Science Fiction as the Mythology of the Future

"The universe is made of stories, not of atoms."

Muriel Rukeyser

Introduction

Science fiction is clearly the most visible and influential contemporary form of futurist thinking in the modern world. Why is science fiction so popular? As I will argue, one main reason for the popularity of science fiction is that it resonates with all the fundamental dimensions of the human mind and human experience. It speaks to the total person about the future.

At the outset, let me provide a working definition of science fiction. Although not all science fiction deals with the future, its primary focus has been on the possibilities of the future. In this regard, science fiction can be defined as a literary and narrative approach to the future, involving plots, story lines and action sequences, specific settings, dramatic resolutions, and varied and unique characters, human and otherwise. It is imaginative, concrete, and often highly detailed scenario-building about the future set in the form of stories.

In this chapter I describe the historical development of science fiction as an approach to the future tracing its origins to science and evolutionary theory, secular philosophy, technological forecasting, mythology, and the philosophy of Romanticism.[1] Within this historical review, I consider the rich array of futurist themes and issues examined in science fiction. I also describe the diverse functions and innumerable strengths of science fiction as a mode of future consciousness.

My central arguments are:

- Science fiction engages all the fundamental capacities of the human mind; it generates holistic future consciousness. Of special note, science fiction integrates the secular-rationalist and mythological-romantic approaches to the future; it synthesizes the Dionysian and Apollonian mindsets regarding the future.
- Science fiction weaves together theory and abstraction with personalized narrative. It combines a highly detailed and concrete level of realism with theoretical speculation on the future.
- Science fiction addresses all the main dimensions of the future and synthesizes all these dimensions into integrative visions or scenarios of the future.
- Because it reflects contemporary and futurist thinking, and embodies many features of myth, science fiction can be viewed as the mythology of the future.

Myth and Science Fiction

"…our aim is not merely to create aesthetically admirable fiction. We must achieve neither mere history, nor mere fiction, but myth. A true myth is one which, within the universe of a certain culture…expresses richly, and often perhaps tragically, the highest aspirations possible within a culture."

Olaf Stapledon

As a starting point, I will consider the power of religion, and in particular religious myth, as an approach to the future. Religious myth, though not exclusively focused on the future, has had a great impact on people's beliefs and attitudes toward the future. It is the earliest recorded form and probably the most influential type of futurist thinking. Predictions of the demise of religion and myth in modern times have proved inaccurate. The great bulk of humanity still subscribes to traditional religious doctrines, as well as various myths and prophecies associated with these doctrines. [2] After describing some of the main features of religious myth, I will demonstrate how science fiction embodies many of the same qualities and strengths as religious myth.

There are many explanations of the power of religious and mythic thinking. Religion answers the deepest metaphysical questions. It provides personal meaning connecting the individual and social group with God's purpose and with the great narrative of history. Religious doctrines are usually connected with various myths which reinforce its belief systems and principles. Religious myths explain existence in the form of stories, connecting past, present, and future in a way that is easily understood and highly inspirational. Often associated with religious myths are ethical principles, providing ideals and direction for people in their lives. Religious myths speak to the heart as well as the mind.

There is an archetypal dimension of myth. An "**archetype**" is a fundamental idea or theme often represented through some image, persona, or symbol. Contained in various religious myths are such basic themes as death and the renewal of life, honor and courage, love and devotion, temptation and damnation, good versus evil, and creation. These central themes of human existence are often represented by mythological characters that provoke strong emotions in the believer and a sense of personal identification.

Science fiction shares certain important commonalities and strengths with myth. Just as with ancient myths, a key strength of science fiction is its narrative form. It has become so popular because it appeals to the dramatic dimension within people. Life seems more like a story than a set of abstractions, and just as history is a multi-faceted story, the future will be a complex saga of stories.

Science fiction, like myth, contains personified characters, thus creating a personal connection with the reader. The reader often identifies with the characters – sometimes positively, sometimes negatively - and vicariously experiences the drama and events of the story through the characters.

As with myth, the stories of science fiction express fundamental themes and archetypes of human existence. In both science fiction and mythology

fantastic beings and settings are presented as a way to symbolically highlight important features of humanity or reality.

Although science fiction may inform it also produces an emotional experience in the reader. The future is felt, as well as imagined and considered. This emotional dimension often translates into inspiration. As the science fiction writer Thomas Disch argues, science fiction has become integral to our lifestyle and culture; through its characters, icons, stories, and themes, it inspires the reader and provides the raw material for turning the future into a personalized journey and way of life.[3]

Although the experience of science fiction is personalized, science fiction stories are often set within a cosmic context and have the same breadth and scope that mythic tales do; they also address the same expansive themes of the nature of reality and the meaning of human existence. In fact, as in myth, science fiction connects the personal with the cosmic. What is the impact and significance of the unfolding cosmic events on the characters in the story?

I think many science fiction writers are very conscious of the connection between their genre and mythology. Many science fiction stories include ancient myths, retold or re-conceptualized in futuristic settings One memorable story "Breckenridge and the Continuum" by Robert Silverberg is a good example of a story that explicitly combined both ancient myth storytelling with an eerie futurist landscape and setting. In this story Silverberg examines the connection between mythology and the creation of the future and along the way creates a series of new myths for the future.[4] In Harlan Ellison's "The Deathbird" the story of the Garden of Eden and the temptation of Adam and Eve is retold. The nature of good and evil is re-examined, as is that of God and the serpent, this time though being played out in a far distant future that is witness to the end of the earth and mankind.[5]

But science fiction goes beyond traditional myths. From a modernist perspective the myths of old are based on archaic thinking. They are oblivious to modern science and the issues of modern life. If myths do have a unique power to motivate and inform people, then perhaps what are needed are new myths based on contemporary thinking that address contemporary issues, as well as issues of the future.[6] As I will argue, this is exactly what science fiction provides. It provides mythic tales informed by science and contemporary thought.

Science and Science Fiction

I will now look at the relationship between science and science fiction. I will describe how science first impacted popular story telling in the modern era, and how this introduction of science into popular narrative led to science fiction.

John Clute, in his *Science Fiction: The Illustrated Encyclopedia*, begins his history of science fiction by trying to define the distinguishing nature of science fiction. He notes that people from ancient times were writing fantasies of traveling to the heavens, or of encountering strange and fantastic beings in strange or fantastic places. Yet, according to Clute, the authors of these early stories did not try to present a convincing case that their imaginative scenarios could actually

exist in reality. Clute defines “fantasy” as “make-believe”, and argues that pre-modern fantasies were intended to be “make-believe” for they provided no explanation of how the imagined fantasy could possibly be real. According to him, the attempt to be realistic in such fantastic stories doesn’t occur until the Scientific Revolution and the modern era. For Clute, More’s *Utopia* (1516), written prior to the modern era, was not intended to be a plausible or real situation. On the other hand, Francis Bacon’s *The New Atlantis* (1626) was intended to be a realistic possibility. Bacon attempted to explain how the type of futurist society he envisioned could be created through science and reason. Bacon offered a rich array of predictions of new and fantastic inventions and human realities for the future that presumably could be achieved through the application of science and reason. For Clute, Bacon’s *The New Atlantis* is **Proto-Science Fiction**.[7]

Another early candidate for Proto-Science Fiction is Johannes Kepler’s *Somium seu Astronomia Lunari* (1634). According to Wyn Wachhorst, in the *Somium*, Kepler presented the first cosmic voyage in science fiction, involving a journey to the moon. In this story Kepler was also the first person to seriously consider the possibility of extraterrestrial life.[8] For Kepler, space travel was not a fantasy; he believed in the future we would journey into outer space. In Kepler’s own words, “Let us create vessels and sails adjusted to the heavenly ether and there will be plenty of people unafraid of the empty wastes. In the meantime, we shall prepare for the brave sky-travelers maps of the celestial bodies.”

Science and the concept of secular progress, associated with the emergence of the philosophy of the Enlightenment in seventeenth and eighteenth century Europe, provided a rationale and guide for conceiving of possible futures far different from the present. The idea of secular progress, briefly defined, is that human society can be improved, along many different dimensions, social and technological, through the application of science and reason.[9] For Clute, the beginnings of science fiction coincide with the emergence of the idea of secular progress and the belief in realistically possible progressive changes in the future due to science and reason.

Yet I would argue, contrary to Clute, that people in ancient times did believe in the existence of mythological places and beings. They believed that gods and goddesses existed in a higher supernatural realm, though often they visited, haunted, or “enchanted” the natural world.[10]

What changed in the modern era were the standards of knowledge and truth. In Europe and elsewhere, in the pre-scientific era, truth was based upon faith and belief in holy texts, as well as prophecies and divine revelations. The metaphysical explanations of fantastic beings and alternate realities, justified through religious writings and mystical experiences, were not scientific or rational by modern standards, and consequently, have been labeled as “superstitious”, and relegated to the realm of pure fantasy. According to its supporters and advocates, modern science and the secular philosophy of the Enlightenment encouraged freedom of thought and inquiry after centuries of religious dogmaticism and repression. Answers to the fundamental questions of life could no longer be grounded in faith, unsubstantiated authority, and sacred texts.

Science in its pursuit of truth strove for objectivity and impartiality. Science based its beliefs on empirical observation, experimentation, and reason, and the description of reality that emerged over the last few centuries within science clearly contradicted in many ways the description and explanation of reality offered in ancient myths and religions.[11]

Religious and mystical views of the future often saw humanity ascending to supernatural realms. Christian thinkers such as St. Augustine believed that the forces of the supernatural or divine realm would transform the earthly realm as a prelude to ascension into a higher (heavenly) reality. St. Augustine imagined our world being modified to accommodate and fit with the spiritual realm. The plausibility of this vision depended upon one's standards of acceptable truth and the nature of reality. For Augustine, it made perfectly good sense to argue that humanity would be transformed in the future by the will of God.

The emergence of science fiction as a form of narration about the future involves a transformation in our standards of thinking, brought on by the Scientific Revolution, regarding what is plausible and real. This new way of viewing reality provided a different approach to understanding and predicting the future – an approach based on the ideas of reason and science. When the age-old tradition of story telling of strange and wondrous realities embraced the ideas and principles of science and secular progress as a way to explain its imaginative settings and characters, science fiction was born.

Hence, as can be seen, science fiction reflects many of the qualities and strengths of ancient myth as well as the beliefs and standards of modern science. It creates "scientifically credible" myths. Therefore, I propose that science fiction is becoming the mythology of the future. As ancient mythologies provided meaning and direction for humankind, I would suggest that science fiction, informed by science and contemporary and futurist thinking, will provide the stories that will give humanity meaning and direction in the future. Science fiction is usually about the future and serves the function of influencing our journey into the future. It will inspire us, as did ancient myths, but it will base its visions on contemporary ideas and standards.

The Genesis of Science Fiction

*" . . . Frankenstein is **the** modern theme, touching not only science but man's dual nature, whose inherited ape curiosity has brought him both success and misery."*

Brian Aldiss

"It is possible to believe that all the past is but the beginning of a beginning, and that all that is and has been is but the twilight of the dawn.
It is possible to believe that all that the human mind has ever accomplished is but the dream before the awakening."

H.G. Wells

Science fiction also has roots in the Romantic philosophy of the nineteenth century. Nineteenth century literature was strongly influenced by Romantic philosophy with its emphasis on human emotion and passion and the inner turmoil, madness, and distress of the human mind. In the nineteenth century, gothic, horror, and adventure stories, all expressions of the Romantic mindset, were very popular. One central goal of such stories was to stimulate and provoke strong emotional reactions in the reader, both positive and negative. Whereas the emphasis in scientific writing has been to describe reality in an objective, rational, orderly, and non-emotional manner, Romantic writing often highlighted the opposite qualities: subjectivity, mental turmoil, and emotionality.[12]

Science fiction would combine together the Romantic - emotional dimension of human experience with concepts and speculations derived from science and Enlightenment philosophy. Nineteenth century science fiction (before the genre had acquired its modern name) was popularly referred to as “scientific romances”. One early nineteenth century writer who wove together Romantic and scientific elements in his stories was Edgar Allen Poe (1809 – 1849). Thomas Disch, in fact, argues that Poe is the modern starting point of science fiction. Poe is well known as a writer of horror stories and tales of the supernatural, but he also includes various scientific ideas and speculations to create psychologically disturbing and mesmerizing effects in his dark tales.[13]

The Romantic dimension of science fiction includes not only the terrifying and horrific but the sublime and inspiring as well. As one early example, Jules Verne (1828 – 1905), highlighted the exhilarating and hypnotic power of new machines and scientific devices, the exotic and esoteric realities and worlds uncovered or created through science and technology, the dramatic awe-inspiring adventure into the unknown, the passion and excitement of exploration, and the existential and cosmic challenges of the future to the human soul.

Another key connection between science fiction and Romanticism pertains to the Romantic philosophical distrust, if not rejection, of the positive and progressive promises of science, technology, and modernity. Though Clute argues that futurist science fiction emerged when the hopes and predictions of secular progress were incorporated into popular story telling, stories within science fiction often have taken the opposite position. Science, secular progress, and the growth of technology may lead to our ruin.

The classic case of this negative view of modern science and technology is *Frankenstein* by Mary Shelley (1797 – 1851). Although during the nineteenth century there was great optimism about the future, perhaps the earliest example of a science fiction novel, Mary Shelley's *Frankenstein, or the Modern Prometheus* (1818), foretold of the potential dangers of science and technology. Shelley was aware of nineteenth century scientific experiments where animal tissue had been animated into movement through the passing of electrical currents through muscles. One night, in a personally frightening image, she conceived of bringing a dead body back to life with electricity and thus the story of *Frankenstein* was born.

The main character in the story, Victor Frankenstein, after creating the "creature" immediately runs away from it, repulsed by its hideous appearance, and he abandons it. Throughout the novel, Frankenstein obsesses on how wretched and terrible a person he is for having produced the creature, and the creature, rejected by his maker, as well as other humans he encounters in his wanderings, decides to enact revenge on his creator through a series of ghastly murders.[14]

Frankenstein is fundamentally an introspective nightmare, more a critique of human nature than of science and technology.[15] One could say that it was the egomania of Victor Frankenstein, coupled with his heartless abandonment of the creature, that is the real cause of the misery, tragedy, and suffering described in the novel. Shelley, in fact, does not discuss in any detail the technology of creating life or the potential problems of accelerating technology. Rather, she focuses on Frankenstein the man, and the haunting thoughts and feelings that literally destroy him as the novel progresses.

One actually feels more sympathy toward the creature than the man, for the creature is innocent, having been brought into the world and then hated and repulsed by all those around him. The creature even promises to leave the world of humankind and live the rest of his life far from humans, if Frankenstein will create a female companion for him, but Frankenstein decides against creating a companion, after first having agreed, and in so reneging on his promise, provokes the creature into murdering Frankenstein's new bride.

Still, in spite of the introspective quality of the story, due to its popularization in the movies in coming years, the story of Frankenstein has been strongly associated with the potential dangers of technology, especially if it is used to serve the human aspiration to play God. Whether it is technology, as such, or the human desire to gain power over reality through technology, Romantic philosophy saw problems and potential tragedy in putting too much faith and hope in science and technology. Frankenstein wanted to benefit the world with his scientific research; he ended up destroying his life and bringing death and misery to all those around him. From the Romantic perspective, he is not so much a "modern Prometheus" as he is a Faustian character having sold his soul to the dual devils of vanity and technological power.

The science fiction writer Brian Aldiss identifies *Frankenstein* as "*the* modern theme" for it not only addresses the dual nature of humanity, of being but an animal (an ape) yet God-like in power to understand and create; it also addresses the double-edged sword of humankind's superior powers. According to Aldiss, the power to create brings both "success and misery". Progress, technological and scientific, is a double-edged sword, and *Frankenstein* focuses upon the potential negative consequences of humanity's increasing power over nature and the world. Aldiss, in fact, sees *Frankenstein* as a "new myth" – a modern myth for our times. Through science and technology humanity is becoming God-like with the power to create, yet do we have the maturity and foresight to use this power wisely? With science having replaced God, humankind is empowered to remake the world. But Victor Frankenstein is a poor God, a fearful God, for he recoils from his own creation, and dies a lonely death

haunted by the reality of what he has brought upon the world.[16] The tragic myth of *Frankenstein*, connecting humanity's enhanced power to create with an inability to foresee the consequences of this new power and wisely nurture its creations, is a common theme repeated throughout later science fiction. Thus, the first new myth created in science fiction is tragic and apprehensive over the future and the promise of scientifically inspired secular progress.

Yet throughout the nineteenth century there were also many positive stories about the promises of technology, secular progress, and the wondrous world of tomorrow.[17] Utopian projections of ideal future human societies proliferated in the Age of Enlightenment and continued into the nineteenth century, including such famous books as Samuel Butler's *Erewhon* (1872) and Edward Bellamy's *Looking Backward* (1888).[18] As I noted in *The Evolution of Future Consciousness* it was a popular view in the nineteenth century that science could be applied to organization and orchestration of human society, producing utopian social systems in the future. During the years from 1888 to 1900, according to Laura Lee, 150 novels were written that were hypothetically set in the year 2000.[19] In *Looking Backward*, a person in 1888 is transported to the year 2000 in Boston, and describes from a personal point of view all of the technological and social marvels of this futuristic city.

Hence, from its beginnings, science fiction includes stories that are positive and uplifting, as well as dark and frightening. Because of the dual influences of the philosophies of Romanticism and Enlightenment science fiction inherits from the nineteenth century a fundamental ambivalence regarding the promises of science and technology and the future in general. Change is both exciting and frightening. Science fiction begins with this insight – that tomorrow holds possibilities of both great progress and good, as well as great disaster and evil. Science fiction, from its inception, combines both the optimism of science and reason associated with the Enlightenment and the apprehensions of hi-tech modernity and fear of change associated with Romanticism.

Two of the most fundamental human emotions are hope and fear, and science fiction creates stories that stimulate both types of feelings. Hope and fear are emotions pertaining to the future, in that both emotions have a future reference.[20] The experience of hope involves an anticipation of something positive and rewarding; the experience of fear involves the expectation of something dangerous or destructive. Science fiction deals with the strange and the different, which can stimulate negative or positive emotions in the reader. The unknown and the mysterious can provoke awe, hope, and wonder, or anxiety, fear, and terror.

It is also important to see in this contrast between hope and optimism and fear and apprehension that science fiction is both a rational mode of thinking and an expression of fundamental human emotions. Ideas about the future based on science, technological extrapolations, and reasoned predictions point to the rationalist dimension of science fiction, but science fiction as a literary and artistic form of expression attempts to stimulate emotional reactions in the reader as well. This dual nature of science fiction reflects its rational-scientific and its Romantic origins – the Apollonian and the Dionysian within science fiction. From

ancient Greek mythology, the Apollonian mindset (from the Greek god Apollo) stands for reason and order, whereas the Dionysian mindset (from the Greek god Dionysius) encompasses passion, reverie, and chaos.[21]

The double-edged sword of hope and fear can definitely be seen in the two writers who really popularized science fiction at the end of the nineteenth century. Science fiction first made a big impact on popular culture in the works of Jules Verne (1828-1905) and H. G. Wells (1866-1946).

Jules Verne is well known for his scientific and technological predictions and his great sense of adventure into the unknown.[22] In the imagination of Jules Verne, we fly around the globe in *Around the World in Eighty Days* (1873), venture to the inner recesses of the earth in *A Journey to the Center of the Earth* (1864), and travel into outer space in *From the Earth to the Moon* (1865).[23] Millions worldwide read Jules Verne's novels. The future worlds of Jules Verne told of times of discovery and human advancement, with a strong emphasis on the positive powers of science and technology. Verne was an avid reader of contemporary science and technology and offered various predictions about future science and technology throughout his stories. Generally, Verne's novels reinforced the idealism of secular progress via the advances of science and technology and the triumph of the human spirit. Things often went wrong in his story lines (providing the necessary drama), but the courage, intelligence, and ingenuity of his characters, coupled with advanced technology and science, usually overcame whatever obstacles were encountered.[24]

Yet, there is also a lesser known "dark side" to Verne's writings. He was not an unequivocal optimist about the future, but his more pessimistic writings did not so easily get to print since they conflicted with the progressive temper of the times.[25] Especially toward the later years of his life, he began to seriously doubt whether secular and technological progress would lead to a better world, and whether humanity had the capacity or inclination to create a better society in the future.

The future clearly becomes complex and multi-faceted and both hopeful and unsettling in the work of H. G. Wells. For Wells, the future becomes a topic of intense and sustained speculation and study. As he remarked "I am extravagantly obsessed by the thing that might be, and impatient with the present."[26] Wells integrated social, historical, and philosophical ideas with scientific and technological concepts in his thinking about the future, creating much richer, more profound, more comprehensive, and more realistic projections than writers of science fiction who merely foretold of scientific or technological changes. Wells wrote an immense number of both narrative fiction and non-fictional essays and books on the future.[27]

Herbert George Wells is generally considered the father of modern science fiction. The science fiction writer Thomas Disch identifies Wells as the greatest of all science fiction writers.[28] Beginning with *The Time Machine* (1895), *The Island of Dr. Moreau* (1896), *The Invisible Man* (1897), *The War of the Worlds* (1898), and *When the Sleeper Awakes* (1899), and continuing through *The First Men in the Moon* (1901), *The Food of the Gods* (1904), *The War in the Air* (1908), *The World Set Free* (1914), and *The Shape of Things to Come*

(1933), Wells produced in story form a multifarious and expansive set of images of possible futures. We encounter alien minds and civilizations, "future histories" of the world and humanity extending millions of years outward, biologically engineered life forms and humans, invisible humans, great future war machines and aircraft, atomic weapons, and both the fall and rise of human civilizations.[29]

Less well known to popular audiences, are Wells' extensive series of philosophical and sociological books and essays on the future, including *The Discovery of the Future* (1902), *Anticipations of the Reaction of Mechanical and Scientific Progress Upon Human Life and Thought* (1902), *Mankind in the Making* (1903), *The Open Conspiracy: Blueprints for a World Revolution* (1928), *World Brain* (1938), *The Fate of Homo Sapiens* (1939), and *Mind at the End of its Tether* (1945). Wells was not only interested in speculating about the possibilities of the future; he was also very concerned with actually influencing the future of mankind. He wrote about his concerns regarding the human condition and presented numerous proposals for how to improve human society. Wells believed that the future could be both predicted as well as directed toward desirable ends, and consequently he is often seen as the father of modern future studies as well as science fiction. He viewed time deterministically, yet he also believed, perhaps in contradiction to this, that the future was malleable and could be influenced by human choices and intervention. [30]

Wells clearly made numerous specific predictions about the future; sometimes his predictions were mistaken, but often he accurately anticipated the "shape of things to come". He predicted the atomic bomb and the use of nuclear energy, armored tanks, aerial warfare, worldwide television broadcasting, and cinematic pornography. He foresaw intercontinental ballistic missiles and the rise of a global society run by multinational corporations. He envisioned large mechanized agricultural farms, genetic engineering, and highly overpopulated mega-cities. He foresaw both World Wars long before either began. Wells envisioned the emergence of a World Brain and World Encyclopedia that in some ways anticipates the recent development of the Internet.[31]

Central to Wells' thinking on the future was his evolutionary and panoramic view of history and time. Wells saw all of nature as transformational, rather than static and unchanging. History involves change. Further he saw time as directional, rather than cyclic, filled with creativity and novelty. Wells took a global, if not a cosmic, view of history, looking for general trends across the vast expanse of time from the dawn of creation to the far distant future. Wells was intensely interested in both history and the future and connected the two together; as the Wells biographer Warren Wagar states, Wells "traversed time". It is worth emphasizing this dual interest and passion of Wells in both history and the future. As I have argued, an understanding of history greatly benefits future consciousness; in fact, without a sense of the past, there is no sense of the future.[32]

Wells' comprehensive vision of the past and the future was conceptualized in evolutionary terms. As a student, Wells studied with the great evolutionary thinker Thomas Huxley and thoroughly absorbed both evolutionary theory and the principles of science. For Wells, time is evolution. In particular, evolution

provided for Wells a scientific story and explanation of the ongoing saga of humankind. From early in his career, Wells wrote articles and eventually books, both fiction and non-fiction, concerning the evolution of humanity, both pertaining to the past and to the potential future of our species. According to Disch, in his science fiction, Wells presented a new evolutionary mythology and narrative of human history and the future.[33] Evolution as a creation of modern science provided Wells with a general scheme for telling the story of humanity than the Biblical account of natural and human history. Wells frequently captures the transformational tension and struggles of the evolutionary saga of humanity in his fictional stories. On the one hand we are grounded in our animal ancestry - on the other hand we aspire to the heavens and the stars above. We are a creature in evolutionary transition, moving forward yet grounded in the past.[34]

Because Wells saw the future in evolutionary terms he saw the possibility for unending human progress but also the potential for disaster, if not total extinction. The future of humanity was uncertain for within an evolutionary framework there is no purpose or *telos* to nature, and humanity is not some special creation by God, but just one among many species in the ongoing struggle for survival. Species survive by adapting to the changing circumstances of the environment and there is no guarantee that humanity will adapt and flourish into the future.[35] Hence Wells created both utopian visions of the future, where humankind uses reason, science, and humanitarian ethics to guide its future, and nightmarish, troubling, and dystopian visions where negative and self-destructive trends dominate in our future history. Given the uncertainty of the evolutionary saga, the future of humanity is a double-edged sword – of both hope and fear.

In Wells' evolutionary perspective we see an important new archetypal theme that would influence much of future science fiction. The world is no longer a creation of gods; it is an evolutionary process involving the possibilities of both unending advancement and total extinction. Just as the double-edged sword of science and technology provided a new motif for myth-making, the naturalistic, cosmic, and scientifically informed theme of evolution provided another new framework in which to create stories about the future. Contrary to traditional Western religious visions of the future that predict a glorious and uplifting triumph of God over evil and the salvation of humanity, evolution offers uncertainty, at least regarding the fate of humankind.

The earliest and most famous of Wells' science fiction novels running from *The Time Machine* through *When the Sleeper Awakes* and *The First Men on the Moon* tend to be dystopian, frightening, and horrific. Many of these novels can be interpreted as warnings; if we don't change our society and our present ways of thinking and behaving we are in for trouble. *The Time Machine* envisions a future world in which humanity – presumably the capitalists and workers of present day – have evolved and divided into two separate species – the Eloi and the Morlocks. The Morlocks do all the industrial work in the dark underground and feed on the Eloi who live a childlike and frivolous existence in a garden paradise maintained by the Morlocks. *The Island of Dr. Moreau* warns against the potential dangers of biotechnology and suggests that the animal – the beast – still lives

within us in spite of our elevated and civilized aspirations. *The War of the Worlds*, according to some critics, an allegory on the ruthless imperialism of the West, tells the quintessential story of alien invasion, of mental evolution freed of emotionality, of the weakness of humankind in the face of greater powers in the universe, and ultimately, the capriciousness and ironies of survival in the world of tomorrow. *When the Sleeper Awakes* foretells a future world ruled by rich capitalists, where workers are suppressed and controlled through behavioral technology, and robbed of their freedom. *When the Sleeper Awakes* anticipates many of the most famous dystopian stories of the twentieth century, including *Metropolis*, *Brave New World*, and *1984*.[36]

Yet beginning in 1902, first with the publication of two non-fictional books, *Anticipations* and *The Discovery of the Future*, Wells begins in earnest to argue for his progressive and utopian ideals about the future. Science fiction utopian novels would follow in the years ahead, including *The Food of the Gods*, *A Modern Utopia* (1905), *The World Set Free* (in which he predicts the atomic bomb), *Men Like Gods* (1923), and his most famous utopian novel, *The Shape of Things to Come*. Wells' basic argument through all these utopian books, fictional and non-fictional, is that humanity's aggressive, self-centered, and power-hungry mentality will doom us to self-destruction, and a global and humanitarian culture, informed by reason and science, needs to rise up and gain control of the world if we are to survive and flourish.[37]

Aside from the importance Wells places on science and reason in realizing a better world tomorrow, to understand Wells' utopian visions it is also essential to place them in the context of his evolutionary framework. Wells accepted the idea that biological evolution was a consequence of natural selection, competition, and survival of the fittest – a "law of the jungle" interpretation of evolution. From Wells' perspective, this competitive, "every species or man for himself" mode of behavior and thinking is, in fact, largely responsible for the present troubles facing humanity. We are competitive, tribal animals living in a civilized global reality. But to complicate matters further, humanity has developed highly destructive modern weapons, such that if we continue our aggressive ways and use these powerful weapons against each other, we are doomed to extinction, or at the very least, we will destroy our present civilization. Following an idea first expressed by Darwin and Huxley, Wells believed that humanity needed to increasingly move to a higher form of evolutionary development and guidance, one directed by ethical considerations rather than self-centered competition. Wells' visions of future utopian worlds invariably involved this concept of "ethical evolution" transcending competitive evolution. Ethical evolution would entail increased cooperation and a unity of purpose within our species.[38]

The utopian novels of Wells usually took the form of narrative histories, tracing first the collapse of contemporary civilization and second the rise of a new world state. These "future histories" of humanity, written in dramatic form, anticipated many later science fiction "future histories", such as those by Asimov and Heinlein, where the future is told as a story extending outward through a series of challenges, defeats, and triumphs. Even Wells' descriptions of ideal

world states are dynamic and historical rather than static. There is no perfect state that once achieved brings history and our further development to a close. There is no "heaven" in his secular view of tomorrow. Progress continues indefinitely. Further, Wells did not see progress as a peaceful steady movement forward, but rather as involving conflict, revolution, destruction, and rebirth out of the ashes. (This conflictual view of progress has been a common and highly influential perspective on the dynamics of history, found in both ancient and modern philosophies and mythologies.[39]) For Wells, the struggle into the future entailed an ongoing tension and conflict between the forces of the past and the forces of the future, between our more primitive tribal mentality and a more progressive ethical mentality.[40] The future is best seen as a dramatic story or series of stories.

Wells saw, at least our immediate future as involving great war, violence, and destruction. In Wells' mind our present world system is corrupt and literally needs to self-destruct. Wells lived through two World Wars, and as noted above, anticipated the outbreak of both wars. Specifically regarding his predictions of the First World War, Wells clearly foresaw that the world was heading toward more global and destructive warfare than anything it had experienced in the past. Although many writers of Wells' period also predicted future wars around the world, it was Wells who was the most powerful voice among them, and it was Wells who foresaw most dramatically the technological advances in future warfare and the immense and pervasive carnage and destruction unleashed through future weaponry. In *The War in the Air*, cities are destroyed through aerial bombardment and nations fall apart; in *The World Set Free*, most major world urban centers are leveled with atomic bombs in what the Wellsian scholar Warren Wagar describes as the "most terrifying novel" he has ever read.[41]

Although war may be inevitable in the near future and perhaps necessary for the birth of a new world civilization, Wells also articulated in considerable detail many ideals, principles, and features of a positive and more ethical future. He described a future world of universal education based on science and a unified world view; the emergence of a world religion, informed by modern science rather than superstition and tribal thinking; equal rights and freedom for all humanity; a collective government under the control of productive, practical people without divisive party politics and the intrusion of the interests of "Big Business"; better cities, housing, and urban infrastructure; and the unending improvement of the human species through biological engineering. He even foresaw the possibility that humanity would evolve and transcend itself, achieving a higher level of universal consciousness, God-like in nature.[42]

For Wells, the history of humanity is a great drama, a story of the oppositional forces of our primitive and animal ancestry and our forward-looking rational and ethical mentality. All his life, Wells wrestled with the conflicting forces of despair and hope: Would humanity rise above the barbarity of the past or were we doomed? This dynamical tension in all of its manifestations is the underlying essence of our nature. We are a story unfolding with an uncertain resolution. We have arisen out of the "tooth and claw" struggle for survival in the natural world and now we face our greatest challenge – to somehow transcend our beginnings,

while at the same time acknowledging and understanding our origins, and create a new world using our evolved powers of reason and morality. Wells is the great creator of modern science fiction because he saw that the future is quintessentially drama, to be understood in terms of the most fundamental principles and issues of science, history, and philosophy, and told in the form of stories.

Because Wells lived through the unprecedented destruction and carnage of two World Wars, and because he felt perpetually frustrated in getting his message of hope for the future across to the powers in the world, as well as to the general public, and because he saw the resolutions achieved in both World Wars as not addressing the underlying problems that had generated these wars, Wells became increasingly pessimistic about the future of humanity toward the end of his life. In his last book, *Mind at the End of its Tether*, Wells states, in regards to the future of humanity, “The stars in their courses have turned against him and he has to give place to some other animal better adapted to face the fate that closes in more and more swiftly upon mankind.” In another earlier passage in the book, he puts it even more succinctly, “The writer is convinced that there is no way out or round or through the impasse. It is the end.” So Wells became hopeless about our future, but because he saw history and time in evolutionary terms, he saw something coming after us, perhaps a dramatically modified version of our hominid line, perhaps some species totally different from us. This theme of the extinction and replacement of humans as the dominant form of life on earth is taken up by many future science fiction writers who came after Wells. There may be a better future coming but it may of necessity not involve us.[43]

In the first decade of the twentieth century, “scientific romances” and other novels about the future contained both hopeful and uplifting visions of tomorrow, as well as fearful and apprehensive images. Clute highlights the optimistic quality of the times and the science fiction during this period. He refers to the first decade of twentieth century science fiction as “A Glowing Future.” Progress was speeding up, invention and innovation were everywhere, and there was great hope in the West, at least, that human civilization and science and technology would continue to advance. There were many upbeat space adventures and positive heroes imagined in science fiction. Yet during this same period there were a variety of unsettling events and ideas emerging in the sciences, art, and culture that were “disturbing the peace”[44], and there were many future war novels being written, including Wells’ prophetic *The War in the Air*.[45] In the decade before the First World War, apprehensions of an impending world conflict were clearly in people’s mind and new doubts and challenges were arising concerning the vision of reality and the future bequeathed by the Enlightenment.

Clute believes that early science fiction stories describing future wars were written as warnings of possible disasters. They weren’t intended to predict, but rather to show the undesirable consequences of political policies and potential applications of new technologies. The "warning scenario" is a common theme within futurist thinking, both in science fiction and non-fictional books on the future. *Frankenstein* and *The Island of Dr. Moreau* can be viewed as warnings regarding the unbridled use of biotechnology to serve the vain aspirations of

power obsessed scientists. The logic of such warning scenarios is if we keep doing what we are doing things will get worse, hence we should change what we are doing. The futurist Wendell Bell refers to such predictions as "**presumptively true**."[46] Hopefully the warning will change human behavior and the predicted negative effects will not occur. Such dark images are supposed to raise our consciousness and provoke corrective action. As J. T. Fraser puts it, "…nightmares are dreams whose usefulness is to keep us on our toes."

Like Clute, the contemporary science fiction writer Frederick Pohl also argues that science fiction in general does not attempt to predict the future.[47] Of course, as a form of literature, science fiction is intended to entertain and stimulate the imagination and to move the heart. Yet contrary to Clute and Pohl, even if the purpose of a story is no more than to warn of possible negative consequences of present trends, this activity has a predictive aspect. Again, the logic of a warning is "If we continue to do X, then Y will follow." This is a conditional predictive statement.

Science fiction, in so far as it is fiction, creates characters and events that are imaginary and not literally true. Clearly, if one is writing a story about the future, then the events portrayed are hypothetical rather than real. Still, although futurist science fiction is imaginary, many of the great science fiction writers, such as Jules Verne, H. G. Wells, and Arthur C. Clarke, created future worlds involving a variety of intentional predictions about the future. Science fiction often attempts to create plausible futurist scenarios and extrapolations on present trends. At the very least it gets the reader thinking about the various possibilities of tomorrow and it has actually inspired outside of the genre a host of predictions and goals for the future. It has even provoked the real-world creation of technologies and hypothetical realities envisioned in its stories. Science fiction may accurately predict the future by stimulating the creation of the future that it is imaginatively and vividly describing.

Disch states that science fiction is often a way to help us see the present better - by placing present events and conditions in exaggerated form in an alternate reality. Yet he also argues that the purpose of most good science fiction writers is to create a "realism of the future."[48] Does the science fiction writer create a plausible and realistic image of tomorrow? Is it convincing? Does it feel real? Are the scenes and characters drawn in sufficient detail and complexity? Realism can mean different things, but one thing it means is that a situation or event makes sense and is plausible. Recall Clute's argument that science fiction uses scientific and contemporary secular reasoning to support the rational possibility that the strange events in the story could become real.

Another useful way to see the predictive dimension of science fiction is to view science fiction stories as narrative "**thought experiments**." Some hypothetical state of affairs is imagined, for example, cities in the future, contact with alien intelligence, or a world wide catastrophe, and a story is told exploring the possible effects or repercussions of the imagined scenario. Or the thought experiment can simply be, given the present conditions in the world, what hypothetical consequences will emerge over time. Thought experiments are a common practice in science – often as a prelude to doing an experiment. In

science fiction the consequences of a state of affairs are conceptualized in the form of a story, rather than a set of measurable controlled variables as in a scientific experiment. Science fiction stories allow us to think through the possible effects, repercussions, or implications of different imagined futures, or the possible future effects of present trends and developments.

Hence, although science fiction is fiction rather than fact, futuristic science fiction predicts, extrapolates, and imagines in story form possible future developments in our world, as well as in the universe at large. Acknowledging that many of the predictions contained in science fiction stories have turned out to be mistaken, the bottom line is that science fiction, based on extrapolations of present trends, has made numerous relatively accurate predictions about the future and does realistically consider the possibilities of the future. Even if its stories take the form of "presumptively true" warning scenarios, with the clear purpose of stimulating people into action to prevent the events portrayed in the story, a conditional prediction is still being made.

The second decade of the twentieth century witnessed a time of great escapism in science fiction from the ongoing horror of the First World War. Edgar Rice Burroughs (1875 – 1950) began his famous "Barsoom" series about Martians and Martian civilization with *Under the Moon of Mars* (1912).[49] Burroughs, creator of the Tarzan series and the well-known novel *The Land that Time Forgot* (1924), populated his stories with heroic figures and thrilling adventures. Through the writings of Burroughs one could escape to an alien world, or the primitive jungle or a land populated with cave men and dinosaurs. Also during this period many stories were written about aerial empires, consisting of huge spaceships or floating cities in the sky. The reader could run away to some imagined perfect world in the heavens above. A great world war, having been envisioned and now encountered, became a stimulus for escape into a presumed better tomorrow, or some strange other land. Thus we encounter another duality in science fiction. It can provide a way to see more clearly where we may be heading, or it may provide a way to run away from an unpleasant reality into some more pleasing and hopeful world.

In the 1920s, following Hugo Gernsback's inspiration, the term "science fiction" came into popular use. The name "science fiction" derives from "scientifiction", a term coined by Gernsback. He used the term to describe the type of stories he published as founding editor in his pulp magazine *Amazing Stories* beginning in 1926. Gernsback, an engineer by training and education, was highly enthusiastic about the potential wonders and benefits of future technology, and inspired by the writings of Wells and Jules Verne, among others, started a series of new magazines (*Amazing Stories*, *Science Wonder Stories*, *Air Wonder Stories*, and *Amazing Stories Quarterly*) dedicated to showcasing how science and technology could transform the world into a "technological utopia".

In spite of Gernsback's upbeat vision of a technological future, following World War I, the level of apprehension and ambivalence over the future continued to manifest itself in science fiction. For example, in this period, numerous stories of futurist cities were written. Sometimes these future cities

were vast and ultra-technological with mile high skyscrapers; other scenarios presented future cities as great ruins following some imagined worldwide catastrophe.

Of special note, perhaps the most well-known of early great science fiction movies, *Metropolis* (1926), was produced, showing the technologically advanced, but equally negative social and psychological side of a great futuristic city.[50] *Metropolis* is a beautiful high-tech city above the surface, where the wealthy enjoy all the benefits of economic and technological progress, but below the surface, the workers, who maintain the city, toil in mechanical, depressive drudgery and monotony without any of the benefits enjoyed by the wealthy class. Perhaps science and industry will lead to great technological achievements and luxury (at least for some) but with disastrous overall social consequences. The darkness and the light are not an "either-or" but a "both-and." The message of *Metropolis* is that the "heart" needs to play a critical role in the creation of a better future.

In the 1920s robots become a highly visible presence in science fiction. The term "robot" comes from Karel Capek's play *R.U.R.* (Rossum's Universal Robots) (1924). A classic early example of a robot – in this case female - can be found in *Metropolis*. Though the term "robot" means indentured labor in Czech (Capek's native language), the fear from the beginning in science fiction stories was that robots – our own creation - would turn on us. In *Metropolis,* the female robot, under the control of a mad scientist and a heartless government official, is directed to lead the working class humans of the city to a self-destructive end.

In the early years of science fiction, robots were highly anthropomorphized, looking like humans covered in metallic armor – in fact, the woman robot of *Metropolis* even had metal plated breasts – like a nude futuristic female gladiator. Robots were machines that were shaped like humans and in many ways behaved like humans. The robot, in fact, in science fiction emerged as a symbolic synthesis of humanity and the machine – equally the human becoming machine-like, being assimilated by its technological creation, as well as the machine becoming human, embodying our worst qualities and characteristics. In *Metropolis* and numerous other science fiction stories, the robot takes up the *Frankenstein* theme in metallic clothing. It personifies our fear of science and technology, as well as our fear of what we may become. In humanity's attempt to create life and sentience (and hence be like gods), our own creation may turn on us. We may destroy ourselves through our machines. Or worst, we may become machines. The robot is a concrete symbol of threatening technology, human corruption, and the quest for power. It is a classic archetype of science fiction.

Cosmology, Future History, and the Golden Age

"What Orwell feared were those who would ban books. What Huxley feared was that there would be no reason to ban a book, for there would be no one who wanted to read one. Orwell feared those who would deprive us of information.

Huxley feared those who would give us so much that we would be reduced to passivity and egoism. Orwell feared that the truth would be concealed from us. Huxley feared the truth would be drowned in a sea of irrelevance. Orwell feared we would become a captive culture. Huxley feared we would become a trivial culture, preoccupied with some equivalent of the feelies, the orgy porgy, and the centrifugal bumplepuppy."

Neil Postman

In the 1930s and 1940s science fiction flourished and vastly increased in popularity. This period is frequently referred to as the "**Golden Age**" of science fiction. Science fiction magazines proliferated and many new writers made their debut in "pulp" magazines, among them perhaps the most well-known being Isaac Asimov and Robert Heinlein.[51] *Flash Gordon* appeared in the newspapers and later became a movie serial. Science fiction was highly popularized through the media of radio and the movies, but these media often focused on the horror and fear elements of the genre. Orson Welles did his famous radio broadcast of an updated *The War of the Worlds* frightening millions of people across America. Equally dark and terrifying, the movies *Frankenstein*, *The Invisible Man*, and *Dr. Jekyll and Mr. Hyde* were produced during this time.

One type of science fiction story that blossomed in the Golden Age was the "**space opera**." Space operas are dramatic epics set in outer space, involving both adventure and danger, with great stellar ships, amazing technological weaponry, alien life forms and evil forces, and colossal space battles. Clute views early space operas as a form of high escapism, first from the Great Depression and then the growing threat of the Second World War. The space opera provided a vision of the future as a great adventure into the unknown, yet with a continuation of war and conflict, now staged on a cosmic scale. It is a classic mythic form of science fiction.

During the Golden Age, E.E. ("Doc") Smith led the way in the development and popularization of the space opera. What is noteworthy about Smith's novels is their cosmic scope. In his two most memorable series, the *Skylark of Space* and *Lensmen* novels, the forces of good and evil battle across the galaxies over billions of years, beginning in the distant past and extending into the far future. In the *Lensmen* series Smith envisions immensely powerful alien life forms with highly advanced technological capabilities and incredible space armada. Humans are drawn into the cosmic saga, achieving heroic status in the fight of good against evil. Within rousing adventure stories, Smith expands our perspective on ourselves to the farthest reaches of space and time.[52]

"Doc" Smith may have taken the reader to the ends of the universe in gargantuan spaceships, but it is the British philosopher Olaf Stapledon (1886 – 1950), also writing in the 1930s, who is usually considered the most cosmic of all science fiction writers. Perhaps the most imaginative and intellectually powerful writer in the history of science fiction, Stapledon wrote only five science fiction novels. Stapledon approached science fiction as a philosopher, a historian of

cosmic dimensions, and a metaphysician who pondered the deep questions of existence and the meaning and nature of reality. Although future technologies and space travel play a role in his stories, Stapledon explores all the varied possibilities of the future, humanistic and scientific. Stapledon's novels are concerned with the ultimate reaches of life, mind, civilization, and spirit.

Of particular note, Stapledon wrote two vast and inspiring epics of the far distant future. The novel *Last and First Men* (1930) traces the complete history of humanity two billion years into the future. Humanity goes through various evolutionary transformations within this immense history – the novel chronicles the historical journey of 18 generations or types of humans into the future. Human civilizations rise and fall, we journey to and settle various planets in the solar system, we biologically and technologically enhance ourselves in varied ways, discover how to travel through time, and achieve great insight and understanding scientifically, spiritually, and philosophically. Yet, in the end, humanity passes into extinction, a brief "music" and "brave theme" within the vast "music of the spheres" of the universe.[53]

The second novel, *Star Maker* (1937), unfolds on an even grander scale. Arthur C. Clarke describes *Star Maker* as "Probably the most powerful work of imagination ever written." *Star Maker* explores the idea that in the vast reaches of the distant future – tens of billions of years from now - the combined efforts of all intelligent life in the universe achieve contact with "The Star Maker," the creator of the universe.[54] In *Star Maker* Stapledon tells the story of the rise of galactic empires and galactic minds leading eventually to "cosmical mentality" and a "cosmical utopia". In the finale of this epochal tale, the universe itself is transcended as the "Star Maker" reveals an infinite array of created universes, from the most primitive to the "ultimate cosmos." We peer into the mind and the creations of God and are bedazzled and humbled. The story is a great cosmic myth of the absolute future.

Stapledon's writings epitomize the intellectual and philosophical adventure of the future set within a science fiction context. Stapledon thoughtfully considers the historical causes of world events, the social and psychological changes that bring about the unfolding of the future, and the implications and consequences of such changes. His books read more like history and philosophy than fictional novels. Individual characters are "swept aside" as Stapledon discusses the great saga of events over millions and billions of years. There is a sense of wonder and awe as well as cosmic revelation within *Star Maker*. The images of the future engulf the reader – we are transported to the edge of infinity. Further, Stapledon writes with great profundity and speculative detail – pondering the meaning of existence and describing innumerable strange and alien realities along the way. Stapledon rivaled, if not exceeded, Wells in imaginative power, and he clearly demonstrated the sense in which the future is the ultimate adventure of the mind. His influence on science fiction has been immense, anticipating a great variety of major themes and ideas that would appear in science fiction in later years .[55]

Stapledon transcended the darkness and limitations of his times, by moving outward into a vast cosmic context – a cosmic context in both space and time. To borrow a phrase from the great seventeenth century philosopher Baruch

Spinoza, Stapledon examined humanity and the grand panorama of existence and intelligence "through the eyes of eternity". For Stapledon, the future of the cosmos is evolutionary and historical – it is a great saga of advance, decay, transformation, and ultimate revelation. The future is no longer just an arena of human affairs, but a great universal epic populated by innumerable alien minds and civilizations on a great quest of creation and discovery. Where is the entire scheme of things heading? For Stapledon, the extended future of the universe was a legitimate and important arena of inquiry and speculation. Within this much broader context, which could be seen as fantastical escapism or heightened realism, the future history of humanity and all forms of intelligence, civilization, and mind is told.

Although Stapledon in both *Last and First Men* and *Star Maker* describes the future from a vast panoramic perspective, recounting events, trends, and accomplishments across billions of years without much mention of individual characters - to use the expression of the historian David Christian, he writes a “big history” of the future - Stapledon does tell these stories from a personal point of view. In each novel, there is a central human character, who recounts the histories, and in the case of *Star Maker*, actually experiences the events. These tellers of the tales bring their personal feelings and thoughts to the story – they react to and ponder over the great saga of future history. This individualized perspective gives both novels a personal dimension. This personalization of a cosmic future achieved in a science fiction narrative is a unique strength of the genre. All of the future histories and epics of Wells, Smith, and Stapledon in different ways combine the personal and the cosmic. Science fiction stories address both the inner and outer dimensions of human reality – the macrocosmic and the microcosmic.

It is worth considering further the similarities and differences between Wells, “Doc” Smith, and Stapledon. Smith’s novels focus on action, technology, and war and conflict in space – that is how future history is understood and told. There is a moral dimension to Smith’s novels as well – there are forces of good and evil in conflict over the destiny of the universe. In Wells there is struggle and war also in the future history of humanity and there is a moral dimension as well, for Wells hopes that our ethical and cooperative dimension will eventually transcend our competitive and tribal behavior. But Wells sets the great saga of the future in the context of evolution, connecting past with future, and hoping that we can move beyond conflict to a higher level of human reality – that is we must move beyond the “war of good and evil”. Stapledon goes even further, and though he discusses future war, his central transformational theme is mental and cosmic evolution. We witness the struggle of intelligence, culture, and civilization to ascend to progressively higher levels of understanding and excellence in the context of a vast, mysterious, and dynamic universe. The central struggle is not good versus evil and the struggle is not war-like in nature. The central struggle is to evolve and achieve wisdom – it is the struggle of mind and self-transcendence. In the end – in the grand finale of first humanity and then the combined corporeal intelligence of the cosmos – there is a feeling of insignificance yet acceptance and appreciation for the journey.

What Wells, Smith, and Stapledon have in common is that they all take a cosmic perspective on the future. Can we accurately understand the future of humanity without seeing ourselves "through the eyes of eternity"? Modern science fiction often sets the saga of the future in a cosmic context, a perspective that reflects much earlier religious myths. Although ancient myths were limited in their visions of the universe, the attempt at least was made to describe the future of humanity within the context of the whole. The cosmic perspective reasserts itself within science fiction, now redefined and significantly expanded beyond traditional myth by science, evolution, and space technology. A scientifically informed vision of outer space now becomes the new cosmos. Yet as Stapledon and other great science fiction writers have realized, though the exploration of outer space clearly involves a technological and scientific dimension, it will involve the expansion and evolution of all facets of human civilization. All aspects of human existence need to be re-thought as humankind moves outward into this new cosmic environment. The exploration of outer space, a central theme in science fiction, provides a cosmic setting for all aspects of the future evolution of humanity.

Although enlightenment, transcendence, and cosmic insight are themes that occur in ancient myth, science fiction as illustrated especially in the works of Wells and Stapledon, places these themes in an evolutionary context. Evolution becomes the grand cosmic story in which individual tales are told. This general framework, a reflection of the ideas of science, represents a significant shift from ancient mythic tales where the general context was usually the actions, creations, and purposes of deities. But in so far as science fiction is dramatic literature and story telling, the path of evolution is described not so much as an abstract theory, but as an ongoing struggle and tension of various forces, represented through fictional characters and societies, their struggles, and their failures and triumphs.

As already mentioned, two of the most well known new authors of the Golden Age of science fiction were Isaac Asimov and Robert Heinlein. Both were prolific writers and had long careers, continuing to produce many popular novels and stories for decades into the 1960s and 1970s. Asimov and Heinlein both began publishing short stories around 1940. From early on, Asimov created a whole series of “robot” stories that he became particularly known for. Heinlein achieved early fame weaving together many of his stories into a coherent and detailed “future history” of human society that stretched a couple of centuries into the future.[56] Asimov soon followed suit, creating his own future history that evolved into his famous *Foundation* series.[57]

Heinlein and Asimov did not look out as far in time as had Stapledon, but their future histories consisted of stories (or series of stories) with numerous individual characters and dramas, as opposed to Stapledon’s grand historical epochs. Although their future histories included various technological predictions, as well as space travel and colonization, Asimov and Heinlein also invoked a variety of psychological, sociological, and historiographic ideas in creating their future chronologies of humankind. Asimov considered the dynamics of historical change and the forces which effect social change, while Heinlein concerned

himself with political, religious, and ethical transformations in humanity. In general, by the 1940s science fiction had clearly created a vast array of speculative social and political, as well as technological, scenarios about the future. Asimov and especially Heinlein led the way in exploring the social and political possibilities of tomorrow.[58]

As mentioned above, Asimov also wrote many stories about robots during the 1940s. Continuing the longstanding theme running back through science fiction since the time of *Frankenstein*, in his robot series Asimov addressed humanity's fear that our technological creations might become a threat to us. Isaac Asimov attempted to address the issue of how to make intelligent machines safe and non-threatening to humans. He formulated the "**Three Laws of Robotics**", presented in his famous collection of stories *I, Robot*.

1. A robot may not injure a human being, or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First and Second Law.

Asimov imagined these three laws or directives programmed into all robots that humans create, with the hope that our technological creations would never attempt to gain control over us or destroy us.[59]

Aside from Asimov and Heinlein there were many other great new writers who emerged during the Golden Age. Two excellent anthologies that showcase the best authors and stories of this period are Ben Bova's *The Science Fiction Hall of Fame* and Raymond Healy and J. Francis McComas's *Adventures in Time and Space*.[60] *The Science Fiction Hall of Fame* is a collection of short stories and novellas voted the best of all time by the members of the Science Fiction Writers of America. A good percentage of the stories in the three volumes of this collection are from the Golden Age. The Healy and McComas anthology is exclusively of stories from the Golden Age. In these two collections are stories on aliens and alien civilizations; time travel and the future; robots and biologically advanced humans; and space travel and star ships that cross the universe – all the great themes of twentieth century science fiction.

One of the writers most frequently represented in these two collections is Lewis Padgett, which was the pseudonym for Henry Kuttner and Catherine Moore, the greatest husband and wife writing team in the history of science fiction.[61] Two of their best stories, "Mimsy Were the Borogroves" and "Vintage Season", are both from the 1940s. "Mimsy Were the Borogroves" – inspired by Lewis Carroll and the concept of alternative realities – concerns the creation of a portal into another dimension by two children who decipher the true meaning of Lewis Carroll's jabberwocky lines. "Vintage Season" tells the tale of a group of tourists from the future who journey back to our time to watch a disastrous collision of a meteor with the earth, but do nothing to prevent it.[62]

A third well known story written in the 1940s by Kuttner and Moore that should be mentioned is "Private Eye". Contained in a different anthology of science fiction stories, *The Mirror of Infinity* edited by Robert Silverberg, "Private

Eye" is psychological science fiction at its best.[63] In a hypothetical future world, law enforcement institutions have developed the technological means to play back any event from the past, and thus ascertain the "true" nature of any crime committed by anyone anywhere. The main character of the story is a person raised by an authoritarian "fire and brimstone" father who instills the fear of God into his son. The son as an adult attempts to plan out and commit the perfect crime, an act of vengeful murder, knowing full well that everything he does can be watched in retrospect afterwards by the law. In a world of omniscient surveillance – both by God and concretely embodied and represented in the police of this futurist world – this man carries out the perfect crime. "Private Eye" examines the psychological repercussions of advancing technology and draws interesting parallels between the potential power of such technologies and traditional ideas about a judgmental, omniscient God contained in many of our religious belief systems.

Some of the other well-known authors and futurist stories of the Golden Age contained in the Bova and Healey and McComas anthologies include Lester del Rey's "Helen O'Loy" which concerns a poignant and moving love affair between a human master and his female robot; Theodore Sturgeon's "Microcosmic God", the story of an inventor who creates a new intelligent species that evolves much faster than humans; Murray Leinster's "First Contact", a tale of how trust is first established between humans and intelligent aliens who meet in outer space; "Who Goes There?" by John Campbell, the frightening and paranoid story of an alien that can mimic the shape and appearance of any live form it touches (this tale became the basis for the science fiction movie *The Thing*); and Harry Bates "Farewell to the Master", the story that the classic science fiction movie *The Day the Earth Stood Still* was based on. In "Farewell to the Master" the earth is warned by an alien emissary that humanity needs to stop its warring, destructive ways or else our whole species will be exterminated. In this story the humanoid alien is accompanied by a giant robot, and the humans in the story, thinking anthropocentrically, mistakenly believe that the robot is the servant of the humanoid alien, when, in fact, it is the robot who is the master. The aliens in the story have relinquished their freedom and autonomy to immensely powerful robots of their own creation, to preserve their own peace and survival – a telling message to humans who of course fear such a possibility as being their doom, when in fact for the aliens it turned into their salvation.[64]

Two of the most famous futurist novels written during the 1930s and 1940s explored with great narrative power the darker sides of technologically advanced and highly controlled human societies in the future. These two dystopian novels of the future are Aldous Huxley's *Brave New World* (1932)[65] and George Orwell's *1984* (1949).[66] "**Dystopia**" means the opposite of utopia - a highly pessimistic and dark image of a future society. The novels depicted future worlds where individuality had been squashed through pharmacological stupefaction in *Brave New World* and social – psychological control in *1984*. The novels were written as warnings regarding possible negative consequences of social and political developments in the world. They were also seen as indictments of contemporary modern Western society.[67]

After the optimism of the nineteenth century, the modern world had entered into a sustained period of great upheaval and change, and once held certainties and positive expectations evaporated in the turmoil of two world wars, the rise of totalitarian governments, economic depression, and the overthrow of classical science, art, and philosophy.[68] As the early decades of the twentieth century unfolded, the future increasingly seemed like something to fear; we had entered the "age of anxiety." *Brave New World* and *1984* captured and amplified many of the fears and apprehensions of the modern world.

In both *Brave New World* and *1984* it is our freedom and individuality - two of the central guiding ideals of the Age of Enlightenment - that are lost. But the primary cause of this loss is not advancing science and technology. Rather it is human nature itself and its social-political institutions that undermine and destroy freedom and individuality.

In *1984*, "Big Brother" – the personified omnipresent eye of the government – watches over all its citizens, demanding total obedience, devotion, and conformity. Orwell's apprehensions over the rise of totalitarianism in his time are transformed into a dark nightmare in which the human spirit has been killed and paranoia reigns over everyone. Truth is destroyed through the continued rewriting of history and psychological conditioning. The government controls its citizen's minds – their very beliefs of what is true and what is right – and through constant warfare and incessant propaganda creates an oppressive and sinister mindset in the population. The population is given a common enemy and indoctrinated into a perception of a common evil, resulting in a world where citizens are turned against each other, and in the name of Big Brother, always watchful of each other's behavior.

In *Brave New World*, future humanity is reduced to a population of pleasure-addicted empty souls. Peace, stability, and happiness are achieved through the sacrifice of all creativity, curiosity, and discontent. People do not read, not because books are forbidden, but because no one wants to read anymore. Science, art, and religion have been eliminated or rather replaced by drugs ("soma") that make almost everyone as content and happy, with no desire to achieve, and as frivolous as an innocent child.[69]

Orwell worried over the growing oppressive control of totalitarianism in the name of absolute social order; Huxley was concerned with the shallow human desire for individual pleasure. In *Brave New World* there is no pain; in *1984* there is no pleasure. Both fictional worlds are stagnate, without progress; freedom and individuality have been killed; ultimate order is achieved at the price of any real growth or change.

Whereas the great space operas of "Doc" Smith and the evolutionary sagas of Olaf Stapledon carry the human spirit to cosmic heights, the dystopias of Huxley and Orwell bring us back down to earth and the weaknesses and evils of the human soul. Such is the range of science fiction, metaphysically and ethically, from the shadows on Plato's cave and the desires of the Freudian id to the brilliance of the light of eternity.

Both *Brave New World* and *1984* might not be considered true science fiction since the primary focus of both novels is social criticism and warning

regarding political and psychological trends set in the context of the future. Yet, science fiction evolved as the twentieth century unfolded. As was the case with *1984* and *Brave New World*, as well as with much of what was being written in the 1930s and 1940s and thereafter, the label of “science fiction” was too limiting for what was being produced within the genre. Science fiction, contrary to Gernsback’s original vision, was not just about science and technology in the future, but all aspects and dimensions of human reality, including society, politics, and psychology. Science fiction became all-enveloping futurist narrative.

Science fiction thus has a very broad scope that serves many different social and psychological needs and addresses different modes of human consciousness. Following Bacon’s dictum that knowledge is power, secular images of the future, which would include many science fiction stories, often promise increasing power over the world and our individual selves. Such stories resonate with our “will to power.” Such stories may bring us hope and optimism, but they also provide a way to escape from the frustrations of our present lives. Science fiction empowers our imagination and elevates our egos, as a way to counteract the perceived limitations and difficulties in life. Hence science fiction stories are simultaneously prophecies of hope and power and pathways of escape.

Yet our optimistic images of the future do not always materialized – far from it, and science fiction also contains many negative and frightening scenarios that warn of mistakes and disasters in our future. They warn of our own frailties and flaws carried to extremes in the future. Science fiction offers a balanced perspective on the future and facilitates in our thinking with both realism and pessimism, and optimism about what tomorrow may bring. It provides new images of both heaven and hell based on the same human desires and fears that motivated the creation of ancient versions of these imagined supernatural places.

Consequently science fiction, as a mode of future consciousness, is not simply rational predictions, or direct implications of contemporary events. The stories also satisfy basic human needs and express various human emotions and motives. This is the Romantic dimension of science fiction. Science fiction stories are like dreams of the unconscious – symbolic and archetypal expressions of human psychology - visions of the darkness and the light like the myths and metaphysical images of ancient religions.

The basic human desires to be stimulated and to transcend the mundane reality of everyday life are clearly reinforced and fulfilled through science fiction. Disch argues that science fiction has emerged as a uniquely American phenomenon because Americans revel in the "make believe." According to Disch, Americans especially value fantasy and the fantastic. In fact, Americans tend to blur the distinction between fantasy and reality - through both the media and our lifestyles. Disch refers to America as a "nation of liars" and "would be actors." As noted earlier, Disch does think that good science fiction should be realistic and convincing, but coupled with the above comment on American mentality, this translates into making the "lie" as compelling as possible. As Disch states, Americans value the "good lie." Science fiction, according to Disch, permeates American culture in numerous ways and its fantastic images and

visions have inspired many prophets and profiteers in society. American culture sells the fantastic, the fantasy, and the future, and science fiction is often the source of these products, images, and dreams. According to Disch, through science fiction, the future has become a lifestyle in America, bringing excitement and adventure to people's lives.[70]

Evolution, Space, Time, and War

"It has yet to be proven that intelligence has any survival value."

Arthur C. Clarke

"Violence is the last refuge of the incompetent"

Isaac Asimov

The 1950s are often referred to as the "**Silver Age**" of science fiction. During this time, the images of science fiction increasingly entered the public mind. The space race between the United States and the Soviet Union turned many of the earlier visions of rockets and spacemen into reality. A great variety of highly popular science fiction movies were produced, including *Forbidden Planet, Destination Moon, Earth versus the Flying Saucers, The Day the Earth Stood Still, The Thing, The Fly, Them, This Island Earth, Invasion of the Body Snatchers, Invaders from Mars, War of the Worlds,* and *On the Beach*. Through such movies and many others, the impact of science fiction on popular culture continued to grow. For example, it was during this time that the flying saucer craze emerged. Reported sightings of flying saucers escalated after people read about them in science fiction magazines or saw them in the movies. Various strange and sinister aliens were created for the big screen, revisiting the theme of the conquest of earth that was first popularized in H. G. Wells' *The War of the Worlds*. After the dropping of the atomic bombs in 1945 and the escalation of the nuclear arms race between the United States and the Soviet Union, the ideas of a global nuclear war and a world catastrophe destroying human civilization became a vivid and real possibility and people began to imagine all kinds of invaders coming out of the sky.[71]

Among the many stories that were written in the 1950s about nuclear war and its possible consequences, the most famous was Walter Miller's award winning *A Canticle for Leibowitz*, considered by many the greatest science fiction novel of all time. The novel examines the aftermath of a global atomic war in the context of religious, philosophical, and spiritual themes.[72] In *A Canticle for Leibowitz*, a Third World War occurs which destroys modern civilization and propels humanity back to a much more primitive level of technology and social organization. One order of religious brothers attempts to preserve the wisdom of the past through the new Dark Ages, though comically they mistake a twentieth century grocery list for a sacred document. Over the millennia though humankind again "advances upward" to nuclear technology and weaponry and starts a whole

new world war, blowing civilization to smithereens for a second time. Abandoning hope that the earth will ever achieve a peaceful and moral civilization, some humans escape the earth in a spaceship. Perhaps the earth is doomed. Progress can not prevail and knowledge can not sustain us. The only answer is to abandon ship and leave.

The end of world civilization – at least as we define it – may not come through a nuclear holocaust, but perhaps through some type of natural disaster such as a worldwide plague. This is the premise of George Stewart's memorable novel *Earth Abides* written in 1949.[73] Our high tech industrialized world collapses as untold millions die and those who survive the plague must directly confront the challenges of survival in nature, no longer protected and supported by all the gadgets and services of modern society. After a few generations, our modern world is forgotten, and humanity starts over again, living a life reminiscent of our earlier hunter-gatherer mode of existence.

A more drastic type of new beginning is envisioned in Clifford Simak's highly imaginative and deeply moving novel *City*, begun as a series of connected stories in the depressing years of World War II, but only pulled together into novel form and published in the early 1950s.[74] In his forward to the novel Simak describes his disillusionment with humanity in the 1940's, a humanity that in its "madness for power, would stop at nothing," and how he first started writing *City* as an escape from the "horror" around him. In *City* Simak tells an epic tale of the future, where humankind eventually abandons the earth, leaving it to be ruled by intelligent animals, in particular dogs, who ponder and wonder whether the ancient stories of man are merely myth and fantasy of the distant past.

In the 1950s science fiction as a cultural phenomenon and a literary genre became more self-conscious and socially organized. In 1953, the annual Hugo Awards were established at the World Science Fiction Convention. Named in honor of Hugo Gernsback, the **Hugo Award** recognizes the best novel, novella, short story, movie, and other noteworthy science fiction accomplishments of the year. The first winner for best novel was Alfred Bester's *The Demolished Man*.[75] Over the years, the World Science Fiction Convention would grow in popularity and spawn innumerable local science fiction conventions across the United States. With the establishment of the World Science Fiction Convention and the Hugo Awards science fiction was becoming a very visible cultural phenomenon in both the United States and other parts of the world. A growing number of people - writers, readers, and millions of fans - embraced the science fiction dream, and saw the world through the visions and ideas of Wells, Heinlein, Asimov, and Clarke.

A decade later in 1965 the **Science Fiction and Fantasy Writers of America** established the **Nebula Awards**.[76] Whereas fans of science fiction vote on the Hugo Awards, professional members of the Science Fiction and Fantasy Writers of America vote on the Nebula Awards. Often the same novel or story has won both awards in a year, but quite frequently writers and fans don't agree. The first year of the Nebula Awards, Frank Herbert's great saga of an alien civilization, *Dune*, won best novel, but tied with Roger Zelazny's *This Immortal* for the Hugo. A year later, Daniel Keyes's *Flowers for Algernon* and Samuel

Delany's *Babel-17* tied for best novel for the Nebula Award, but it was Robert Heinlein's *The Moon is a Harsh Mistress* that won the Hugo.

One writer who achieved great popularity in science fiction in the 1950s and worldwide fame, a decade later in the 1960s, is Arthur C. Clarke. In his stories, Clarke explored the grand cosmic themes of science fiction and the future, weaving cosmology together with mythic ideas and speculations on human evolution. In his classic science fiction novel, *Childhood's End* (1953), a vast armada of alien space ships encircles the earth, establishes communication with humanity, and guides the transformation of humankind to a higher form of life and intelligence.[77] Interestingly, the aliens look like incarnations of the Devil, suggesting that our early myths of a serpent-like creature that tempts us to rise above the level of obedient children was perhaps a futurist premonition.

Clarke addresses the same theme of evolutionary human transformation in his popular *2001* trilogy, where humans again make contact with a vastly advanced alien intelligence and a humanoid "Star Child" is created as the next step in our evolution. In *2001*, which is based on the short story "The Sentinel" written by Clarke in the 1950s, the evolution of humanity from our primitive beginnings as ape-like creatures is credited to alien intervention.[78] Minds of a cosmic nature are guiding our ascension through time – an idea that clearly resonates with religious ideas of the past, except now the cosmic intelligence is natural rather than divine and the means of transformation is scientific and technological rather than supernatural. Clarke became world famous with the release of the movie *2001* in 1969.

Clarke has written many other stories through the years that have religious or spiritual overtones, including his famous short stories "The Star" (1955) and "The Nine Billion Names of God" (1953).[79] "The Star" is a science fiction retelling of the historical "Star of Bethlehem", with a tragic and ironical twist, and "The Nine Billion Names of God" weaves together Tibetan monks on a metaphysical quest with a super-computer and, in the finale of the story, the hand of God.

Throughout his career Clarke has explored the high-tech, high-science end of science fiction and often synthesized it with the mystical, mythic, and cosmic.[80] The themes of ancient myth are assimilated and recast in modern cosmology and scientific speculation. God does not disappear but is re-conceptualized in an evolutionary context and often given the metaphorical face of an alien.

As can be seen, future human evolution is a topic that many science fiction writers have addressed. Psychological evolution is the central theme in Theodore Sturgeon's science fiction classic *More Than Human* (1953).[81] In this novel, a small group of socially outcast humans merge into a group-mind (in telepathic contact) and become a "Homo Gestalt." Telepathic evolution is also a central theme in Alfred Bester's Hugo prize-winning *The Demolished Man* (1953). This novel is set in a future world where police can read minds and criminals learn to hide what they are thinking in their own consciousness. Much of the action in this psychologically intense story takes place in "mental space" – in the thoughts and counter-thoughts of the pursuer and the pursued.[82] Yet perhaps the most memorable and touching story of human evolution of this period was Daniel

Keyes's *Flowers for Algernon*, published first as a novella in 1959 and then as a novel in 1966. Through various new scientific treatments, Charlie Gordon, a congenital imbecile, is turned into the most mentally advanced human who has ever walked the earth – a genius of immense capabilities. Yet the transformation does not hold and Charlie eventually turns back into his old self – only dimly aware of the great heights to which his mind had ascended.[83]

In general, the theme of biological and psychological evolution in humans can be either hopeful or fearful in its tone and implications. The dark side of humanity may evolve as well as the good. In Jerome Bixby's chilling 1950s story "It's a Good Life", a child endowed with powerful psychic powers wishes people who displease him out of existence.[84] It may though be normal humans who out of fear attempt to subdue or kill more highly advanced humans. In Howard Fast's "The First Men" a group of super-intelligent children must defend their lives against government and military forces that want to destroy them.[85] The theme of the old versus the new, of what is normal versus what is strange and different is frequently played out in stories about future human evolution. Even if we do evolve in the future, there undoubtedly will be a dramatic struggle between the "new humans" and "old humans" fearful for their own continued survival and control of the world. This is the age old conflict of the future and the past, of stability and change set in the context of possible future human evolution.

It is interesting that stories about human evolution have frequently influenced contemporary society. Science fiction has been a significant source of inspiration for various social, quasi-scientific, and religious groups and movements that promise "higher levels" of evolution to their followers.[86] Again, a future image is created that stimulates or directs human action. In the case of stories about human evolution, people are inspired to develop to a higher level of mental, spiritual, or social reality. Science fiction has become an arena of thought in which humanity has considered how to redesign or redirect itself.

As noted above, the 1950s saw a heightened awareness of space exploration among the general public, and this heightened awareness of outer space and space technology was often connected with speculations about alien intelligence and the possibility of visitations of aliens from outer space. Both space exploration and aliens have been highly popular themes in science fiction since its beginnings. Through the 1950s, and in the decades to follow, space exploration and alien contact have continued to be ubiquitous features in science fiction, in both cinematic and literary forms.

The alien from outer space is, in fact, another of the central archetypes of science fiction. The alien represents the unknown and the fantastical personified, often possessing intelligence and technology far beyond human abilities. The alien is the transcendent and at the same time a creature that emerges out of the darkness. Stories of the future, especially those set in outer space, almost always have aliens, of one kind or another. Symbolically, the alien is the mysterious and frightening future.

Through the future human odyssey to the planets and the stars, alien intelligence may be contacted and humanity may be transformed – perhaps for better, perhaps for worse. The extreme contrast in possibilities can be seen in

two popular science fiction movies concerning alien contact produced in the 1970s and 1980s. Within the *Alien* movie series, humanity contacts a hideous alien species hell-bent on destroying us; the alien in this movie series is straight from hell, dripping slime with highly corrosive acid as blood, the most nightmarish creature imaginable. At the other end of the continuum, in *Close Encounters of the Third Kind*, the aliens are highly advanced technologically, yet gentle, benevolent, and utterly beautiful and magnificent. They are clearly mysterious, yet they promise enlightenment, fellowship, and friendship and communicate with us through music. As personified archetypes of the future, they represent the two extreme possibilities of what is to come in our journey into outer space. We will meet demons or we will meet angels.

Some classic science fiction novels involving space exploration and alien contact include Ray Bradbury's *The Martian Chronicles* (1950); Stanislaw Lem's *Solaris* (1961); and Larry Niven's epic adventure and award winning *Ringworld* (1970).[87] In *The Martian Chronicles* it is humans, exploring and settling Mars, who destroy the indigenous Martians and their civilization. In *Solaris*, it is the alien who gets the upper hand on us. In this highly original tale of alien contact, humans are unable to communicate with or understand the alien intelligence, which in fact is embodied within the entire oceanic surface of an alien planet. The alien intelligence manipulates the minds of the human settlers by speaking to them through their dreams and driving them mad. In Niven's novel, humans, and an assortment of interesting aliens, partner and travel to a huge and apparently abandoned "ringworld" that encircles a distant sun. Ringworld is immense in proportions, millions of miles in circumference and thousands of miles across. The interior band which faces the sun is surfaced in natural terrain with plant life, lakes, rivers, hills, and valleys. It is a marvel of solar and ecological engineering. The novel revolves around the mystery of what possible alien intelligence and advanced technology could have constructed such an immense object and then for no apparent reason abandoned it. The aliens of *Ringworld* are wondrous in their abilities and totally enigmatic.

The alien can also be seen as a psychological projection and a symbolic representation of ourselves in the future. As with the robot, the alien can be an expression of both our hopes and fears – our good side and our dark side. Our interactions with aliens then turn into symbolic struggles with ourselves. We run from our nightmares, but often we may run from our ideals and dreams as well. Through the alien and thoughtful speculation on alien civilizations we can consider different possible future modes of existence and identity and on different possible technologically advanced societies. Aliens are thought experiments but also explorations of our feelings regarding potential future selves.

Ideas in science fiction about space travel and space exploration have had a significant impact upon popular culture, both negative and positive. There is no question that science fiction has fueled the imagination, plans, accomplishments, and present developments of human space exploration.[88] Yet as Disch notes, the contemporary development of the space program has also been strongly connected with military goals and technologies, such as Reagan's Star Wars initiative and the earlier military strategies and plans behind satellite launches

and the space race between the USA and Russia.[89] The history of science fiction space operas, both in literature and film, also strongly connected the rocket and the space ship with super-weaponry and great wars in space. Culturally and psychologically, we associate the space ship with incredible destructive capabilities in its super arsenal of photon torpedoes, laser guns, and death rays. (This association of space travel and super-weaponry goes back to Wells' *War of the Worlds*, but is clearly reinforced in the more recent popular movie series of *Star Trek* and *Star Wars*.) Although science fiction writers such as Robert Heinlein and Jerry Pournelle have strongly supported the USA space program (NASA), it has become an increasingly hard sell to the public in the last couple of decades. Shouldn't we spend our money on health, education, and social issues instead of space, since the latter is strongly connected with war and the engines of destruction, while the former is associated with human welfare and peace? In this case, the negative and destructive images of space ships, space exploration, and contact with aliens generated in futurist science fiction may have contributed to a cultural backlash on the future of humanity in space.

Space travel and colonization, though, need not be associated with war, destruction, and hostile aliens. The adventure into outer space can be seen as a journey of cosmic discovery and enlightenment – it can be seen as the fulfillment of humanity's destiny.[90] It can also be seen as the evolutionary arena for the construction of technologies at a whole new level of size, sophistication, and scientific depth. In Robert Heinlein's novella "Universe" a huge space city has been constructed that is journeying to the stars.[91] Space travel may be our salvation, as in George Pal's 1950s movie *When Worlds Collide* where humanity must leave the earth due to the imminent collision with another planet. In journeying into outer space we may transform other worlds, making them fit for human habitation. Terraforming Mars – a dream of both science fiction and ecological science – is the central theme in Kim Stanley Robinson's 1990s trilogy – *Red Mars*, *Green Mars*, and *Blue Mars*.[92] Perhaps we will build wormhole super-highways through space such as in the movie *Contact*.

Time travel is a theme that, like space travel, runs throughout the history of science fiction back to its very beginnings. Stories about traveling through time are particularly relevant to thinking about the future, since the imagined journey through time may take us to a hypothetical future, and the story line may revolve around both positive and negative aspects of the encountered future world. Wells' *The Time Machine* told of a future world populated by cannibalistic Morlocks and indolent Eloi – a world depressing, frustrating, and disappointing to the Time Traveler who visits this future reality. On the other hand, time travel into the future can reveal a miraculous and utopian human civilization such as in Bellamy's *Looking Backward*.

Traveling through time also leads to various paradoxes and unusual complexities of reality. If time travel were to be achieved in the future, it would transform human reality and perhaps the entire universe into mind-twisting temporal convolutions and spirals to infinity. One can change history if the time traveler moves into the past, thus altering his or her own present, or one can travel into the future, bring back knowledge of the future and alter both the

present and the future. In Robert Heinlein's "By His Bootstraps", written in the 1940s, through traveling back and forth through time the protagonist becomes his own father and his own son.[93]

In the 1950s time travel stories continued to be popular. Isaac Asimov wrote *The End of Eternity* and Fritz Leiber wrote the Hugo winning novel *The Big Time*, both stories describing time traveling humans and other assorted intelligent beings who attempt to control time, past and future, by manipulating and revising history.[94] In the following decade, venturing into metaphysical and spiritual realms, Michael Moorcock, in his novel *Behold the Man*, describes the story of a man in search of the historical Jesus Christ. Through a series of unplanned events, he becomes the actual Messiah and Christ.[95] As one final time travel novel of note, David Gerrold's classic *The Man Who Folded Himself*, written in 1973, tells of a person literally suspended in a loop in time, born to manipulate his own sex and heritage, becoming mother and father and daughter and son – all somehow the same person circling and twisting around through time.[96]

The New Culture and the "New Wave"

"If Jules Verne could have really looked into the future, say 1966 A.D., he would have crapped in his pants. And 2166, oh, my!

Philip José Farmer

According to Clute, during the 1960s science fiction became fact. Satellites by the hundreds began to go up, encircling the earth in a web of communication and global monitoring, as earlier envisioned by Arthur C. Clarke. Telstar relayed the first transatlantic pictures. At the beginning of the decade, Yuri Gagarin became the first human in space. By the end of the decade humans had landed on the moon – a dream of science fiction since the time of Kepler.

For Clute, the era, in general, embodied a renewed sense of optimism about the future, reflective of earlier times in modern Western history. There was a positive belief in technology and space exploration and a sense that humans could constructively direct the future. *Star Trek* was an optimistic dream. So was the space program. Technology and humanity were united in the exploration and transformation of nature. In general, from Clute's perspective, the 1960s was a time of cultural and technological creativeness and faith in the future.

The 1960s was indeed revolutionary, both socially and technologically. But it was a complex and unsettled time. It was a time of both faith and anti-faith. The decade saw the beginnings of a cultural revolution in the modern West against many of the central images and ideals of modernity. The "military-industrial complex" came under attack, as well as traditional social norms and cultural values. Economic and technological progress was rejected by many individuals as too materialistic – there was an increasingly strong call to get "back to nature" and abandon all the technological and ideological baggage of modern civilization. The 1960s were a time of great cultural experimentation and revelry - of

consciousness raising, free love, and dropping out of society - of liberation, adventure, madness, and freedom

Within science fiction there is a corresponding liberation, revelry, and Dionysian quality – of art mirroring life. Reflecting popular culture, science fiction became increasingly concerned with psychological, social, and ethical themes. Science fiction, which had always contained a strong element of social criticism and warnings about the negative consequences of contemporary trends, became even more critical of the modern world.

Humanity continued to live under the ominous threat of nuclear annihilation and the new culture of the 1960s strongly proclaimed that we should make love, not war. As part of the strong counter-culture critique of the military-industrial complex and nuclear proliferation, Disch contends that science fiction, with its numerous post-nuclear war stories, helped to "defuse the bomb".[97] In stories of nuclear war, a very real, dark, and devastating possibility of the future was vividly and graphically portrayed in narrative form. The power of such "warnings" far exceeded any abstract, ideological, or theoretical arguments. Compare the number of people who read Kahn's futurist warning of a third world war On *Thermonuclear War* versus those who saw *Dr. Strangelove*. *Dr. Strangelove* is cinematic science fiction and a mad black comedy on the mentality of the arms race, politicians and governments, and our military technologies – the audience laughed and cried in the face of annihilation. With science fiction we were asked to imagine the possibility of nuclear devastation in concrete, shocking, and personalized detail. Following Disch's argument, again it seems that visions of the future, represented through science fiction, influenced the actual unfolding of the future. If science fiction, both in literary and media forms, had this effect it did so because it gave perceptual vividness, graphic horror and drama, and personal meaning to the hypothetical negative future of nuclear war. Stories are often more powerful than theories.

Science fiction in the 1960s saw the beginning of the "**New Wave**" as experiments in more literary, psychological, and humanistic writing become popular.[98] Three of the most highly regarded, Hugo winning science fiction novels of all time *Stranger in a Strange Land* by Robert Heinlein*, Dune* by Frank Herbert, and *The Man in the High Castle* by Philip K. Dick were published. All three of these novels highlighted issues of culture, ethics, and the exploration of alternative social and religious belief systems.[99]

One of the most influential voices of the "New Wave" was Harlan Ellison. In 1966, Ellison won the Hugo award for best short story with his " 'Repent Harlequin!' Said the Ticktockman".[100] Inspired by Henry David Thoreau's essay on "Civil Disobedience", Ellison's story reflects the rebellious and individualist philosophy of the 1960s counter-culture. It is a critique on the regimentation and orderliness of contemporary society. Such themes had been addressed before in science fiction, but what makes Ellison's story unique is the rambunctious and colorful style, the emotional intensity, and the clear sense of social defiance embodied in the tale. It is clearly a tale of the creative and adventuresome 1960s rather than the relatively conservative 1950s.

One of the key features of the “New Wave” was an increased emphasis on style and literary experimentation. Not that hard science and sound technological extrapolation disappeared from science fiction in the 1960s, but the genre put more of an emphasis on science fiction as good literature, if not creative literature. Perhaps best epitomizing the new inventiveness and heightened literary self-consciousness in science fiction was Harlan Ellison's revolutionary “New Wave” anthology *Dangerous Visions*, published in the last few years of the 1960s.[101] Ellison saw *Dangerous Visions* as “revolutionary” and the first volume received an award at the World Science Fiction Convention as the most “significant and controversial SF book published in 1967.”

One of the best stories contained in *Dangerous Visions* is Philip José Farmer’s “Riders of the Purple Wage”, a hilarious, irreverent tale of the future set in the year 2166.[102] Winner of the Hugo Award for best novella in 1968, “Riders of the Purple Wage” is a story that could not have been written, let alone published, a decade earlier due to its irreverent and explicit language and madcap, bizarre scenarios. Punctuated by such chapter introductions as “One Man’s Nightmare is Another Man’s Wet Dream” and “There are Universes Begging for Gods, yet He hangs around this one looking for work”, this story stretches the imagination of the possible, the permissible, and the socially acceptable like no other story of the “New Wave.” The story is true to the exploratory spirit of science fiction. It expands the universe of the mind, the senses, the emotions, and one’s ethical and social values.

When he wrote “Riders of the Purple Wage”, Farmer was already acknowledged as a writer who broke through social constraints and contemporary taboos. In particular, Farmer brought sex into mainstream science fiction.[103] In spite of its presumed freedom of thought, in its earlier years science fiction had stayed relatively conservative regarding traditional social norms about sexuality. In Farmer’s *Strange Relations* a human develops a sexual and totally dependent relationship with an alien plant, and in his novel *Flesh*, future earth has returned to a goddess-centered religion, where sex has become a sacred yet public spectacle.[104]

In the 1970s, Farmer created one of the most inventive series of novels written on the future. The *Riverworld* series looks at the age old question of life-after-death but with a new twist. Farmer imagines a vast river-encircled world where every human being who has ever lived, including the Neanderthals, is simultaneously brought back to life after their individual deaths with absolutely no explanation of how all of humankind was resurrected and brought to this strange world. Set in some future time, after the end of humanity, characters from all periods of history, including Mark Twain, King John, Sir Richard Burton, and Herman Goering, are thrown together and go on a great adventure up the river of the world in search of answers to the mystery of their resurrected existence.[105] In *Riverworld*, Farmer experiments with the archetypal theme of immortality and life after death.

For J.G. Ballard, another of the central architects of the “New Wave”, science fiction was a means to revel in the madness of the day and the end of Western civilization as we know it. Ballard saw material – technological progress

in the modern world as coming to an end and his novels reflect his pessimism about the future. In such novels as *The Drowned World*, *The Burning World*, and *The Crystal World* Ballard envisioned various world catastrophes and their aftermath. The future is an all-enveloping nightmare and we are engulfed in it.[106] In his short story, "Build-Up", Ballard describes a future world where all empty space has been used up and urbanized. Everyone is walled in and there is no way out. In "The Subliminal Man", the forces of advertising have overpowered humankind and we have all been reduced to perpetual consumers, with no choice but to "buy, buy, buy." As Ballard asks in "The Subliminal Man", "The signs, Doctor! Do you see the signs?"[107]

Another important writer of the "New Wave" was Michael Moorcock, who wrote *Behold the Man*, the story of a time traveler in search of the historical Jesus. *Behold the Man* can be read as an irreverent, if not blasphemous challenge to the orthodox Christian belief in the divinity of Jesus Christ, since it is a neurotic, self-absorbed mere mortal from the twentieth century who turns out to be, reluctantly and inadvertently, the actual Christ of history. The time traveler is born in the present, returns to the past, dies on the Cross, but is born again in the present, only to circle back again in time in an eternal loop with no ultimate beginning or end – a metaphor on the nature of God. As noted above, "New Wave" science fiction, as a reflection of the revolutionary 1960s, repeatedly challenged traditional cultural and social norms, beliefs, and values. Moorcock, as both a writer and the editor of *New Worlds* magazine, was one of the leading figures in this rebellion against convention and the intentional assault on social taboos.[108]

Behold the Man was a story with a clear religious and spiritual theme, involving a reworking of one of the fundamental myths in Western tradition. Other "New Wave" writers explored the connections between myth, religion, and science fiction as well. Earlier I mentioned Ellison's "Deathbird" and Silverberg's "Breckenridge and the Continuum".

Another writer, who achieved great popularity in the 1960s, and repeatedly incorporated mythic elements into his stories and novels was Roger Zelazny.[109] In the early 1960s, Zelazny created one of his most highly praised stories, "A Rose for Ecclesiastes". The story takes place on Mars and involves a linguist from Earth who is drawn by a beautiful Martian temptress into fulfilling a Martian myth – that someone will appear (from the sky) and renew the race and the vitality of the decaying Martian civilization.[110] Zelazny weaves together elements of the philosophy of *Ecclesiastes* – a belief system that rejects all striving as vainglorious and pointless, which seems to capture the essence of both Martian philosophy and the attitude of the reluctant Messiah – with the metaphor of the rose – a symbol of beauty and rebirth that transcends the nihilism and fatalism of *Ecclesiastes*.

In his Hugo award winning novel *Lord of Light*, Zelazny again combines together myth and science fiction. *Lord of Light* takes place in the distant future, on a world where the gods and goddesses of Hindu religion are real immortal beings – having immense powers created through advanced technology – and rule the masses of the planet. On this world, a new "Buddha" – an enlightened

one - arises who challenges the sovereignty of the gods and leads the people of the world to freedom. The novel both incorporates mythic and religious themes of our own world and creates a new mythology of the future within a science fiction setting. Again, God is transformed, this time through technology.[111]

In the reworking of old myths, science fiction creates new myths for the future. As we have seen, the mythic, the religious, the metaphysical, and the cosmic have all been areas explored in science fiction. Science fiction looks at all these dimensions of reality in all their manifestations, both uplifting and deific and dark and demonic. In so doing, science fiction offers us mythologies of the future and ultimate visions of the universe to inspire or terrify the soul. As Disch notes, the fantastic realities and creations of science fiction have often served as the stimulus for contemporary religious and spiritual movements.[112]

One writer of the 1960s and 1970s who delved into the metaphysical, who repeatedly questioned the meaning and nature of reality, and who ultimately became a mythic figure himself was Philip K. Dick.[113] Dick not only wrote the quintessential alternate reality tale, *The Man in the High Castle*, as well as a host of other popular science fiction stories and novels, but he has also more recently achieved great notoriety and fame in popular culture having created the stories behind the movies *Bladerunner*, *Total Recall*, and *Minority Report*.

In his Hugo Award winning novel *The Man in the High Castle* (1963), Dick plays with the reader's mind, questioning what is real, and what isn't, and whether the distinction is always that clear. Although the novel is not strictly speaking about the future, it provides a superb example of how Dick unsettles and disrupts one's concept of reality. In this novel, Dick describes an alternate reality in which Germany and Japan won World War II. In this alternate reality, in an America divided and controlled by Germany and Japan, there is a man – "the man in the high castle" – who writes a book describing an alternate reality in which the Allies won World War II. But what is doubly strange is that according to the "man in the high castle" (who is of course Dick placed in his own alternate reality writing a mirror image novel) the book he has written is true. As the story reveals, the Germans and Japanese who politically rule the United States live a decadent existence, dependent on American culture and technology. In the telling of the story the reader is led to the strange conclusion that the Axis powers in our reality really did win World War II.[114]

The popular movie *Bladerunner*, based on Phillip K. Dick's science fiction classic *Do Androids Dream of Electric Sheep?* (1968), explores various themes and questions regarding manmade intelligent androids and their relation with their human creators. In the story one group of androids decides to search out and hunt down their human creator with the hope of extending their lifespan.[115] As in *Frankenstein*, the created go after the creator. The androids though are hunted by a governmental assassin - a "bladerunner". The ironic twist in the story is that the "bladerunner" is himself an android, having simulated memories placed in his own mind to give him the false notion that he is human, but he is really being manipulated by humans to kill his own kind. In the final analysis, the question is clearly raised regarding who is actually more human – the androids or their inhumane creators.

Mind control coupled with collective madness are core themes in Dick's novel *Martian Time-Slip*, where psychosis, schizophrenia, and obsession with power permeate the first human settlement on Mars and individuals are drawn into one another's strange and deranged mental realities.[116]

In Dick's novel *Flow My Tears, the Policeman Said*, the main character wakes up one day and finds that his social identity has been eradicated – no one knows him and there is no public record of him ever having existed. One can describe this novel as the nightmare paranoid version of *It's a Wonderful Life*, where forces behind the scenes manipulate reality lending a surrealistic, dreamlike quality to the whole story.[117]

In his novel *The Three Stigmata of Palmer Eldritch*, Dick weaves together questions regarding the nature of God with the themes of drug induced consciousness, illusion and reality, and, once again, control over people's minds. A new hallucinogenic drug promising eternal bliss and the experience of omnipotence is brought to human settlers on Mars by Palmer Eldritch, an enigmatic character and outcast who has returned from some distant mysterious galaxy. Yet for those who take the drug, the psychic presence of Eldritch enters into their minds, and what initially appears to be the psychological, if not spiritual salvation for the Martian settlers seems to turn into a bargain with the devil.[118]

The future is as much an adventure into the metaphysical and the nature of reality as it is a saga of the promises and perils of technological and social progress. In his novels and stories, and often in a dark, haunting, and disturbing fashion, Dick delves into the nature of consciousness, personal identity, truth and illusion, good and evil, and the tenuous and ambiguous borderland between madness and sanity. Whereas other "New Wave" writers challenged the cultural and social norms of modern society, Dick went further and challenged the philosophical underpinnings of our world and collective mindset. Dick questioned the objectivist theory of truth and reality. He was fascinated with the Hindu idea that all of reality was but a dream in the mind of Brahmin and throughout the latter period of his life believed he was, in fact, communicating with minds from outer space. Dick was both inspired and haunted by his cosmic revelations. For many science fiction devotees, Dick's writings, with their dark complex settings and frequent excursions into altered consciousness and mind control, anticipated the feeling and atmosphere of cyberpunk science fiction long before this movement had a name.[119] Over twenty years after his early death, Dick continues to have a large following of fans and commentators on his writings and ideas today.[120]

Continuing the growing inner-directed emphasis of "New Wave" science fiction, according to Clute, the 1970s saw science fiction became increasingly introspective and psychosocial. We saw the earth for the first time from space, and this perspective put our fragile human reality into stark relief. Moreover, during the 1970s, science fiction movies continued to grow in popularity, drawing greater crowds and presenting on the big screen more powerful special effects and compelling alternative realities. *A Clockwork Orange*, *Star Wars*, and *Close Encounters of the Third Kind* were produced during this decade. Combining

science fiction and scientific speculation, the magazine *Omni* also appeared in the 1970s.

One highly important cultural transformation that began in the 1960s and grew in the next few decades was the feminist and women's rights movement. Women became an increasingly powerful voice in contemporary Western culture, and reflecting this general cultural change, women became a much more significant voice in science fiction in the 1970s and 1980s.

Ursula LeGuin led the way. She emerged as one of the most honored science fiction writers of her era. In 1969 LeGuin won the Hugo and Nebula awards for best science fiction novel of the year. The novel awarded was *The Left Hand of Darkness*. It is a story about gender and sexual stereotypes, set on an alien planet where the inhabitants change their sex during their fertile season. *The Dispossessed*, published five years later, also won both the Hugo and Nebula for best novel. This novel describes two "utopian" yet totally different societies which exist on an alien planet and its moon. It is a study in the meaning, value, and various limitations of presumed "ideal societies."[121]

In its early history, the science fiction philosophy of venturing into the unknown did not lend itself to having the stereotypical woman as a hero and central figure. Early science fiction focused on spaceships, aliens, and interstellar wars. Women did not seem to fit with the science, technology, dangerous scenarios, and military conflict of early science fiction. Although C. L. Moore wrote about strong and heroic women, Moore's writing was the exception rather than the rule.[122] Generally, either women were stereotypically weak, or they were not present at all. And the simple fact was that almost all science fiction was written by men. This lack of female presence reflects a limited vision of the future within science fiction and a stereotypical view of women as weak, passive, emotional, and non-intellectual. The rise of women in human society and the breaking free of traditional female stereotypes was a significant missed prediction of science fiction. As women emerged as an increasingly important voice in contemporary society, a larger percentage of women achieved an important place in science fiction, and increasingly, more heroic and strong female characters appeared in science fiction stories. In this case art mirrored life; science fiction changed when society changed.

Accordingly, the woman of the future envisioned in science fiction changed in the 1970s and 1980s. Perhaps one of the most striking and well-known visions of tomorrow's woman appeared in the cinema. Combining narrative realism with the power of visualization and the film, and first appearing in the 1970s, the ultimate female protagonist, Lieutenant Ripley, is born, dies, and is resurrected in the *Alien* movie series. Doing battle with the most heinous of monsters from space ever brought to life on the screen, she surpasses in survival instinct, bravery, and intelligence all her male companions through the four episodes of this series which continued on into the 90s. She even conquers death in *Alien Resurrection*. Yet in spite of her tough side, she also demonstrates the nurturing and caring maternal side, as evinced in her bonding with the young girl in *Aliens* and her communion and connection with the alien super-mother and

the human-alien hybrid child in *Alien Resurrection*. In the series finale she has become the mother of the monster.

One superb example of a woman science fiction writer, who emerged in the 1960s, breaking the stereotypes of the supposed "feminine" mindset and personality, was James Tiptree, Jr. - the pen name of psychologist Alice Sheldon. Tiptree was the mystery "man" of science fiction. While no one had actually met Tiptree, many people swore that "he" must be a man because of the way "he" wrote. Before revealing her true identity coincident with the publication of her story, ironically titled, “The Women Men Don't See”, Tiptree wrote such classic tales as “Love is the Plan, the Plan is Death” – a love story about aliens where the father is fed by the mother to their children - and “Her Smoke Rose Up Forever” – a study regarding the immortality of painful life defining memories.[123]

Aside from LeGuin and Tiptree, some of the other leading women science fiction writers who appeared in the 1960s and 1970s include Anne McCaffrey, Vonda McIntyre, and Joanna Russ. McCaffrey became very popular with her *Dragons of Pern* series, in which women characters, breaking the weak and dependent female stereotype, participated in various adventures on alien worlds riding on the backs of dragons.[124] Again, with female characters as the central protagonists, McIntyre won awards for her story “Of Mist, and Grass, and Sand” and her novel *Dreamsnake*.[125] Disch identifies *The Female Man* by Joanna Russ as the best feminist science fiction ever written. It is a story of feminine empowerment in which women without men have successfully populated and survived on an alien world for thirty generations.[126]

Within science fiction literature, women writers have flourished since the 1970s. Often addressing feminist themes and creating central women characters, who break free from the earlier sexist stereotypes of science fiction, much of the best science fiction being written today is by women. Undoubtedly this fact shatters the popular stereotype that science fiction is written mostly by men. LeGuin, McCaffrey, and McIntyre continue to write and win awards. Moreover, a whole new wave of great women science fiction writers has emerged in the last couple of decades. Among the best are C.J. Cherryh, Lois McMaster Bujold, Connie Willis, and Octavia Butler.

C.J. Cherryh, an incredibly prolific writer, has created within her stories an intricate future history of humanity stretching out two thousand years into the future and across the Milky Way. Two of Cherryh’s novels, *Downbelow Station* and *Cyteen*, have won the Hugo award for best science fiction novel of the year.[127] Another of the most frequent award winning science fiction authors of the last ten years is Lois McMaster Bujold. Five of her novels, *The Vor Game, Barrayar, Mirror Dance*, *Falling Free*, and *Paladin of Souls* have won either the Hugo or Nebula for best science fiction novel of the year.[128] Connie Willis has won more Hugo and Nebula awards for both her novels and short stories than any other science fiction writer, man or woman, ever. Her highly acclaimed *Doomsday Book* and *To Say Nothing of the Dog*, both Hugo award winners for best novel of the year, involve time travel scenarios. The latter is high comedy; the former is deep horror. In *Doomsday Book,* a synthesis of historical scholarship, science fiction, and psychological and theological considerations on

the issue of good and evil, a woman graduate student in the future is accidentally sent backward in time to England and the time of the Black Death.[129] Octavia Butler, breaking another stereotype as an accomplished black science fiction writer who is also a woman, has written extensively on social, racial, ethnic, and urban issues. Her *Parable of the Talents*, set in a decaying future America beset with racism, religious fundamentalism, and urban poverty, won the Nebula award in 1999 for best science fiction novel of the year.[130]

All in all, women science fiction writers have significantly contributed to the increased social, humanistic, and psychological dimensions of contemporary science fiction literature. Their voice and perspective has brought an important and necessary balance and enrichment to thinking on the future within science fiction.

Cyberpunk and "How Science Fiction Conquered the World"

"The future is here. It's just not widely distributed yet."

William Gibson

This is your last chance. After this, there is no turning back. You take the blue pill - the story ends, you wake up in your bed and believe whatever you want to believe. You take the red pill - you stay in Wonderland and I show you how deep the rabbit-hole goes.

Morpheus (The Matrix)

In the 1980s science fiction "conquered the world," or at least the West, and quite appropriately, it happened through one of the most powerful forces of Western culture – the movies. *Star Wars* emerged as a pervasive social phenomenon, spawning web sites, fan clubs, video games, unending media coverage, and an invasion of millions upon millions of toy characters into the households of America, Europe, and Japan.[131] Other very popular science fiction movies of this period, and there were many, included *E.T.: The Extra-Terrestrial, Mad Max 2, The Thing, Alien* and *Aliens, Back to the Future, The Terminator, Dune,* and most notably *Blade Runner. Star Trek: The Next Generation* began on TV and the movie series continued in the theaters, further heightening the saturation of science fiction in the popular media. In general, the 1980s was a coming of age for science fiction films, which became much more popular than ever before. *Star Wars* and *E.T.: The Extra-Terrestrial* became two of the greatest money making movies in film history.

One reason science fiction movies became more popular in the 1980s was the quantum jump in special effects that occurred beginning first with *2001* and really taking off in realistic simulation and fantastic mind-boggling visualizations in *Star Wars*. It was not so much that the stories or characters

became more compelling, complex, or sophisticated, but rather the strange and bizarre characters, settings, and technologies (including spaceships) could be more powerfully and vividly presented on the screen than ever before. Behind this incredible advance in special effects was the computer. In the late 1970s, and into the 1980s and beyond, computer graphics became the wave of the future in science fiction film-making.

Reflecting the increased fascination with computers and the world transformed through information technology, computers and artificial intelligence became more pervasive themes in science fiction in the 1980s. Over the last couple decades, various computer scientists and roboticists, such as Ray Kurzweil, Hans Moravec, and Vernor Vinge (who is also a science fiction writer), have predicted that computers will soon exceed humans in intelligence.[132] Although science fiction may have jumped on the bandwagon exploring the various implications of super-intelligent computers as well as the increasing dependency of human society on computers, Clute argues that science fiction did not fully anticipate the computer revolution in human society. He suggests that what turned computers into a pervasive reality in human life was electronic miniaturization, and that it was perhaps hard to visualize such small scale advances, in comparison to huge space ships and other wonders of technology usually imagined by science fiction. He also suggests that humanity's fear of being surpassed by technological intelligence could be an explanation for science fiction's lack of vision in this respect. According to Clute, perhaps deep down we were afraid of the possibility that computers could evolve beyond us. Accordingly, he states that science fiction generally avoided facing this possibility.[133]

Yet, clearly in the decades before the computer revolution, science fiction writers explored the issue of artificial intelligence, our possible growing dependency on it, and the question of whether "thinking machines" would one day surpass us mentally and intellectually. In the 1940s and 1950s, Isaac Asimov wrote prolifically on the theme of robotic intelligence. In the 1950s and 1960s, a number of science fiction writers created classic tales on the dangers of increasing technological intelligence and our dependency on it. In Jack Williamson's *The Humanoids* the prime directive "To Serve and Obey, and Guard Men from Harm" is taken too literally by robotic servants with adverse consequences - humans become trapped in the excessive protectiveness of their technological creations.[134] In Alfred Bester's psychologically astute story of symbiotic madness "Fondly Fahrenheit" an android becomes pathologically intertwined with his human master's mind and personality and goes on a mass murdering spree.[135] In Harlan Ellison's "I Have No Mouth and I Must Scream" the first self-conscious super-computer, realizing it is stuck in an immobile mechanical form, decides to take revenge on its human creators. It destroys all of human civilization, leaving just a few humans alive that it intends to torture for all eternity.[136]

The fear of artificial intelligence may go beyond the idea that the technological monster will turn on us and destroy us. As Clute notes, our apprehension over intelligent machines may simply reflect our fear of being

surpassed by them. The “monster” in fact may be a projected fear of being transcended and made obsolete. The super-intelligent or ethically superior robot or android may be an intolerable blow to the human ego. The imagined destruction of humanity by some type of artificial intelligence may symbolize the psycho-social displacement of humanity as the highest form of intelligence on earth.

Some good examples on this general theme of advanced or superior intelligent machines written in the 1960s and 1970s include David Gerrold's *When Harlie Was One*, Poul Anderson's “Epilogue”, and Roger Zelazny's “For a Breath I Tarry.”[137] In Gerrold’s novel, Harlie is a computer, though only a “child” of one year old; yet he becomes the teacher of “his” human creator. In “Epilogue” humans travel out into space, accelerating through time, and return to earth millions of years into the future. Upon their return they find a global ecosystem of electronic and computer life forms; biological life, including humanity, is gone. The humans eventually leave the earth deciding it now rightfully belongs to the new non-organic life forms. Roger Zelazny’s highly imaginative, mythic, and emotionally moving “For a Breath I Tarry” tells the story of Frost, a computer that rules the northern hemisphere of the earth in the far future. Frost is in search of the meaning of man – a distant memory now – and ultimately decides to create a human body for itself in order to experience what it feels like to be human firsthand. Frost, a creation of humankind, now becomes the creator and infuses his mind and consciousness into a human body. Frost wishes to know what it is like to have feelings and sensations, which his machine body can not experience. He sacrifices his immortality in order to feel. Frost also creates a female body for Beta, the computer that rules the southern hemisphere, and invites Beta to join “him” as his human companion. In essence, what Frost creates is a new Adam and a new Eve and a new beginning for humankind.

Although computer intelligence can be seen as a threat to our sovereignty as a species, our individual freedom, our diversity, and our rich emotional lives, computers and other forms of advanced technology might facilitate our future evolution. We may partner with computers.[138] Science fiction has explored this idea of how future technology, rather than usurping our powers and capabilities, might contribute to our further growth and advancement. Our intelligence, our identities, and our minds may become technologically augmented in the future.[139] Through technology we may become Post-human or Trans-human.[140] One early classic tale on the technological enhancement of humans was Poul Anderson’s “Call Me Joe” which was written in 1957. In this tale, a human cripple is wired to an immensely powerful biotechnologically created alien species - “Joe” - that lives on the planet Jupiter. The human experiences his reality through the eyes of Joe, controlling the behavior of Joe, and in essence, becoming Joe. The personal identity of the human character is transformed through this technological symbiosis. “Call Me Joe” is a tale of virtual reality long before the idea became commonplace in popular culture. [141]

Frederick Pohl was one of the great science fiction writers of the 1970s and 1980s. In 1976 he published the Nebula Award winning novel *Man Plus* which describes a technologically enhanced human adapted to life on Mars. Like

Joe, the man becomes more enamored of his new techno-biological form than of his previous human reality.[142] Earlier in his career, in his fascinating short story "Day Million," Pohl had also examined the theme of technologically supported virtual existence – in this case dealing with romance and sexuality.[143] Written a year after *Man Plus*, Pohl's Hugo and Nebula Award winning novel, *Gateway*, describes, among many other interesting speculations, an intense and personally transforming psychotherapeutic relationship between the main protagonist of the story and a computer therapist named "Freud." Such stories illustrate the possibilities for intimate interaction, if not symbiosis, between humans and technology and suggest how advanced technology may change us through its communication and personal interaction with us.[144] The merging of human and machine is another archetypal theme running through science fiction.

Reflecting the increased fascination with computers and the world transformed through information technology and artificial intelligence, cyberpunk emerged in the 1980s. **Cyberpunk**, a new sub-genre of science fiction, began with William Gibson's highly influential and Hugo-Nebula award winning novel *Neuromancer*.[145] Cyberpunk is many things – a complex swirl of social and technological ideas and associations revolving around the computer and the emerging computer culture. "Cyber" refers to both the world of computers and humans becoming **cyborg** or cyborg-like in their interactions with computer systems. "Cyborg" means a combination of human and machine.[146] According to Clute, "punk" refers to the "mean street" environment and mentality of the characters in the stories. For Disch, "punk" also means to oppose present normality. For Clute, within cyberpunk there is a feeling of dark city life, of intricate underground cultures, and of criminal societies and mysterious powers that control and manipulate the characters in the stories. Disch's view of cyberpunk includes the themes of "amoral politics, urban squalor, global pillage, and systemic criminality." There is the archetypal scenario of becoming entangled in the mesmerizing power of technology. The computer conquers humanity by entrapping our minds in its complex cogitations and machinations. As Clute describes it, within the cyberpunk world, **cyberspace** – the virtual reality created by computers - is a "drug" that can lead to individual suicide. The self can fragment and become lost and out of control within cyberspace. Cyberpunk stories often embody the fear that computers and technology will gain control of human life, and in particular, our minds.[147]

Clute asserts that within cyberpunk there are the same fears, same rebels and madmen, and same evil, all-powerful characters as in earlier science fiction. Yet I would add that cyberpunk reality has a whole new kind of freedom and metaphysical nature not found in outer space or other traditional science fiction settings. The computer, with all its technological and social-psychological effects and consequences, extends the arena of action and the horizons of reality in science fiction. Cyberspace is a world where the mind, through the power of the computer, defines the limits of reality; the inner states of the mind create this new reality and become part of the reality as well. This universe of the possible, realized in cyberspace, extends far beyond the constraints of physics and the laws of nature – it is potentially infinite. Cyberpunk and virtual reality are

metaphysical experiments – expanding the limits of the imaginable and the possible through the new science and technology of computers.[148]

Cyberpunk both reflects contemporary human society and influences it – a reciprocity of art and life. After *Neuromancer*, cyberpunk emerged as a popular cultural movement. Magazines such as *Wired* and *Mondo*, and the dark gothic anti-establishment vein within computer culture, all reflect the influence of cyberpunk.[149] Cyberpunk is an excellent example of the hypothesis that "The best way to create the future is to predict it." But cyberpunk is also an expression of present cultural trends, in particular Postmodern philosophy. Because of its dream-like and free associative qualities, there is often a loss of narrative logic and linearity in cyberpunk stories; it is a collage of visions and events. This non-linear structure mirrors both the Postmodern rejection of rationality and logic as well as the contemporary media reality of chaotic bits and blips of unrelated images and messages. Cyberpunk is an electronic phantasmagoria. Postmodernism and cyberpunk are counter-culture, rejections of our modern heritage of objectivity, rationality, and normality. Cyberpunk also reflects the subjectivist and individualist themes in Postmodern philosophy. In its extreme form, Postmodernism views reality as a subjective creation. Within cyberpunk the computer provides the means and power through which mind and intelligence can create a diversity of virtual worlds. Objectivity disappears or merges with fantasy.[150]

Cyberpunk also offers another example of how science fiction feeds on the creation of the fantastic. How strange and yet convincing can you make the experience? Because anything is possible in the realm of imagination, and computer technology provides the instrument for the mind to create whatever it entertains, cyberpunk has become the ultimate trip, the ultimate make believe land or alternative reality; yet it is grounded in contemporary science and technology. All fantasy empowered by the computer and virtual reality is technologically plausible.

After emerging as a distinctive form of science fiction literature in the 1980s, in the following decade cyberpunk would have an impact on science fiction in the movies. In order to appreciate its influence on the cinema, it is important to set the stage by looking at some basic trends in science fiction movies in the 1990s.

Clute describes science fiction in the 1990s as "Facing a New Century," but we should consider how we seem to be portraying the future in science fiction movies during the last couple decades. In the 1990s there was a plethora of big muscular heroes as well as raw physical power and immense destructive capabilities presented in science fiction movies such as *Terminator 2, Total Recall, Predator I* and *II, Demolition Man*, *Judge Dredd*, and *The Fifth Element*. There was also correspondingly an increase in vivid, graphic "blood and guts in your face" violence. The 1990s saw the release of *Alien Resurrection, Independence Day, Event Horizon, Dark City,* and *Blade*, all extremely violent depictions of the future. Although violence is no stranger to science fiction, and especially science fiction movies, vastly improved special effects have immensely enhanced the vividness and wallop of hostility, death, and destruction

in science fiction movies. Considering the types of Hollywood heroes who take the leading roles in science fiction movies, we can ask what type of image of the future and future humans is being conveyed through the media. Our imagined heroes of the future have the qualities of Roman gladiators, professional wrestlers, martial arts masters, and seasoned street fighters. Further, their raw physical powers are generously enhanced with high tech weaponry. Our visions of the destructiveness of technologies of the future have also become magnified. These trends have continued into the twenty-first century.

But violence in science fiction cinema is only part of the bigger picture. In the news we see smart bombs, suicide bombings, high tech weapons, almost daily assassinations, and the media spectacles of the Gulf Wars, the war in the Baltic, and the war on terrorism. The Cold War may be over and the threat of a nuclear war lessened, but in both the fantasies of science fiction film and the "reality" of the news, violence is in our face – enhanced and perfected with military and media technology, but violence nonetheless.

As science fiction movies have become increasingly more popular and violent at the same time and the wizardry of special effects has evolved, a violent, dark image of the future has been popularized through the movies, reflective of the influence of cyberpunk, as well as of post-apocalyptic thinking, and brought to the screen through the power of virtual reality and special effects. Many cyberpunk and virtual reality movies were produced in the last couple of decades including *Johnny Mnemonic, Hackers, The Net,* the *Lawnmower Man* series, and most notably *The Matrix* series, which has evolved in typical Hollywood fashion into a trilogy of movies. In these movies the darkness and the demons are no longer simply "out there", but also now within us – having entered our minds.

In *The Matrix* series, the ultimate paranoia trip, our entire world, unbeknownst to most of us, actually only exists in virtual reality – that is ‘in our minds.” The central struggle in the movie is between the vast and powerful computer system that has created this virtual world and freedom fighters out to regain human sovereignty and independence and restore true reality to humankind. The movie, in fact, is a modern technical spin-off of Descartes' omnipotent demon scenario. Rene Descartes, a seventeenth century philosopher of the Scientific Revolution, imagined that a being of sufficient power and technological know-how through stimulating our brains, could create in our minds our total experience of reality and self that would be indistinguishable from our present experience of the world. *The Matrix* postulates such a world, one that is nothing but a creation of technological intelligence. The philosophical question of course is whether this speculative scenario might in fact be true – how would we know?[151] The way reality is thrown into question in *The Matrix* is a theme of both cyberpunk and Postmodernism.[152] As portrayed in *The Matrix* we seem to be entering the new century with a whole new set of nightmarish images of strange technologies, mind games, and extremely powerful villains. In particular the Devil has entered into our consciousness and our experiential reality. *The Matrix* is the ultimate expression of the fear of mind control.

The Matrix has stimulated a great deal of philosophical analysis and commentary.[153] The science fiction writer Joe Haldeman, for example, classifies *The Matrix* as "**Sci-Fi**" rather than science fiction. Haldeman distinguishes between science fiction, which in his mind is grounded in realistic science, and Sci-Fi, which is what is usually produced in the movies and does not seriously ground its story line in scientific concepts and principles. According to Haldeman, *The Matrix* invokes magic, mysticism, and undeveloped, implausible scientific ideas. The main hero in *The Matrix*, for example, is able to alter or control "reality" through unexplained mental powers. The emphasis in the movie is more on special effects, action, and emotion than thoughtful and intelligent scientific ideas – a common feature of popular science fiction movies. *The Matrix*, as Sci-Fi, is according to Haldeman, fantasy masquerading as science fiction.[154]

Another science fiction writer, David Brin, provides an even more penetrating critique of *The Matrix*. For Brin, *The Matrix* is a Romantic and conservative vision of technology and the future. Within the movie, artificial intelligence is portrayed as an evil force that destroys human society and imprisons all of humanity in a totalitarian hallucination. The goal of the freedom fighters is to overturn this oppressive technology and return our world to its former free and natural state. Brin argues that the Romantic movement of the nineteenth century was a counter-reaction against the futurist and forward looking philosophy of the Enlightenment – a rejection of reason, science, and technology in favor of a more natural, simpler way of life. As do many other science fiction movies, *The Matrix* portrays technology as something that will lead to more problems than it is worth, mirroring the fear expressed in *Frankenstein* for example. There are rebels in *The Matrix*, but these rebels are not fighting for a new way of life, but rather an overturning of the evil powers of technology and a return to the past. According to Brin, the optimistic hope of the Enlightenment was that science, technology, and human reason would create a new and better world – this was also the dream of Hugo Gernsback and other early visionaries of science fiction as well. As a conservative, anti-technology, and Romantic vision, *The Matrix* looks backward. For Brin, *The Matrix* is the anti-thesis of the forward-looking spirit of the Enlightenment and science fiction.[155]

These critiques of Haldeman and Brin highlight important issues and contrasts concerning science fiction movies and science fiction literature. First consider the emphasis on special effects in science fiction movies. Especially since the beginnings of the New Wave in the 1960s, science fiction has increasingly turned more toward psychological, social, philosophical, and even religious themes, with less of an exclusive emphasis on future science and technology. From the perspective of contemporary science fiction, culture and the human psyche will undergo as many changes in the future as will the machine – perhaps even more so. Thus far though, cinema and television, which have produced a vast array of science fiction stories about the future, have tended to highlight the razzle-dazzle, spine-tingling, gee-whiz, destructive aspects of science and technology. Yet any realistic scenario of the future must be broad-based, encompassing the psychological and cultural as well as the scientific and technological.

Second, the special effects emphasis on future technology in science fiction movies highlights destructiveness, terror, and the potential dangers of technology. It is understandable that the strange new worlds of computers, cyberspace, robots, and virtual reality would instigate fearful responses in popular culture. In previous generations, the possibilities of space travel, alien contact, time machines, and bioengineering produced similar fears of the unknown. As we have seen one of the important themes in science fiction has been fearful apprehension, caution, and repeated warnings over future technology.

Yet future technologies could also benefit humanity both socially and psychologically. As Brin notes, this was the promise of the Enlightenment. The potential uplifting wonders of the future and of future science and technology should also be presented, not just the terrifying possibilities.

In point of fact, popular media science fiction has been conservative and paranoid – apprehensive and critical of significant changes in the future that challenge our present values and beliefs; it has psychologically projected such fears in the form of blood-thirsty monsters, mad scientists, murderous robots, sinister computers, and evil governments. The *Frankenstein* scenario is perpetually recast and replayed in the modern cinema – as are the frightening images of *The War of the Worlds*, *The Time Machine*, and *Brave New World*. Recently, human cloning has become a controversial topic of social debate, yet science fiction movies such as *Star Wars II: Attack of the Clones*, *Judge Dredd*, and *The Sixth Day* all depict cloning in a very negative and conservative light. Science fiction movies invariably express fear over the future potential of technology. It is ultimately conservative, reactionary, and lacking in visionary intelligence and imagination

As Haldeman notes, Sci-Fi movies generally lack scientific intelligence and thoughtfulness. But the lack of intelligence extends beyond the scientific into the literary, psychological, and philosophical realms as well. As a third critical problem with Sci-Fi movies, Disch notes that although science fiction films and TV shows have significantly increased in popularity, most of it is shallow - good guys, bad guys, fear, and destruction, with the good guys winning (usually through some violent means) at the end. Again, the level of imagination and intelligence presented in science fiction media productions is impoverished and restrained. Standard formulae for plots and characters dominate the biggest and most popular productions. As Disch quotes from the New York Review of Books, most of the big budget Sci-Fi movies “want in the worst way to say nothing”.[156]

While Sci-Fi movies generally remain trapped in mindless special effects, inane stories, evil and destructive bad guys, and conservative counter-reactions, Disch argues that science fiction literature has diversified into a variety of sub-genre including cyberpunk, teen oriented adventure series, hard science fiction, militaristic space operas, and post-apocalypse survivalist gore.[157] In a world of increasing individualism and human diversity, science fiction literature has splintered into multiple visions and multiple realities. The great god of secular and technological progress - the original motivating engine of science fiction -

has been replaced by the contemporary mindset of reality as smorgasbord and collage. Science fiction literature has gone Postmodern.

I think David Brin is correct in arguing that *The Matrix* and other popular science fiction movies such as *Star Wars* express a conservative counter-reaction to the forward looking spirit of the Enlightenment, but our choices concerning the future are not limited to scientific - technological optimism or Romantic conservatism. Science fiction, and more generally our futurist imagination, needs to explore all the myriad possibilities of tomorrow. At the very least our contemporary Postmodern sensibility should open the critical mind to considering other versions of future reality, besides retreating to a pastoral idyllic past or rocketing forward on high tech spaceships armed with photon torpedoes.

The free-for-all quality in contemporary science fiction literature points to an important strength inherent in its approach to the future. Science fiction has always been an experiment in imagination, unconstrained as much as possible by the boundaries of everyday reality. As I mentioned earlier, science fiction can be viewed as "thought experiments." For Disch, science fiction is strongly connected with counter-culture – with reactions against the norm and the *status quo*. At its core science fiction epitomizes the value of creative freedom to imagine and perhaps even live strange and unusual possibilities. And as we have seen, different authors have attempted to explore this infinite territory from as many perspectives as can be articulated and described. Science fiction clearly values diversity of viewpoints. As we have seen though there are often cultural or conceptual blinders and biases during any particular era of human society, the goal is to transcend these constraints when they are recognized. The self-conscious "New Wave" revolution is one case in point. To freely consider the possibilities of the future is to open one's mind and transcend the limitations of present schemes of thought – this is what it really means to "boldly go where no man has gone before".

The Vast Reaches of Space, Time, and Mind

"How to explain? How to describe?
Even the omniscient viewpoint quails."

Vernor Vinge

Within the last couple of decades, some of the most imaginative, literary, scientifically informed, and complex science fiction novels of all time have been written. Not only do these great contemporary novels address technological and scientific future possibilities, they also envision intricate and fascinating future societies and civilizations and innumerable psychological transformations in humanity. They are filled with philosophical, ethical, and religious themes and provide the drama, substance, and characters for a rich mythology of the future. These novels also provide an array of different timelines to consider in thinking about the future – from the near future to millions of years ahead.

I am going to highlight some of the best contemporary science fiction writers and a selection of their most noteworthy novels. There are many other excellent authors writing today[158], including the women science fiction writers mentioned earlier, and I refer the reader to the Hugo and Nebula Award websites for up-to-date lists of the most popular science fiction novels and stories.[159]

A good place to begin this review is with Neal Stephenson and his highly colorful and rambunctious novel, *Snow Crash* (1992). Set in the relatively near future in and around Los Angeles, *Snow Crash* deals with the exploits of The "Deliverator," otherwise known as Hiro Protagonist, who works for the Mafia delivering pizzas. The Mafia, in fact, has cornered the monopoly in the United States on pizza delivery, guaranteeing a fresh hot pizza within 30 minutes or else. Hiro Protagonist, in his second life, is a computer hacker who advertises himself as the greatest swordsman in the world and spends a lot of his free time in the Metaverse, an immense growing cyberspace reality where most of the action in human life now takes place. Within this dual world of normal reality and cyber-reality, a combination pharmaceutical drug and computer virus, "snow crash," is spreading, and infecting and gaining control over the minds of more and more people. The main story line of the novel is Hiro Protagonist's attempting to uncover the mystery behind snow crash – who is responsible for creating the virus/drug and what is its nature and purpose - before all of the Metaverse and human reality falls under its spell. Foremost, *Snow Crash* is a hilarious adventure, involving a fascinating assortment of bizarre and often menacing, yet all-too-human, characters, as well as one endearing robotic guard dog, set in a world where nations and governments have lost control to business conglomerates and special interest groups. But *Snow Crash* is also a serious futurist extrapolation on contemporary social and technological trends – a fast-paced, often frantic image of a mad, anarchistic world – a parody on the nature of our times. It is without doubt one of the most popular and frequently-cited science novels of the last two decades.[160]

Greg Bear is one of the most well-known and accomplished contemporary science fiction writers, having written the classic biotechnological novel *Blood Music* (1985) and the Nebula Award winning best novels of the year, *Moving Mars* (1993) and *Darwin's Radio* (1999).[161] In the novel *Blood Music*, a scientist creates a symbiotic synthesis of living cells and nanotechnological mini-computers. This new form of life self-replicates and multiplies and invading the bodies of human hosts, begins to spread through hundreds, thousands, and eventually millions of people, absorbing their bodies and minds into a new evolved sentience that envelops all of North America. This new life form is not intentionally malevolent to humans but it is clearly superior to human intelligence and taking over control of things. It eventually leaves the earth, ascending to a higher level of existence and mentality. One central theme of the novel is the human struggle to try to understand and contain a form of intelligence that is clearly superior to us.

In *Darwin's Radio*, and its sequel *Darwin's Children* (2003), Bear explores the theme of future human evolution. In these two novels, Bear invokes the "punctuated equilibria" theory of evolution, proposing that highly stressful

environments will instigate abrupt evolutionary change. In *Darwin's Radio*, mothers around the world begin to give birth to a new species of humans, and instead of embracing this new species, humans collectively respond in fear, denial, and suspicion and attempt to control, if not destroy, this "epidemic" of mutations. Through both novels, the key theme explored is how the general population and our present social and political institutions would react to a new form of humanity. Aside from being a highly researched and informed study in the biology of evolution, *Darwin's Radio* and *Darwin's Children* are excellent "thought experiments" in the social and psychological dimensions of human evolution.[162]

Bear's novel *Queen of Angels* is an immensely colorful tale of the possibilities of psychological evolution. *Queen of Angels* (1990) is set in Los Angeles in the year 2047.[163] The novel is a detective, murder mystery involving nanotechnology, psycho-technology, and issues of self-identity and consciousness. Humanity has separated into two classes – the technologically enhanced and un-enhanced. In this world psychologists possess the ability, through nanotechnology, to enter people's brains and link into their minds. Psychologists can explore a person's deepest feelings, memories, and thoughts in a virtual or cyberspace experience. The plot centers on tracking down a mass murderer and penetrating his mind to discover his reason for killing all of his closest friends and dearest admirers. While this main plot is unfolding, a parallel story is told in which a super-computer is attempting to determine if it possesses self-consciousness. Written with exuberant literary flair and philosophical sophistication, both plots revolve around the connected questions of personal identity, self-responsibility, and the nature of the mind and consciousness.

Another contemporary writer, Dan Simmons, has written one of the most highly regarded multi-volume science fiction epics of all time. This epic is a series of four novels, *Hyperion* (1989)*, The Fall of Hyperion* (1990), *Endymion* (1995) *and The Rise of Endymion* (1997), set in the twenty-eighth through thirty-first centuries.[164] In Simmons' future universe, the earth has presumably been destroyed, but humanity has spread across myriad star systems and worlds, forming the Hegemony of Man. These worlds are all linked together by an intricate network of wormholes or "farcasters" through which humans can instantaneously travel. The first novel *Hyperion*, winner of the Hugo Award, is modeled on Chaucer's Canterbury Tales, and features seven archetypal pilgrims who set out on a "tree-ship" for the planet Hyperion, which lies outside of the farcaster network. The pilgrims, including a poet, a philosopher, a priest, and a warrior, tell their individual tales and their reasons for journeying Hyperion. *Hyperion* is immense in its scope and deals with religion, good and evil, time travel, artificial intelligence, and a plethora of different planetary ecologies and human societies.

In *The Fall of Hyperion*, the pilgrims must confront the Shrike, a technologically constructed, mysterious being from the future. While the pilgrims are drawn through a series of encounters with the Shrike, the Hegemony of Man is in a state of crisis presumably due to the imminent invasion of space-adapted humans, the "Ousters." Characters and beings of the past, as well as the future,

populate the story as well. The name “Hyperion” is inspired by the poem “Hyperion” by the nineteenth century poet John Keats. In *The Fall of Hyperion* the mind and persona of Keats is recreated by powerful artificial intelligences that control the farcasters and all of human technology. Keats is actualized in physical form and becomes a central character in the drama, eventually traveling back to a simulation of nineteenth century earth where he must go through his death all over again.

The saga continues through *Endymion and The Rise of Endymion*, with new twists that delve into the ultimate nature of reality, immortality, and the value of the human soul. In the thirty-first century the Catholic Church has gained control over most of the human settled planets and literally bestows physical immortality (through technological means) on its followers if they become obedient to the will of the Church. The Church though is corrupt and has sold its soul to the Devil – the artificial intelligences first encountered in the earlier novels. A new Messiah appears – a child of Keats and one of the Hyperion pilgrims. She is pursued by the forces of the Church – which include sinister time-accelerated robot/androids that battle the Shrike. In these novels there is a fascinating spiritual debate between a futuristic Grand Inquisitor and a new Dalai Lama – a philosophical clash between Catholicism and Buddhism – and a time looping retelling of the Crucifixion and Resurrection.

More recently, Simmons has woven together classical myth and science fiction in his unique retelling of the siege of Troy in his book *Illium* (2003).[165] Set in the distant future, the central protagonist of the story, a Homerian scholar from our present time, finds himself arisen from the dead and on the battlefield of Troy, amongst the historical Greek warriors Achilles, Odysseus, Agamemnon, and their army. He has been assigned to watch and record the ongoing battle and report his observations to the ancient Greek gods and goddesses, who are very real and possess superhuman powers supplied through some type of highly advanced technology. An additional strange and perplexing element of the story is that the re-creation of the siege of Troy seems to be occurring on the planet Mars, with the gods and goddesses overseeing the events from the great Martian volcano Olympus Mons. Events proceed pretty much as recounted in Homer’s *Illiad* until the scholar decides to inform the Trojans that they are doomed if they continue to fight against the Greeks. History is changed in the process and the mythic tale rewritten with a variety of new elements including sentient robots from Jupiter sent to investigate strange events transpiring on Mars. These robots eventually confront the Greek gods in an epic battle of machines and ancient humans versus Olympian deities on the slopes of Olympus Mons. Simmons, with allusions to Wells’ *The Time Machine* thrown in, mixes past with future, Shakespeare with Homer, and myth with hi-technology in *Illium*. A second volume *Olympos*, published in 2005, completes this highly imaginative tale.[166]

Another Hugo award winner for best novel, *A Fire Upon the Deep* (1992) by Vernor Vinge, is set thousands of years in the future. The Milky Way, populated by a host of different intelligent species, including humans, is the cosmic setting for this magnificent modern space opera.[167] A group of humans inadvertently sets loose an advanced artificial intelligence that begins to spread

across the Milky Way and envelop whole star systems and civilizations. The more technologically advanced worlds in the Milky Way are linked together via a communication system analogous to our present Internet. The viral intelligence – labeled the "Perversion" – moves through this cosmic Internet system, destroying worlds and capturing the minds of its inhabitants. The Perversion becomes a galactic computer virus.

One particularly interesting feature of this novel is an alien species and society of wolf-like creatures who possess "pack minds," only having a clear sense of personal identity and consciousness within their individual packs. They possess "Gestalt Minds" and stay in mental resonance with each other through vibrating membranes on their skin which coordinate their separate nervous systems.

The group of humans that set the Perversion free has landed on the lupine planet, but they are ambushed and all killed except for two human children. The key to destroying the Perversion though may exist somewhere in their spaceship. A rescue mission of humans and aliens is sent to the planet. Humans must find a way to communicate with the wolf-like creatures and work together to stop the Perversion, yet these lupine minds live in a medieval feudal world, filled with treachery and deceit, including one nasty, ruthless leader pack that wants to gain control of human technology.

More recently Vinge has written a prequel to *A Fire Upon the Deep* entitled *A Deepness in the Sky* (1999), which also won the Hugo award for best novel of the year.[168] Once again Vinge creates a very interesting and memorable alien life form, this time a technological civilization of intelligent spiders that hibernate in a frozen state for 200 out of every 250 years when their sun periodically goes dormant. Vinge again delves into speculative psychology, describing a race of future humans that has achieved a tyrannical unity of "Focus" through the use of a biotechnologically controlled virus that infects their brains. These humans are manipulated by the leaders of their race to create a population of single-minded hyper-efficient individuals. The central alien character Sherkaner Underhill, a genius, madcap spider who is leading his species to a new level of technological development that will allow them to function even when their star is dormant, becomes convinced that some form of alien intelligence (in this case it is the "focused" humans) is watching his world. The "focused" humans in fact want to conquer his world and use the planet's resources and technology. Vinge again excels at combining futurist science and technology with fascinating psychological ideas and concepts. He considers the possibilities of mental evolution as well as alternative types of psychologies and how beings with different kinds of minds could communicate with each other.

Another classic series of novels written in the last decade is Kim Stanley Robinson's Mars trilogy – *Red Mars* (1991), *Green Mars* (1994), and *Blue Mars* (1996).[169] All three novels won either the Hugo or Nebula for best science fiction novel of the year. These three volumes are probably the best science fiction books ever written on the colonization of Mars. The general question addressed in amazing detail in this trilogy is: If humanity was given the opportunity to create a new culture and civilization on an unspoiled world, what would happen?

Robinson's Mars trilogy is a grand utopian epic – a social-technological thought experiment of the highest order. Its power in particular lies in its multi-level richness and realism. Robinson exhibits an incredible knowledge of Martian geology, geography, and meteorology. He describes a vast array of ecological, biological, and geological engineering projects undertaken by the settlers of Mars, and in particular, those efforts toward terraforming the planet into a human inhabitable world. The scale of these engineering efforts is immense, from tethering an elevator cable from the surface of Mars to an orbiting asteroid to releasing enough underground frozen water on the planet to create a vast northern ocean. But Robinson also creates a fascinating set of characters. The cast of characters, representing many of the main cultures and ethnic groups from the earth, have different ideas and philosophies regarding the colonization of Mars, for example, whether it should be significantly altered to support human and animal life. They clash with each other over what the ideals of this new utopian world should be. The trilogy is a thoughtful debate, personified in various memorable characters, over the creation of a new world. Robinson also weaves into his story a socio-political and economic dimension, as powerful earth-based meta-national corporations are competing with each other and the settlers of Mars over control of the planet and its development. Robinson's narration is vivid, logically coherent, and highly compelling. The sense of realism is so powerful and intricate, covering all the fundamental dimensions of human life that one forgets one is reading a science fiction novel.

Another contemporary writer Stephen Baxter writes on an immense cosmic scale. His book *Vacuum Diagrams* (1997) reaches out across the entire universe and millions of years into the future, as well as billions of years into the past.[170] This novel, which is part of a series of future history stories by Baxter, traces the future destiny of humanity and describes the ultimate cosmic conflict between the most powerful sentient forces of matter and anti-matter, the Xeelee and the Photino Birds, and the eventual escape of both the Xeelee and the last humans into another universe. The scope and imagination of Baxter's future history of the cosmos has been compared to Olaf Stapledon's vision in *Star Maker*.[171] But Baxter's chronicle of the life of our universe not only extends far into the future, but deep into the past as well. The conflict and struggle between the Xeelee and the Photino Birds begins 20 billion years ago and ultimately defines the central drama of the entire history of the universe. The Xeelee are incomprehensively beyond human intelligence and human civilization and inter-cosmic time travelers. They alter the history of the universe and their own evolution by journeying back to the beginnings of the universe and redirecting the sequence of historical events. In the far distant past – approximately 5 billion years ago – they begin construction of a portal that eventually provides an escape route into another universe four million years in the future. The fortunes of humanity rise and fall through Baxter's cosmic epic, with humans at different times coming under the rule and control of different alien species, and eventually being imprisoned by the Xeelee in a spatially curved world from which there seems to be no escape. Along the way, various intelligent species attempt to create God and predict the entire history of the universe.

Baxter is particularly good at applying contemporary science and technology, including quantum theory, nanotechnology, cosmology, and artificial intelligence theory, to his multifaceted speculations on the future. There are a great variety of advanced technologies in his novel that transform or manipulate space, time, the evolution of life and intelligence, and the physical laws of the universe, all of which Baxter explains in scientifically informed language. *Vacuum Diagrams* won the Philip K. Dick Award for the best science fiction novel of 2000.

Baxter excels again in his capacity to weave cosmic scale story telling with up-to-date scientific and technological knowledge in his newer trilogy *Manifold Time* (2000), *Manifold Space* (2001), and *Manifold Origin* (2002).[172] In *Manifold Time*, Baxter takes ideas from contemporary cosmologists Lee Smolin, Fred Adams, and Greg Laughlin and sets sail across the evolutionary history of the multi-verse, from the most simple to the increasingly complex, from distant past to distant future – literally creating a manifold of "times" into which human space explorers are thrown.[173] In *Manifold Space*, Baxter grapples with Fermi's Paradox: Why are there absolutely no indications of other forms of intelligent life or technologically advanced civilizations in the observable universe? This novel delves into the issue of communication across alien minds and tells a tale of ultimate sacrifice to further the evolution of consciousness in the universe. Finally, in *Manifold Origin*, Baxter speculates on the evolutionary history of humans and provides an extremely realistic, graphic, and convincing depiction of the minds and lives of our primitive ancestors, including Neanderthals, *Homo erectus*, and *Australopithecus*. On an alternate and mysterious "red earth," Baxter places all these different hominids, along with contemporary humans, as well as giant "humans" who evolved on a parallel different earth, and speculates on where the human family is heading in the future.

Finally, in this review of recent science fiction, Charles Stross should be included. In *Accelerando*, Stross creates an epochal and cosmic, yet personalized, tale around the theme of the "technological singularity." According to various futurists and technology writers, at some point in the relatively near future, it is predicted that technological intelligence will surpass human intelligence – this event is the technological singularity. The inspirational starting point for this idea is "The Coming Technological Singularity" written in 1993 by Vernor Vinge.[174] The meaning and implications of the technological singularity have been extensively examined since Vinge's seminal paper, notably by the inventor and futurist, Ray Kurzweil. Kurzweil argues that in the next few decades computer intelligence will surge beyond human intelligence and quickly leave us in the dust. The post-singularity world of computer intelligence will be incomprehensible to humans unless our minds are technologically augmented, which Kurzweil believes will happen as well.[175]

What is so impressive and mind-boggling about *Accelerando* is that Stross attempts to describe in narrative form what will happen to humanity and to our world as we approach and then pass through the technological singularity – that is, Stross attempts to imagine the incomprehensible. Following the exploits and adventures of three generations of the Macx family and set in the context of massive and accelerative social and technological changes in the coming

century, Stross chronicles in *Accelerando* an amazing and rich variety of possible advances in computer intelligence, virtual reality, communication networking, nanotechnology, robotics, space travel, and bio-tech integration; the novel overflows with technological inventions and a whole new language to describe this reality.

Yet further, Stross speculates on how these fast and furious and interconnected technological transformations will impact human life and human identity. Members of the Macx family evolve psychologically and physically throughout the story. As one example, once computer hardware reaches the complexity and memory storage capacities of the human brain, humans, including the Macx family, can download their conscious minds into computers. and, in essence, branch off into multiple streams of consciousness. One conscious mind and identity continues to live in a biological body while a second version (or even more versions) of the same person lives within computer hardware and whatever virtual reality the person wishes to create in that technological system. Conscious minds within computers can also materialize in different nano-technological incarnations. Throughout *Accelerando*, in innumerable ways, the nature of human identity and human experience is altered as new technological developments emerge. The human conscious mind becomes a complex integrated plurality of voices, images, and streams of data surrounded and engulfed by the input of multiple software agents. Though many of these technological possibilities have been discussed in futurist writings, notably in Kurzweil, in *Accelerando*, the reader is presented with a concrete and personalized vision of how such innovations would impact individual humans and their lives. Parenthood, childhood, and marriage are dramatically altered in the context of multiple versions and timelines of individual selves.

While humanity is changing, the network of computer intelligences across the globe is quickly growing in power and mental capacities, increasingly manifesting an independence and mind of its own, and becoming more enigmatic and mysterious in its purposes. Steadily this super-human artificial intelligence gains control of the earth and extends its technological tentacles outward into the solar system where it begins to transform the inner planets and their physical material into a nano-technologically supported massive solar brain. In the wake of this expanding wave of artificial intelligence, humans, no longer able to comprehend or control what they have created, migrate outward through the solar system and beyond, attempting to escape from the reach and influence of what they label their “Vile Offspring.” Yet, humans take with them many of the creations of this advancing technology.

Within *Accelerando* Stross systematically and imaginatively extrapolates outward in time from present technological trends through a series of progressive changes and developments. Each chapter describes events within successive decades. Predictions build upon predictions and a future technological and social history unfolds, step by step, that is highly realistic and convincing. Although set in the form of a story about the Macx family, *Accelerando* reads like a general future history of the technological and social-psychological evolution of humanity. In addition, the ambience of a strange and frenzied future reality is created; the

language describing this is electrical and accelerated; inventive, visionary, and rich in hi-tech jargon, it propels the narrative at a breathtaking velocity. Of particular note, Stross examines in detail and imaginative depth how advancing technology will alter the human self, the nature of consciousness, and human relationships; love, friendships, and the meaning of human life are all transformed. By the beginning of the twenty-second century, all that once was has been transcended. As Gardner Dozois, the science fiction writer and editor states, "The *Accelerando* stories represent one of the most dazzling feats of sustained imagination in science fiction history, and radically up the Imagination Ante for every other writer who wants to sit down at the Future History table and credibly deal themselves into the game."[176]

The above award winning authors and science fiction stories capture the vast and wondrous drama of the future. I have provided some detail on each story to convey both the imagination and richness of these visions. The legacy and intelligence of Wells and Stapledon is clearly alive and well in such stories. Interestingly, many of these stories, including *Hyperion*, *A Fire Upon the Deep*, and *Vacuum Diagrams*, hark back to the age of great space operas, only now they are informed by computer science, quantum physics, and vastly more sophisticated psychological and cultural speculation. Even if popular science fiction movies frequently rise no higher than good guys, bad guys, special effects, violence, and shallow plots, science fiction literature, at its best, raises and addresses the deepest philosophical and scientific issues of humanity, existence, and the universe, and it does so in the context of futurist drama.

The Power and Breadth of Science Fiction

"…if the world is becoming too conscious of the innumerable possible futures jostling for its attention, science fiction had a central role in creating that urgent consciousness."

John Clute

In the new millennium, science fiction continues to grow in popularity and influence around the world.[177] Science fiction fandom is a vast social network across the globe. Numerous conventions are held every year celebrating authors, artists, new books and stories, as well as classic tales from the past. The fans revel in the lifestyle and all the paraphernalia and memorabilia associated with the genre.[178] A "Science Fiction Museum and Hall of Fame" has recently been established in Seattle, Washington.[179] As stated earlier, science fiction is the most influential contemporary form of futurist thinking in popular culture – it is a culture unto itself.

As can be seen from the historical review of science fiction that I have provided, science fiction covers a host of different themes and topics pertaining to the future. It addresses all the following areas of futurist thinking:

- Human Society and Cities in the Future – Future Cultures

- Scientific and Technological Discovery and Innovation
- The Relationship of Humanity and Technology
- Human Evolution and the Nature of Mind, Self, and Intelligence
- The Evolution of Life – Biotechnology
- Environmental, Ecological, Solar, and Galactic Engineering
- Robots and Androids - Technological or Computer Intelligence
- Space Exploration and Space Colonization – Exploring and Understanding the Cosmos
- Alien Contact, Alien Civilizations, and Alien Mentality
- Time Travel – The Manipulation of Time
- Philosophical, Religious, and Spiritual Enlightenment – God
- Morality and Values – Good and Evil
- Women, Men, Love, and Sex in the Future
- New or Alternative Forms of Reality - Alternative Universes
- Future Wars
- The Nature and Value of Progress
- Natural and Cosmic Disasters – The End of Humanity
- The Transcendence of Humanity
- The Evolution of Anything and Everything
- The Ultimate Nature, Meaning, and Destiny of the Cosmos

In summary, science fiction both embraces and questions the Enlightenment idea of secular progress. Some stories view science, technology, and reason as leading to a better world – some stories identify flaws in either the ideals of secular progress, or the imperfect nature of humanity in realizing the goals of secular and scientific progress. Yet within science fiction, following the philosophy of the Enlightenment, whatever is said should be scientifically credible. Enlightenment philosophy rejected the validity of traditional mythic and religious stories on scientific and rational grounds, offering a new scientific description of reality and secular ideals and empirical predictions for the future. Science fiction writers delve into the possibilities of space travel and space technology, robotics, computers, and artificial intelligence, evolutionary biology and biotechnology, nanotechnology, and the myriad of implications and ramifications of physics and physical cosmology.

Science fiction has also been inspired by philosophical Romanticism. From a Romantic perspective, science, reason, and technology are not enough – in fact, as idols or absolute gods, they may be destructive to the human spirit. From a Romantic perspective, we need to be Dionysian as well as Apollonian in our approach to the future. We need to consider human emotion and personal meaning in envisioning and directing our future. Science fiction arouses all the diverse and fundamental emotions in humans, including fear, hope, exhilaration, depression, joy, sorrow, awe, humility, and humor. Also, embracing the central Romantic ideals of beauty and art and the Romantic emphasis on narrative literature (instead of abstract theory) as a mode of understanding life, science fiction can be viewed as art as much as scientific and technological extrapolation.

Science fiction, as a literary and artistic form, attempts to imagine the future in narrative and aesthetic form. The future is a story – in fact many stories. Literature and art educate and inspire in a way that a scientific theory cannot. Speculative stories and artistic visions about the future are essential dimensions of future consciousness.

Similarly, the religious and mythological approach to both the past and the future anchored their ideals and visions to stories and archetypal characters that humans could identify with. Such ancient stories inspired and educated. Science fiction does the same. As I have attempted to illustrate and explain, science fiction is mythic and cosmic, and addresses the fundamental questions of human existence but it does so through the minds and experiences of unique characters, thus personifying the journey into the future.

Given its diverse roots, science fiction is highly pluralistic, with different writers emphasizing different perspectives. It tells many stories – from many points of view – with many different styles – about all aspects of the future. It has gone beyond the monolithic visions of the Enlightenment. It is Postmodern, interdisciplinary, and frequently counter-culture.

Science fiction is inter-disciplinary. Because it has both Romantic and scientific-technological roots, it pulls together the arts and humanities with science and technology. Since it is mythic, cosmic, personalized, and often concerned with such issues as the meaning of life and good and evil, it brings together the secular-scientific with the religious-spiritual. Since science fiction increasingly has moved beyond simple extrapolations on science and technology and brought into its arena concerns with the future of the human mind, human society, culture, values, ecology and the environment, it draws upon all areas of human inquiry and study. Because it takes all these different dimensions of reality and integrates them into stories and scenarios, it is truly interdisciplinary, examining how technology, the environment, society, values, and the psyche all interact with each other.

Science fiction has many different functions and strengthens and benefits future consciousness in numerous ways. It stimulates multiple dimensions of thought, exercising the critical and rational intellect and stretching the speculative and creative imagination. Science fiction can draw the reader into critical reflection on contemporary trends and where these trends could lead. As mentioned earlier, science fiction frequently involves “thought experiments,” where the implications and ramifications of future hypothetical situations are thought out. One’s intellect and thinking capacities can be challenged and stretched through the scientific, technological, and philosophical speculations in science fiction, for example, as in the high-powered cosmic cogitations of Stapledon and Baxter. One could describe at least some science fiction as speculative cosmology, philosophy, and even theology set in narrative form. Science fiction expands one’s imagination by engaging in “possibility thinking.” Diverse worlds and innumerable strange realities are imagined in science fiction. Multi-faceted highly realistic scenario-building frequently occurs in science fiction. Future scenarios involving technologies, ecologies, geologies, economies,

societies, governments, habitations, psychologies, and ethical norms and values are described and pulled together into cognitively compelling, detailed worlds.

Science fiction not only predicts the future but influences it. Science fiction describes the future in great sensory and descriptive detail, and has a strong emotional impact on the reader. The future is presented in personalized terms, with memorable and identifiable characters possessing various archetypal qualities. Hence, such characters, their challenges, and their exploits often inspire the reader into action or dramatic changes in thinking.

Science fiction generates a holistic experience of the future, impacting all dimensions of human psychology. It combines the abstract and the personal – it is a universe of ideas and individual characters. It unites cognition and emotion. It creates a virtual perceptual experience of the future since it creates such detailed and descriptive visions of possible future realities. It gets a person thinking about the future, feeling its pathos, and at times motivating the individual into changes in behavior and lifestyle. Because it both critiques and extols different modern trends, and often has morals to its stories, it addresses human values and ethics. Novels such as *A Canticle for Leibowitz*, *Brave New World*, *Stranger in a Strange Land*, and *Behold the Man* have strong moral, if not religious, messages embodied in their narratives. Science fiction engages the entire human mind.

In general, science fiction possesses a set of complementary functions and powers. Often it unites apparent opposites. It is secular-scientific and mythic – Romantic; it is both rational and emotional; it combines the strengths of religious inspiration with rational understanding. Science fiction can be seen as both “thought experiments” and artistic visions. There is a personalized dimension to science fiction, but equally it can be filled with scientific theory, technological detail, and cosmic abstractions. While it tries to predict and understand the future, it also attempts to inspire, entertain, terrify, and mesmerize. It functions both as meaningful drama and literature and futuristic extrapolation. Science fiction can actually influence the future and not simply anticipate it. It is high escapism, as well as highly reflective and often critical of contemporary times. Science fiction extols the promise of the future, yet is filled with warnings, fears, and apprehensions about tomorrow as well. It shares similarities with ancient fantasy and mythology, yet it is also a creation of the modern world; it ties the past and the future together. As the mythology of the future, science fiction creates the dreams the world of tomorrow will be made of.

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