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Prediction of Things to Come for Exceptional Children and Adults as Seen through the Eyes of Science Fiction Writers

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PREDICTION OF THINGS TO COME
FOR EXCEPTIONAL CHILDREN AND ADULTS AS SEEN
THROUGH THE EYES OF SCIENCE FICTION WRITERS

A Project Report
Presented to
The Graduate Faculty
Central Washington University

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TABLE OF CONTENTS

	Page #
Chapter 1 - Background of the Study-----	1 - 5
Introduction -----	1 - 2
Statement of the Problem -----	2
Definition of Terms -----	3 - 4
Prognosticator/predictor -----	3
Exceptional -----	3
Science fiction -----	3
Hugo awards -----	3 - 4
Nebula awards -----	4
Futurologist -----	4
Significance of the Study -----	4 - 5
Limitations of the Study -----	5
Chapter 2 - A Review of the Literature -----	6 - 25
Introduction -----	6 - 7
A Look at Past Literature -----	7 - 13
Modern Science Fiction -----	13 - 14
Science Fiction as it Looks to the Future ---	14 - 16
Hugo and Nebula Awards -----	16 - 25
Chapter 3 - Methods -----	26 - 28
Chapter 4 - Findings -----	29 - 39
Introduction -----	29 - 30
Early Science Fiction -----	30 - 32
Science Fiction as a Predictor -----	32 - 35
A Look at More Modern Science Fiction -----	32 - 35
Hugo and Nebula awards -----	35 - 39

Table of Contents (cont.)

Chapter 5 - Summary, Recommendations, Conclusions	40 - 45
Recommendations -----	42 - 44
Conclusions -----	44 - 45
References -----	46 - 49
Appendix -----	50 - 53
Hugo Award Winners -----	50
Nebula Award Winners -----	51 - 53
Novels -----	51
Novellas -----	51 - 52
Novelettes -----	52 - 53
Short Stories -----	53

CHAPTER I

BACKGROUND OF THE STUDY

Introduction

"We do not have a literature of the future for use in these courses, but we do have literature about the future, consisting not only of the great utopias but also of contemporary science fiction. . .if we view it as a kind of sociology of the future, rather than literature, science fiction has immense value as a mind-stretching force for the creation of the habit of anticipation. Our children should be studying Arthur Clarke, William Tenn, Robert Hindlein, Ray Bradley, and Robert Shockley, not because these writers can tell them about rocket ships and time machine but, more important, because they can lead young minds through an imaginative exploration of the jungle of political, social, psychological, and ethical issues that will confront our children as adults." (Toffler, 1970, p.181).

Other authorities have looked at science fiction as a predictor of future events. "Adapting to change being in the consciousness and science fiction--the speculative extension of technological man-- has been crucial to the present rise of visions among the young." (Toffler, 1974, p. 134).

A prime example of this is found in the December, 1978 Futurist in David Goodman's article. In this article Goodman pointed out that, of 137 future predictions made in the book, 1984, by George Orwell, 100 were in effect by the year 1978. These included not only scientific and technological changes, but also

included attitudinal and social changes as well.

Statement of the Problem

The problem is that education has not, to any degree, looked at science fiction as a source of information related to future problems in the lives of exceptional children and adults.

By looking at science fiction that has won the Hugo and Nebula awards, it will be the purpose of this paper to examine a number of problems.

1. It will be the task of the author to show that science fiction has both in intent and by accident been a reliable predictor of future events.
2. The author will look at science fiction and identify the ways science fiction can and will, for the purpose of this paper, be used as a prognosticator of the future events in the lives of exceptional children and adults.
3. By looking at these events, the author will be able to make recommendations as to the prediction of future events and show that science fiction is a viable tool for prognostication.
4. The author will look to an effective method of using science fiction as a prognosticator of the future course of events in the lives of exceptional children and adults.

Definition of Terms

Prognosticator/ predictor.

For the purpose of this study these terms mean the ability of a science fiction writer to look at current trends and events and picture what he sees in the course of future events, both sociological and scientific. By definition the word prognosticate means "To forecast or predict (something future) from present indications or signs: prophesy" (Stein, 1966).

Exceptional.

For the purpose of this study this will include all exceptionalities currently recognized with the exception of the gifted. Specifically included will be the blind, the deaf, the mentally retarded, behavior and emotional disorders, learning disabilities, and the orthopedically handicapped.

Science fiction.

For the purpose of this study science fiction is defined as literature which looks at the possible course of the future for the human species. This study will include science fiction that is based on current sociological and scientific trends, rather than literature dealing with fantasy.

Hugo awards.

Initiated in 1953 by the World Science Fiction Conventions, but given annually since 1955, these awards

are named after Hugo Gernsback, the "founder" of science fiction. Winners are selected by the convention members by mail ballot and the award is presented at the Award Banquet of the Convention over the Labor Day weekend. Science fiction and fantasy writers, artists, and professional and amateur publishers are eligible for the awards.

Nebula awards.

Offered by the Science Fiction Writers of America, this award was started in 1965, with the first award given in 1966 for Best Novel, Best Novella, Best Novellete, and Best Short Story of the previous publishing year. It is presented by the Science Fiction Writers of America for excellence in the field of science fiction. Any science fiction piece or fantasy story is eligible which has been published by an American trade publisher or in an American magazine of national circulation: short story to 7500 words, novelette to 17,500 words, novella to 20,000 words.

Futurologist.

For the purpose of this study, futurologist will be defined as a person who studies the future and makes predictions based on present knowledge.

Significance of the Study

This study will provide one more tool for educators to use in looking at needed changes in programs for

exceptional children to better prepare them for life in the future. It will give the educator goals and will also identify areas where changes need to be made in order that these educators may develop educational programs for the future.

Limitations of the Study

This study includes only the science fiction pieces winning the Hugo and Nebula awards. These prizes are awarded as the best in science fiction writing and may not be truly representative of the broad spectrum of science fiction. This paper utilizes quality literature as seen in the eyes of the judges for the Hugo and Nebula awards and consequently will not utilize other quality pieces which effectively report future events and changes for exceptional children and adults.

CHAPTER II
A REVIEW OF THE LITERATURE

Introduction

In looking at science fiction as a source for the future of man, it is generally accepted by futurologists that the beginnings of science fiction were the utopias (Millies, 1975). These were societies of the future that were considered ideal by their creators. A list of utopias would include such works as Plato's Timaeus, Critias, and The Republic (early fourth century B.C.); Francis Bacon's The New Atlantis (1624); James Harrington's The Commonwealth of Oceana (1656); and Jonathan Swift's Gulliver's Travels (1726).

As authors began to take a more scientific view rather than a philosophic view, science fiction was born. Some of the earliest attempts at science fiction were: Johannes Keppler's Somnium (1634); Bishop Francis Godwin's The Man in the Moon and Cyrano de Bergerac's A Voyage to the Moon. As literature entered the nineteenth century, the emphasis of early science fiction turned toward the changing of human life in such works as Mary Shelly's Frankenstein and Robert Louis Stevenson's The Strange Case of Dr. Jekyll and Mr. Hyde (1888).

At this time, two of the figures that would make science fiction a legitimate form of literature were beginning to write, H.G. Wells and Jules Verne. These two authors were grouped under the term now called science fiction and they would dictate the future course of science fiction. They were often critical of each other and were adamant in their dislike of the other's works. Even though they criticized each other, each developed a large following and set the course of current science fiction (Millies, 1975).

In America, an author of the nineteenth century, John Davies, identified James Fennimore Cooper's The Manikins (1835) and Washington Irving's Rip Van Winkle (1838) as early attempts at science fiction here on the North American continent. The common thread in all of these early science fiction works was that they all looked at man as he then was, and tried to project him into the future in some manner. The early science fiction material, whether it was of the utopias or that of Shelly and Verne, all looked at the possible future extensions of man (Millies, 1975).

A Look at Past Literature

In this section the author will attempt to look at some of the advances that were seen by the very earliest of the science fiction writers. By doing this it is possible to determine how effective science fiction is

as a future predictor. Edward de Bono states that as the imaginative mind of the science fiction writer expands on a present thought, new ideas emerge which lead to further experimentation and, in some cases, bring ideas into reality (Nichols, 1976).

Taylor takes the process one step further into the realm of redesigning science fiction to mean science (if) fiction. Taylor stresses that the innovation looked at in science fiction today is the scientific research and knowledge of one hundred years later. Taylor goes on to say that the problems addressed by the science fiction writer today become the focus of scientists fifty to one hundred years later (Nichols, 1976).

A good example of this is the law of the motion of particles as defined by Newton, which was held in scorn when Newton first expressed it, but became the focus of attention in the time travels of Rip Van Winkle in Washington Irving's book of 1838. Another author that stressed this was Jules Verne in his creation of the Nautilus in Twenty Thousand Leagues Under the Sea. H.G. Wells Also used this law in his great work The War of the Worlds to project the weaponry of the Martians. Long after the science fiction writers had used this law as a basis for their work, scientists used Newton's work in their experiments with atomic energy (Nichols, 1976).

The science fiction author often deals with things that stretch the imagination of the people when they are written but become the practicalities of life at a later date. In 1650 Cyrano de Bergerac foresaw in his work, A Voyage to the Moon, the development of rockets to propel space vehicles, recording devices, and light bulbs, as well as, the acceptance of the mind-stretching idea of the earth revolving around the sun with the other planets. He also dealt with the fact that our world is comprised of atoms. DeBergerac expounded, what was then a heretical idea, of the moon being a satellite of the earth in his later work, A Voyage to the Sun.

Mary Shelly, in her great masterpiece Frankenstein, dealt with a scientist that tampered with nature. This work combines the ideas of a utopian society with ideas of time travel, as well as factual science. The use of electromagnetic energy, the use of organ transplant, and the reconnecting of nerve tissue in limbs torn from the body are all a part of this novel (Millies, 1975).

Edgar Allen Poe in Ms Found in a Bottle, deals with the study of the earth's core. In this book Poe projected the sociological change from a rural society to an urban centered population (Millies, 1974).

Another early American science fiction author, Fitz James C'Brien wrote about robots between the years 1828

and 1862 in his book, The Wondersmith. He also told about microscopic creatures in The Diamond Lens and about personality changes in The Lost Room.

In the years 1868 and 1869, Edward Hale was dealing with satellites and life on satellites in his books, The Brick Moon and Life in the Brick Moon. Louis Senarens in 1968 was another author to look at robots and their uses. He also predicted the use of computers and self powered farm machinery. In other books that Senarens wrote, such unheard of things as aircraft, submersibles, armored vehicles and machines that could move both on land and water were a part of future societies as he saw them. Although his technological changes were important, he was even more ahead of his time in the fact that he stressed that there would be huge urban societies and that there would be a movement toward a smaller world community (Millies, 1974).

In this period of history, H.G. Wells and Jules Verne began to write. Although many authors had been writing science fiction up to this point, the founders of the Hugo and Nebula awards assert that, with the coming of Wells and Verne, the birth of science fiction, as we now know it, was at hand.

Jules Verne was a master of characterization and of looking at innovation. In his work Four Weeks in a Balloon, which was published in English under the title

Around the World in Eighty Days, Jules Verne looked specifically at the development of world travel and observed that there was, within the society of that period, a movement toward being able to move easily from one society to another. Around the World in Eighty Days was the first successful work of Jules Verne.

In Verne's work, The Journey to the Center of the Earth, he examined the ideas of rocket powered travel and the development of powered digging machines. More important was the fact that he examined the idea of the equality of men and women in the areas of learning and thought.

Verne looked at the future of space travel in his work, A Trip from Earth to the Moon. In this novel Verne specifically dealt with the forces necessary to break through the earth's gravity and the pull of gravity from the moon.

The value of Jules Verne as a predictor of future scientific study, would be best found in his classic work, Twenty Thousand Leagues Under the Sea. In this one work, Verne studied the ideas of submersibles powered by atomic energy, the extensive use of electrical energy, the use of scuba diving gear to walk the ocean's floor, the cultivation of the ocean as a food source, pollution of the oceans, the crisis of extinction of aquatic species, the use of undersea radio

communication devices, and the use of torpedoes to sink other vessels. His details in this great classic were so accurate that, in later years, the first atomic submarine would be called the Nautilus after the ship in Twenty Thousand Leagues Under the Sea. His description of cultivation of the earth's floor is used in the under sea exploration of today just as he described it, with great success.

H.G. Wells looked to the future in a different way. His sophisticated imagination was the source of some of the classics in science fiction. He often looked at the prejudices of his time and then would project them into the future. In his work The New Machine, he looked at the change from a capitalistic selfish society to the creation of a utopian socialistic society. This work was the precursor to the works of men like Orwell, Huxley, Miller and Vaught.

Wells was a pessimist by nature so he looked at society and its technological advances as a potential disaster when man lets the technology get out of hand. Atomic energy, ray guns, destruction of large areas with a single weapon, air travel, and electricity were all a part of the many works of H.G. Wells.

In Well's work, The Island of Dr. Moreau, he looked at genetic transformation. This was in the year 1896. In When the Sleeper Wakes, Wells became the first author

to look at the broadcast of government propoganda by giant radio machines.

Modern Science Fiction

Science fiction has a growing population of authors and works. It is one of the largest selling sections of literature in most book stores. Science fiction has the same common core, in that, it all projects man into the future. Whether it is Flash Gordon or Dunes, it takes man into the future as the author envisions it. Some science fiction, like Dunes, is optomistic in nature, but much of it projects a more pessimistic point of view, such as George Orwell's 1984 (O'Neil, 1981).

Published in 1949, the book, 1984, by George Orwell took a very pessimistic view of the future for mankind. David Goodman, a well known and respected sociologist, took a look at 1984 in the December 1979 issue of Futurist. He pointed out that of the one hundred and thirty-seven predictions made in the areas of technology and sociology in Orwell's book, one hundred were actually in effect in the year 1978. He went on to point out that by the year 1984, twenty more of these changes would be within the realm of possibility because of the technology that now exists. The most damning point, though, was that he felt that all could be in effect by the year 1990 if the right conditions could be brought about to change the current abhorance of a totalitarian

government (Goodman, 1978).

Aldous Huxley, in Brave New World, took a look at the trends that he felt existed in London society of the 1920's and projected the course for the future that he saw mankind taking. Huxley projected that, as a society becomes more complex, governmental power would become more centralized, bringing about more government control. Huxley also projected a breaking apart of the family, and a degeneration of sexual mores. He also looked at the governmental use of conditioning and the use of drugs to keep society under control. These predictions were made in 1931, but many are a part of the society of today (Theobald, 1972).

Arthur Clark, another of the modern science fiction authors, looked at the next two hundred years in his book Profiles of the Future. Clark projected that, within this century, we would have translating machines, electrical storage facilities and a dictionary of the language for dolphins and whales. These predictions were made in 1958, and we are now looking at each one of them within the timeline set by Clark for completion of these projects (O'Neil, 1981).

Science Fiction as it Looks to the Future

Thus far this paper has dealt with the idea that science fiction looks at the future, but is there really an intent amongst the authors of science fiction to

prognosticate? Dennis Livingston sums it up this way:

Those who live in a time of rapid social change are constrained to contemplate the future, to consider the options it holds for the development of themselves and their society, and to choose the paths in time that appear to promise the most significant improvements in humanities lot (Toffler, 1974, p. 182).

Robert Heinlein, a well known science fiction author, offers this view:

Science fiction is speculative fiction in which the author takes as the first postulate the real world as we know it, including all established facts and actual laws. . .it is often very tightly speculation about the possibilities of the real world (Toffler, 1974, p. 182).

Isaac Asimov, a writer with over one hundred books to his credit, says that science fiction is. . ."by far the hardest thing to do" (Asimov, 1973). He reasons thus by the fact that he is dealing with new knowledge and projecting (prognosticating) into the future. Asimov is very specific in saying that any good science fiction is a prognostication of future as seen by the eyes of the science fiction writer.

Alvin Toffler in Future Shock (1970) says that science fiction is specifically a prognostication of the future made by men living in the present. Toffler says that science fiction deals with society and technology as seen in the future through the intuition of men living now. Sociological projections are made in particular, and while they can be changed, they are as the author sees them with the information and direction at hand.

The value of science fiction lies in, not only its value as a prognosticator, but more in the general ideas of what the future may hold in store for all of us. Technology and technological advances are generally the thrust of predictors of the future, but we must also look at where we seem to be heading sociologically. By doing this we may be able to head off the societies of 1984 and Brave New World (O'Neil, 1981).

Hugo and Nebula Awards

As already discussed, science fiction does, according to the experts in the field of science fiction, have value as a predictor of the future. The major purpose of this study is to look at science fiction that has won the Hugo and/or Nebula awards and see what it has to say about the future for exceptional children and adults. These two awards have been given since the year 1965.

Fritz Leiber in his Novella, Ill Met in Lankmar, looks at the problem of exceptional people with insight when he writes about problems faced when people learn in a different way. He refers to the general lack of acceptance by society toward differences. By learning in a different way, you are considered less than human in this novella. The story deals with a revolt by those who are different and the attempts to extinguish them.

In the short story, Catch the Zeppelin, by Fritz Leiber we look at the hallucinations of an old man and how he escapes from the real world into an imaginary utopia. Society cannot accept this and brings him back to reality with a thundering crash, only to have him escape again by dying.

Gordon Eklund and Gregory Benford, in the Novellette If the Stars Be Gods, view behavior and psychiatric disorders. They show that society's norms change and what may be acceptable today, may be the deviance of tomorrow. Again the big issue in this story is one of acceptance by the major society.

Arthur Clark in A Meeting with Medusa, looks at physically handicapping conditions and how the future will treat them. By reconstructing a severely injured man, he is returned to useful society. Injured in an aircraft accident, the major figure of this story is rebuilt for a trip to another world. Only in the end does he realize that there is no way he can fit into society, in spite of all its technology.

Gene Wolfe looks at three handicapping conditions in The Death of Dr. Island. He writes about three young people who are placed on a treatment planet because of their deviation from society as a whole. The first is a mentally retarded young man, the second is an emotionally disturbed young lady, and the last is a socially

isolated young man who is unable to interact with society in a meaningful way. The story centers around the interaction of the young people with the planet, until one of them kills the girl and by doing so, inherits her ability to interact with the major society outside the treatment planet. The final young man finds a way to destroy the treatment planet because of his love for the murdered girl and his hatred for a society that could accept this harsh treatment. Again the major thrust is that of normal society not accepting any deviance from its norms and isolating those that are exceptional.

Kate Wilhelm in her short story, The Planners, deals with severe mental retardation. In this story, society cannot accept deviance and rejects it. The same story line holds true in the short story, Jefty is Five by Harlan Ellison. In this story people cannot deal with a severely retarded child and eventually they kill him. Society, in this case, even includes his parents. Euthenasia is an important part of each of these stories.

Harlan Ellison, in his novelette, A Boy and His Dog, looks at society gone completely corrupt. He sees violence and extreme behavior disorders as a total way of life in the future. Society totally breaks apart in this literary work and, in the end, even when love is

offered, the hero cannot distinguish between love for a girl and love for his dog.

Jo Ann Russ, in her short story, When it Changes, looks at a return of astronauts from the past into a new society. The changes that are present in society make the voyagers from the past different. Both societies try to accept each other but find that accommodation is impossible. Finally the visitors from the past are rejected by the society of the future. In this society, what we now consider mental retardation, does not exist. Genetic alteration, both in utero and after birth, are a major part of the story.

Enemy Mine by Barry Longyear deals with the changes brought about by the programming of people and laser surgery of specific learning areas of the brain. The ability to communicate through thought transmission is also very much a part of this novella.

Mental retardation is the theme of Mother to the World by Richard Wilson. Changes in the mentally retarded are brought about by having them adapt. Massive destruction of civilization has brought the changes to the world and the fact that the mentally retarded have already learned to adapt over the years, makes them the leaders in the world as the world learns to adapt. With marriage, genetic transformation must be instituted so that the best qualities of the retarded and the normal

are brought to society as a whole.

Behavior disorders are a major part of The Planners by Kate Wilhelm. By changing blood chemicals, along with changing neuro pathways by lasar surgery, behavior changes are brought about. Education is a major concern of this story and the difference is that education is completely involved with changing the individual to meet the needs of society.

Roger Zelazny deals with psychiatric disorders in his novella, Home is the Hangman. Hangman is a satellite programmed with human reasoning power that has returned from a mission into deep space. The four scientists that programmed it are attacked by their own feelings of guilt and are murdered by each other as the increased knowledge of the guilt weighs upon them. Hangman, at first, is blamed for the killings, but saves the only scientist left and implants in this human his knowledge gained in his trip to deep space.

A Crowd of Shadows looks at people programmed by androids that were created in the past by other humans. Those that refuse to be reprogrammed by the androids are considered deviants and are excluded from the utopian society of the androids. Telepathic communication is a part of this society, and this makes conversation unnecessary. In the end the deviants regain control because they are capable of independent thought. This

story was written by Charles Grant.

Star Dance by Spider and Jeanne Roninson looks at physical handicaps. The ability to overcome these in deep space and the use of zero gravity are important parts of this short story. Severe behavior disorders are also treated in this work.

By looking at the short stories, the novellas, and the novellettes that won the Nebula awards, it is possible to see that there is a major thread that has become a part of these works. Of the forty-five literary works that have won an award, a full fifteen deal in some way with handicaps and exceptional children or adults.

The novels are a different matter. Most of the novels deal with exceptionalities as a part of the story line and do not make the exceptionality the major feature in the novel. A major exception to this is Flowers for Algernon by Daniel Keys. The main character in the book is Charlie Gordon, a thirty-two year old mentally retarded man. Given an operation and drug therapy, Charlie goes from a mentally retarded adult to a gifted adult and then back to retarded again. The major point of the story is how society looks at Charlie and how Charlie looks at society. Another major point covered in the story is how a retarded person looks at himself. The use of advanced surgical techniques

and the use of drug therapy are a major scientific breakthrough in the story and make the story plausible.

In the novel Born with the Dead by Robert Silverberg, we look into the world of multiply handicapped adults. They are made whole by illusion and both society and the individuals involved see them as a whole being. By doing this, even the most severe handicapping condition is made unreal and the reality of the illusion takes over, only to be broken when someone from outside steps in.

An even more exciting way of dealing with amputation and organ transplant is looked at in The Forever War by Joe Haldeman. In this book, an injury to an extremity is dealt with by the battle suit of the warrior. Immediate amputation of the injured extremity, cauterization of the wound, the injection of happy drugs, and replacement of blood volume are handled instantly. The person is then transferred to a hospital planet where a prosthesis is implanted and regeneration of tissue is encouraged until a new limb is grown. All damaged organs are transplanted in the same way except the heart and the lungs, which are treated by the implantation of an artificial organ. The novel also talks about the reprogramming of the minds of individuals so that they are able to overcome psychic and mental disorders. If there is a breakdown, the person is taken back to the point in

time when he was able to deal with whatever problems he had, and the memories that are damaging memories and the person can return to society.

John Varly in The Persistence of Vision, which won both the Hugo and Nebula award for best novel as well as winning the Nebula award in its short form for best novella, looks at handicaps in a different way. Handicaps are grouped into areas of the country and these colonies are isolated from society as a whole. The colonies become independent and depend upon themselves for existence. The major colony that is dealt with in this story is one in New Mexico that has all blind and deaf people. In this colony they have developed three stages of communication between themselves and those that enter the colony to visit. The first is signing, the second is whole body touch, and the last is a form of telepathy. This society is based on truth, love, and understanding. In the end this society becomes the utopia, while society of the majority is far from perfect.

2001--A Space Odyssey is a classic film, but is also a novel by Arthur Clark that won the Hugo Award. Although the book deals primarily with a travel through time in the future, an attempt to handle exceptionalities is made by tissue regeneration and through transformation.

Ursula Le Guin in Left Hand of Darkness looks at the idea of deviance. In the novel an earth man visits a

planet in which all humans have evolved into hermaphrodites. Deviance, therefore, becomes a person with a normal, as we see it, sexual functioning. The novel also looks at schizophrenia and finds it not only acceptable, but a condition that is to be admired. The people of the planet compare the condition to the voice of an opera singer. In the novel they also use drugs to control the sexual drives as well as using them for thought control.

Frank Herbert in his classic, Dunes, looks at handicapping conditions from a survival-of-the-fittest point of view. Persons having a handicap are a part of society as long as they can function, but are excluded when they can no longer function. The work of society must always come first. There is tolerance of the mentally slow, the physically handicapped, and the behaviorally disordered only as long as they do not interfere with society.

Another novel to share both the Hugo and Nebula awards was Ringworld by Larry Niven. This story deals with rebirth after death, and handles exceptionalities by having them reborn whole into the next world. By doing this, they are the equal to all in the next world.

To Your Scattered Bodies Go by Phillip Jose Farmer is again a story of life after death. In this novel, a

superior society resurrects the dead of earth and brings them to life on another world. Born again and again on different parts of the river that runs through the world, the characters progress through this strange world. Any who were handicapped in their life on earth are reborn on the new world with whole bodies and minds, but with the same personalities and personality traits that were a part of them on earth.

Robert Heinlein in The Moon is a Harsh Mistress deals directly and viciously with those having severe handicaps in that he simply has his society of the future kill them at birth. Those that become handicapped after birth by accident are fitted with necessary prosthesis to enable them to exist in the world of the future. The main character has an artificial arm, and has a series of arms to perform the work he does in society.

Of the twenty-seven novels that won either the Hugo or the Nebula awards or both awards, a full ten address the idea of handicaps. In some cases they do this reluctantly and in others, they deal with the problem head on. The novels have some unusual ways of dealing with handicaps in that they deal with them in every way from benign neglect to clinical and surgical interventions.

CHAPTER III

METHODS

In collating the information found in this study, the author took a look at four major considerations. Each of the matters are interrelated and are essential to the study. They are as follows:

- 1) Is there evidence to support the statement that science fiction of the past influenced future scientific study and is a predictor of future scientific events? To do this it was necessary to read the identified classics of science fiction and examine them to see if what had been proposed by these authors has come to pass in the world. The study will then place the scientific predictions into tables to see if the predictions made in past science fiction have either come to pass or are being worked on by current scientists.
- 2) The project then examines the view of the experts in the field of futurology to see if they consider science fiction a viable predictor of future sociology and technology. It was the task of the author to show that science fiction was considered a viable resource by futurologists in predicting future events. The ideas of Toffler,

Livingston, Asimov, and Heinlein were examined along with those of Verne and Wells. How did they view science fiction and did they feel that one of the purposes of science fiction was to act as a prognosticator of future events?

3) The next task was to read more recent science fiction and see if these works were as capable of prediction into the present as were the works of a more distant past. Novels like 1984 and Brave New World were the focus of attention, with the result that they too were accurately looking at the world in a variety of ways. Examining the more current science fiction material shows that they are accurate in their view of sociological changes as well as in their proposed technological changes.

4) The last part of the study looked directly at the Hugo and Nebula award winning literature to see what they had to say about the future course of life for exceptional children and adults. To see more accurately what has been predicted, this material will be handled in four ways:

- a) What categories of exceptionalities have been addressed in these works.
- b) Are there any current trends that would lead, in part or whole, to these predictions being accurate.

c) Examine and graph the predictions made for improvement in the life of exceptional children and adults in future society.

d) Examine the challenges that we, as educators, must face to make sure that the life in the future society holds promise for exceptional children and adults. It will also be a simple task to get a percentage of how many of the award winning science fiction works dealt with exceptional children or adults.

In working with these four major categories dealing with science fiction, it is possible to give some recommendations to educators in the present to enhance the positive predictions and to bring under modification the negative factors. By making these recommendations, a course for the improvement of all will be suggested.

CHAPTER IV

FINDINGS

Introduction

In reading science fiction and the information concerning science fiction, it is found that the futurologists and the science fiction writers share one mind. They feel that there is a definite connection between science fiction and futurology.

The major factor to be considered is that science fiction has been around for a long time and the volume of science fiction is increasing daily. Science fiction when it started out, was basically written as a relief from the literature of the times and did not develop in its own right until the latter part of the nineteenth century. Many of the early authors that wrote science fiction, wrote it only as a change from what they had been writing or as a new way of telling what they saw happening. All of the early writers of science fiction would take a scientific theme and project the theme into society and then, hopefully, to project what they saw happening. In some cases, like Johannes Keppler with his work, Somnium, the work was based on scientific knowledge of the time as well as a dream that he had of future society. As the literary form of science fiction became more and more acceptable,

the authors began to write science fiction as their only form of literature (Millies, 1971).

Early Science Fiction

The point is well established by the authors themselves as well as by literary historians that have looked at early science fiction, that the authors took scientific knowledge of the day and projected it into their stories. In many cases the authors were well versed in science and were scientists themselves or had extensive scientific backgrounds. Examples of this would be Johannes Keppler and Bishop Godwin, who were physicists, and Edward Hale, an astronomer. To get a better picture of how accurate they were in their projections, Table I lists thirty projections from early science fiction, along with the date of the projection and tells whether or not that projection has come to pass.

Table 1
Future Projections - Early Science Fiction

Projection	Year of Projection	Accomplished	
		Yes	No
Law of particular motion	1838	x	
Rockets that propel ships	1650	x	
Recording devices	1650	x	
Light bulb	1650	x	
Electromagnetic energy	1840	x	
Organ transplant	1840	x	
Nerve tissue connection	1840	x	
Sociological move to urban society	1858	x	
Study of the earth's core	1859	x	
Robots	1840	x	
Prediction of personality changes	1840	x	
Sattellites	1868	x	
Manned sattelites	1868	x	
Computers	1869	x	
Self powered farm machinery	1869	x	
Aircraft	1869	x	
Submarines	1869	x	
Armored vehicles	1869	x	
Amphibian vehicles	1869	x	
Equality of men and women	1890		x
Submarine powered by atomic energy	1892	x	
Scuba gear	1892	x	
Undersea radio	1892	x	
Torpedoes	1882	x	
Atomic weapons	1894	x	
Ray guns	1894		x
Helicopters	1854	x	

This is only a partial list of the things that have been predicted by the science fiction writers of the past. As can easily be seen, many of the ideas were at least 50 to 100 years ahead of the actual accomplishment technologically. Technology races to catch up but, as can clearly

be seen, the mind of the science fiction writer and the futurologist is far ahead of technology.

Science Fiction as a Predictor

The futurologists as well as the science fiction writers themselves consider science fiction as a way of making predictions into the future by using a story line and not just dry facts. This is what distinguishes science fiction from the fantasy novels that are very much a part of the fiction of today.

Alvin Toffler and John Livingston as well as many others that are considered futurologists, as cited in Chapter 2, state that science fiction writers, by design, attempt through stories to project into the future. The science fiction writers themselves like Isaac Asimov and Robert Heinlein, as documented in Chapter 2, feel that science fiction is intended as a predictor and that its value lies in looking at what the future may hold for mankind (O'Neil, 1981).

A Look at More Modern Science Fiction

Modern science fiction was primarily examined by looking at the works of George Orwell and Aldous Huxley in their classics, 1984 and Brave New World. Both of these authors intentionally looked at society as they saw it and projected a future society. Orwell stated that in his writing of the novel, 1984, he was trying to get the largest possible audience rather than publish a sociological

treatise on his feeling for the direction that he felt that mankind was taking. He felt that the treatise would be read and forgotten by a few scholars in their ivory towers, while the novel would be read and remembered by a large number of people (Goodman, 1978). Huxley, as cited in chapter 2 of this paper, did much the same thing in that he looked at London society of the 1920's.

Both of these authors have had a profound effect on literature and on the direction that mankind has taken, as they have made man more aware. One thing is clear and that is that many of the predictions of both of these authors have come true.

Table 2

1984

Projection	Accomplished	
	Yes	No
Lotteries run by the state	x	
Lack of heating fuel and electricity	x	
Helicopter gun ships	x	
Forced Metrafication	x	
Three dimensional effects in art	x	
Machines that can translate voice to print	x	

Table 3

1984: Prediction in Military Science

Projection	Accomplished	
	Yes	No
Think tanks where experts plan future wars	x	
Improved missiles and bombs	x	
Planes independent of earth	x	
Lenses suspended in space	x	
Floating fortresses to guard important sea lanes	x	
Self propelled bombs to take the place of bombing planes	x	
Earthquake and tidal wave control		x
Efficient defoliants that could be spread over large areas	x	
Germs immunized against antibodies	x	
Soil submarines that could bore through the ground		x

Table 4

1984: Predictions in Police Technology

Projection	Accomplished	
	Yes	No
Data banks containing detailed personal information	x	
Rapid access to and retrieval of data	x	
Two-way, flush mounted TV		x
Remote sensor of heart beat	x	
Tone of voice analyzer	x	
Sensitive omnidirectional microphone	x	
Police patrol helicopters	x	
Large telescreens for public viewing	x	
Memory holes for rapid destruction of information	x	
Scanner to detect and analyze human thought		x

Table 5
1984: Predictions of Psychobiology

Projection	Accomplished	
	Yes	No
Improved electrotherapy	x	
Better techniques for hypnosis	x	
Improved truth drugs	x	
Control of sex drive, specifically by abolishing orgasm		x
Reconditioning by implosive therapy of flooding	x	
The ability to artificially inseminate	x	
New forms of physical or psychological torture	x	
A science of determining thoughts by facial expression and gestures		x
Televised group therapy	x	
Subcortical psychosurgery		x

As shown in the charts, many of the predictions of 1984 are either already with us or are about to come true. As cited in Chapter 2, many of the predictions Huxley made are also coming true. It will be for future society to judge whether we have been able to overcome the many negative ideas expressed in these two classics.

Hugo and Nebula Awards

In reading the science fiction that won either the Hugo or the Nebula award or both awards, it was possible to see just how many dealt with exceptional children and adults. There were a total of twenty-seven novels read as three had won both the Hugo and Nebula award for novels. As no Hugo

awards were listed for the shorter types of fiction, there were a total of 45 pieces of literature read. Fifteen novellas, fifteen novelettes, and fifteen short stories were read as a part of the project. Of the forty-five short literature forms, fifteen dealt with exceptional children or adults, or thirty-three percent (33%). Of the twenty-seven novels, ten dealt with exceptional children or adults or thirty-eight percent (38%). In some cases, the literary works dealt with more than one handicap. The award winning literature deals with a total of forty-one different incidences of handicaps (See Table VI).

Table 6
Handicaps and Incidences in Literature

Handicap	# of times	% of times
Severe Mentally Retarded	3	7
Educable Mentally Retarded	6	15
Emotionally Disturbed	7	17
Behavior Disorder	7	17
Learning Disability	3	7
Deaf	2	5
Blind	3	7
Orthopedically handicapped	5	12
Multiple handicaps	5	12

It is easy to see from the tables that the authors felt most at ease in dealing with emotional/behavioral handicaps and with the multiple/orthopedically handicapped. It is interesting to note that the authors felt least able to deal with the blind/deaf group. Mental retardation in its two categories accounted for twenty-two percent of the handicapping conditions.

In looking at the predictors to see what is going to happen to exceptional children and adults on the whole, it ranges from euthenasia to benign neglect to scientific interventions. It must be stated, however, that in all cases, the treatment of exceptionalities is less than one would normally want it to be. The exceptional are, in the eyes of the science fiction authors, more something to be treated with disdain by future society, or isolated from that society, or at least modified so that they are acceptable to society. Table 7 gives some of the ways that the handicapped are treated in society of the future.

Table 7

Number of Times Intervention Mentioned

Intervention Mentioned	No.	Percent
Euthenasia	6	17
Thought modification	9	25
Orthopedically hand	2	5.5
Benign neglect	5	14
Surgical intervention	6	16
Genetic alteration	2	5.5
Gravitational change	1	3
Thought control	2	5.5
Tissue regeneration	1	3

In looking at Table 7, one can see that the science fiction writer looks to a great extent, to benign neglect and euthenasia to solve the problem of exceptional children and adults in the future. There is also an equally large group that feels that the answer lies in thought modification and control for the future. Surgical interventions and genetic alteration coupled with genetic alteration and gravitational changes are the other alternatives of choice.

If you separate out the retarded, the deaf, and the blind, then the picture for the future is even more bleak. Euthenasia and benign neglect is the operation of choice for most of the science fiction writers. The only other alternative that they hold out is genetic alteration. In only one short story, Mother to the World, do they look at exceptionalities in a positive way in dealing with the retarded. The short story, Mother to the World, is the only one where the person is accepted in spite of his disability, and society accepts him for his abilities. Even then, they use genetic transformation to try to prevent the condition in the future.

The last question to be answered are trends in current society that would point to the changes as projected in the short stories and novels. Currently the ideas of thought transformation and drug therapy are a part of the current psychiatric treatment in many of the institutions and treatment centers. Genetic studies and in-utero surgery

are being experimented with at many of the large medical centers. Work with altering the DNA molecule is also a part of scientific research being currently conducted in hospitals and research centers throughout the country. Labs are working with prosthetic devices that ten years ago were a part of the science fiction of the time. More damaging, however, is the move toward changing the laws that protect the handicapped, that could lead to the benign neglect or the euthenasia of the future.

In Chapter 5, the author will look at possible changes in our educational system. The author will also examine programs to make the future more acceptable to the handicapped.

CHAPTER 5

SUMMARY, RECOMMENDATIONS, CONCLUSIONS

In this paper, the author has examined science fiction to see if there is a way to utilize science fiction as a predictor of future events. It has been possible to look at past science fiction and see that, by the authors admitted intent, science fiction has been a reliable predictor of future events. This has been true not only in the field of science and technology, where science fiction had satellites, interspace travel and the use of self powered farm machinery, and the like, but also in the field of social change.

In the field of social change the science fiction author predicted the equality of men and women 50 to 100 years ago, while society is only now getting around to establishing this. Science fiction successfully predicted the move of American society from an agricultural rural society to the technological urban society that we now have. It looked at the trends that were present in the eighteenth and early nineteenth centuries and predicted that man would earn his living from factories and industry rather than the farm. It also predicted the move to the corporate farm.

In the areas of technology, science fiction was even more spectacular in the prediction of satellites as far back as the seventeenth century and the ability to live on those

satellites. Science fiction also successfully predicted the era of inter-planetary travel by satellite and later by man, which we are only now beginning to achieve.

As far as looking at the predictions for the future of handicapped and exceptional people the science fiction author is less optimistic in looking at their future than he is at looking at the scientific changes. First of all the science fiction author sees the exceptional child or adult as being isolated from society and not having a real place in the society of tomorrow, unless there are some real changes made, society may become what the science fiction author envisions it. The science fiction author sees a return to the practices of euthenasia, which were a part of past history. These authors look at the killing of severely handicapped individuals as a boon to society and a mercy to the handicapped individual.

On the other hand, science fiction holds out some hope with the intervention of new in-utero surgical techniques that alter the DNA molecule to prevent handicapping conditions. Authors see the wide spread use of new drugs that will expand the capabilities of the handicapped, and will, in the long run, begin to eliminate the handicap. The science fiction authors of today look at genetic alteration as another way of altering life for the handicapped to allow them to better fit into society in the future.

Lastly the science fiction author looks at tissue

regeneration and surgical transplant to solve some of the problems of the future orthopedically handicapped. Although the author used only the Hugo and Nebula award winning novels and the Nebula award winning shorter science fiction, there is a vast selection of other science fiction that may hold a key to the future for exceptional children and adults.

It is important to understand that the science fiction author projects his future societies from the major population of the present and he uses the trends that he sees in present technology and society. His future is not a locked thing but one that is open to change.

Recommendations

One of the major purposes of this paper was to make some usable recommendations to the educators of today to try to make the future brighter for the exceptional child of the future. Eight major recommendations are a part of this project.

1. We need to train our exceptional children and adults to adapt to the changing society of the future. It is always a problem for people to adapt to changes, but it is the most difficult for exceptional children and adults to adapt. We know that there are going to be great changes in our way of living, so we must prepare all of our children and adults to be ready for that change that is coming.

2. Educators must encourage research into ways of making society more aware of the place of the exceptional

person, so that society can see the worth of all people. Everyone has a place, no matter how small, in society and society must be made aware that the exceptional child and adult can be a part of society if we allow it. Research as to what the ideas of society are concerning exceptionalities, becomes more urgent if we are to assure the place for exceptional children and adults in future society.

3. Educators in the universities must train future teachers in the knowledge of exceptional children, so that they can pass that knowledge on to the children that they are teaching. As trainers of teachers, we have a responsibility to exceptional children and adults to help them in their role in society. One of the major ways of doing this is to make all teachers aware of the self worth of exceptional children and adults.

4. Inservice teams need to be trained to go out into the field and work with already trained teachers in expanding their knowledge of exceptional children and adults. As mainstreaming becomes more a part of the life of the exceptional child, we must be sure that all teachers have an opportunity to know just what the abilities of exceptional children are. We must teach that these abilities exceed the disabilities.

5. Continue research at all levels to better identify and habilitate the exceptional so that they fit better into society.

6. Work with the technologists and the scientific personnel, so that as new technology is developed, they don't forget the human side of their developments. If we, as educators, work with the social scientist and the technologists that are developing new technology for the handicapped, then we will be able to assure that they are in the best interest of the handicapped.

7. Be sure that educators and technologists know and understand the needs of exceptional children and adults. We must be sure that we do this, not from a theoretical point of view, but from what the exceptional person knows and wants. If we are to best serve the exceptional, we must have their input into what they need. It is both in their interest and in the interest of society to know the needs of the handicapped.

8. Continue to pressure government and social agencies for the exceptional children to see that programs that are needed for the welfare of exceptional children and adults are not lost. In a time when there are more and more pressures to limit public expenditures in welfare programs for all, we must work to see that the handicapped are not slighted in their needs.

Conclusions

In working with the material in this study, the author is convinced that science fiction is a viable tool for looking at the possible course of events in the future for all children, and not just for children and adults that are

considered exceptional. The science fiction authors have had a history of being accurate in their projection of future society and future technology. They have been as much as fifty to one hundred years ahead of their time, and have been as accurate in their projections as have been the futurologists. The major difference is that they use a story line to project the future, while the futurologist uses projections of possible facts.

Science fiction is a tool and not an answer. We can change the course of history, as they see it, if we are willing to make the effort. It only takes knowing what might happen, and then planning a course that will either enhance the prediction or alter the prediction depending on what is needed.

The other major conclusion the author makes from the reading of science fiction, is that there is rather a bleak outlook for anyone who is different, if we don't begin now to alter our sociological patterns. It is not enough to say that we feel something is happening in society, we must be prepared to work to alter the course if we see something that needs changing. Science fiction gives us a picture of what could be, not what is, so we can work in the present to change future society.

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Appendix

Hugo Award Winners from 1965 to 1980

<u>Year</u>	<u>Title</u>	<u>Author</u>	<u>Publisher</u>
1965	The Wanderer	Leiber	Ballantine
1966	This Immortal	Zelazny	Ace
	Dune	Herbert	Ace
1967	The Moon is a Harsh Mistress	Heinlein	Putnam
1968	Lord of Light	Zelazny	Doubleday
1969	Stand on Zanzibar	Brunner	Doubleday/ Ballantine
1970	The Left Hand of Darkness	LeGuin	Ace
1971	Ringworld	Niven	Walker
1972	To Your Scattered Bodies Go	Farmer	Putnam
1973	The Gods Themselves	Asimov	Doubleday
1974	Rendezvous with Rama	Clarke	Harcourt
1975	The Dispossessed	LeGuin	Harper
1976	The Forever War	Haldeman	Del Ray
1977	Man Plus	Pohl	Harper
1978	Gateway	Pohl	Ace
1979	Dream snake	McIntyre	Harper
1980	The Fountains of Paradise	Clarke	Signet

Nebula Award Winners from 1966 to 1980

Novels

<u>Year</u>	<u>Title</u>	<u>Author</u>
1966	Dune	Frank Herbert
1967	Flowers for Algernon	Daniel Keyes
	Babel - . 17	Samuel Delany
1968	The Einstein Intersectinn	Samuel Delany
1969	Rite of Passage	Alexei Panshin
1970	The Left Hand of Darkness	Ursula Le Guin
1971	Ringworld	Larry Niven
1972	A Time of Changes	Robert Silverberg
1973	The Gods Themselves	Isaac Asimov
1974	Rendezvous with Rama	Arthur Clarke
1975	The Dispossessed	Ursula Le Guin
1976	The Forever War	Joe Haldeman
1977	Man Plus	Fredrick Pohl
1978	Gateway	Frederik Pohl
1979	Dreamsnake	Vonda McIntyre
1980	The Fountains of Paradise	Arthur Clarke

Novellas

1966	He Who Shapes	Roger Zelazny
	The Saliva Tree	Brian Aldiss
1967	The Last Castle	Jack Vanos
1968	Behold the Man	Michael Moorcock
1969	Dragonrider	Anne McCaffrey
1970	A Boy and His Dog	Harlan Ellison

<u>Year</u>	<u>Title</u>	<u>Author</u>
1971	Ill Met in Lankhmar	Fritz Leiber
1972	The Missing Man	Katherine MacLean
1973	A Meeting with Medusa	Arthur Clarke
1974	The Death of Dr. Island	Gene Wolfe
1975	Born with the Dead	Robert Silverberg
1976	Home Is the Hangman	Roger Zelazny
1977	Houston, Houston, Do You Read?	James Tiptree, Jr.
1978	Stardance	Spider & Jeanne Robinson
1979	The Persistence of Vision	John Varley
1980	Enemy Mine	Barry Longyear

Novelettes

1966	The Doors of His Face, the Lamps of His Mouth	Roger Zelazny
1967	Call Him Lord	Gordon Dickson
1968	Gonna Roll the Bones	Fritz Leiber
1969	Mother to the World	Richard Wilson
1970	Time Considered as a Helix of Semi-Precious Stones	Samuel Delany
1971	Slow Sculpture	Theodore Sturgeon
1972	The Queen of Air and Darkness	Poul Anderson
1973	Goat Song	Poul Anderson
1974	Of Mist, and Grass, and Sand	Vonda McIntyre
1975	If the Stars Are Gods	Gordon Eklund and Gregory Benford
1976	San Diego Lightfoot Sue	Tom Reamy
1977	The Bicentennial Man	Isaac Asimov

<u>Year</u>	<u>Title</u>	<u>Author</u>
1978	The Screwfly Solution	Raccoona Sheldon
1979	A Glow of Candles, A Unicorn's Eye	Charles Grant
1980	Sandkings	George Martin

Short Stories

1966	Repent, Harlequin! Said the Ticktockman	Harlan Ellison
1967	The Secret Place	Richard McKenna
1968	Aye, and Gomorrah	Samuel Delany
1969	The Planners	Kate Wilhelm
1971	Passengers	Robert Silverberg
1972	Good News From the Vatican	Robert Silverberg
1973	When It Changed	Joanna Russ
1974	Love Is the Plan, The Plan Is Death	James Tiptree, Jr.
1975	The Day Before the Revolution	Ursula Le Guin
1976	Catch That Zeppelin	Fritz Leiber
1977	A Crowd of Shadows	Charles Grant
1978	Jeffty Is Five	Harlan Ellison
1979	Stone	Edward Bryant
1980	Giants	Edward Bryant