

Teaching Evolution Through Science Fiction

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ABSTRACT

A review of the content and development of the literary genre called science fiction was completed. The theory of evolution was found to be extremely influential in both the early and current writings of most science fiction writers. Many prominent science fiction authors, for example, H. G. Wells, Arthur L. Clark, Ray Bradbury and Isaac Asimov, were openly concerned with propagating evolutionism philosophy. Much science fiction literature openly presents a world view which is in direct contrast to the Judeo-Christian cosmology. The implications of its influence are also discussed.

INTRODUCTION

*'Darwin's theory of evolution created a revolution not just in biology, but in our entire concept of man and his place in the universe.'*¹

This has been profoundly reflected in the area of literature, and evolutionary theory has had a more profound influence on science fiction than on any other literary form.² This is largely because the theory of evolution has had a tremendous influence on the natural and physical sciences, and most science fiction is a product of scientists, or at least individuals keenly interested in science. Science fiction is dominated by stories about a universe without God and where life appears and develops as the natural order of things. Millions of Americans regularly read science fiction works and are influenced by the ideas that they advocate. In the 1980s nearly one out of four fiction works was in the science fiction-fantasy category.³ Research on socialization and child development finds that our belief structure highly influences our explanation and conclusions concerning our world-view. When it was accepted by most Westerners that humans and all life were direct creations by God, it was believed that if other worlds existed and had life, they were also created by God and were part of His plan. This world-view argues against the belief that intelligent beings from other planets evolved separately or apart from God.

The acceptance of evolution indicated that if life evolved on earth, it could likewise have evolved elsewhere. It was speculated that this life could currently be either at a 'lower'

or a 'higher' level than humankind, or it may even be of an entirely different kind, such as non-carbon molecule based. If many kinds and types of life exist elsewhere in the universe, many science fiction themes become a real possibility. Exobiologists such as Carl Sagan and others now postulate that it is highly probable that life exists in many far off places in the universe.⁴ The influence of science fiction has been noted by Clarke:

*'It will come as no surprise to readers that science fiction was the main agent in spreading ideas about coming things. What began with Jules Verne and reached greater heights with H. G. Wells is now a universal model for writing — dreaming, hoping and fearing — about the future.'*⁵

The theory of evolution also has had a dramatic effect on the religious beliefs of scientists and science writers, and this is often vividly reflected in their writings. As Suderman notes:

"The most striking fact in the intellectual history of the last third of the nineteenth century", says Merle Curti, "was the blow to the historic Doctrine of Supernaturalism by new developments in the biological and physical sciences." The greatest threat from the sciences came with the publication of Darwin's Origin of Species (1859), which, to use Andrew D. White's phrase, "had come into the theological world like a plough into an anthill." Darwin's theory called into question the existence of God, but, just as important and more difficult for traditional Christianity to absorb was its challenge to supernaturalism with its

*assumption of an order of existence beyond nature and of a divine creator who stands outside of and above these laws.*⁶

Rubinsky and Wiseman put it more directly as follows:

*'Science fiction began with another characteristic. It offered a new view of man. Up until Darwin, man had seen himself as a finished being, already completed, made in God's image. Historical man. But with Darwin's writings, time began to stretch. Historical time wasn't enough. Now there was human time, geological time, cosmic time. There has always been a gap between serious literature and popular fiction. That gap widened after the Industrial Revolution, but one type of writing—the apocalyptic school—transformed itself and jumped from the religious and academic camp into the new fiction.'*⁷

THE DEVELOPMENT OF SCIENCE FICTION

The beginning of science fiction is generally attributed to the nineteenth century work of Jules Verne and H. G. Wells. According to **The Encyclopedia Britannica** early science fiction included literary works in which modern technology and scientific discovery were crucial to the story line:

*'Depending upon the author's purpose, the degree to which the science element is fictionalized may range from a careful and informed extrapolation from known facts and principles to the most far fetched and flatly contradictory of speculations. What remains constant throughout the imaginative spectrum is the appearance of plausibility, stemming from an at least surface allegiance to the attitudes, methods, and terminology of science.'*⁸

Most of this literary genre was at first called **science novels** or **scientific romances**. Science fiction as a separate classification of literature dates back to only about 1926 when Hugo Gernsback founded **Amazing Stories Magazine** to specialize in literature that he called *scientifiction*.⁹ Gernsback, who originated the term science fiction, was wildly successful and was soon widely imitated. The science fiction world has covered many, if not most, major scientific innovations long before they were on the possibility drawing boards.¹⁰ Not unexpectedly, surveys have shown that many practising scientists themselves enjoy science fiction literature, often more so than any other type. And science fiction also serves another role, as Pohl concluded:

*'I think it is fair to say that a majority of the world's leading scientists today were first turned on to their subjects by reading science-fiction stories.'*¹¹

Herbert George Wells (his pen name was H. G. Wells) was modern England's most prolific author and the father of modern science fiction.¹² Born in 1866 in Bromley, Kent, he spent most of his life working as a writer. His works were best sellers for years, and are still sold in many

editions (the current English language **Books in Print** lists scores of his works in print). His orientation toward evolution is indicated by the fact that he studied science under Thomas Henry Huxley, one of history's most staunch defenders and apologists for evolution, who is today called Darwin's bulldog. Wells' science degree, a B.Sc. from London University (first class in zoology, second in geology) prepared him for a life of teaching, research and writing.¹³ After graduation, he began not only teaching, but working on a biology textbook which was published in 1893. He soon contracted tuberculosis which prevented him from becoming a teacher, but he could still write, and continued full time in this area until he died.

Wells published his first article in 1891, an essay in **Fortnightly Review** which was the first of many in this magazine. His first full length science fiction book was **The Time Machine**, published in 1895. Wells openly stated that his work was written to influence people's views in various areas, one of which was evolution.¹⁴ In his words,

*'The artificial factor in man is made and modified by two chief influences. The greatest of these is suggestion, and particularly the suggestion of example. With this tradition is inseparably interwoven. The second is his reasoned conclusions from additions to his individual knowledge, either through instruction or experience. The artificial factor in a man, therefore, may evidently be deliberately affected by a sufficiently intelligent exterior agent in a number of ways: by example deliberately set; by the fictitious example of the stage and novel; by sound or unsound presentations of facts, or sound or fallacious arguments derived from facts, even, it may be, by emotionally propounded precepts.'*¹⁵

In 1896 he published the article 'Human evolution: an artificial process', in **Fortnightly Review**. In his view the origin of life was purely by atheistic naturalism:

*'... there are no elements in living matter which are not found in its lifeless environment; that the energy by which life is operated is not any mysterious "vital force", but is the same energy, as physiologists have abundantly demonstrated, by which the simplest physical and chemical transformations are worked; and that the chemical compounds found in living bodies and as yet unsynthesized seem to differ only in their complexity from those we can already put together in test-tubes and those that exist as not-living matter. The one distinguishing feature of living matter is its capacity for self-reproduction. But the chemist can tell us of numerous chemical reactions which, given proper conditions, are self-continuing in the same way; the only difference is that the chemical transformations of life can reproduce themselves over a wider range of outer conditions than can any of those lifeless reactions.'*¹⁶

To advance his views on naturalism and atheism, Wells, as did many other evolution apologists at this time,

selected certain elements from evolution theory and rejected others. For example, he often treated the less privileged very sympathetically in his writings — and showed enormous feeling for many of the ‘inferior’ social groups which the eugenics advocates were determined to control or even wipe out. This may have to do with Wells’ family and social background: his father was a poor shopkeeper, and his mother a maid servant and housekeeper. Wells himself had to struggle to earn his degrees, and his rise from poverty to fame and prominence was largely by his own considerable effort. He did believe, in harmony with the Social Darwinists, that social compassion had slowed down human evolution:

‘Even if we suppose that he has undergone such an alteration, it cannot be proceeding in the present civilized state. The most striking feature of our civilization is its careful preservation of all the human lives that are born to it — the halt, the blind, the deaf and dumb, the ferocious, the atavistic; the wheat and tares not only grow together, but are impartially sheltered from destruction. These grow to maturity and pair under such complex and artificial circumstances that even a determinate Sexual Selection can scarcely be operating. Holding the generally accepted views of variation, we must suppose as many human beings are born below the average in any particular as above it, and that, therefore, until our civilization changes fundamentally, the intrinsic average man will remain the same.’¹⁷

In many of his works, such as **The Time Machine**, both evolution and the implications of the theory for society are major themes.^{18–20} The major character in this novel is the ‘time traveller’, who in his journeys to the future discovered that the people there had decidedly non-muscular ‘soft rounded figures’ because natural selection was no longer taking place, allowing the weak to thrive. Wells defines natural selection as ‘selection by death’.²¹ As he explains, in this future time, selection for strength no longer existed because the world then was peaceful and secure, and all persons were adequately taken care of. This allowed the weak to thrive, and in time all became weak. They were not only weak of body, but also weak of mind — and consequently they could not concentrate very well, and also tired very quickly. This nation of people that behaved very much like children was the result of a world that was peaceful and secure.

In contrast to this inferior race, a subterranean species called ‘morlocks’ were far superior — they were quick of mind, physically fast and strong, but also cruel. These ‘small apelike creatures’ were descendants of humans who evolved into creatures that could survive in the underworld. Their world was not one of peace and security, nor did they evidently preserve the weak: evolution was still operating on them.²² Why they evolved into a more monkey-like appearance is baffling: it would seem that Wells would have served his purpose better by hypothesizing the evolu-

tion of a superior body beyond modern humans to represent future evolution.

When the time traveller travelled even farther into the future, he discovered that the people then were all vegetarians because the higher animals had become extinct. A very real concern in biology today is not that many insects, bacteria, platyhelminths, nematoda, and other lower animal groups will become extinct, but that many so-called higher level animals will be lost forever in the near future. To prevent this, multi-million dollar efforts are now being expended to save the panda, various types of bears, elephants, whales, many primates, and countless other animals. The time traveller then realized that he was at ‘the sunset of humanity’. After exploring this world of the future dated 802,701, he learned that most of its people were apathetic to his cries of concern about their own future.

He did make one friend in this future world, a young girl named Weena whom he rescued from drowning. Weena became the time traveller’s friend and guide, helping him to understand their society. While exploring one of the ruins of the past civilizations around him (one of ‘the great civilizations which mankind’s society evolved into’) he encountered the morlocks. The evolutionary superior morlocks, the time traveller soon perceived, were after his life. To survive, he realized that he must locate his time machine and escape from their world. Back in his time machine, he went even farther forward in time to when the Earth ceased rotating. In this world he ‘landed’ on a deserted beach on which the only animals he saw were a flying animal resembling a huge white butterfly and some crab-like monsters. Travelling forward again, and halting at 30 million years from the time when he first left his laboratory, he saw the cooling earth was now filled with an all-pervasive deathly stillness. This future, one that evolution still predicts will occur, so horrified the time traveller that he zoomed backwards in time.

Some speculate that Wells’ point in this story is that humans all too often live as if we and the earth will somehow improve forever on our own. His major point is, since we can do much to determine our future, it behooves us to direct and control our evolution so that our future will be better. The future can be greatly improved by using the laws of evolution for our advantage and to mitigate the effects of the laws that work against our best interest. Another point implied in this novel was that the individual does not matter, only the species (the race) matters. While in the year 802,701, the time traveller had inadvertently left a fire burning in a previous campsite which started the forest on fire, killing between 30 and 40 morlocks (presumably the weaker ones) while he watched. This incident was not necessary to the main theme of the story, and Wells’ purpose for using it is not clear. Was he showing that natural selection was still affecting even the morlocks at this late date? Wells did teach that evolution, for humans at least, did not always have to be cruel:

‘This view, in fact reconciles a scientific faith in

evolution with optimism. The attainment of an unstable and transitory perfection only through innumerable generations of suffering and "elimination" is not necessarily the destiny of humanity. If what is here advanced is true, in *Education* lies the possible salvation of mankind from misery and sin. We may hope to come out of the valley of Death, become emancipated from the Calanistic deity of Natural Selection, before the end of the pilgrimage. We need not clamor for the Systematic Massacre of the Unfit, nor fear that degeneration is the inevitable consequence of security.²³

Literature, even that which sells widely, influences certain classes of people more than others. In Wells' case, the better educated followed his work more closely, and his influence on the less educated was much less.²⁴ H. G. Wells, in spite of his enormous success as a writer, was defeated twice as a Labor Party candidate for parliament. As Magill noted,

*'although he sacrificed art to propaganda in much of his work, he spoke with eloquence and conviction to a world in crisis. Only at the end of his life did he feel that he had failed in his efforts to improve human society by thought and word.'*²⁵

He may feel that he failed, but science fiction historian Pohl concluded that

*'... Wells wrote consequential science fiction, the kind of story that did not turn out to be just a dream at the end but changed the world itself.'*²⁶

Wells not only conveyed evolutionary ideas in his writings, but he was a tireless campaigner for the theory and against Christianity.²⁷ His one-million word **Outline of History**, written in 1920 and revised in 1931, is primarily an apologist work for evolution and against religion. This work was soon followed by **The Science of Life**, which was again heavily oriented towards arguing for the validity of evolutionary theory. In 1926 the well-known Catholic writer, Hilaire Belloc, wrote a book entitled **A Companion to Mr Wells' Outline of History**, wherein he tried to respond to what he felt was Wells' horribly distorted picture of the history of Christianity and his inept attempt to defend Darwinism.²⁸ Wells retorted with **Mr Belloc Objects to the Outline of History**, in which he scathingly denounced Belloc, calling him an ignorant sub-man, stating that he *'knows scarcely anything of museums or laboratories or the spirit and methods of research.'*^{29,30} One of Belloc's primary objections to Wells' work was the theory of ruthless natural selection. As Wilson noted, Belloc knew that,

'the writing of history was not a mere compilation of facts so much as it was the presentation of those facts in order to substantiate a point of view. And Wells' point of view, in Belloc's eyes, was simply wrong. Above all, it was wrong in the extent to which it distorted and assailed the Christian orthodoxies. Wells was a simple Darwinian. He did not believe in the Fall of Man. He believed that, through enterprise and

*aggression, the human race had dragged and fought its way out of the jungle by a process of natural selection. It was hampered in its progress onwards and upwards by the absurdities of religion; and no religion was more absurd or misleading in the whole Outline than the religion founded upon the Twelve Apostles with Jesus Christ as the chief cornerstone.'*³¹

Wells takes pains to defend evolution, and calls Belloc dishonest and lacking in intelligence to object to this world-view. Many of the arguments that Wells advocated in this work have since been shown by the scientific community to be untenable. For example, he argued that ontogeny recapitulates phylogeny, that the evidence of our evolutionary past is found in our body in such structures as the gill slits, our fish heart and kidneys, and our reptilian skull and mammalian tail.

Not to be outdone, Belloc responded in 1927 with **Mr Belloc Still Objects to Mr Wells' Outline of History**. In it he listed and quoted many eminent continental professors of biology (Bateson, Driesch, Dennert, Dwight, Morgan, LeDantec, Nageli, Korchinsky and Cope), all who had rejected Darwinism and especially the extreme natural selection that Darwin advocated.³² Belloc also indulged in some name-calling of his own and ignored some of Wells' arguments, but did successfully challenge Wells in several areas. So far as I know, Wells did not break the trilogy of books thus far produced by the two authors. Wilson concludes that the debate,

*'... merely showed that Belloc and Wells inhabited different universes. From this distance, one cannot say that either of them emerged from the contest victorious. Belloc perhaps crowingly spotted a few more howlers in The Outline of History than Wells managed to pick out of his antagonist's commentary. That is not to say that the controversy was not important. A modern, sensual, secular-minded man had been confronted with the ancient orthodoxies. Belloc thought he knew what Wells was talking about. Wells certainly had no understanding of Belloc's position. For all he learnt from the quarrel, it might have been conducted in two different languages.'*³³

It should be added that Wells also lived his beliefs. On the book jacket of his 1984 autobiography is said:

"I have never been able to discover whether my interest in sex is more than normal," Wells muses at the beginning of this memoir. Despite a long and happy marriage to Amy Catherine ("Jane") Wells, Wells was dissatisfied, and reached for outside sexual experience after coming to a modus vivendi with his wife. What happened thereafter forms the substance of this book: his passionate love affair with Amber Reeves, which created a scandal that rocked pre-World War I London when Amber insisted on conceiving and bearing his child; his light-hearted relationship with the clever and amusing "Little e", the Grafyn von Arnim, author of Elizabeth and Her German

*Garden; his decade-long and ultimately unhappy liaison with Rebecca West. (West, too, bore Wells a child.) . . .*³⁴

And Wells' attitude toward conventional morality is shown in his own words:

*'One day we found in a copy of The Times we had brought with us, a letter from Mrs Humphrey Ward denouncing the moral tone of the younger generation, apropos of a rising young writer, Rebecca West, and, having read it aloud, we decided we had to do something about it. So we stripped ourselves under the trees as though there was no one in the world but ourselves, and made love all over Mrs Humphrey Ward. And when we had dressed again we lit a match and burnt her. The Times flared indignantly and subsided and wriggled burning and went black and brittle and broke into fragments that flew away.'*³⁵

THE NOVEL FRANKENSTEIN

Another excellent example of the influence of the new science, both evolution and biology in general on literature, is the novel **Frankenstein**. Written by Mary Goodwin Shelley and first published in 1817, her theme was the morality of applying science to life and what can go wrong. Although often not regarded as science fiction, this work is the best extant candidate for the honor of the first true science fiction story. Even the word **Frankenstein** has become a vocabulary noun, understood by virtually all persons as a monster. The story is about Robert Walton, an explorer, and Victor Frankenstein, a scientist. Frankenstein was a bright young man from a good family in Geneva who showed great promise in the natural sciences. After studying at the university in Ingolstadt, he mastered the field of natural science to the extent that he stumbled upon the secret of creating life — and he could not rest until he tried out his new knowledge. Using the information that he had learned in college and also that which he discovered through his own research, he fashioned an eight foot monster partly from the bodies of corpses, and then endowed his creation with life.

Unfortunately, it did not have all of the traits that one would desire — its face looked horrible, and when Frankenstein realized what his monster was actually like, the horror of his actions caused him to come down with 'brain fever'. Victor's best friend, Henry Clerval, came down from Geneva to stay with him and help nurse him through his illness. Victor was so grief stricken because of the monster which he had created that he was not able to tell anyone, not even Clerval, about it. At this time Victor's brother, William, was murdered, and Victor's servant Justine was charged and later found guilty of the crime. Justine had no motive or reason, nor evidently the ability to carry out the crime, and the only evidence was a miniature from William's neck that was found in her pocket. To help him deal emotionally with these tragic events, Victor went

hiking up the mountainous countryside. There he again met the monster that he had created, who demanded that he listen to his predicament. The monster related that after he left Victor's chambers, everyone he met screamed and ran away because of his grotesque appearance. Finally finding shelter in an abandoned hovel, he remained there during the daylight, and by the cover of night sought berries for food. Through observation, he slowly learned the ways of the people around him. Needing friendship (after all, he was a human, albeit a monster) he again ventured out to try his luck. His repeated failure caused him to become bitter towards all humans. It was he, the monster, that killed William, not Justine and he then explained how Justine got possession of the miniature: he saw Justine in the hut, and then slid the miniature into her pocket.

The monster then demanded that Victor fashion a mate for him who would give him love and companionship. If Victor agreed, the monster promised to take his mate to the wilds of South America to never again be seen by mankind. But, if Victor refused, the monster threatened to kill at random. Victor felt that the only solution was to acquiesce to the monster's demands. He began fashioning a female monster mate — but never completed it, realizing as he worked that they would mate and spawn a whole race of monsters. When Victor destroyed his work, the monster, watching at the window, became angered and forced his way into the house. The monster then vowed to carry out his promise and taunt both Victor and the human race — later killing Victor's bride, Elizabeth. Victor then determined that he would spend the rest of his life searching for the monster until he was killed. Victor never achieved this goal — he died in the frozen north in the midst of his search. The monster then related to Walton that Victor's was the greater crime — he created a man without love, friend or soul, and deserved his punishment. The monster then vanished, never to be heard from again. The story concludes on the note that humans may learn how to create physical life, but only God can create life with the divine spirit.

This story contains much insight relative to the responsibility that we as humans have for our creations. Highly abstract when it was written, the account raised issues that are now a real concern. Genetic engineering is on the horizon as a routine procedure, and the ethics involved are enormous. Differences exist — the Frankenstein monster was an adult fashioned out of body parts, and genetic engineering is used to merely alter the genes in a germ cell — nonetheless, both concerns deal with the problems of altering life in the image of mankind. This is obvious from the titles of books about DNA research that deal with genetic manipulation such as June Goodfield's **Playing God: The Genetic Engineering and the Manipulation of Life**, Leroy Augenstein's, **Come Let Us Play God**, Ted Howard and Jeremy Rifken's **Who Should Play God?: The Artificial Creation of Life and What It Means for the Future of the Human Race** and Gordon Rattray

Taylor's **The Biological Time Bomb**, all which discuss the creation of life and related topics.³⁶⁻³⁹ Later science fiction writers were more open about evolution's influence in exploring these concerns. David H. Keller, Pohl noted, wrote many stories, but:

*'Perhaps his most famous story was The Revolt of the Pedestrians, which told of a future time when generations of automobile driving had caused the legs of the human race to wither away; [but in the story] an aberrant young man, atavistically born with legs complete, leads a movement to go back to the good old days.'*⁴⁰

THE NEW VIEW OF OUR WORLD AND SCIENCE FICTION

It was not until the Renaissance in the fifteenth century that mankind began to seriously comprehend the concept that our earth was part of a solar system family of planets. One of the first researchers to scientifically defend a sun-centered system with the then known planets travelling around it in circular orbits was Nicholas Copernicus. After the publishing of his **On the Revolution of Heavenly Bodies** in 1543, the universe as we know it first began to be understood. Men such as Galileo and Kepler, though they did not agree with Copernicus in some areas, expounded the heliocentric view. This view was not totally new, and actually was postulated centuries previously by Eratosthenes, Aristarchus and others, but **most people**, even most learned men, did **not** fully accept the heliocentric view of the universe until the early 1600s.⁴¹

The concept of a heliocentric solar system carried with it the realization that the earth was a globe which was far larger than previously thought. Although since at least Plato's time, a few thinkers had correctly addressed the shape and even the approximate size of the earth (Eratosthenes' estimate was close) **most** of the ancients entertained a view of the universe vastly different from our modern day picture. After these discoveries, it was reasoned that the solar system must be considerably larger than the ancients had assumed. Only in Copernicus' day was it generally realized that the planets were not just a few miles away from the earth's ground surface as historically assumed by many. Its size was not fully comprehended until the early 1900s when Pluto was discovered. Researchers in the 1700s also discerned that the other planets were in some ways much like the earth, another revolutionary idea:

*'In a century and a half from Copernicus to Newton, man's image of the universe had been totally transformed. It was a far larger universe, far more complex, and far more remote from the earth.'*⁴²

Along with the modern realization that there were other 'worlds' far away from the earth came the possibility that living beings may exist on these planets. This in itself did not influence a belief in the view that many strange worlds existed (which is a common topic of science fiction) for one

important reason: until the turn of the century, it was almost universally believed that God had directly created humans and all life. Hence, if life existed on other planets, God must also have created it. Thus, the life there must be similar to that on earth. Because God was believed to have been a loving heavenly Father, it was incomprehensible that He would create physical creatures on other planets which were grotesque, cruel, or naturally malicious towards the earth, as not uncommonly represented in much earlier science fiction.

The increasing acceptance of the evolutionary theory in the middle of the 1800s, spurred on by such workers as Darwin, Huxley, Haeckel and others, popularized the belief that, just as life on the earth evolved on its own, life could also have developed on other planets, depending on the surrounding environmental conditions. Humans and animals were no longer seen as the product of an intelligent designer with a loving purpose, but as a result of natural law, chance and the brutal forces of competition which occurred in the impersonal natural world. As Buskirk observed:

*'... most who believe in life in outer space suppose it on the theory of evolution. An evolutionist would reason: If life evolved after millions of years on this planet, why couldn't it have done so elsewhere in the universe?'*⁴³

Much science fiction had meaning **only** when it was believed that both other large earth-like planets and other solar systems existed. Except for God, angels, devils or other beings which were spiritual and therefore did not need to travel in material machines, few persons believed beings from other planets existed. As Sagan and Leonard state, the world as many people who lived at the dawn of history saw it or understood it, *'was a small patch of land bounded by distant hills and perhaps by the blue line of the sea.'*⁴⁴ Of course, it is difficult to discern **exactly** how most ancients perceived the universe. Many common people and scholars alike viewed the universe as nothing more than what it appeared to be from earth: the planets were merely stars that moved faster, and the stars themselves were assumed to be fairly small objects which hung in the sky not too far away from the earth. The enormous size of the universe was not fully understood until this century and, even in the last few decades, our view of its vastness and complexity has been revolutionized.

Literature, especially science fiction, served to give the common person this new view of a Godless cosmos and life that springs forth by natural laws.⁴⁵ One of the first popular works about life from other planets was H. G. Wells' **War of the Worlds**, which told of the story of grotesque creatures with tremendous powers that came to earth from Mars.⁴⁶ These monsters were eventually destroyed, but not by human power. The Martians lacked immunity to earth's bacteria, and thus were *'slain by the humblest things . . . upon this earth.'* This book, although science fiction, clearly conveys the possibility of life on other planets. From

Wells' major interest in college, biology and evolution, he reasoned that if life evolved by natural law on the earth, it likewise could have evolved in the same way on other planets. This view played an important part in many of his novels, and the evolutionary hypothesis in many is obvious.⁴⁷

The belief that living beings inhabited other planets became accepted to the extent that a 1938 fictional radio dramatization of **War of the Worlds** by Orson Wells was mistakenly understood by many listeners as a genuine news report. The broadcast claimed that a meteor which had landed near Princeton, New Jersey proved to be hollow and monsters from Mars soon emerged from it. Armed with horrible death ray guns, they slew all of the humans which they came across as they marched toward New York. The result of this broadcast was that, as one newspaper stated, America *'was convulsed by panic and hysteria.'* Hundreds of doctors and nurses called their local hospitals to volunteer their services, men in the armed forces offered their help, and city officials began to work out mass evacuation plans.⁴⁸ Some people actually poisoned themselves, preferring to die by their own hands than from the Martian ray guns.⁴⁹

Because this scare was nationwide, the furore was not due to local population peculiarities: meetings were held in many places in America and Canada to formulate a defense plan. This incident conveys the fact that many people then had a strong belief in the possibility of intelligent life on other worlds — and that it could be malicious, and very harmful to the people on earth. A number of other stories about space travel soon became popular. Many featured odd, often malicious creatures from other planets, such as those in the **Buck Rogers** and **Flash Gordon** books and, later, in their television series. **Star Trek**, first broadcast in 1966, is still popular in 1992 with a cult following, and the sixth **Star Trek** motion picture opened in December 1991.

A review of prominent modern science fiction writers today, especially Isaac Asimov, Carl Sagan, Arthur L. Clark, L. Sprague de Camp, L. Ron Hubbard and Ray Bradbury, also reveals that they make many very definite statements in their writings relative to their religious beliefs. They are unequivocally opposed to the idea of a Creator God and have extensively expressed their often vehement opposition to this world-view. Many are extremely supportive of an atheistic, or at least the non-theistic world-view, and essentially espouse the views of evolution as proposed by Charles Darwin and others.⁵⁰ This viewpoint, as openly expressed in most of their writings, includes both a hostility towards the Judeo-Christian world-view and strong support for the evolutionary world-view. As Belloc said in 1927, the *'popular materialists'* desperately rely on a denial of a Creator God to support their lifestyle.⁵¹ The result was the acceptance of views such as Wells' belief that, *'it is a fact that most men find monogamy. . .so far "unnatural" as to be a restraint.'*⁵² And

in his own life Wells was openly sexually promiscuous and flaunted it.⁵³

THE SCIENCE OF EXOBIOLOGY

With the realization that the universe is much larger than previously supposed, many secular writers' imaginations were freed to create bizarre worlds within the huge unknown expanse that lay outside of the earth.⁵⁴ Motion pictures with multi-million dollar budgets such as **Close Encounters of the Third Kind**, **Star Wars**, **E.T.**, **Star Trek**, and others continue to popularize the idea of naturalism and consequently that life exists in many places in the universe. **Star Trek's** creator, Gene Roddenberry, was openly anti-religion and a self-proclaimed 'secular humanist' who often used his show to teach ideas about religion and values.⁵⁵

There is as yet no clear evidence of any planets other than those in our solar system, so it is an interesting state of affairs that a whole 'science' has developed to study something for which no empirical proof yet exists.⁵⁶ As Abell concluded concerning the hypotheses of extraterrestrial life:

*'It would be hard not to find a scientist who would not be terribly excited if such hard evidence could be found; for what could be a more monumental discovery than proof of life beyond the earth?'*⁵⁷

Although estimates vary widely, A. G. Cameron concluded that about 100,000 planets exist within our galaxy that could currently sustain some form of life. If life can evolve of its own accord by chance and natural law, then life could exist in places in the universe where conditions are favorable. Drake estimates that

*'there may be 10 million extraterrestrial technical societies within our solar neighborhood capable of radio communication beyond their own bio fields.'*⁵⁸

While the question of life on other planets is still speculation based on a number of hypotheses and assumptions, many scientists feel that it is inevitable that life **must** exist in some of the many places that they speculate are hospitable to it. They reason that, because life evolved on the earth, this indicates that whatever occurrences caused it to exist here could also cause it to exist somewhere else. Although some scientists are optimistic as to the possibility of life existing elsewhere because of their belief structure, this conclusion is based solely on faith in evolution and on many tenuous assumptions, not empirical evidence.⁵⁹ There is much that we do not know for sure, and many surprises likely exist in the universe, but at this point non-sun planets and other solar systems are still unconfirmed, at best only *'planet-like bodies'* have been indicated circling around pulsars, an impossible condition for life.⁶⁰

SUMMARY

A large number of young people are introduced, or at

least influenced, to enter a science career by reading science fiction, and many young people who plan on a science career regularly read science fiction.⁶¹ Although they realize that these works are not true, they nonetheless convey impressions and world-views which no doubt influence a young person's perception of reality. It is a means of indoctrination which is rarely balanced by reading literature critical of the viewpoints taken in science fiction. This is a concern because, as Pohl notes, its early

*'... readers included a great many of that period's crop of young or about-to-be scientists; the magazines sold best near college campuses. But overwhelmingly the typical reader was a boy of about 15; some of the readers were even under ten.'*⁶²

One's beliefs develop from a variety of sources, not only factual knowledge, and science fiction is an important means of influencing many Americans and others around the world to develop a world-view which is contrary to the belief that an all-loving and wise Creator deliberately fashioned the universe for rational purposes, and part of this universe is human beings which also have a purpose in God's scheme of things.

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