were not much different than those of Thomas Wolfe in the twenties and thirties. Both simply stuck a real or metaphorical roll of paper in the typewriter and wrote without regard for structure: the author, in their work, is all.

In his Postmodern masterpiece, *Hopscotch,*[17] Cortazar goes half the distance. Within the book are chapters in which characters interact, as is normal in all novels. If read chronologically, the chapters tell one story. Cortazar places jumps within his narrative, though; he includes an invitation to read the chapters in a different order – one created by him – and, further, invites the reader to assemble their own novel from these tableaus. The fragments of meaning are tableaus freed from time which can be accessed and rearranged according to the desires of the reader; shuffled to create new motives for the actions of the characters as well as different outcomes to their philosophical dilemmas, which are quite real in terms of affecting them in life-and-death ways.

Deconstruction and semiotics are, perhaps, extensions of the examination of consciousness. It could be argued that most philosophers and religious thinkers of the past would be scientists today, because they wanted to know what was going on. Huge swaths of religious and philosophical thought of the past has been rendered irrelevant by science because we have enhanced our knowledge of world with tools capable of sensing that which is too far or too small or otherwise beyond our capability to sense without tools. We have learned that pure thought, without the physical facts, is not a strong enough tool to use to understand ourselves and our environment.

I submit that there is a literary alternative that bridges the rift between science and literature and takes seriously all that we have learned, in the past century, about ourselves and our surroundings: science fiction.

C.P. Snow, in *The Two Cultures,* states, "The clashing point of two subjects, two disciplines, two cultures . . . Ought to produce creative chances. In the history of mental activity, that has been where some of the break-throughs came. The chances are there now. But they are there, as it were, in a vacuum, because those of the two cultures can't talk to each other."[18]

Science fiction is a literature which takes advantage of this creative chance. It is the one literature that takes into account the fact that we live in an age technologically quite different than that of our grandparents and postulates possible differences that might change humanity in the future--including changes in consciousness. In *Distress: A Novel,*[19] Greg Egan envisions a change in consciousness which might emerge were we to actually understand physical reality in its totality via a Theory of Everything, and his characters, and thus the reader, experiences this change—a good example of the power of literature.

Like Modern and Postmodern literature, science fiction often requires a trained mind to fully appreciate its nuances. Because of this, the field has isolated itself from the masses. However, it holds the most promise as a literature for those who truly want to think about what is happening in the totality of the world, not just in the arenas of words and emotions. Science fiction speculates about possible futures and examines such futures from a philosophical point of view. It is an acquired taste, but so are any of the sciences, mathematics, Modernism, Postmodernism, Shakespeare, and poetry.

This brings me to the final part of this paper, which is concerned with healing the breach between the two cultures.

Samuel Delany has defined science fiction as (to paraphrase),"That which I say is science fiction when I point to it." In other words, it has a chameleonlike ability to use any literary form or to experiment with new ones; it can be as subtle and intense as Woolf, as delicate as Proust, as overt as Dickens. Those in the field try in vain to define science fiction. Attempts to create new marketing labels rise and fall. Various works could be labeled, if the term science fiction had never existed, as postmodern, experimental, apocalyptic, horror, high literature, fantasy, hard-boiled crime, romance, speculative, interstitial, nonlinear. This messiness seems evidence of its vitality. Often, science or some change due to technical fields is foregrounded, but it is not unusual to find science fiction in which the science or technology is a deeply submerged given, and the work is instead entirely character-driven. When we can download a work into our brain and experience it in visual, musical, verbal, literary, pattern, or other modes, when it can be parsed, rearranged, and reveal new interactions, we will indeed be experiencing reality in an entirely new fashion. This interaction is probably not as far in the future, as one might think. The enabling technologies are rapidly coming to birth, often as processes to help the disabled or as research delving into the roots of the process of sensorial assimilation, and will eventually mature into marketable products.

The direction of science and the direction of science fiction are at a shared, unique juncture--which has not always been true. It is a juncture which mainstream literature, for the most part, ignores. For instance, science fiction and biological reality converged in a particularly terrifying way during the anthrax scare, which awakened us to our own vulnerabilities--vulnerabilities which we cannot avoid, because they lie at the root of our biological being. But these same vulnerabilities have the potential to expand our lives in ways that we can now only imagine. We are entering the century in which we will explore not just matter, as we did in the twentieth century, but life itself.

Despite its reputation, science fiction is no more predictive of the future than reading tealeaves. Instead, it is a lottery of possibilities, a crystal garden that begins with reality and then goes on, like all literatures, to build on the submerged texts upon which it stands. Science fiction in America started in the pulps, and its target audience, it is often

said, was twelve-year-old boys. It has gone through many stages of growth since then, and perhaps is on the verge of another one.

Instead of being predictive or prescriptive, science fiction's greatest strength is that it is a revelatory literature, a way of thinking which takes into account the real world, and its real possibilities. It focuses on technological developments--which are the offspring of science--that have given us the wonders of the present day, negative and positive, that really do make a difference in our lives. It is an intellectually adventurous and, at it's best, edgy literature which foregrounds the astonishing, powerful actions of the human mind and the human imagination.

Science itself is neutral. It is just information. It has no moral content. In a manner analogous to the way we slant and manipulate events in the real world for fictional use, we use the information we discover to develop technologies. Our whole way of life is based on those relatively few people who were interested enough in nature to expand the knowledge that feeds technology. We humans are the only creatures who can actually and use what we know in order to radically change our environment – and ourselves. That is where sociological concerns arise.

While we are still exploring the issues of time and space, we are now able to also explore life itself; perhaps even consciousness. Until now, we have been the same old humans with a lot of new toys. Our physical bodies have remained relatively unaltered while we converse with people on the other side of the world, or hurtle through the atmosphere at hundreds of miles an hour. We have had much success in dealing with infectious diseases. Lifesaving procedures such as bypass surgery are almost commonplace.

We still remain the biggest mystery in the world. We are comprised of millions of programs, systems of evolutionary successes intimately linked to one another in a network which we are just beginning to understand.

And understanding will bring manipulation, and manipulation will bring improvement. Or at least, change. That is, whose idea of improvement will we use? Richard B. Hoover, of NASA's Marshall space flight center said, "A lot of paradigms about what life can and

cannot do are coming apart now."[20] What might the new paradigms be? Science fiction explores them.

Our emotional malleability at a young age allows us to mimic the cultural milieu into which we are born perfectly. We absorb language, which is a social program in and of itself, effortlessly. Newborn infants react to tone of voice and eye contact. We are programmed to be a part of the community. We are exquisitely imprintable. We absorb our own culture much as we absorb food, and make it a part of our physical substance, our neural wiring, our filtering process. This human malleability is the source of much joy, and a lot of sorrow as well. There has been discourse for thousands of years about what the nature of a perfect human society might be. One society's criminal is another society's hero.

But the marvel of it all is that all of this, every last raveling, is biological.

We are entering a period of time when we will be able to cure cancers, heart disease, diabetes, and inherited disorders. The present debate over stem cell research is just the tip of the iceberg. We will soon have the opportunity to consider, as a society, just who we want ourselves to be. Presently, altering one's appearance through plastic surgery or even hair colorings or piercing falls into the category of vain frivolity. But when such alterations are deeper, more finely controlled, and more easily accomplished, how will we feel then? Let's say that it is possible to choose one's mood, one's very personality, with more precision. Who is doing the choosing? What is identity? Theological and philosophical questions have become scientifically accessible.

What is information going to mean to us in the future—or for that matter, what does it mean to us in the present? Hypertexts, both literary and informational, give us the ability to browse information in a nonlinear way; a way, perhaps, akin to the way a toddler takes in information and begins to make links—except that we do this with a (more-or-less) mature brain. Thus, the intellectual and emotional experience of making new connections can deeply reward that part of the human that thrives on such tasks, can reawaken the exploratory excitement of intellectual growth, and deepen emotional response and epiphany. Brooks Landon's review, in Science Fiction Studies #61

(http://www.depauw.edu/sfs/review_essays/land61.htm), of Gareth Branwyn's and Peter Sugarman's ***Cyberpunk: A Do-It-Yourself Guide to the Future,***[21] with its many references to seminal hypertext works, is an excellent place to begin exploring hypertext fiction.

As an example, *Queen City Jazz*[22], my first novel, was conceived in 1990 as a hypertext novel before such technologies were available to the public. The jazz, ragtime, Tin Pan Alley, American visual art, comics, and novels referenced therein are presently referenced only by words. Thus, the full extent of their evocation is limited to those who, at one time, actually experienced the referenced work. In addition, it was a nonlinear work forced into the constraints of linearity by the limits, at that time, of the publishing process. I laid out many of the chapters around me in a circle, and decided on the sequence that seemed to make the most narrative sense, but it was only one interpretation among many possibilities. Transforming QCJ into a hypertext work (ignoring the massive cost of obtaining the rights to do so) would enhance the experience of this novel immeasurably. The uses of technology as regards perception are unlimited. Artistic paradigms might change completely when they begin to infiltrate the public in more intimate, more biologically entwined, ways.

This vision of science fiction as the next modality of human growth, the ultimate realization of the Twentieth Century's movement through Surrealism, Modernism, and Postmodernism, all of which were linked to science and to changes in how and what we were able to perceive – the flattening of time through the telegraph, for instance – may be poised to completely change the face of literature and the intensity of the literary experience. This is only one small facet of the newnesses we will soon be able to experience, out of an unlimited range of newnesses both within ourselves and in our environment. In the coming era, as we gain ways to manipulate our very biology, human character might well and truly change, and are arts will reflect, and perhaps participate in, these changes.

Science fiction points the way in which the two cultures of science and literature, which represent a schizophrenic split in humanity's use of information, might merge, and create new possibilities in the nature of consciousness itself.

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