SOCIAL SCIENCE FICTION

BY

CHRISTOPHER S. LESLIE

A dissertation submitted to the Graduate Faculty in English
in partial fulfillment of the requirements for the degree
of Doctor of Philosophy, The City University of New York

2007

This manuscript has been read and accepted for the Graduate Faculty in English in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

Marc J. Dolan, *Chair of the Examining Committee*	*Date*
Steven Kruger, *Executive Officer*	*Date*

Supervisory Committee

Marc J. Dolan

Alison Griffiths

George Otte

THE CITY UNIVERSITY OF NEW YORK

Abstract

Social Science Fiction

by

Christopher S. Leslie

Adviser: Professor Marc J. Dolan

Through a cultural history of social science fiction, I consider one of the permutations of the "golden age" of science fiction, social science fiction. It is born in the pulp magazines of the 1930s and becomes increasingly prominent in the aftermath of World War 2 as a literature that can excite a moral response in engineers and scientists and help individuals adapt to change. Social science fiction uses mass media to encourage a public-sphere debate about the interaction of technology and society.

One implication of this study is a rethinking the phrase "cultural resistance"; often tied to Antonio Gramsci's concept of hegemony, cultural resistance in this study is the demonstrated to provide actionable freedom for those who participate in social science fiction. While social science fiction is thus an important counterhegemonic formation, for the past forty years this important literature been thought of as too enthusiastically supporting a technocratic society. However, the scientists and cultural workers who create social science fiction step away from their employment to exercise the possibilities of a shared literary space, demonstrating the possibility that mass media can provide a space for cultural resistance.

This project considers the work of John W. Campbell, Isaac Asimov, and Robert A. Heinlein to show how their activities promote a new collectivity aligned against master narratives. Originally successful, social science fiction is disparaged in favor of the new wave because in its critique social science fiction appropriates certain fantasies of technocratic discourse. The Star Trek television series (live action and animated) and Stanley Kubrick's film 2001: A Space Odyssey both interrogate the solid subject positions of earlier practitioners. Unfortunately, the critique of social science fiction made during the new wave makes a lasting impression on the critical imagination, leaving an important exemplar of cultural resistance to go unstudied. Using a cultural studies approach inspired by Michael Denning, this study demonstrates how the authors in this study predict the contingent communities that embrace new media at the end of the century and offers an antecedent to help direct media projects in the future.

Acknowledgements

First of all, my dissertation director, Marc Dolan, has earned my gratitude by supporting this project, and his insights into literature and media studies have made this dissertation a more interesting project. His extensive comments on my drafts and his unflagging enthusiasm provided me with the motivation to prepare a complete work and gave me a clear direction for the project's future, not to mention his graduate seminars that gave me a background in the field of American Studies and the practice of scholarship.

My dissertation committee has also been more than helpful in this process. Alison Griffiths, who taught the seminar "Spectacular Realities" and commented on an early draft of the 2001 chapter before agreeing to serve on the committee, has broadened my thinking about media and the interaction between science and society, improving not only this dissertation but my scholarship and teaching in general. George Otte's course in interactive pedagogy started me thinking about the ways in which media can enable--or discourage--the active participation of the audience. As a member of my orals committee and a reader of this dissertation, he has provided thoughtful comments and interesting challenges. Each member of the committee has been generous with insight and suggestions, sending back usable suggestions and encouragement on every chapter and the work as a whole. I will miss working with them.

Many librarians in the course of their daily work helped me gather and study the material that backs up the conclusions of this study. Polly Thistlethwaite, head of Public Services at The Graduate Center's Mina Rees

library, uncovered archives of primary source material that led to many of the insights within. Ryan Hendrickson, assistant director for manuscripts at the Howard Gotlieb Archival Research Center at Boston University, demonstrated the breadth of the Asimov collection and provided useful insight into archival research. Rachel Hertz, an intern at the Harry Ransom Center at The University of Texas at Austin, provided me with an overview of how the collection might support my study and convinced me to spend "at least" a week with the collection; while I was in Texas, the staff of the Ransom Center provided me with friendly assistance.

Over the past few years, I have had the benefit of feedback from the Robert A. Heinlein Studies area of the Popular Culture Association. In particular, I thank the area chair Lisa Edmonds D'Amico, who founded the group and brings us together each year. I also thank the panelists at the San Antonio, San Diego, Atlanta, and Boston conferences whose comments and suggestions advanced my thinking about my presentations. I owe an additional debt of gratitude to Heinlein scholar William Patterson, who by carefully editing my presentations for the Heinlein Journal has improved my writing and my scholarship.

The Graduate Center of the City University of New York and the English Program there have, of course, been instrumental in providing me with a graduate education and institutional support. I thank the many professors who have helped prepare me to write a dissertation, and while writing, I was conscious of how so many courses were contributing. I am grateful for the support of the City University of New York's Graduate Research Grants program, which provided funding to help me visit the above archives. Also, the English Program provided a generous Millennium dissertation-year fellowship.

The American Studies Certificate Program sponsored a dissertation workshop in the fall of 2006 that greatly helped me in the writing process, and my fellow students in the workshop provided invaluable insight into the project. My students and colleagues at John Jay College, Hunter College, and Polytechnic University have provided me with moral support, an intellectual environment, interesting courses to teach, feedback on the ideas I was working with, and in some cases have lent books that I could not find in the library.

Finally, my family and friends have been generous with their support of my studies and patience for my absence as well. I owe a great deal to my mother, Carol Privitere, for her weekly encouragement and her dedication to the idea graduate study. In addition, I have benefited from regular conversations with Maggie Kulik about literature and culture that have found their way into this work, and she has improved the manuscript directly by volunteering to proofread. Finally, I owe a great deal to Jan McVicker, who suggested that I go to graduate school in the first place.

To my sister Kerry, who watched Star Trek reruns
with me and asked questions during the commercials.

Table of Contents

Introduction

Navigable space in new media, according to Lev Manovich in The Language of New Media, exists on a trajectory from Mark Twain's and Ernest Hemingway's renaissance of the ancient epic's exploration of space to the cyberfiction of William Gibson. While Manovich presents compelling affinities between the work of these authors, there is plenty of difference that makes this lineage curious: Gibson's distressingly dismembered physical bodies, indeterminate subjectivities, and strained communities seem worlds away from Twain's idylls and Hemingway's heroes.

Even more curious is the disciplinary gap Manovich leaves between Hemingway and Gibson: Manovich fills the period from 1940 to 1980 with engineers and technologists. The lacuna in the literary sphere is telling. That this period is also the golden age of science fiction raises several questions. What is the cultural work done by science fiction? What are its affinities to modernist literatures, and how does its permutations represent so many Kuhnian epicycles that signal the demise of master narratives, the birth of postmodernism, and the user-centered narratives of new media? In the period Manovich has called "second modernism" (or "supermodernism" or "transmodernism"), why is it that theorists have invested so much effort in drawing continuities between the superficially similar but generically distinct scientific utopias, scientific romanticism, science fiction, and cyberpunk? Why is it so difficult for critics to see the golden age of science fiction as a legitimate cultural phenomenon? And perhaps most importantly, what is one to make of the fact that, with the

development of ARPANET, one of the first e-mail lists ever invented is "sf-lovers" in 1979, devoted to the discussion of science fiction?

Manovich's omission of the golden age of science fiction may be due to the fact that there are multiple attempts to adapt the weird tales at the start of the century to what will become cyberpunk and postsingularity fiction at the end. One permutation--a permutation that does not succeed--is the focus of this dissertation: social science fiction pulps, novels, and motion media fill the gap between Hemingway and Gibson. Social science fiction is relatively short-lived, involves a group of cultural workers that come together to argue about the goals of the genre and its means of representation, and offers an opportunity to observe the demise of modernism's master narratives. It also demonstrates a rare occasion to witness a truly collaborative culture, providing the media scholar with an opportunity to discuss an important antecedent to the micromedia of the twenty-first century. The story of this genre also leads to a greater understanding of how a genre can offer a site of cultural resistance. Unfortunately, a critical blind spot prevents the open study of this genre. Even though social science fiction--a type of science fiction that involves the consideration of societies of the future--is conceived of as a method for free inquiry and debate, the knee-jerk reaction of many scholars of science fiction, and even literature in general, is that science fiction is a form of culture that clouds the reason and is complicit in imperialist visions during the Cold War.

What if, however, science fiction in the years around World War 2 creates a cultural space for intellectual freedom instead of representing Cold War ideologies uncritically? Certainly, everyone knows that the stories of romance and adventure in the mass-market publications were unconscious reflections of imperialist, fascist, and perhaps totalitarian worldviews. We are not supposed to like science fiction until the new wave, inspired by the British magazine <u>New</u>

Worlds, provides us with a more humanistic, introspective, and socially relevant fiction of the future. Certainly the fiction of Samuel Delany, Joanna Russ, J. G. Ballard, Philip K. Dick and Harlan Ellison fits in better with longstanding themes of fantasy and utopian literature, providing stories and metaphors that readers can use to fashion their own identities and howl in disgust at the technocratic establishment. And yet a reader of the earlier science fiction feels that there is something else to say about the writing that arises in the golden age of science fiction: those stories written and inspired by John W. Campbell, Isaac Asimov, and Robert A. Heinlein.

The standard works about science fiction after 1970 attempt to portray these authors as an unfortunate low point by presenting a drama that begins in ancient mythology, passes through the Renaissance and Enlightenment utopias, gains prominence in the nineteenth century's "weird tale" and infiltrates the periodical market at the start of the twentieth century around the time of the 1939 World's Fair in New York City, building toward the new wave in the 1960s and cyberpunk fiction at the end of the century. There are standard emblems for each period, each one having proponents who argue that it is the "first" example of science fiction. Is the first science fiction the tale by the second century Greek satirist Lucian of Samosata?[1] Is it Thomas More's grey Utopia (1516), Johannes Kepler's spirit-powered trip to the moon in Somnium (1634), or Francis Godwin's goose-powered trip to the moon in The Man in the Moone (1638)? Plato's story of Atlantis in his unfinished dialogues, not to mention Francis Bacon's The New Atlantis (1626), have been suggested as origins as well. In modern times, some point to Jonathan Swift's Gulliver's Travels (1726) while others turn to Mary Shelley's Frankenstein (1818). Some of Edgar Allen Poe's work has been sold as "science fiction" by Penguin Classics and promoted by scholars as the origin of

the genre. Jules Verne (in From the Earth to the Moon (1865) and others) and H. G. Welles (The Time Machine (1895) and others) are also promoted as the progenitors. Yevgeny Zamyatin's novel of oppressive modernity, We (1927), has also been called the first science-fiction novel. This critical dissensus is not a problem that can be solved by application to facts, but it is a matter of who makes the strongest argument. Because so many authors, critics, and fans make an effort to establish definitions of the field and assemble a canon of works to fit their definition, science fiction provides its readers experience in creating a usable history long before the canon wars of the 1980s. The argument about what science fiction is, and what works are included in science fiction, is an essential part of the genre.

The creation of a canon is not without consequences. In attaching the cables of tradition to these high points of utopian and fantastic literature, the critic can create a continuity from Greek and Roman classics through the counterculture science fiction of the 1960s, and by pulling the cables tight, the tradition can connect serious literature from the European Renaissance and Romantic period while soaring above the dull pit of the science fiction pulps where social science fiction is born. This is the way, for instance, in which science fiction critic Eric S. Rabkin constructs his English 313 course at the University of Michigan. Starting with Frankenstein and short stories by Edgar Allan Poe and Nathaniel Hawthorne, he includes "classics" by H. G. Welles and provides an international flair with We and War with the Newts (1936) by Karel Capek (Capek coins the word "robot" with his 1921 play R.U.R.). He covers what would be the golden age with Olaf Stapledon's 1937 Star Maker (an author revered by many golden age writers, to be sure) and The Martian Chronicles (a 1950 collection of stories by Ray Bradbury, who published science fantasy in little

magazines and is a figure from high literature, not the pulps). Rabkin then moves to classics of the new wave, presenting Philip K. Dick and Arthur C. Clarke as if they were part of a literary vanguard and not as if they had honed their craft by writing for the low audiences of the pulps. He ends with William Gibson's Neuromancer (1984).

Thus, it is possible to tell the story of science fiction with little reference to the authors of social science fiction. The typical way to do this is to create a trajectory from the supposed origins in high literature, pick up the writers of the golden age who are deemed to have literary merit, and then promote the new wave and cyberpunk as the crowning achievements of the genre. Rabkin is not unique in the work he selects for his canon; as a critic, his work both influences ideas about the genre and reflects a scholar's best insight into the problem. In placing a Romantic author at the point of origin, Rabkin creates a genre that is oppositional; the works he selects are admonishments to their readers that their ideals are misguided. In order to claim these works belong to the same genre, one must look at the use of setting, as one does when reading utopian literature: what these authors most obviously share is the use of hypothetical or future time as the setting for their stories. Of secondary importance is their use of ethical frameworks: many of the authors on Rabkin's list seek to excite a moral response from the readers. This helps to present science fiction as a genre that aspires to literature; a literature that is an alternative to literature. The works he chooses are interesting, and according to his syllabus, his classes are large, presented in a lecture hall with break-out discussion sections. In so doing, Rabkin presents science fiction as anyone else might present to a literature class: he is a spectacle of a reader, demonstrating his skill to the students, who then practice reading and responding in small, closed groups.

The Story of Science Fiction

This would be all well and good if it had been Shelley, or Welles, Zamyatin, or Bradbury, who coin the term science fiction. The genesis of the term can be told like this: Hugo Gernsback, an engineer from Luxembourg, popularizes an inexpensive wireless telegraph when he immigrates to the United States in 1904. Although interested consumers embrace him, officially he is met with skepticism because radio telegraphs were thought to be so expensive that only large corporations could use them. After being investigated for fraud, Gernsback is "rather disappointed at the relatively low level of technical knowledge among the general population, and he resolve[s] to do something about that" (Banks, "Part 1," para. 21). He opens several businesses, but also starts publishing a magazine, Modern Electrics, in 1908. Gernsback, more than anyone else, is responsible for the twentieth century electronics "kit"--and perhaps through others extending his idea, he is responsible for home photography and chemistry kits. One historian says he champions the "radio masses," and is an important figure not only in the history of radio, but in the history of media (Massie and Perry 278). Through his supply of electronics parts, manuals, and periodicals, Gernsback promotes the idea of an individual engagement with technology.

Gernsback's first years in the United States are in the middle of a printing bonanza in the form of inexpensive magazines known as the pulps. After some experimentation in the 1890s, publishers embrace the inexpensive periodicals and according to Goodstone provide readers the opportunity to escape from their daily lives or to experience cultural criticism. In the period 1890-1910, science fiction of the "finest quality" appears, offering either "a critical comment on the inequality between the classes" or a "predictive comment on the outcome of rapid technological progress" (xiii). As Gernsback is publishing Modern

Electrics, readers were already familiar with science fantasy stories, such as those of H. G. Welles and Edgar Rice Burroughs. In fact, since the start of the twentieth century, Munsey has been publishing "pseudo-scientific material" such as Burroughs's stories and calling the genre "different stories," having a taste for action, romance, and technology (Goulart 159-60.) In 1911, Gernsback had some "extra space" in one of his issues and writes a story about the future--and continues the story in twelve installments. The result is a serialized novel that is published under a separate title, Ralph 124C 41+.

As Gernsback's publishing interests increase, so does his publishing knowledge, and he moves from publishing scientific magazines, to full issues of fiction, to producing Amazing Stories, a magazine devoted to fiction for people who are interested in science, or what he calls "scientifiction." This magazine sits on shelves on newsstands next to the other inexpensive fiction magazines, devoted to mystery, western or adventure stories: the pulps.[2] Gernsback hires an editor and they court new writers as well as reprint nineteenth-century classics from Jules Verne, H. G. Welles, and Edgar Allan Poe.

Gernsback did not invent the idea of fiction with a scientific element; it is already a feature of the pulps. It is Gernsback, however, who seeks to make science fiction into a genre of its own. The first issue of Amazing Stories, the first magazine totally devoted to scientific fiction, is published in April 1926. The magazine did well very quickly, reaching a circulation of 100,000 copies despite its high cover price of twenty-five cents (Goodstone 201). One of Gernsback's prominent contributors is Edward E. Smith, a doctor of chemical engineering who is best known for the "space-opera" genre: whereas Edgar Rice Burroughs and others confine themselves to the solar system, Smith creates a space ship that uses atomic energy to travel the entire universe. Smith's first novel, The Skylark of Space, is serialized in 1928, representing a slight shift in the genre.

Goulart notes that the prominent qualities of a Smith story are the breadth of the galaxy, the epic battles, the super-human qualities of the heroes, and the addition of a villain (163). After losing Amazing Stories in a bankruptcy settlement, Gernsback comes back in 1929 with Science Wonder Stories, where Rogers states the term "science fiction" first appeared in an editorial.

The next development occurs in January 1930, again, because of extra space. Harry Bates tells the story this way: William Clayton, the publisher of many pulp titles in different genres, receives a proof of each magazine's cover monthly in his office. At the time, he is publishing thirteen magazines, and printers must cut covers from rectangular sheets of paper. "This meant that month after month three of the sixteen places would stare empty at Clayton, in effect reproving him for not having three more magazines so that they need not be empty" (Rogers, ix, emphasis in original). Bates, the editor of Clayton's adventure titles, is told to come up with a magazine that promotes historical fiction--it is to be called "Torchlights of History." Bates, thinking of Amazing, wants to edit a magazine of speculative fiction. He discards the name of "Tomorrow" as being "sort of highbrow" and also discards the name "Science Fiction" because "as a phrase hardly anyone had ever seen or heard it (Amazing preferring the horrible 'scientifiction')" In the end, he settles for Astounding Stories of Super-Science, which begins publication in January of 1930 (Rogers, xi). Within a year, it reaches a higher circulation than Amazing (Goodstone 201). Clayton, who earns his first money with a "tame girlie magazine," by this time has built a line of a dozen adventure titles and is briefly the richest publisher of the pulps. He loses his fortune in 1932, and he sells Astounding to Street and Smith, a firm that had invented the idea of diverse holdings of specialized pulp magazines (Goulart 13). In spite of the popularity, the content of the magazine is

so different from typical periodical fiction and the readership so dispersed that readers feel alienated.

As Pohl reports, "[i]n the early 30s, to be a science-fiction reader was a sad and lonely thing" (18). Some enterprising fans collect addresses from the letter columns and begin correspondence clubs, but these were rare. In conjunction with his new ventures, Gernsback starts chapters of the Science Fiction League in major cities after 1932. The organization does not seem to help his new publication Wonder Stories that much, and it struggles financially. Even so, Pohl reports, it is the beginning of fandom, helping him and others to realize that there is a community of like-minded people they could talk to. This is important to Pohl, who reports that he is introduced in the eighth grade to Astounding by a classmate, because science fiction is something that someone has to hide: passed between classmates, it is an unsanctioned activity.

Although the term "science fiction" is clearly in the air at this point, it will not be until March 1938, after Campbell becomes editor of Astounding and changes the name, that a magazine will carry the phrase in its title: Astounding Science Fiction. From this perspective, then, a different picture of science fiction emerges. Science fiction is the detritus of mass culture. It is an afterthought born of market excess, implicated in the cheap thrills of girlie magazines and adventure stories, a market consciously below the more respectable literature of the slicks. It is what Samuel Delany would call an interstice: a place between spaces, an alley between the buildings of mass culture. It is not born of an ideological imperative. It is not, as Brian Aldiss would have one believe in his study Billion [revised as Trillion] Year Spree, the heir of repeated and regular return of the human imagination to the study of possibility. The creation of science fiction is a marketing experiment among a series of publishing accidents.

Social Science Fiction

Even though it is tied to mass media, it is important not to condemn the genre out of hand. Certainly part of the miasma attached to science fiction is because it is a popular form of literature and its fans are devoted to the point of obsession. In order to refine the critical program represented by standard stories of science fiction, such as that promoted by Rabkin, this project employs a cultural studies approach to literature, using golden-age science fiction as the subject.

The field of cultural studies, which owes so much to the Frankfurt School, must somehow reconcile any study of mass media with Theodor Adorno's condemnation of popular music and, by extension, popular culture. Adorno's famous condemnation of recorded music is that the structured format transforms its listeners into automatons. With Max Horkheimer in Dialectic of Enlightenment (1944), he paints a bleak picture of an all-encompassing mass culture. It is not enough, they write, that humans are dominated in the workplace, the responsibility and freedom of work stripped away from them, but also mass culture dominates them in their so-called "free time." The diversity of culture provided by mass media is not evidence of its freedom, but its relentless cooptation:

> Marked differentiations such as those of A and B films, or of stories in magazines in different price ranges, depend not so much on subject matter as on classifying, organizing, and labeling consumers. Something is provided for all so that none may escape; the distinctions are emphasized and extended. The public is catered for with a hierarchical range of mass-produced products of varying quality, thus advancing the rule of complete quantification. Everybody must behave (as if spontaneously) in accordance with his previously determined and indexed level, and choose the category of mass product turned out for his type (123).

In this dissertation, it will become clear that there is another way to think of mass culture. The genre of science fiction accredited to Campbell, social

science fiction, uses mass media to create an alternative public sphere. Far from being subject to formulaic entertainment, the fans of this fiction demonstrate the potential for individuals to create an alternative collectivity through mass media. This is not the standard story of science fiction in the golden age; in the following chapters a good deal of effort must be expended to counter attacks on golden age figures that suggest that writers like Campbell, Asimov and Heinlein are anything but purveyors of freedom. Central to this project, then, is an awareness of cultural resistance based on counterhegemony that is more directly inspired by the notebooks of Antoni Gramsci.

Campbell, as an editor, recruits his writers from scientific professionals. In addition to the writers in this study, Theodore Sturgeon, L. Sprague de Camp, Mark Clifton, L. Ron Hubbard, Raymond F. Jones, and A. E. Van Vogt are part of Campbell's cadre. Social science fiction is a literature designed to excite a speculative response about the structure of society. This genre gains prominence after the American use of atomic weaponry on Hiroshima and Nagasaki in 1945, as a demand grows for a cultural space to debate the nature and ethics of technological advance. It declines in the 1960s, as pulp publications decline and a group of writers takes on the phrase "the new wave." Because of its origins in popular, inexpensive magazines, social science fiction practitioners become experts at using the mechanism of mass media to achieve reflection and introspection on the part of readers--so much so that fans of the genre develop an alternative public sphere dedicated to analyzing the direction of public policy toward science.

As a genre, social science fiction presents a future that has been constructed, therefore promoting the idea that the future is contingent and adaptive; such a future is seen to be subject to the decisions individuals make. Its best-known practitioners employ a blend of mythological tropes and utopian

forms to create a vision of alternative societies that are separated from the reader not by geography, as in the traditional utopia, but in time. The authors of social science fiction self-consciously provide an alternative to the scientific-military-commercial establishment, leading inquiry into the proper use of technology, the effects of the diffusion of technology, and the place of the individual in technologized society, hoping that their stories would inculcate ethics among scientists and technologists, secure a future protected and enhanced by science by creating a sense of possibility in the young, and awaken the general public to the importance of scientific literacy.

What is striking about social science fiction is the extent to which practitioners collaborate on their vision for the future. Postulates about the future--how interstellar space will be traversed, how humans will communicate with alien species, how travelers will deal with the boredom of long voyages--are put forward by individual authors into the science fiction magazines and then debated by fans, editors and authors in letters to the editor and at science fiction conferences. Postulates that are deemed plausible and useful have the honor of becoming science fiction conventions; Isaac Asimov's laws of robotics are frequently employed without credit in any fiction having to do with robots. Additionally, authors borrow traits from each other as an homage: when Hicks falls asleep during the descent to the planet's surface in the film Aliens he is echoing Robert Heinlein's hero Johnny Rico in Starship Troopers.

Sharing a worldview differentiates social science fiction from other types of fiction. Each author of social science fiction has his or her own version of what the future will hold, like the detailed "future history" developed by authors like Robert Heinlein. These visions of the future, however, are not independent. They share assumptions--and sometimes disagree--about what the future will hold. Through this borrowing and collaboration, a collective consciousness is formed

that is the most important feature of social science fiction. The consistent and reflexive technique builds an alternative public sphere wherein writers and readers debate the appropriate course of development. This self-reflexive genre promotes knowledge of itself, encouraging readers to read everything; since those with this knowledge of everything gain expertise that they can use as cultural capital.

The field of social science fiction creates a group of experts analogous to what Sarah Thornton describes in the field of popular music. In her study Club Cultures, she suggests that there is a difference between "affective" freedom, such as the feeling of freedom, and "actionable" freedom, or support for individuals to commit free actions. Dance music certainly helps people to "feel" free on the dance floor or in their homes, but does that feeling amount to anything? Thornton says that it does; she points to the examples of the entrepreneurial dance music fan, one who can run a business based on his or her immersion in the dance music subculture, and also of the dance music fan, one who obtains cultural power in the world of dance music by their encyclopedic knowledge of the figures and historical developments of the genre. By becoming tour guides to the underground, local experts in any subculture not only obtain for themselves social importance and influence, impressing others and receiving accolades from the subculture that they might lack in the larger society, but also reaching out to shape and guide the development of the subculture. If the cultural resistance of dance music can provide both an affective and an actionable freedom, can the same be said of science fiction? From the collaborative imaginary of social science fiction arises a cultural cachet in the social world, and those who would otherwise lack power in the scientific-commercial-military establishment gain considerable social power.

One of the reasons that social science fiction falls away from the critical mainstream is that it does not fit well into the accepted idea of literature. In seeking to found the genre in utopian or fantastic literature, the appropriate antecedent to social science fiction is lost and the way of reading it is not clear. However, there already is a literature where a group of people uses a shared worldview to enter into a public debate: the exercise of declamation at the culmination of the progymnasmata of ancient Greece.

The progymnasmata seeks to provide the student in the rhetorical school the training he would need to become a ῥήτορ ("rhetor," a public speaker). The goal of becoming a ῥήτορ is not simply to become a polished and confident speaker; rhetorical training seeks to give the student the ability to speak on behalf of another person and to create an argument that is fitting of that person's station and situation. In this way, rhetorical training sought to produce something similar to a lawyer in today's society. In his study of declamation, D. A. Russell connects the history of the declamation to "the world of the comic or the detective story--or, for that matter, the world of the epic" (22). This is because the declamation is constructed as a school exercise. In a declamation, the teacher provides students with some sort of a contentious situation. The situation sometimes is fanciful, involving pirates and orphaned children, encouraging the students to think about issues of citizenship and rights from a variety of points of view. In response to this situation, the student has to invent a character that makes a response to that hypothetical situation, then make a speech in that character's idiom.

Hearing the declamation helps build an appreciation for the form of a polished speech, certainly, but also engages the audience in a question of ethics and values. Christy Friend has documented the ways in which the strange tales of pirates and orphans in the Greek and Roman schools provided the student

learning to be a ῥήτωρ with an ethical experience. In having to impersonate another, the student in a declamation has to see the world from another person's point of view--the heart of an ethical experience.[3] In deliberation, a student might be asked to speak for a party in a dispute such as this:

> A rich man goes to dinner in a poor man's house. His host's pretty daughter waits at table. The rich man asks if she is a slave or a free woman. The father is ashamed, and says she is a slave. The guest rapes her. The law is that the penalty for the rape of a free woman is death, for that of a slave a fine of 100 talents. The rich man offers the money; the poor man demands his death (Friend 29).

In this situation, many different ideas are open for debate as students scramble to make a speech: what is the status and rights of a slave? what is the consequence of a lie? how should a rich person behave--and what is the consequence when he behaves badly? In addition, the exercise allows gender to enter the all-male environment: the students can choose to speak on behalf of women, whose voice otherwise would not be able to enter into public discussion.

Russell suggests that this understanding of declamation's deliberative nature is important because, as a common element of school education, it helps the critic see how the declamation is the basis of other forms of literature, such as the epic poem and the tragedy. The connection is the creation of a fictional spokesperson that debates; in presenting literature through a deliberative persona before a rational audience, the epic and the tragedy inspire the declaiming faculty. Although Russell does not push his ideas this far, this dissertation will demonstrate how this debating persona that is the heart of declamation and social science fiction is a different kind of literature that provokes an important response from its audience: the response to the debate.

Another reason why social science fiction does not make it into the critical discourse is related to this idea of declamation. Because it does not create

literature by working with the standard literary elements, its excellence is easy to dispute. Social science fiction is not known for its literary inventiveness because its originality is not seen in characterization, narration, or plot. Characterization, in particular, in the genre is not particularly well developed; characters are rendered in the cast of ordinary, hard-working citizens and do not frequently undergo crises of conscience. Narration in this genre seems to be uncomplicated; omniscient third-person is popular, as is the confessional first-person report of someone who has undergone a transformation through experience of the unknown. Likewise, the plot in social science fiction tends to be formulaic, following standardized patterns like the ones noted in folklore: a quest requiring learning but, when completed, resulting in a prize. Thus, these three elements of fiction are used to create an enjoyable, distracting, and accessible body of work that does not seem to push the boundaries of cultural expression.

It is easy to discredit social science fiction with the New Criticism; this is the critical paradigm generally used to understand science fiction, often with less than satisfactory results. As will be made clear in later chapters, the style of new criticism brought to bear on science fiction focuses on isolated interpretations of the plot, characterization, narration, and in some cases setting. In the discussion of Heinlein's Starship Troopers (1959), for instance, critics often deride the novel for its totalitarian environment and suggest that its story line encourages fascistic thinking. That these interpretations of the novel are not quite accurate in terms of setting and plot is almost beside the point.

That the writers in fact are promoting free thinking and critiquing society while they are decried for promoting quite the opposite will require a careful dissection. It will not be enough to say that approaches based on new criticism are wrong, although a large part of the project is to recapture the critiquing lens that social science fiction provides. It is also important to think about the

peculiar form of narration promoted by the authors of social science fiction. Certainly the narrative persona of social science fiction, with its scientist storyteller, is akin to the Realism of the nineteenth century, not to mention the burgeoning fields of social science at the turn of the twentieth century. But the authorial persona of social science fiction is also implicated in an inside club, calling attention to the fact that its network of collaborators strives to create a different vision. It is an argument of this dissertation that this persona and audience are not biographical constructs, as frequently presumed, but rhetorical strategies. The new critic would find it distasteful to consider "who the authors are" and "who the readers are"--the movement, after all, sought to sever the supposed ties to society because the critical claims from these ties were spurious. However, the authors of social science fiction so overtly create a scientific persona to narrate their stories and so directly seek to interact with what they suppose to be their audience's worldview that one can hardly say that the narration of social science fiction is a matter of biography. Instead, these authors use narration to create a space for cultural resistance: instead of creating a work that opposes or challenges the prevailing ideology, social science fiction is a shunt that avoids direct confrontation and instead provides readers with the ability to observe ideology inside of a collaborative network for inquiry.

Cultural Resistance

Critics who suggest that science fiction is a cultural fantasy that uncritically reflects dominant ideologies are, whether they announce their position or not, reflecting an idea about hegemony based in the work of Antonio Gramsci. In the Prison Notebooks, Gramsci points out that a ruling power maintains its position in two ways: "domination" and "intellectual leadership" (57). Thus, coercion

backed up by threat of force or punishment is balanced by hegemony, or those structures of civil society that provide the spontaneous consent of its citizens. Intellectuals in a society provide a hegemonic function in that they provide the rationale that keeps the ruling power ensconced. It is not a direct act of legitimization and promotion for Gramsci that keeps them in power, however. The power of the intellectuals is that they maintain the terms of the debate in such a way that maintains the status quo.

What is disturbing about this vision of the intellectuals is that even in an oppositional culture enunciation, the power of hegemony holds. Take, for instance, the challenge of Modernist artwork. Modernism promotes itself as a radical alternative to the traditions of the past, and in many ways, it is. The struggle of Modernism to challenge traditional notions of artistic representation and its eventual success might seem like a successful challenge to the ruling power. However, on looking closer, one sees a hidden continuity that is, indeed, obscured by the noise of the oppositional stance of modernism. For instance, in its challenge to traditional art Modernism fails to challenge the notion of the artist--even after "found art" and dada randomness--or the notion of artwork--even after Conceptualism. Now that Modernism's ruptures are healed, art historians still value the artist as a solitary rational individual, which is amusing given Modernism's embrace of the irrational, and the public still views expensive works of art in art museums on the weekends. One can see the operation of hegemony when the disruption of Modernism is accepted into the world of art, and in fact used to support the foundational premises of genius and value.[4] Thus hegemony, when working properly, defeats opposition not by force but by acceptance, allowing the larger discourse about art to go unchallenged.

The sinister nature of hegemony then is its ability to pamper the disruptive opposition to the ruling powers and transform it into a pillar of the state.

This picture of civil society and of the function of art is not pleasant to cultural workers and scholars of the humanities. T. Jackson Lears, in his essay "The Concept of Cultural Hegemony," has documented the many ways in which scholars have shown that the masses are not brainwashed but isolated by "the tendency of public discourse to make some forms of experience readily available to consciousness while ignoring or suppressing others" (577). Nevertheless, if one accepts the premise that direct opposition to domination is likely to result in generating support for the ruling power, one seeks an alternative mode of dissent. Instead of oppositional culture, some critics have proposed the idea of counterhegemonic strategies that temper official ideologies or, in some cases, set in motion a transformation of official policy. Certainly, the ruling ideology fails if it has to back up hegemony by direct action; in a similar view, those opposed to the ruling ideology fail if they have to take up direct action.

Some critics have suggested that various aspects of modern culture provide a space for counterhegemony. Fredric Jameson, for instance, in his essay "Reification and Utopia in Mass Culture" suggests convincingly that works of mass culture cannot help but legitimate the existing social order--for surely they depend on the ruling ideology for language and form--but at the same time they "cannot do their job" without deflecting the ruling ideology and reflecting "the deepest and most fundamental hopes and fantasies of the collectivity" and thus give a voice to the masses (144). This kind of supposition has been productive in cultural studies: Theresa Martinez uses a similar argument in her essay "Popular Culture as Oppositional Culture: Rap as Resistance" to suggest that rap music uses popular culture to give a voice to a marginalized group and disrupt "dominant hegemonic paradigms" (279). Ján Elsner in his essay

"Cultural Resistance and the Visual Image: The Case of Dura Europs" uses an entirely different subject matter--the images created in a Greek city under Roman rule--to show how art can provide a sense of "internal friction" toward the dominant authority, in this case Romanization (271). Brian Wilson, in his study "The Canadian Rave Scene and Five Theses on Youth Resistance," shows how popular music in spite of its collaboration with a vision of technological self is "subtly resistant and/or non-oppositional" (375) to dominant ideologies, providing a space for an "ongoing struggle for cultural power" (408).

These arguments about the nature of cultural resistance fall somewhat flat for someone seeking evidence of something more than the survival of dominant ideologies. They are valuable in explaining the power of popular culture and the necessity of studying it, but the feeling of freedom does not point the way to a transformative culture. Certainly, they are effective in providing a starting point for discussing the nature of the fantastic in literature, as Jameson has done in his recent Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions. In this study, Jameson calls Phillip K. Dick the greatest science fiction writer, notes that there are only one or two great authors of the golden age of science fiction, and barely manages to avoid condemning the rest as inhabiting a "hard-science aesthetic ideology" (315).

How can one, then, see the golden age of science fiction as counterhegemonic? Gramsci does not explicitly address the idea of counterhegemonic strategies, so all anyone can do is search for possibilities of it in the Prison Notebooks. In his discussion of intellectuals, he states: "All men are intellectuals […] but not all men have in society the function of intellectuals" (9). This seems to give the hope that individuals who are not sanctioned intellectuals can be called out from civil society and given the power of the intellectuals that maintain hegemony. If hegemony depends on all civic conversations existing

within an established discourse, the ruling power must train and support intellectuals who speak the right language. Marcia Landy, in an essay that suggests one of the most important ideas of Gramsci is that intellectuals can either legitimate power or create new relations of power, points to Gramsci's concept of the organic intellectual:

> [O]rganic intellectuals must have a critical consciousness of the world, a desire to question and change existing conditions, and a sense of collectivity with others working to restructure society (59).

Even though the ruling party will suggest that only certain individuals have the ability to be intellectuals, according to Gramsci this is not true: being an intellectual is a matter of a person's position in society. Tying this idea of Walter Benjamin's supposition in "The Work of Art in the Age of its Technical Reproducibility" (1936) that the possibility for a radical art in the age of mechanical reproduction is only at the moment in which the readers become authors, one sees a way through cultural studies to find cultural resistance in mass media--a way that will provide ample evidence in social science fiction to suggest its power as a counterhegemonic strategy.

Gramsci himself noted that there is not "one" society that holds the individual; societies are "very numerous, more numerous than would appear." Through affiliation with different societies, one finds oneself in "the human race"--but the ways in which one enters the race are "many and complex." Far from seeing this as a static process, like an individual bathed and comforted by hegemony, these societies are "active and in movement" (353). While one can imagine a situation where each individual is trapped in officially sanctioned societies, societies that are called into being in the shadow of power and serve a hegemonic function by massaging discourse along lines that support ruling ideology, it is also possible within the terms that Gramsci sets out to imagine

individuals who create societies for themselves that involve a different relationship to human nature. When these societies exhibit a counterhegemonic force by bringing together traditions or practices that are not officially sanctioned, it can be said that they create a space for cultural resistance.

In Culture in the Age of Three Worlds, Michael Denning explains that cultural resistance has more than a mental manifestation, and what he calls an "emancipatory cultural studies" is dependent on noticing how the feeling of resistance is demonstrated in the physical world:

> [C]ultural resistance ranges from cutting school and defacing billboards with graffiti to violations of public taste by forms of clothing, hair style, manners of speech, and high-volume boomboxes. At times, these forms of cultural resistance may cement small communities of resistance, what cultural studies came to call subcultures. [… A]n emancipatory cultural studies should always pay close attention to these practices, not to congratulate ourselves on our taste for resistance, but to understand what is taking place in the culture (163-4).

In calling for a transformation of cultural studies, then, Denning seeks to demonstrate how individuals claim for themselves the status as intellectuals: the ones who create the terms for discussion, the ones who inhabit a social sphere.

Using a cultural studies framework inspired by Denning, one can examine the interaction of literature and society, the cultural workers involved in producing social science fiction and the cultural artifacts in elective communities. In doing so, one realizes that it is not necessarily the art itself that creates cultural resistance; there must be a different expectation of what one will do with the art. Social science fiction offers an opportunity to engage in this emancipatory cultural studies because it creates an important cultural space during the golden age. Social science fiction presents itself as an illegitimate literature in the process of formation; because it is not a stable phenomenon with accepted goals, it hails the consumer as a prospective producer and critic. While

one can see many kinds of art as culturally resistant, social science fiction is unique because it builds in the expectation of critique to the genre. While after the new wave, one focuses on the stories when thinking of science fiction, the authors of social science fiction do not make a much of a distinction between letters about science fiction, histories of science fiction, science fiction stories, science nonfiction. What is more, they value both reading and writing these subgenres as valuable activities. The endless discussions of how to define the field and what works to accept into the canon are not reflections of an amorphous or indefinable genre. Instead, they are one of the central tenets of the movement: that the community of readers must participate in the creation of its assumptions, learning to exercise their reason in front of a literate audience.

The Critical Response to Social Science Fiction

Unfortunately, the arguments about counterhegemony in the line of Jameson and others tend to privilege fiction of the new wave while erasing or deriding the work of social science fiction. At first, however, the books appearing in the 1940s that cover science fiction are positive. These works are limited in number, and include anthologies and handbooks as much as genuine studies of the genre.[5] These works accept the premise that social science fiction is a legitimate form of critique, and hail the reader as a potential contributor. Lloyd Eshbach, for instance, collects advice on writing science fiction from authors like Campbell, Heinlein, Van Vogt, and E. E. Smith. The 1950 anthology by August Derleth puts authors from the pulps (Stapledon, Hamilton, Van Vogt, Sturgeon, and Heinlein) in a trajectory from Plato's story of Atlantis through More, Bacon, Swift and Poe to demonstrate that the modern authors are existing in a continuum that goes back to the origins of literature. Sam Moskowitz begins his

study of science fiction fandom in 1954 with The Immortal Storm, emphasizing the people who meet to learn about science fiction and to begin their own writing. Basil Davenport's 1955 study suggests that Campbell and other writers of space operas end up dealing with problems of science philosophy and society, holding up a mirror to society and the recesses of the human mind. These and other studies before 1960 suggest an important societal function of science fiction; at the same time, they place a call to their readers to join the genre.

At the end of this era, James Blish (under the name William Atheling, Jr.) is publishing book reviews; in a 1962 review, he decries the loss of letter columns in the magazines, suggesting that editors want their magazines to appear more "dignified" and so omit the columns (96). In the 1960s, this growing pressure of acceptability from the "new wave" is apparent, even though it contradicts the transgressive message of these authors. Michael Moorcock, Judith Merril, and Harlan Ellison, in their effort to find a wider audience for science fiction, cast all science fiction of the golden age as conformist and inhibitatory, and use John Campbell as a primary reason for this repression. This impression has carried on to this day; Colin Greenland writes that Astounding needs to be recognized as the first publication to recognize the new wave in the United States, publishing the early works of J. G. Ballard and others in 1960, but the magazine is not suitable for the new wave because of Campbell's policies:

> John. W. Campbell's Astounding Stories (later Analog) was an altogether more earnest production. Much has been said and written about the puritanical censorship practised by Campbell and his assistant Kay Tarrant, but personalities aside, Campbell's editorial commitment to intellectual rigour forced him to rate the head above the heart, and therefore above the genitals too. The emotions could be seen only as a 'problem', sex as a distraction (26).

One of the primary detractors to the golden age is Michael Moorcock, one of the promoters of the new wave. Moorcock's guest editorial "Play With Feeling" in the April 1963 edition of the British science fiction magazine New Worlds says that science fiction is missing passion and subtlety and is disconnected from human affairs. Suggesting that adult writers can write adult stories, he asks for more authors like J. G. Ballard, E. C. Tubb, Brian Aldiss, and John Brunner.

Moorcock in 1964 becomes editor of the magazine New Worlds, and certainly his promotion of the ideals of the new wave are part of his attempt to keep the magazine in publication; in a contracting market, one can presume, Moorcock is trying to differentiate his magazine from, among others, Campbell's Analog. This attempt, however, is not simply marketing, because Moorcock continues his attacks on golden age authors even after New Worlds ceases regular publication in 1971. For instance, he presents his scathing condemnation of all things Campbell in a 1978 essay "Starship Stormtroopers," using Heinlein's novel as a starting point. Moorcock accuses the writers of the golden age of enthusiastic militarism and ends with a remarkable attack, not on the fiction, but on his own imagination of Heinlein as a writer:

> Next time you pick up a Heinlein book think of the author as looking a bit like General Eisenhower or, if that image isn't immediate enough, some chap in early middleage, good-looking in a slightly soft way, with silver at the temples, a blue tie, a sober three-pieced suit, telling you with a quiet smile that Margaret Thatcher cares for individualism and opportunity above all things, as passionately in her way as you do in yours. And then you might have some idea of what you're actually about to read (201).

Aside from Moorcock, two other writers promote the new wave at the expense of the golden age. The first, Judith Merril, is not a new figure. During the golden age, she is a member of the Futurians, a science fiction group active from 1938-1945 that aims to make fans more aware of the political dimension of science fiction. Merril starts publishing science fiction after that, but is also

known for editing science fiction anthologies in the 1950s and writing a book review column in the Magazine of Fantasy and Science Fiction from 1965 to 1969.[6]

One of Merril's first book reviews in May 1965 begins with a conviction that science fiction is qualified for wider consumption:

> I sincerely believe that science fiction has been, and continues to be, not a separate flow paralleling the mainstream of modern writing, but a fresh current in it, clearly distinguishable at its point of entry, and eventually so entirely merged with the larger body as to retain existence only in terms of the measurable addition it has made to the content, turbulence, and current speed of the whole (70).

For Merril the main idea in promoting the new wave is so that a larger audience can experience the power of science fiction. It is true that much of the promotion of the new wave is predicated on the idea that science fiction has transcended its humble, common roots in mass culture and is instead a vital project of the humanities. A common theme in those who venerate the new wave is the idea of literary quality. In addition, one of the aims of the new wave publicity is to sever the ties to science, or at least create a contrast to what comes to be called the hard science fiction of the pulp era; in her April 1965 column, for instance, Merril says that the "science" in science fiction is not about laboratories but about a disciplined way of thinking. She expands this idea in her September 1968 column, one of her last, by saying: "Science fiction is not science: its job is not getting the answers, but asking the questions" (18; emphasis in original).

This kind of literary and nonscientific writer of science fiction is the kind of writer Merril suggests can breach the mainstream market. In a column with a dateline of September 1965 but appearing in the December 1966 issue, Merril promotes Ballard and William Burroughs, among others, because they represent the "rather more subjective, perhaps the more thoughtful, certainly more

literary, direction of British s-f in the mid-sixties" (40). Suggesting that only Kurt Vonnegut and Cordwainer Smith in the United States are doing anything similar, she praises authors whose work "represents that area where s-f thinking and surrealist writing meet and marry" (42). In her November 1967 column, she adds that some of the "old thing" writers, Asimov included, are forerunners to the new wave, insisting that anyone who applies experimental literary techniques to contemporary speculation is the "essence of science fiction" (29). Merril seems to be seeking commercial respectability for the genre, much as the Magazine of Fantasy and Science Fiction tried to do in general, but, as indicated in the Epilogue, seems to back away from this position.[7]

Harlan Ellison's introduction to the 1967 anthology Dangerous Visions is the final important milestone in the promotion of the new wave. He credits Campbell and other writers in the 1940s because they demand that human beings use the gadgets promoted by Hugo Gernsback, but for Ellison these were limited attempts to work within the genre. What is more, Ellison says, the new authors have been held back by the mainstream interest in science fiction: the new and experimental voice that breaks free of taboos cannot be heard in the old paradigm, so it is time for a radical new vision of what science fiction can be. Both Ellison and Merril cast the earlier age as some kind of stodgy past over which the new generation must rise.

It would be giving Moorcock, Merril, and Ellison too much credit to say that they created this negative impression of technology. What they do, however, is tie the work of golden age writers to a larger critique in the 1960s of an advanced industrial society. This critique is epitomized by Jacques Ellul's condemnation of the technological state (translated into English in 1964 as The Technological Society), where he notes abstract ideals of technique have overcome local knowledge. Herbert Marcuse's One Dimensional Man is

published the same year, with its suggestion that technology erases art's power to critique culture. Jane Jacobs, in Death and Life of Great American Cities (1961), points out that top-down city planning is stifling civic life; it not being enough for planners to know abstract services and techniques, she writes, they must know "specific places" (410). Marshall McLuhan publishes several books in the 1960s, including Understanding Media: The Extensions of Man (1964) in which he proclaims that the message of media is not the content but the impression that the viewer is connected to a vast infrastructure. Theodor Roszak's subtitle to The Making of a Counter Culture (1969) ties the social unrest of the 1960s to technocracy. Not all critics are dire, but all blame the technical authority. Jean Meynaud predicts in Technocracy (1964) that it will be impossible for technics to supplant democracy. Lewis Mumford, in The Pentagon of Power (1970), sees hope if the imagination of a mechanical world can be replaced with an organic world, "in the center of which stands man himself, in person" (393).

Using an ad hominem attack, the writers of the new wave suggest that those with engineering or military service in their background are the ones who are helping to maintain the status of the technocratic elite. This critique does not last long in the science fiction community; the demand that there be less science and more literary merit to science fiction does not square with the fans. Lester del Rey, for instance, says that the new wave fails because it suggests it is the only form of science fiction; "[t]here should be room enough under the heading of science fiction for many types of writing" (257). The ideals of the golden age--scientific accuracy and the extrapolation of the social effects of technology--remain a popular part of the genre. However, the promoters of the new wave are right in their suspicion of what would appeal most to the literary and academic consumer. The new wave's attempt to promote itself at the expense of the golden

age works, in part, in that the lasting effect of the new wave is the negative impression they promote of the golden age, social science fiction included.

While the authors promoted as new wave have not gained widespread acceptance, much criticism[8] after 1960 begins to pass over the golden age, preferring to create a trajectory from Shelley to Poe to Welles to more literary authors, such as Bradbury. These critics suggest that golden-age fiction is flawed because it does not deal with inner realities. Damon Knight, in his 1967 revision to his 1956 study In Search of Wonder, proclaims that the underground created by Gernsback is dead, and increasingly critics see the golden age as an unfortunate time when science fiction is ignored by mainstream sources. Thomas Clareson in 1971 makes the claim that the writers of the 1930s are too enthusiastic about science and connects them to the Technocracy movement. In 1990, Clareson expands this critique to say that golden age writers are elitists who are infatuated with machinery. Norman Spinrad suggests in 1990 that "serious" science fiction has been tarred by its tangle with commerce during the golden age. In 1995, Sharona Ben-Tov includes only Asimov but states that he is an example of the hard science fiction that makes no challenge to prevailing ideologies. Similarly, Thomas M. Disch in 1998 suggests that the emergence of science fiction from industry shows how writers like Heinlein serve to perpetuate the military-industrial complex. These characterizations are a far cry from those of the 1940s and 1950s, when science fiction is thought to be the only literature capable of creating a critique of a technological society.

After the publicity attempt of the new wave, critics like Lois and Stephen Rose suggest that the abbreviation "sf" would be a better term for the genre, since it ties the foundations of the genre in "science fiction" to the new fiction that is better called "speculative fiction." Taking the science out of science fiction

is necessary, the Roses and others say, because of science's basis in rationalism. They write:

> We would advance the analogy that the best new science fiction functions as a sort of literary "consciousness machine." It is peculiarly adapted to help us break through our reality-oriented, 'rational,' world view by its combination of "science" and "fantasy" and its development of totally new environments that are plausible (112).

The difficulty of this transformation is that it is Robert Heinlein, soldier and scientist of the pulps, who invents the term "speculative fiction" in a 1953 article for the Library Journal: "science fiction is speculative fiction in which the author takes as his first postulate the real world as we know it, including all established facts and natural laws" (1188). Even more of a problem is Heinlein's Stranger in a Strange Land, with its mysticism and exploration of the mind, becomes a text of the counterculture--and a primary example of the kind of science fiction the new wave would like to see. In order to accommodate this disruption, the Roses and other critics of the new wave have to create a break in Heinlein's work, casting the juveniles and the magazine fiction as his early attempts that are tied to the scientific establishment before Heinlein breaks free. As will be shown in Chapter 3, the supposed break in his work is not as clean as a new wave critic would like to see. Heinlein's early work is challenges the minds of the scientific establishment, and his so-called hard stories are peppered with the nonrational (the famous Waldoes, for instance, are powered by magic).

Even when post-wave detractors, like William Sims Bainbridge, concede that science fiction had a positive role in the development of spaceflight, they find fault with the legacy. Bainbridge says that only "retreatist or magical social movements" have come from science fiction:

> fans seek vicarious gratification through the stories rather than actual success through achievement. The slan fantasy can be seen as the desire

> for status acquired magically, without the necessity of actually striving (229).

Others say that golden age science fiction had a positive effect in that it lays a ground for the authors of the new wave. Many, like Marshall Tymn, say that science fiction has nothing to do with the pulps, calling golden age writers of "space fiction" and encouraging writers to look to fantasy and stories of the mythic imagination that originate in Kepler's Somnium. Increasingly, authors after the attacks of the new wave suggest that the proper role for science fiction is to present the unfathomable and incomprehensible, and authors like Campbell, Asimov, and Heinlein are unsuitable for this project because they suggest the universe is ultimately comprehensible. In addition, they portray authors of golden age fiction as being removed from issues of society and suggest that golden age authors present an uncomplicated vision of the world.

There are those after the 1960s who try to maintain the good name of the golden age, and interestingly these focus on the personalities involved (like a cultural study of the workers involved) and not the setting or characterization of the fiction.[9] But these studies are few and far between, and they are written by critics with ties to the pulp era; they do not represent the prevailing feeling that science fiction was part of a militaristic dream. It takes some time for critics who attempt to cover science fiction as a field to counter the new wave's attack on the golden age. One early attempt is by Patricia S. Warrick, who in her 1980 study of cybernetic fiction says she longs for the more scientifically rigorous writing of the 1930s and 1940s. Barry Malzberg in 1982 suggests that the most appropriate form of science fiction is pulp because it is "the beast born in the era of enlightenment to snarl at the heart of all intellectual and technological advance" (4). Malzberg praises Gernsback's ghettoization of science fiction, something that many in the wake of the new wave suggest is a flaw. Frank Cioffi, using a

structuralist approach in 1982, suggests that the mythic value of magazine fiction in the 1930s and 1940s is in the depiction of values: the reader considers how the mythic society views the technological change presented by the story, and then must determine whether that society's view is accurate. Cioffi embraces the ninety-five percent of science fiction that Stanislaw Lem and Darko Suvin hold to be "unworthy" by using a cultural criticism instead of looking for elite literature (144).

In addition to these recuperations, some helpful studies have emerged in the wake of cyberfiction. In attempting to deal with cyberpunk in 1990, Norman Spinrad suggests that the split between hard science fiction and the new wave is can be seen in the difference between Verne and Welles, but goes on to say that William Gibson heals that fissure by writing science fiction in a world of hard science fiction of the golden age using the style of the new wave, emulating Ellison, Burroughs, or Moorcock. Brooks Landon is not exactly enthusiastic about the golden age, but at least includes it as a transition point between the Victorians and the new wave. E. F. Bleiler assembles a critical resource in 1998, bringing together histories of the pulps from 1926-1936 to demonstrate the interests of the publishers to critique the prevalence of science in modern life. Gary Westfahl, also in 1998, specifically seeks to recuperate the work of Gernsback and Campbell (and Heinlein, as an exemplar of the Campbell writer); Westfahl's interest in this early period leads him to the important observation that the field of science fiction is not simply made up of stories, but a multiplicity of genres that includes commentary, nonfiction, and prophecy. Samuel Delany in 1999 makes several important pronouncements about science fiction as a "paraliterary" genre that is outside of, or a commentary on, other literature.

In spite of these attempts to recuperate golden-age science fiction, the mainline argument retains the new wave's charge that this genre is complicit in

cementing compliance with wartime imperatives, stifling dissent, and representing an alliance between the military, industry, and entertainment interests. George Slusser and Eric Rabkin's collection Hard Science Fiction, based on papers delivered at a 1983 conference, demonstrates the tendency of critics to worry about the genre's affinity for technology. This characterization works in conjunction with efforts to recharacterize the primary function of science fiction images of fantasy that provoke wonder; the authors do not consider the fictions to be statements for discussion, but unconscious reflections of a technological society. Many studies--John Huntington's Rationalizing Genius: Ideological Strategies in the Classic American Science Fiction Story (1989), David Seed's American Science Fiction and the Cold War (1999), De Witt Douglas Kilgore's Astrofuturism: Science, Race, and Visions of Utopia in Space (2003), and others[10]--tie work from the golden age to attempts by engineers and businessmen to short-circuit democratic principles and rely on unchecked genius to develop social policy. They no longer see representations of a technological society as efforts to promote discussions about technology, seeking to use the New Criticism to find tensions in the artistic representation of technology--a project that fails.

Given this critical legacy, this dissertation will seek to demonstrate that it is the unfinished and contributory nature of social science fiction that is representative of its power. If one accepts the idea of cultural resistance provided by Denning, the claim of the new wave to provide a truly emancipatory form of literature is dubious given its reliance on oppositional forms.

Implications of This Study

In order to be taken seriously, the authors of the golden age would need to be recuperated, and in some cases, this recuperation will be only partial. One can

perhaps accept the proposition that Heinlein is not a fascist, but can one forgive his support of the Vietnam War? One might be able to find in Campbell's support of the paranormal an emblem of nonrational science, but will his conservative views on race allow him to find a place in the academy? Most critics do not want to discredit Asimov, the bright young immigrant from Brooklyn, but by association and by worldview, even he is denigrated as espousing a deterministic vision of history that is unsuitable for the modern age. Bringing Star Trek into the academy is unlikely to succeed either; the crew's attempt to communicate with the radically different species the Horta will, no matter how much context is given, likely cause titters because the class will only see Spock trying to use his powers of mental telepathy to communicate with a rock. From the dangerous to the absurd, why should a dissertation be offered to revise the critical paradigm used to discredit these authors? Certainly part of the reason Zeus and the Olympian gods trap the Titans under Mount Etna is for the benefit of the world and not just their personal gain. Before one attempts to dig them out, should there not be a good reason?

A major thesis of this dissertation is that genre literature operates as an imaginary space analogous to a public sphere. Science fiction provides individuals with the tools needed to engage other readers in the process of debate and consensus. This group of practitioners, who are presumed to have equal rights to the sphere, and the invention of a mechanism for each to put his or her proposition on the stage exemplify the promise of pop genres, echoing Benjamin's prediction that the readers of literature will become its authors and providing for a Denning-style cultural study. This presumption further demonstrates the possibility of the cultural resistance of science fiction: readers are not passive victims of allocution; they are consultants and creators of the

genre. An examination of drafts, letters, and other ephemera is essential to this aspect of the dissertation.

In genre literature, the line between writer and reader is blurred, creating an informed community that undertakes a social project using the genre as a medium of exchange, not the expression of an individual genius. This blurring is an indication of the effort to create a space for cultural resistance: clear definitions of author and reader help to maintain the reader in a position of uncreative receiver of text.[11] Genre literature works to form a community, promoting a vision of science fiction as cultural process allied with debate and consensus. As an imaginary space, science fiction offers individuals the tools needed to engage other readers with arguments over plausibility and tradition. This method of production--a group of practitioners who are presumed to have equal rights to the sphere and a mechanism for each to put his or her proposition on the stage--exemplifies the cultural resistance possible in mass media. Readers are not passive victims of allocution.

A portrait of the golden age writers crafting a narration that provides a space for cultural resistance in mass media is valuable in the age of new media for an additional reason. In his study Free Culture, Lawrence Lessig suggests that the current debate over copyright infringement is not so much a question of lost revenue. The entertainment industry's suggestion that the digital age threatens its profits, Lessig says, is a smokescreen for a larger concern: if a large number of works fall into the public domain, then consumers will be busy repurposing old content for their own amusement. Instead of going to the movies or watching television, consumers might invite friends to their homes, pop their own popcorn, and enjoy their own derivative culture. Lessig's point is well taken, but this of course involves a dependence on the mass media as an origin for the raw materials.

It might seem, in the wake of 2001 and other masterpieces of science fiction film, that the ability of individuals to participate in mass culture is as Lessig suggests: as a repurposing audience, analogous to Henry Jenkins's "textual poachers." Social science fiction, even more than Lessig's repurposing audience and Jenkins's textual poachers, suggests a different way for individuals to interact with mass media. Lessig and Jenkins promote the idea of an individual who depends upon the entertainment industry; the creativity of the audience will be limited to what he or she can do with the assumptions and representations sanctioned by the prevailing ideology. This dissertation provides a different vision of cultural resistance through mass media: the idea that mass media can promote and enable a different kind of society, one that argues about its norms and provides an opportunity for authors to publish work that is contingent on the audience's acceptance. While this vision shares the anticommercial message of Lessig and Jenkins, it adds to the discussion the possibility that the consumer in an age of mass media is not beholden to official representations. The promotion of this vision offers a valuable antecedent for those who wish to understand how future manifestations of cultural resistance might be fashioned using mass media.

Overview of the Dissertation

The question for the current study is whether the cultural resistance in social science fiction is distinct from the cultural resistance of other forms of art. Even if cultural resistance is an alternative to oppositional action, in order to qualify as cultural resistance it must be opposed to something, and if the study of this resistance is to be worthwhile, the something to which it is opposed must have an analogue that lives beyond the period of the study. Writers have to use a

collective hallucination to find a space for cultural resistance because, in spite of the supposedly organic nature of mass culture--organic in the sense that it springs out naturally from the mind of a creative genius--the competition for science fiction is created in a special environment. Individuals otherwise have little hope for creating culture that could stand against these factory products, especially if those individuals still believe that mass culture needed an environment behind it in order to succeed. This dissertation examines five particular sites of potential cultural resistance in the years 1930 to 1970. These works provide insight into the early attempts to promote a new collectivity aligned against master narratives.

The first chapter considers the fiction and editorial work of John W. Campbell. Here, Campbell redefines the authorial persona as the man of science called away from his official duties and regions of sanctioned research--and so creates a space for cultural resistance for those who are involved in technological fields.

The second chapter considers Isaac Asimov's fiction, nonfiction, and editorial work. Asimov is the prototype fan-practitioner and uses his experience to try to call others to the genre, hailing the reader as a potential contributor. In addition, he exemplifies the multiplicity of genres that are inside the rubric of science fiction. In order to promote a space for cultural resistance, a culture must engage all aspects of the public sphere: certainly opinionated discussions about new forms of art are important, but so is the ability to discuss the terms of the debate and the aims of the genre.

The third chapter considers the so-called juvenile fiction of Robert Heinlein. In his fiction, his reader has to assemble different worldviews and confront his or her assumptions. This duty is odd given the supposition of the

new wave that social science fiction could not engage the reader in issues of identity. An examination of the cultural work of his novels helps to counter the claim that only new wave fiction provides a cultural space for readers to examine their cultural assumptions.

Following these three examples of cultural resistance in the golden age, the final chapters turn to two moments that are supposedly emblems of the new wave. The original Star Trek television series, as it turns out, is fully grounded in the principles of social science fiction. While some might see the fan fiction that results from the series as an early attempt to adapt mass media to one's personal needs, the reader of this dissertation will see this aspect of the series to be somewhat limited. However, in the emblem of the autopoietic self, Star Trek is an appropriate capstone for the promotion of cultural resistance in mass media.

Stanley Kubrick's film 2001: A Space Odyssey is the focus of the final chapter of this dissertation. This work is successful in critiquing some of the premises of the golden age. Social science fiction appropriated certain features of modernist discourse that in themselves needed to be challenged--not to mention the fact that the genre's success created a new legitimate regime that offered a fantasy of perfect communication, definable spaces, and technological mastery. However, the legacy of the film is not so much a discussion of unknowability or the critique of instrumental reason, which is what a new wave practitioner would want; engineers uniformly turn to the character of HAL as an emblem of a sentient computer instead. Unfortunately, the indeterminacy promoted by the film triggers a puzzle-solving response in the reader, who then creates a pristine and knowable world from the fragments of narrative Kubrick leaves for the viewer. Furthermore, the spectacular nature of the film creates a pronouncement instead of inspires an answer: one can imagine commandeering a movie set and

making a revision of Destination Moon, but the mechanics involved in making an answer 2001 exceed the typical viewer's ability to mount a response. At this time, the use of mass media to hail the consumer as a creator passes from science fiction. The telling moment is George Lukas's Star Wars (1977), which enables a tremendous fan base to enjoy an immersive environment that is supported by paraphernalia but asks readers to exist comfortably in the world provided by the producers.

Chapter 1. John W. Campbell: The Anthropologist of the Future

The golden age of science fiction is often said to have been the brainchild of John W. Campbell. In a memorial to him, Lester del Rey writes: "As an editor, he was so large a man that he made a tiny and seemingly unimportant field grow to fit his vision and his stature" (Biggle 227). However, so little criticism has been written about Campbell that he is something of an absent center of the science-fiction saga. It is not hard to see why. After a short but prolific career as a fiction writer in the 1930s, Campbell turns most of his attention to editing the work of others. Isaac Asimov reports that Campbell explained the reason thus: "Isaac, when I write, I write only my own stories. As editor, I write the stories that a hundred people write" (Harrison, xi).

There are many stories of Campbell's success as an editor. Asimov compares Campbell's power to a spell: "He filled me with enthusiasm. He made science fiction the most exciting thing in the world" (Platt 9). Theodore Sturgeon writes: "Once I got seven thousand words of comment from him on a five-thousand-word story" (Biggle, 227). His provocative remarks can be seen in the context of inspiring new writers. Mack Reynolds, explaining how it is that he came to write a story about American blacks who return to Africa to bring the continent to civilization, reports that most long stories in Analog:

> were written at a suggestion of John Campbell's and whole chunks of them were based on his ideas. I don't mean that he necessarily agreed with a great deal in them, but, as always, John liked to throw a handful of mud in the fan just to stir up controversy and get the folk to thinking (Harrison 202).

Campbell's argumentativeness has been noted in several memoirs. Albert Berger suggests that it is part of his attempt to break free of conventional thinking. His "deliberately outrageous argumentative statements" are designed to stir a discussion "from which, he said, might come insights that no one, including himself, had previously had" (197). In publishing extreme views, one might conclude that he is attempting to do to all of his readers what he does in private with his writers: spur original thought.

Another reason why Campbell is an absent center is that he is something of an embarrassment to the writers he inspired and to the fans of the golden age. As an editor in the 1950s, he writes editorials in an effort to promote investigation into the fringes of the scientific community. Among the most famous of these, he expresses interest in a propulsion device designed by Norman L. Dean that he purports does not need fuel; the potential of Hieronymus machines to capture the power of the mind (and other experiments in extrasensory perception); the alleged cover-up of krebiozen, which is promoted as a cure for cancer; the revitalization of the dream of dowsing rods to find water or spirits, and Dianetics, the essays and stories by L. Ron Hubbard that are a precursor to what today is known as the Church of Scientology.

Whereas these follies embarrass the writers he recruited because they are practitioners of "serious" science, they are more embarrassed by Campbell's editorials, which increase in length from the one-page announcements in the first decade of his editorship to issues of science in the 1950s and, in the 1960s, to issues of general concern and contemporary events--including some conservative ideas about race in which some may find evidence of racism. This progression from the weird to the terrible has sealed Campbell's fate. Few writers about science fiction give him more than a passing notice, and when he is

treated fully, it is to criticize his embodiment of a technological enthusiasm that plagued the World War 2 years.

In light of this critical vacuum, it is tempting to set up Campbell as the ignorant or flawed origin of social science fiction, the vexed source of the genre later practitioners had to transcend. The question of origins is, as Michel Foucault suggests, a vexing one. In the rubric of descent, the origin is the moment of pristine ignorance, the position of "inevitable loss" from which an idea springs forth in purity, a fleeting moment of truth (79). He writes that establishing a golden age as a stable point of origin hides the complexity of the past, since every beginning is simply scratching over the pages of the past. He admonishes historians to unravel genealogies rather than establish origins, since the study of origins has the tendency to hide the convictions and knowledge of the past--and the convictions and knowledge of the past can only be revealed if one turns to the genealogy.

Instead of postulating Campbell as an ignorant origin, it is possible to consider a genealogy of Campbell's work--and, since he stops producing fiction once he becomes an editor, this genealogy becomes the genealogy of the type of science fiction he promoted, social science fiction. This genealogy, however, contrasts with the received wisdom on Campbell. A theme in the coming chapters will be the unfavorable impression social science fiction writers have gained in the passing of time. In some cases, this impression may be justified. And yet it is strange that a genre like social science fiction that seeks to transform its audience into active members of a collective--and in so doing create a space for the critique of existing social structures--should be condemned as being conservative. Campbell's ideas about race will cause him to be labeled as racist by the new wave, his interest in expanding the bounds of science will make people believe that he is overly fascinated by quackery, and his exuberance about

the possibilities of technology will lead others to reprove him for thinking that the interests of the engineers outweigh any social or ethical concerns. It may be impossible to write about these defamations without being labeled as a reactionary or revisionist in turn, but it is worthwhile to consider why the innovator of a style of narration for a collaborative fiction that paves the way for stunning social critiques would be dismissed as an authoritarian technocrat.

The genealogy of Campbell reveals several important aspects of social science fiction. First, as indicated in the introduction, the genre's connection to the basest forms of mass culture helps the critic to think of it as a populist tool to inform the masses rather than an ideological tool to instill authoritarian values. Its discussions of race and alternative structures for society remind one of how anthropology (and other social sciences) creates utopian visions of other societies as an exercise to create a cultural space where readers can examine their fundamental principles and assumptions. In its opposition to tradition and its demand for new perspectives, social science fiction fits in with modernism and more particularly with the proletarian fiction that borrows modernist aesthetics to create a positive cultural space to think about one's place in society. Finally, it shows the reliance on a cultural collective that casts an alternative spin on the use of civic associations, providing a voluntary association for adults that is not based on employment, heritage, or caste. In drawing together these strands, Campbell is clearly a figure worth studying as someone who employs mass media as a cultural tool.

Campbell and Science Fiction

While the proponents of the new wave would have us believe that Campbell created the science fiction of the golden age, it is important to note that Campbell comes on the scene at the exact moment when science fiction is

becoming established as a genre. He begins college at the Massachusetts Institute of Technology at the end of the Roaring Twenties as the first issues of Amazing were going on the shelves, entering into the relative independence of college with these magazines as fuel for his imagination. He is an early fan of Amazing and his first fiction is published there. His first story, "When the Atoms Failed," is published in 1930 when he is a sophomore at MIT.

Campbell, the son of an electrical engineer employed by New Jersey Bell Telephone, is a scientific misfit from the start; as a student at MIT in he meets Norbert Weiner, the founder of cybernetics, but he is expelled in 1931 without a degree. Most report that this is because he fails an examination in German, but E. F. Bleiler wonders if it is because he enjoyed writing more than studying. After finally taking a degree in physics from Duke University, Campbell can only find part-time employment in sales at the height of the Great Depression. He finds a steady market for his fiction, however, and in September 1937 F. Orlin Tremaine, the editor of Amazing, offers him a job as assistant editor (Stableford 48). In a few months, he succeeds Tremaine after Tremaine is promoted to a higher position within the Street and Smith organization.[12] Bleiler calls Campbell the first professional science-fiction editor, since he is the first to take on a career as editor of science fiction; others who edit at the time are businesspeople, publishing executives, or young writers who are trying to earn a living until their fiction takes off. Chapter 2 points out that Isaac Asimov is the prototype fan-practitioner, but this is also true to a certain extent with Campbell, the main difference being that Campbell could not benefit from his own tutelage.

To those who suggest that Campbell invents or creates the idea of golden age science fiction, Gary Westfahl says that it might be better to say that he

"noticed it, responded to it, and helped it along" (39). As evidence for this supposition, Westfahl looks at the birth dates of science fiction authors whom the Science Fiction Writers of America chooses to be listed in The Science Fiction Hall of Fame anthologies. The average year of birth is 1916, and so the idea that extended contact with Campbell produces a stable of writers seems absurd. Westfahl postulates that the only explanation for the large number of coevals is "early exposure to Hugo Gernsback's magazines" ("Dictatorial" 40, emphasis in original). Looking through the biographies of the writers under question, Westfahl cites many authors who report reading the reprinted classics and new stories they found in Amazing Stories. For a time, the Astounding edited by Campbell is the best option available to authors; if nothing else, it pays the most. Thus, Campbell can be seen as the director of the golden age, not the creator.

The extent to which editors even before Campbell become expert at vetting early versions of stories indicates that it is not Campbell who first demanded scientific plausibility. David Lasser, the editor of Gernsback's magazine, is also the first president of the American Interplanetary Society. As a scientist, he demanded scientific accuracy from his writers. In a letter asking for contributions in 1932, Lasser writes:

> I might say that our policy is aimed more at the realistic than at the fantastic in science fiction. We find that our readers have wearied a little of unbelievable monsters, unbelievable situations and feats of the imagination that could never become reality. We want imagination used, but we want the author to back it up with a convincing background, so that the reader will find out that these things could be true.

In response to submissions, Lasser writes letters directly to his authors, suggesting points at which the reader might question the scientific plausibility of the stories. When different species come together, for instance, he cautions a writer to take care when saying that humans decipher Martian inscriptions:

"[Y]ou must be sure and make it convincing how they did it; for they have absolutely no method of approach to a written language of another world." By the end of 1932, he prepares a form letter with common objections pretyped, underlining those that apply. The first paragraph suggests that the information is being provided for the "information and guidance" of the writer. At the top of this list of objections is: "no scientific background" or "insufficient science," followed by "not enough action and adventure," "not enough strangeness and mystery," "too much love interest," and "idea too hackneyed--not original enough."

Bleiler concurs with this assessment, pointing out that when Campbell takes the reins of Astounding, he improves and enlarges on F. Orlin Tremaine's policies (157). It is Tremaine, after all, who encourages readers to engage scientific ideas in a letters column, includes science non-fiction articles and essays, and demands that the stories in Astounding have scientific plausibility (Carter 15-6). Setting up Campbell as the progenitor of the field is a convenient fiction, then; it would not be as easy to cast aspersions at Hugo Gernsback, the immigrant entrepreneur. Campbell, with his obvious flaws, is the perfect figure to set up at the origin point if one wants to discredit the genre.

To establish Campbell as the progenitor of science fiction, however, is somewhat disingenuous. In spite of the accolades he has receives, he does not invent the genre. While some claim that he is the one who demands scientific realism, as indicated above this tradition is already established by the time he is writing--helping to explain his popularity with editors and fans--and certainly is dominant at the time he takes editorial control of Astounding. Occasionally this is pointed out by critics of the genre; Mark Rose, for instance, points out that Campbell and his authors were all "second-generation" science fiction writers, cutting their teeth on Verne, Welles, Burroughs, and Doc Smith. Whatever

innovation they seek to bring to science fiction is a refinement to an "established genre," not the creation of something new (12). To accuse Campbell of initiating a fantasy of the primacy of science and the beginnings of an imperialist vision of outer space is as historically untrue as it is unfair: the space opera has already popularized the illusion of a unified intergalactic space with a cursory understanding of the technology required, whereas Campbell thinks about the kinds of technology and resources such a journey would require and when his characters get there, they are hardly the dominant species.

One of Campbell's more genuine innovations is the method by which he trained writers and employed them to engage the social implications of technology. Westfahl likens Campbell's vision of science fiction to a "gigantic, continuing scientific brainstorming session," and the concepts that survive the audience of scientists are worthwhile because they are "the reasoned conclusions of a group of qualified individuals" ("Convenient" 61). The past participle "reasoned" resonates here; Westfahl points out to the pattern of argument and discussion that precedes publication. It is not as if science fiction is a check on the authority of science, but "a new autonomous power in society, offering a stimulating type of education to future scientists and presenting unique perspectives on proposed scientific ideas to scientists and other authorities" ("Convenient" 62). John Huntington takes this idea further, suggesting that science fiction is unique among popular entertainment because it is self-creating, instead of being part of a corporate interest. In science fiction, he continues, not only are the readers and writers the same people, but also "[o]ne thing that distinguishes the genre is the frequency with which writers become editors" ("Thoughts" 141). Huntington suggests that innovation in the genre of science fiction results from the clash between editor-writers who think they know how the genre should be contrasted with what he could have called writer-editors,

those authors who have a thought about the way the genre should develop. Campbell's heavy-handed editing, then, is really an opinionated discussion about the way in which the genre should be represented. Isaac Asimov has explained the experience of Campbell's editing with these metaphors:

> Campbell was a spider sitting in his web. To him came his fifty writers. He gave each one his ideas and watched for the sea changes that came back, and those sparked other ideas that he gave to other writers. He was the brain of the superorganism that produced the "Golden Age" of science fiction (Science Fiction 179, emphasis in original).

This ethic of sharing and discussion, which will be considered more fully in the next chapter, is a primary feature of the genre and represents the way in which social science fiction recruits authors from a range of readers: by promoting an argument about the definition of science fiction and leaving open the question of which works should be considered science fiction, readers are called from their status as receivers of text and brought into a professional discussion. This is a primary gateway by which a new science fiction writer (writer of fiction, writer of criticism) is born. In Campbell's editorial style, one can see how an author would experience a sense of cultural resistance. Here is a private individual not tied to any particular lab or university, demanding that laboratory technicians and research scientists use their minds to imagine what could be, instead of invent what they have in response to research initiatives or funding opportunities. People who are generally at the behest of commercial or governmental imperatives are suddenly given a place to create and explore.

While the authors of science fiction certainly draw upon popular antecedents for their work--the myth and heroism of epics in ancient cultures, the utopian manifestos of the Renaissance and Enlightenment--it should be clear that the concerns of science fiction writers are somewhat more immediate.

Campbell, just like Hugo Gernsback, is faced with the problem of having a medium to transmit stories and information about the future of technology but few authors to fill the channel; their imperative is not so much to create an audience--these magazines being cast-offs of larger enterprises--but instead to create authors. In addition, Gernsback and Campbell are confronted by what Campbell would come to call the scientific establishment. Gernsback is thwarted by an increasing amount of publicity about the technological industries that present new developments as wonders of the age that are out of reach by common individuals. He wants to sell electronic equipment in the mass market, but the public believes that technology is something that they could neither understand nor afford. Campbell is a surplus engineer: having finished his degree, he cannot find a place for himself in the already-entrenched scientific establishment. His fiction, as is discussed later in this chapter, is not about popularizing science. Campbell's fiction does not attempt to extend the reach of the scientific establishment but instead wishes to broaden the scope of inquiry. His early novels promote ideas of telepathy because he wants his characters to communicate with alien species that do not share the same language. He studies and speculates about the nature of Einstein's physics because he wants to explore a post-Newtonian world. He develops theories about force fields and energy beams because he wants his scientifically minded characters who lack political and economic power to come to the aid of peoples being attacked by tyrannical powers.

The Evil Genius

In spite of his editorial work and his effort to create a collectivity of authors, Campbell and the fiction he promotes are frequently remembered as an authoritarian voice that is complicit with mid-century technocracy. Michael

Moorcock makes the most scathing critique of Campbell in a 1978 essay, "Starship Stormtroopers." The essay takes on both Campbell and Robert Heinlein, as indicated by the obvious pun in the title. Moorcock became editor of New Worlds magazine in 1963 and championed the new wave of science fiction, a collection of writers who sought to connect themselves to the nouvelle vague in French cinema. Part of the vitriol of Moorcock's criticism can be ascribed to Oedipal strife; certainly, the next generation of writers needs to discredit its forebears in order to find a place for itself on the market. For instance, Moorcock credits Campbell with creating a revolution in science fiction as editor of Astounding Stories, but calls Campbell's writers (he names Heinlein, Isaac Asimov, and A.E. Van Vogt) "wild-eyed paternalists to a man, fierce anti-socialists, whose work reflected the deep-seated conservatism of the majority of their readers, who saw a Bolshevik menace in every union meeting" (196). He blames the war partly, since it provided a love for typological characters and "authoritative" technical terms that they use to describe "scientific hardware and social problems alike" (197). Throughout the essay, Moorcock conflates his assumptions about the larger society and his ideas of what Campbell's authors have in mind when they are writing, peppering his complaints with ad hominem attacks (calling the writers of Astounding "crew-cut[,] wisecracking, cigar chewing, competent guys" (197)).

Leaving aside for a moment the specific charges Moorcock makes, one can already see the difficulty in writing a critical study of social science fiction. The Introduction presents the idea that the best way to understand social science fiction is through narration: it is the authors' creation of personae and their imagination of their audience that makes social science fiction distinctive. Yet, already this study is doomed. Moorcock's epithet of "competent" does not bode

well for Campbell, especially in the context of racism: is one to think that Campbell's value as a narrator is to present a competent white supremacist persona that addresses an audience of budding agents of world domination? This is certainly the impression that Moorcock and other proponents of the new wave of science fiction would have one believe.

Campbell is an easy mark. It is easy to blame him for the seeming erasure of race and gender in social science fiction: There are few women or people of color in his stories. One might prefer that he were more interested in gender equity; the fan of social science fiction, however, will have to wait for Heinlein's juveniles before there is anything approaching interesting female characters and racial or ethnic diversity.[13] A 1948 poll suggests that only eleven percent of active fans of science fiction are women (del Rey 139). Even today, there are a marked gender and racial differentials in the sciences, and in the 1920s, when Campbell is a student at MIT, this situation is far more pronounced.

Aside from the marketing banter of Moorcock's editorial, one can find legitimate complaints in Moorcock's essay. Campbell is representative of a Victorian hangover about race: he conflates race with the Lamarckian category of species: humanity is one race, and the species one finds on other planets or in other solar systems are members of different races. There is little differentiation between members of each "race" (or species); the humans are cast the same, and alien species are similarly uniform. What one sees in Campbell, and in many writers of science fiction before the new wave, is a vision of racial purity that is somewhat disturbing. Moorcock brings up Campbell's racism about the Watts riots; the pair had been on a panel together in 1965, and according to Moorcock Campbell floated the idea that certain races were born naturally to be slaves:

> [H]e pointed out that the worker bee when unable to work dies of misery, that the moujiks when freed went to their masters and begged to be

> enslaved again, that the ideals of the anti-slavers who fought in the Civil War were merely expressions of self-interest and that the blacks were 'against' emancipation, which was fundamentally why they were indulging in 'leaderless' riots in the suburbs of Los Angeles! [Another panelist demolished] Campbell's arguments, which left the editor calling on God in support of his views--an experience rather more intense for me than watching Doctor Strangelove at the cinema.

Concerns about Campbell's assumptions about race are not hard to find. Frederik Pohl opines that Campbell never "withheld any obligation or courtesy on the grounds of race or religion" but goes on to say that Campbell assumes his readers are "WASPs" and is not so confident in their tolerance, so he encourages some writers to take English or Scottish surnames. Furthermore, Pohl points out, Campbell is not distinctive in his exclusionary tastes; there are few Jewish or black characters anywhere in the fiction when Campbell is writing (1920s and 1930s), and in Doc Smith's Skylark and Lensmen series of the same period, "almost every one is either [a] petty racketeer or pitiful victim" (89).

Isaac Asimov and Campbell carried on an extensive correspondence about this issue, even though it is absent from Asimov's autobiography of this period, In Joy Still Felt. In a collection of letters Yours, Isaac Asimov, edited by his brother Stanley Asimov, there is a 1963 letter from Asimov to Campbell. Campbell apparently had asserted that he wants black Americans to "earn" their rights, to which Asimov responds: "Groups don't have to earn their group rights. Individuals have to earn their individual rights. The Negroes want their chance to earn rights as individuals" (99). He goads Campbell by suggesting that Campbell would never reject a story outright from a black man because "in Alabama" "they" think that "the chances of a Negro writing a good story are so small" (100-1). Asimov concludes with a prediction that Campbell will come over to his side, but it is hard to tell if Asimov's faith is warranted.

Letters from Campbell in the Asimov collection at Boston University's Gottlieb Center place this argument in a larger context. In 1961, Campbell writes to Asimov what might be seen as the first principle of his racism: human races result from selective breeding, with partners choosing members of their own race. Believing that both personality and physiology traits are influenced by genetics, and that what makes a mate desirable is culturally determined, leads Campbell to conclude that there are differences between races based on breeding. He does say in this letter that white men cannot assume that they are superior due to their complexion, and adds that a black man should not be afforded rights simply because of his complexion. It would be simple to say that Campbell only disagrees with the growing impetus toward affirmative action, but he does think that the different cultures that surround the different races have made pronounced and definite differences between the races. In the same letter, Campbell writes that white superiority is based on their superior culture and not their privilege. It is wrong to assume, he says, that the superior achievements of light-skinned people are the result of biology. The Europeans, he suggests, invent universities, cultural institutions, and science to improve their own kind. The darker races, he writes, because of their tribal organization, were hemmed in by superstition and tradition and failed to develop methods of science, while Europeans valued the thinker who could make things that worked. Campbell's collation of race and nationality here is bizarre and his notions of racial purity are deplorable. While he claims to have researched his ideas with works of history and anthropology, one could wish that perhaps his reading includes works that does not promote this racist essentialism.

Asimov is clearly indebted to Campbell, as will be clear in the next chapter, for Asimov sees Campbell's tutelage to be a formative moment in his career. It may not be surprising, then, that Asimov is one of Campbell's frequent

defenders, both privately and publicly. Toward the end of his life, Asimov condenses his two-volume autobiography into a single volume, extending the coverage to his later years and adding the word "memoir" to the title. In this work, he points out that in the days before World War 2,

> racism and racial stereotypes were an ingrained part of the American scene. It was not till World War 2 and the fight against Adolf Hitler's racism that it became unfashionable for Americans to express racist views. […] Hitler's example killed its respectability except among the troglodytes we always have with us (41).

This raises an interesting question. Asimov does not include any information about race in his chapter on Campbell, nor does the topic of race come up in the 1960s part of his memoir when Campbell's editorials turn from one-page comments into multiple-page musings on current events. Does Asimov consider Campbell to be a "troglodyte," or does he think Campbell is not racist?

That Campbell is conservative, there is no question. He suggests in his editorial "On the Selective Breeding of Human Beings" that eugenics has been practiced ever since the start of the human race, in the sense that creatures that could speak and could learn to use their reason over their instincts were selected as mates and those who could not were killed or, at least, not selected as mates. The idea that control over one's emotions is a genetic characteristic is as dubious as the nineteenth century supposition that genetic inheritance included temperament, but that is not the least of the problems with the editorial. At the end, Campbell suggests that a rapist is a person who has failed to "override an instinctive drive" (178) and, in an earlier day and age, would have been killed without mercy. He does not go so far as to say that modern rapists should be executed, but he does say that they are less than human.

On the other hand, Campbell's editorials show a keen awareness of the fates of societies in contact with more developed civilizations. In his 1961

editorial "Colonialism," he praises the way in which the native peoples of New Zealand, Hawaii, and Alaska were able to create a hybrid culture when faced by European cultures with a greater technological capability. This hybrid has to be based on a sharing of information between the parties that come into contact, predicting the discussion about sustainability and innovation that Arnold Pacey will investigate under the rubric of "technological dialogue." Campbell points out how the Inuit (what he calls Eskimos) quickly become adept at using mechanized devices, but also share their knowledge of Arctic survival. He concludes that societies can engage in a relationship of mutual teaching when each has a developed civilization--development here not being dependent on having sophisticated industrial tools but having an established set of skills and techniques that is passed between generations. In areas with tribal forms of society and little proliferation of technology, such as parts of Africa, Campbell says forms of slavery result from intercultural conflict. In this editorial, he says he would like to "raise the question" whether the Africans were "responsible" for their enslavement--responsible because they had a tribal form of government that is not a defense against civilizations based on technique (175). It is not a question of certain races being suited for slavery, but certain forms of societal organization. In this editorial, Campbell makes a rare mention of a primary source, suggesting that his readers pick up Louis E. Lomax's study The Reluctant African (1960). Lomax, an African-American professor of philosophy, is also an activist reporter who suggested that the Civil Rights movement is too conservative. In this editorial, at least, Campbell makes an effort to honor the works of a black man.

In 1965, Campbell does not seem to have written directly about the August riots in Watts, California. Strangely enough, however, Campbell wrote an editorial in January 1965, "Race Riots," about lesser-known riots in the

summer of 1964 in towns of the Northeastern United States. He starts the editorial by stating that the riots were not "white against black." For one thing, less that one half of one percent of black inhabitants of Harlem participated in the riots. While the rioters in Harlem were mostly black, "this was not the pattern in Rochester, Chicago, and other places" (7, emphasis in original). From the start, Campbell tries to disassociate any ideas of race from the topic; the title "race riots" is about the common perception that the rioters were black. "They were race riots, all right--but the races involved were Barbarians vs. Citizens--and neither skin-color, religion, or home background had anything whatever to do with it" (7). Thus, he returns to a favorite theme of his editorials, the idea that modern civilization is raised out of a barbarous state that is akin to genetic inheritance. He quotes a rioter who says "They're killing us psychologically, damn it! [...] If they're going to kill me, I'd rather they did it with a bullet!" Pointing out that not all the rioters are black, Campbell says that it is true that "city-culture" is killing them--"them" being "all the Barbarian rioters, black and white, Jew, Christian, Mohammedan or Buddhist, in all civilized lands everywhere" (95). This image of a "race within a race" is a frightening explanation of the boiling social unrest of the sixties, and predates the public interest in the riots in Watts six months later.

Campbell goes to some pains to disassociate himself from the position of a racist--perhaps recalling Asimov's admonitions that others will consider him to be racist if he does not take care with the words he publishes. Campbell does refuse to accept the liberal proposition that an individual can change depending on circumstance, and yet, given his frequent claim that racial characteristics result from the history and culture of society, and that he specifically refrains from suggesting that there are specific racial markers that help one identify members of the "barbarian" race, an investigation into Campbell's racism is

ultimately unsatisfying. He does seem unhappy with the particular discourse on race, but his alternative ideas about race are not particularly useful. While it is interesting that Campbell, who has ambiguous ideas about race, would be called out on account of racism, even more interesting are his ideas about how technology intersects with race.

Race and Anthropology

What is remarkable about Campbell is not that he might be a racist, but his insistence that societal development is a choice that members make on a nearly unconscious level. For instance, even today partner selection is something that many people view as being beyond choice and more related to temperament, so many people do not think that their choices are embedded in cultural patterns that have an impact on a society's development. The effect of underlying structures of belief on technical development is perhaps not quite so cut-and-dried as Campbell presents it, but at the same time it would seem that the way one believes the universe is organized would encourage or discourage certain types of inquiry.

This caveat is not enough to exonerate Campbell as a racist, but it does help to explain why it is he, more than anyone else, who can be credited with the genesis of social science fiction. Most of the time, in the novels of Asimov, Heinlein, and other golden-age writers, the population of a planet cannot be divided into different races, and the population--if it is different from the human race--has essentialized features. This is harder to see in the Foundation Trilogy, but when social science fiction reaches visual media in Star Trek, this convention becomes apparent. When the Enterprise travels between star systems, one sees a disturbing certainty in the different species it encounters: they also are

portrayed as pure races. In the episode "The Apple," for instance, the crew encounters a society that is organized to serve the deity Vaal. The people of Vaal are alarmingly similar, partly as a phenomenon of television makeup but also in part due to the idea that these species are considered to be "other" and lack distinction. Species are frequently portrayed this way, and it is only at the end of the series's three-season run, in the episode "Let That Be Your Last Battlefield," that racial differences are exaggerated within a species. The half-black and half-white humanoids find each other despicable, but the crew cannot tell them apart. That the series is able to revise this notion of racial purity in its third season does not excuse the conventions that brought it about in the first place.

Campbell's fiction reflects this conventional racial purity. In his novel The Mightiest Machine (serialized in Astounding in 1934-5 and published as a paperback novel in 1947), the human race has spread to different planets in the solar system. The main character is Aarn Munro, who is born on Jupiter. This fact has given him a unique birthright: he is short in height but wide in stature, giving him supernatural strength. Here and elsewhere for Campbell, environmental conditioning takes on a power to transform an organism as much as genetic inheritance. Munro's superior intellect leads him to develop a device that allows him to travel to other stars.

Munro and his friends coincidentally find their way to a solar system where other races from Earth (the Tefflans and the Muans) are engaged in a war with the intent to eradicate the other. The Tefflans, who used to live below the surface, resemble caricatures of the devil. (These races are descended from a race that once had contact with life on Earth.) One of the colonists speculates that those left behind lose their civilization as they mingled with the base humanoids of Earth. Some land in Europe, where they fight with a race of ogres and eventually win, creating a new civilization. Others land in Africa. There the

races are unintelligent, and while the colonists are able to raise the intelligence of the races in Egypt, in doing so their "blood" is so "overcome" that civilization there vanish. In similar cases around the globe, "when the blood of the old Ma-jhay-anhu was diluted, it won for a time, and then died. … [O]nly the undiluted Ma-jhay-anhu blood lived to reach a civilization once more that endured fairly well," and this race that has come across the stars to help them in their battle (84-5). In this novel, Campbell attempts to explain technological differences on the planet Earth with an imaginary infusion of alien "blood" into the aboriginal species of Earth. In trying to deal with the geographical disparities in the development of written language, tools, and agriculture, Campbell is slightly ahead of the game.[14]

Campbell suggests that the many hominid species on Earth are quite different until being unified by alien mating; only peoples that manage to maintain a high degree of alien blood are able to maintain their civilization, and those that today seem backward simply are the result of aliens mating with species that are so savage that the alien traits do not survive. This form of racism is comforting to the racist, since the racial differences are inviolable--the original source of civilizing power is long gone, and the races of Earth can choose to either spread around their racial inheritance, risking the dilution of their stock, or can resist mating with races that might endanger any chance Earth has of maintaining civilization. Even though this discussion of race is simply part of a story that one character tells to the aliens and not a pervasive aspect of the story, it displays an alarming fear of miscegenation.

There is something familiar about Campbell's use of reified conceptions of cultural difference. Anthropologists in this period similarly exaggerate racial homogeneity in their reports. In studying other societies, anthropologists take an essentializing stance, creating a unified idea of the "other" in order to form a

basis of comparison with the author's own civilization. Ruth Benedict, in Patterns of Culture (1934), seeks to promote the idea of cultural relativity, but in order to do so she must present reified visions of different cultures. She writes about the Zuñi as if all members are the same: "Prayer in Zuñi is never an outpouring of the human heart" (62). This personification, which borders on caricature, is a mental exercise that Benedict indulges to prove her overall point: different cultures have different traits that depend on the overall mission of the society, and one cannot say one trait is more valuable than another outside the context of that society. She admits that it is difficult to write about traits when they are dominant in society; it is much easier, she says, to write about religion in the United States in 1934 since it is no longer as productive of meaning, but to write about capitalism would be impossible. Even so, such a study is necessary in order to make a critique of the current culture:

> [T]he dominant traits of our civilization need special scrutiny. We need to realize that they are compulsive, not in proportion as they are basic and essential in human behaviour, but rather in the degree to which they are local and overgrown in our own culture. … [A]ny cultural control which we may be able to exercise will depend upon the degree to which we can evaluate objectively the favoured and passionately fostered traits of our Western civilization (250).

The connection to anthropology is not as spurious as it might appear. While sometimes derided for writing "hard" science fiction--a fiction that focuses on tools and devices--Campbell actually is more interested in society. Writing for a fanzine in 1940 as Don A. Stuart, he admonishes writers to avoid dealing with the specifications of the technologies they seek to invent. He encourages them to fully develop their devices outside of the story, and write a story that depends on the consistent operation of that machine but does not revert to a narration that explains the device to a 1940s reader on Earth--the story, he says, should not

jerk away from Mars in 3783. Furthermore, he suggests that tools are part of a civilization, and must operate as if they are part of a larger culture:

> Too few [authors] build civilizations before they build stories. But a story is only an incident, and an incident takes place against and because of the civilization […]. Histories tell of kings and emperors and dictators; to get a picture of the civilizations they ruled, archeologists seek broken pots and beds and plowshares, the details of life that give the forgotten times realities. […] Not Presidents and Admirals of Space Navies, but the broken pots of another age, is the need of science fiction (A New Dawn, 462).

This sensibility is astute, and it will lead the writers under Campbell's influence to become philosophers of technology, examining what kind of society is likely to develop a certain device, and how that device interacts with that society's ideals and aspirations. This awareness is most profound in the Dune Trilogy by Frank Herbert, where the interactions between environment, technology, and culture are investigated with revealing detail.

One can wish Campbell had used a different word than "race" when trying to describe the different species that inhabit planets, but it might be more productive to think about the ways in which Campbell seeks to depict the reified notions of race in his fiction and the fictions he encouraged others to write. In his novel Islands of Space (serialized in 1930 but published as a novel in 1956), his protagonists develop a hyperspace drive--credited with being the first mention of hyperspace in fiction. The (unfortunately named) people of Negra have been thwarted in their attempt to steal the Earth's sun in the previous novel, and the protagonists Arcot, Wade, and Morey decide to use the technology they invented to travel to other stars. They learn that the Negrans have changed their fate by moving their planet so that it orbits around a new star, from which the trio quickly retreats, and then travel on to other planets to encounter civilizations that are different, and societies that have crumbled.

The strong man Torlos represents one of the species the trio encounters. They are amazed by his strength when he bends a crowbar, not understanding its purpose. It turns out that his bones are made of iron, but one of the shipmates is not convinced that such a thing is possible. Arcot explains patiently:

> "How can stone grow?" countered Arcot. "That's what your bones are, essentially--calcium phosphate rock! It's just a matter of different body chemistry. Their body fluids are probably alkaline, and iron won't rust in an alkaline solution." Arcot was walking rapidly as they followed the aliens down the long corridor (133).

This discussion is notable in several respects, some of which are not worth more than a mention here. One is that Campbell, in 1930, is fascinated by superhuman abilities in advance of superhero fiction, a genre that seems to be invented with Superman in 1938. Without a tradition of superhero fiction to build on, Campbell has had to draw upon other antecedents for his fiction. One source that comes to mind, especially while reading of the lost explorers in The Mightiest Machine, is the Odyssey and other epics in the classical mode, such at the Argonautica. In Islands of Space the overt reference to "The Rime of the Ancient Mariner" brings one's attention to the Romantic poets. The Islands of Space also calls to mind Gulliver's Travels and the isolated societies that Gulliver visits. These poems carry their heroes outside of the everyday; their heroes are privileged with an experience of societies other than their own.

The final aspect of this discussion is the narrator's comment: "Arcot was walking rapidly as they followed the aliens down the long corridor." The narrator is remarkable for its unobtrusiveness. The narrator does not remind the reader of the chemical composition of the human body, nor does it stutter in amazement. After all, it is this type of personality--in the form of the characters, but also in the narrator and the reader--that is capable of undertaking this

journey. Just as the hero and the reader of the Homeric epic must share an awareness of the Greek gods and religious conventions in order to participate in the play--and the hero and the reader of the Coleridge poem must be implicated in the poetic and philosophic traditions of modern individuality in order to make sense of the events--the reader of Campbell needs to have more than a passing interest in science. This fiction speaks the language of the scientific establishment, using the terms and concepts provided by high school science and perfected in state-sponsored research institutions, but it does not originate from these institutions. It calls to the scientific citizen in the language he or she is required to learn in order to succeed, but it twists that language to its own purpose, a purpose that is removed from the sense of immediacy and practicality those institutions attempt to instill in their subjects. Mikhail Bakhtin's pronouncement about what makes discourse in the novel distinct should come to mind: official language requires our immediate and unquestioned allegiance, but the novel thwarts the unitary nature of authoritative language. Campbell's narrators, like any narrator, demonstrate the necessity of having to choose a glossary--and, one might add, require the reader to shift between glossaries in order to make sense of the language being used.

As is indicated in the Introduction, this is a difference in the cultural resistance afforded by social science fiction. Campbell's fiction creates a zone for cultural resistance: official language is not distributed directly from a pristine authority, but is woven with other threads by a human subject. What is more remarkable about this heteroglossia is that it challenges the most authoritarian language of all, the abstracted and personless discourse of scientific knowledge. An engineer might have an experience of cultural resistance to the ideal of the pure communicative function of language in a literature class--perhaps Campbell found this in the ancient epics or in Romantic poetry--but he or she is not likely

to encounter it while reading the literature of science. Scientific writing is purposely abstracted from the context by investigators who want to say that the phenomena they observe are not dependent on their fallible powers of perception or the specific environment of their laboratory: if the field of science aims to provide reliable information to a technological society, it cannot allow personal prejudices or insights that others cannot access into the body of knowledge. The dream of perfect communication among scientists, then, causes the belief that personality and experience can be suppressed. Campbell's fiction is not so foolish as to confront these assumptions head-on, for this technological establishment has provided him with the knowledge that has made his critique possible. It is not that he wants to bring down the notions of science, but simply to critique the assumption that the world is ready-made, presented to the scientific mind as an accomplished fact.

The increasing amount of scientific knowledge and technical ability has a tendency to create a worldview that is informed by inevitability of structure and the necessity of law.[15] The scientific method has at its core the development of reliable knowledge, or knowledge that is repeatable and fits in with a structure of existing belief. While this knowledge is important in order for a civilization to build up a body of accepted fact that helps it to efficiently build devices and architectures, this body of knowledge also has a stultifying effect on the scientific imagination. An engineer or scientist is in danger of seeing the world as a collection of predefined equations; while he or she may not know the terms or solutions to every equation, by virtue of his or her training he or she is assured that, should it be necessary to understand how something is constructed, it could be explained.

Another remarkable aspect of this discussion is the use of speculation about science. In order to do free the mind for new ideas, Campbell takes us to

other planets where the underlying assumptions for life are not the same. In so doing, he decenters human biology from the understanding of science. Campbell establishes a tradition of alternative biologies--which he and others accompany with scientific alternatives in the other sciences and fields of technology--that will dominate the genre of hard science fiction but also serve as a backdrop in social science fiction. This examination of different kinds of arrangement is something that author Hal Clement says is a favorite topic for Campbell: taking apart the "of course" statements of science. Even though there had been low-gravity planets and high-gravity planets in science fiction, "Of Course [sic] no one planet can vary greatly in its gravity," so in his novel Mission of Gravity he created Mesklin, a planet that rotates so quickly that its equator bulges and a human who weighs 180 lbs. on Earth weighs 540 lbs. at the equator of Mesklin and 60 tons at the poles (Harrison 74). Such a world is populated with creatures very different from our own: they must use the same rules of chemistry and analogous rules for biology, but other than that, the scientist is free to use his imagination.

As editor of Astounding, Campbell wrote an eighteen-part series about the known facts of the solar system. The information is based on what knowledge is available to Campbell and is mostly outdated today. What is not outdated, however, is the sense of humility Campbell's narrator purveys. In the concluding paragraphs of "Other Eyes Watching," an essay about Jupiter, he writes:

> If some strange and utterly alien creature from other solar systems were to come to make a guess as to which of Sol's children bore life, which do you suppose he would choose? Tiny planets--the Terrestrial type--with an almost perfect vacuum for atmosphere--or mighty worlds like Jupiter? I think I would choose Jupiter, were it not that I just happen to have special, one might says "inside," dope. My personal economy is based on water (295).

There is one advantage to the relatively light atmosphere of Earth, he says. A container full of light atmosphere would find the pressure on Jupiter insurmountable and would collapse; likewise, a capsule of pressured Jovian air would burst when it reached space. The people of Earth seem to have an advantage for space travel--a remarkable assertion to make in 1937--but at the end of the essay he returns to the title, wondering what forms of life are trapped at the base of Jupiter's atmosphere, looking back at Earth and wishing that they could escape, much the same way an inhabitant of Earth hoped to escape. This personification suggests a way of using science to think about truly different perspectives--not simply different walks of life, but different forms of life. It would seem that Campbell would like his readers to think of radical difference--differences in organisms--as opposed to differences that result from arbitrary permutations of culture and history.

Social Science Fiction and Modernism

This distrust of privileged perspectives points to another aspect of the genealogy of science fiction: modernism. Certainly many authors in the modernist mode seek to break from the past, and this breaking from the past is shared by science fiction. Modernist writers also present images and syntax that are unfamiliar to the readers; in the way it presents unrelenting pictures of the unknown and unfamiliar, social science fiction seeks to produce the same disorientation that readers experience when viewing modernist art. Even in the face of this difference, the narrators, like the narrators of Stein and Joyce, are singularly unhelpful in the presentation; they do not attempt to negotiate the difference between the worldview of the art and the worldview of the reader. Instead, they go boldly forward in their new vision for society. With its embrace of new ideas

about human perception provided by biologists and psychologists, Modernism returns to the ideals of nineteenth century literary realism. As the sciences delve more deeply into the scientific investigation of the human being and its environment, in the arts one can see a parallel influx of scientific knowledge. The narrators of realist fiction become more than the purveyors of argument and transmitters of experience; increasingly, they temper their observations and their conclusions with an advanced understanding of the human organism.[16]

If Modernism seems of a different species than social science fiction, it is because modernism is predicated on an experimentation with style, whereas social science fiction maintains a conventional style but experiments with narration: both, however, are interested in breaking away from the debilitating pressure of the past. Social science fiction is not an heir of modernism, yet one can say that they are cousins of realism. Warner Berthoff reminds us that we should not be misled by the realist concern with "the way we live now" into thinking that realism is a fiction of inevitability; one of the distinctions of the realist aesthetic is that it suggests "what it is that, given these inescapable conditions, men may still do or be within them" (24-5). Modernism springs from the impulse to find new ways of representation that are suitable for a new age--in Three Lives, Gertrude Stein uses a disruptive style to represent characters who do not fit in with traditional social structures; had she used a more conventional format for her stories, her characters would have seemed pathetic, or pathological. In spite of the personal language of the novel, the facts of the characters are derived from the categories established by social science: with whom do they live, when do they marry, why do they fail to marry, what are their aspirations?

Campbell's fiction has a similar ancestry based in realism but it comes from a different route: whereas modernism is connected to realism through phenomenology in philosophy and the plastic arts, social science fiction is connected to the visionary realism of the late-century regionalists. The narrator of a Sarah Orne Jewett novel, for instance, is an intelligent and overly literate investigator of an unfamiliar region of human society. Deephaven (1887) and The Country of the Pointed Firs (1896), to use ready examples, involve the presentation of a society that derives from a different set of assumptions about how life is lived and a different natural environment. Far from expressing the idea that life is limited or constrained by these different conditions, these novels revel in the possibilities of different social arrangements. Indeed, the contrast between different islands and towns in The Country of the Pointed Firs seems to reflect a proliferation of diversity; outside of the constraints of an industrializing and rationalized environment, Jewett's novels revel in the variety of human society.

In her study of proletarian fiction, Radical Representations, Barbara Foley has established that there can be a radical revision of realism that is concurrent with modernism. She demonstrates that the imperative to "make it new" is taken seriously by the radical writers from the stock market crash of 1929 to the beginning of the American involvement in World War 2. However, for these radicals the new-making is not simply a surface matter but an effort to create a new form of literature that opposed itself to bourgeois aesthetics. Augusto Boal has ably documented the limitations of this literature: in contact with a singular consciousness, the narrator, the viewer of conventional literature is asked to see an extraordinary moment of time, where the social order is in flux. The narrator's arrangement of events into complication, climax, and resolution demonstrate a special moment of time, a time that is ended with the

social order reestablishing itself. The viewer experiences a coercive catharsis that reinforces his or her place in society. This form of fiction is not suitable to effect social change. Foley concurs: "what looks like a natural product of narrative causality is an ideological product of presupposition" (254). In addition, the self is presented as an essential characteristic and this self must undergo a transformation in order for society to change; it is not that the social environment changes, but that the protagonist learns to master the environment. Both Foley and Boal criticize conventional literature because it fails to achieve its project:

> [R]ealism turns out to be just the opposite of what it pretends to be. Rather than offering a pluralistic discourse that objectively analyzes social and moral complexities, it implicates the reader in a hegemonic discourse that discourages critical or skeptical thinking. It is coercive and authoritarian (255).

Proletarian authors turn to the ideals of modernism, then, because the forms of the past are surrounded by ideologies of accommodation and acceptance of the world as established fact. They innovate form--Foley enumerates the forms of the fictional autobiography, the proletarian bildungsroman, the proletarian social novel, and the collective novel--in order to provide a cultural space where individuals can imagine a new arrangement of the social order.[17] These forms are nascent in Campbell's work. Both Islands of Space and The Mightiest Machine start as an exploratory project like a social novel; his novels use the perspective of multiple characters in the command crew. The writers he trains will take up the forms he does not directly employ, such as the fictional autobiography and the bildungsroman. Asimov's fictional autobiography will be discussed in Chapter 2 and Heinlein's revision to the form of bildungsroman will be covered in Chapter 3. The perfection of the collective novel is seen in Gene Roddenberry's bridge crew of the Star Trek series, discussed in Chapter 5.

For now, let it suffice to say that the connection here is not an accident. Campbell and other writers of social science fiction employ fiction for similar aims: they hope to loosen the hold of conventional ideology on the imagination of their audience, supplanting the traditional role of the viewer as the beholder of art with the ideology of a viewer that must manufacturing meaning. On a related note, the modernist and the social science fiction practitioner share the idea that they can engineering a society through artistic intervention; by bewildering the viewer's sensibilities and creating a new regime for understanding the work of art, they both aim to create a dissident citizen who has broken free from the constraints of history.

Solitary Rational Genius

Another aspect that modernism shares with science fiction is the veneration of the solitary, rational genius. The use of science to inform the painterly subject leads to an idealization of the artist who is a technical expert, but unlike the artist who is adept at creating a pleasing mirror of reality, the modernists use science to inquire into the nature of perception. The resulting art may be regarded as ugly, and the artists seem to be more interested in the politics of representation than in refining their methods of representation. Similarly, Campbell's use of science to inform the creation of his stories--instead of using the techniques of literature to create a pleasing work of art--lead some to think he is more interested in transforming society through technology, rather than portraying societies that are transformed by technology. Paul Brians, for instance, blames Campbell's positive outlook on science for a lack of stories that warn against nuclear war in the 1940s. Even though the establishment of the Manhattan Project led to a crackdown on writing about nuclear physics, a few

stories about the splitting of the atom had made it to mainstream sources in the press (Brians 7-8). These reports fire the imagination of science fiction writers, and despite a ban on reporting, their stories appeared in the pulps; Campbell publishes Robert Heinlein's story "Solution Unsatisfactory" in 1941. Brians suggests that it is Campbell's insistence "on a generally optimistic mood in the works he published" (12) that led to a decline in stories that focused on the perils of atomic weapons, to such an extent that the best stories about nuclear war were not published in Astounding at all. (H. Beam Piper's "Flight from Tomorrow" (1950) and Fritz Leiber's "The Foxholes of Mars" (1952) are the examples Brians uses.) The competition of Astounding thus benefited from what Brians calls "Campbell's refusal to adopt a negative tone about the danger of nuclear war" (14). Brians points to the work of true anti-nuclear writers such as Ray Bradbury's stories collected as The Martian Chronicles as emblems that could not have been published if Campbell had been in charge of all publishing outlets. Brians finds it "surprising" that a story like Bradbury's "The Million-Year Picnic" would have found an audience in the United States. The reason for his surprise, Brians says, is that for decades science fiction had encouraged the United States to have a "love affair with itself" and tells its readers to "think of themselves as superior beings":

> When homo superior emerged in the world of science fiction, he was almost always more sympathetic than the ordinary humans who formed bigoted mobs bent on his destruction. Undoubtedly such stories had strong appeal for the largely adolescent male readership of bookish social misfits who purchased much of the science fiction of the forties and fifties, and who exercised a powerful influence over its content through their highly organized and articulate fan organizations, publication, and conventions. […] The cult-like nature of American science fiction cut it off from a wider audience for decades, but in the early fifties it provided a haven for heretical and potentially threatening writings like Bradbury's (15-6).

An interesting question is how implicated Campbell and other writers of social science fiction are with the growing technocratic movement. That the two movements are contemporary is hard to deny. Neil Postman suggests that the United States entered into a new age in 1925 with the so-called Scopes Monkey Trial, where high school teacher John Thomas Scopes is tried for breaking a Tennessee law that forbids teaching of anything but the biblical creation story. Before this event, both tradition and technology exist, but after the trial only a "totalitarian technocracy" remains. With the "uneasy tension" between tradition and technology erased, the alternative to technology has been erased--technocracy "makes them invisible and therefore irrelevant. And it does so by redefining what we mean by religion, by art, by family, by politics, by truth, by privacy, by intelligence, so that our definitions fit in its new requirements" (48).

Some critics, like John Huntington, would like to see Campbell's form of science fiction as part of this transformation. He argues that when the United State underwent a shift from capitalism based on individual freedom into a technocracy, the shift is not accomplished by "totalizing theorists" but by the culture itself, and "[a]n important part of that cultural thinking process was SF itself" ("Rationalizing" 3). According to Huntington, the promotion of the genius by science fiction--the superhuman individual who does not answer to any authority--is similar to the dream of the technocrats that arose in the same period in that both seek a solution outside of the civic sphere. Because it does not contain the shock at suffering and the horror of poverty one sees in John Steinbeck's Grapes of Wrath or the political concerns of James Agee's and Walker Evans's Let Us Now Praise Famous Men, Huntington continues, science fiction promotes rationality and is complicit in the stranglehold the technocrats have on the power of critique and reflection. Unlike the horror stories of the mad

genius, science fiction is inappropriate because it paints pictures of the benign rational genius. Huntington's problem: there is no "way of reading" science fiction--texts are unambiguous because the reading public has "already settled on a certain ideology and certain kinds of attention" (37). This is an interesting statement given the contentious nature of early science fiction, where ideas and conventions are debated and contested; there are many conventions clamoring for acceptance, there are scientific and technical discourses, there are conversations about society and politics, there are concerns about the proper role and aesthetic for writing science fiction. After Roland Barthes, we must accept that a text is a "cacography" (132), a collection of noise, and that there is not only one way of reading: "In fact, the meaning of a text can be nothing but the plurality of its systems" (120). The only "way of reading" is the way of the author, combing the various strands of the text, separating the threads and weaving in what feels to be missing so that the reader can produce a new work of his or her own.

Brians and Huntington have clearly bought into the ideology of the new wave: they would like to establish a romantic trajectory for science fiction, traveling from Welles through Bradbury to the pantheon of more acceptable science fiction writers. Campbell's biography does not exactly cast him as a proponent of super-science. He is a dropout from MIT; even though he has a degree in physics from Duke, he is unable to find work as an engineer. In addition to this biographical evidence, there is his interest in the paranormal. One of the condemnations the new wave makes of his career is, in fact, his interest in pseudo-science. Campbell in the 1950s used his editorial space to promote all manner of scientifically questionable devices and ideas. When one looks at his editorials, however, it is clear that Campbell is opposing himself to the scientific establishment. In his 1959 editorial "We Must Study Psi," for

instance, Campbell promotes himself as a collector of unofficial information--and praises his readers for doing the same.

In the editorial, Campbell says he has long been interested in telepathy; the Lensman series is about psi powers. Science fiction's ability to inspire new engineering through the explication of scientific principles has been established by the 1950s, Campbell writes, so it is time to move on so science fiction can fulfill its function "as a frontier literature" (4). He reviews some stories about people using dowsing rods on construction sites to find water pipes and other reports of paranormal science. In moving to sociology, anthropology, and psychology, science fiction has tried to draw attention to the illogical and incalculable--what he calls "subjective reality," a clear tie to the practices of Scientology. Despite the scientific advances made to understand objective reality, Campbell writes, little understanding has come to the understanding of emotions and desires. This is because the analytical tools brought to bear on these inner phenomena are incapable of dealing with the illogical nature of emotions and desires. "Evidently," he writes, "what we need is a non-logical technique of analytical thinking--a method of thinking that is more-than-logical. A non-logical-but-rational technique" (161). The reason for studying psychic phenomena, then, is because they are the easily observable phenomena that arise from subjective reality. He hopes that by bringing the analytical power of the scientific establishment to bear on the paranormal, science will bring to light a new understanding of human nature.

It is not as if the interest in mysticism and the paranormal are separate from the interest in anthropology; in Campbell, one can see a continuity. The popular genre of the "lost race" novel, exemplified by the Doc Smith novels but clearly widespread at the start of the twentieth century, helps to make that connection. The lost races tend to have different ideas about what constitutes

science, sometimes approaching the mystical. Anthropologists, certainly, in their encounter with other societies, describe mythologies and religious practices that include belief in the paranormal and magic. In writing stories about "lost races" at the start of his career, and in writing editorials that explore the possibilities of mysticism in the middle of his career, Campbell is exercising a bit of cultural relativism: under what circumstances are belief in magic appropriate--and under what conditions might mystical insights be useful to society? An interest in primitivism or mysticism is not unique at the turn of the century--William Butler Yeats, for one, experimented with mental telepathy in his younger years--but for a person of science, the study has an added force. Science, supposedly, defeated magic and mysticism. Returning to the earlier ideals is an attempt to uncover what might have been lost in a society devoted to science.

Campbell's fascination with the paranormal does not square with the charge that his fiction promotes the technocratic ideal. According to their published statements, the technocrats seek to use the methods of rational science to improve society, not develop mental telepathy to guide the economy. In calling for more attention to be paid to investigations outside of normal science, Campbell is expressing discontent with the way in which the scientific establishment is directing the nation's resources. His call for investigations into psi and other paranormal phenomena is also, tellingly, a call for a return to mysticism--the very kind of traditional beliefs that Postman suggests should work as a counter to technocracy. Finally, his repeated insistence that science should change its direction suggests that he is, of course, outside that establishment. Campbell, in this editorial and others, returns to the idea that he is at the nexus of a community that is an alternative to, if not opposed to, the traditional networks of the technological establishment. It is the way he used his

role as editor of a mass media magazine to create an alternative public that is his most telling legacy.

Rotarians to the Stars

The conception of writers as members of amateur societies presents them as an analog to the civic associations that had unfavorable reputations in the decades preceding the golden age of science fiction. In Sinclair Lewis's novel Babbitt (1922), the eponymous hero rises to fame by means of a civic association but, thanks to his public presence, is singled out for censure. In the 1930s, the idea of civic service is prominent, but the ideal of "service" is tied to organizations that have other imperatives. In Middletown (1929), the Lynds point out that clubs like the Rotary "urge maintenance of the present industrial system" (89). The Lynds find that Middletown clubs are becoming less exclusive, opening their membership to those who wanted it; such clubs form an important aspect of the social life of the city. Aside from the stigma of conventionality, these clubs are limited because they are focused on reacting to the social problems of the day.

A club that wants to be more engaged in imagining a different path for society might organize itself as a political party--certainly this is a path that Heinlein tries in his 1938 run for political office--but the political route is fraught with practical challenges of a different sort. Hugo Gernsback's idea of renting out rooms in the Museum of Natural History for his societies harkens to this ideal as well. Gernsback is an early promoter of these amateur groups as part of his effort to create a market for his electronics by increasing the public interest in technology. According to Sam Moskowitz, Gernsback pays for the first public meeting of the American Interplanetary Society on 30 April 1930 at the American Museum of National History. In addition, seven of the ten charter

members are authors who contributed to Wonder Stories. Gernsback's effort is not unique; Asimov's early speaking career involved innumerable luncheons.

One thing that many civic organizations share, according to the Lynds, is an interest in literature. This is certainly a driving force behind Carol Kennecott's decision to leave her hometown and take a job in Washington, D.C. in Sinclair Lewis's Main Street (1920). The idea that a group of civic-minded adults can join together and inform their actions with literature is laudable, and yet the use of the available work--whether it be novels by Lewis or Fitzgerald, or works from another moment in time--tends to lead to discussions about the way the world presently exists. Literature of a conventional sort is not suitable for imagining alternatives. The works identified in this chapter--the Greek and Roman mythological classics, the utopian tradition, and anthropological or other studies from the social sciences--prove a much more stable ground for the practitioners of social science fiction. Soon enough, their attention turns to reading their own works.

When Campbell takes the position as editor of Astounding in 1938, he has seven years' experience as a fan-practitioner of science fiction and one-half year in a science fiction office. One can assume, then, that the policies he implemented are from the author's point of view and not the editor's. One thing he does is reinstate the "Brass Tacks" feature that publishes letters from readers. In a typical issue, a dozen letters are published. Readers argue about scientific facts the stories raise, praise authors for their ingenuity, ask questions, make suggestions, and praise Astounding. Certainly, this is not the first time a periodical has published letters to the editor, but the purpose of letters to the editor in a magazine devoted to an experimental genre is slightly different than contributions from readers in a newspaper. Since the conventions of the genre are not fully established, the readers take an active participation in the shaping

of what kind of fiction will be published. As will be noted in the next chapter, Isaac Asimov got his start as a published writer in the "Brass Tacks" column, and it is through this mechanism that new authors are trained.

Campbell has some ideas about what the aim of the genre should be as well. In an editorial announcing the change of the magazine's title from Astounding Stories to Astounding Science-Fiction in March 1938, Campbell begins by suggesting the reader of science fiction is a unique type; the "average mind" cannot understand or appreciate science fiction. This fan admits there is a vast amount of information to be learned about the universe and that, at the same time, humans can learn it. This creates an interest in tomorrow that is a very important marker of the science-fiction fan, the type of person that Astounding wants to attract:

> Those who can, and are willing to[,] think of the future, are the ones we can, and want to, appeal to with Astounding. Science is the gateway to that future; its predictions alone can give us some glimpse of time to come. Therefore, we are adding "science" to our title, for the man who is interested in science must be interested in the future, and appreciate that the old order not only does change, but must change (37, emphasis in original).

In the June 1939 editorial "Future Tense," Campbell proclaims that science fiction is something new, free from its antecedents. While other civilizations had fantasy and prophecy, Campbell asserts that they come from a different motivation, the fear of the future. That this new genre has attracted a new audience must mean it is part of "some totally new characteristic of our new civilization": "for the first time in all the history of Man's climb, he looks forward to better things, and not backward to a forgotten 'Golden Age'" (6, emphasis in original). Campbell suggests science fiction is a natural accoutrement to a civilization that has become so advanced that it can shape the future--and looks

forward to the opportunity. The readers of Astounding, as Campbell promotes them, are a unique group, the vanguard of a new form of human civilization that has the ability and the desire to make a better tomorrow. These are not gratuitous musings, of course: Campbell, like Gernsback, is struggling to make the magazine work. These readers need a new form of literature and a new mechanism for communication in order to achieve these developments, and he offers copies of Astounding as a means to this end (and, of course, to keep his job as editor).

In something of a continuation to "Future Tense," Campbell's editorial "Democracy" sets up an analogy to a representative democracy for the genre of science fiction. He suggests that the contents of the magazine comprise a collection of the "readers' votes" and he is the "election board official"--not the elected official. The candidates are the writers, and their platforms are their stories and their styles. Campbell notes that his restoration of the "Brass Tacks" feature of letters from the reader has been successful in "forming and directing the continued expansion that Astounding is undergoing" (125) and that he will begin summarizing the letters he does not print to give readers a sense of what the entire audience is thinking about each issue. In the September 1938 editorial announcing the end of the fifth year of Street & Smith's Astounding, he announces a new feature: "The Analytical Laboratory"--a tally of the votes for the best stories. This feature allows readers to see what ideas are popular, what ideas have failed, and helps to make his editorship less of a personal crusade about science fiction and creates the impression the Campbell simply sits at the helm. He will continue to publish letters in "Brass Tacks" to give further insight into what the audience is thinking. Noting the strides Astounding has made in the past five years, Campbell suggests this is only the beginning: "with new

authors and the Analytical Laboratory and your coöperating letters to guide them, Astounding will advance more in the coming year than ever it has before!" (57).

This editorial style is a more relevant legacy than authoritarian science or his racism and sexism. In his first years as editor, Campbell is creating a new sense of narration. Regardless of actual authors and readers, fiction is always a story told by a persona to an imagined audience. Instead of encouraging writers to have superhuman personas that are superior to their readers, he asks them to join together with the audience to craft a new age. Writers must write with the knowledge that a skeptical audience will receive them. Each "pronouncement" by a science fiction writer is contingent on its reception by the audience. In terms of readers, Campbell regularly uses his position as "The Editor" to cajole and invigorate the consumer: one cannot simply sit back and enjoy the magazine; one must engage the ideas and respond.

These imperatives are more than just marketing. Frederik Pohl remembers the experience of a personal meeting with Campbell to be confrontational: on visiting him, Pohl recalls, one had to be ready to be confronted with new ideas that Campbell is turning about in his head. Pohl surmises that Campbell would assault everyone who came into his office during the month with whatever topic he is addressing in his editorial, honing his own ideas by bouncing them off anyone who is convenient. On the weekends, L. Sprague de Camp reports, friends would come to Campbell's apartment and he would hand each a manuscript when he arrived: "This made for a rather quiet gathering but was doubtless of value to us in learning our craft" (Harrison, 105). Being an author of science fiction means that one must overtly and consciously use what the authors know about society and science to determine whether the

creation is plausible, and the only way to do that is in a group familiar with science, technology, as well as the history and conventions of science fiction.

As presented above, scientific realism is one aspect of social science fiction that provides a space for cultural resistance. From a biographical standpoint, however, Lasser's decision to leave Wonder Stories and, as he puts it in a 1969 letter to Arthur Clarke, to take up a concern for the "domestic earthly problems" that he witnesses on his way to work in New York City, demonstrates that the collaborative attention to society is not simply a series of bureaucratic motions for the people involved. Lasser goes on to work with the unemployed and uses the organization skills he honed as an editor and president of a voluntary association to form a national organization, the Workers Alliance of America, in 1935, and spends much of his life working in public assistance and labor unions.

This concern for the direction of society is not unique to Lasser; Campbell writes in the introduction to the anthology Prologue to Analog:

> During that period, there were, of course, two very powerful motivations acting on people--a very powerful desire to think about something other than the mess things were in just then, and, and the same time, a most urgent desire to figure out what had happened, and why, and how to change things so it wouldn't happen again. Those are fine backgrounds for science fiction; science fiction can be taken--read--as a form of escape. But it is, also a way of considering the past, present, and future from a different viewpoint, and taking a look at how else we might do things (9-10, emphasis in original).

It is clear that, even from this early stage in the genre, authors and editors believe that science fiction has more value than just causing young people to follow careers in science. Campbell's stories published under the pseudonym Don A. Stuart go even further to investigate the consequences of technology. The 1934 story "Twilight," for instance, is set within three frames. The first frame is the narrator telling his story to his friend, and the second frame is the narrator's

experience of picking up a hitchhiker who is a time traveler, and the third frame is the hitchhiker telling the story of his invention (in fact, the narrator reports that the hitchhiker "sings" the stories, like a traveling rhapsode). This technique, reminiscent of Mary Shelley's Frankenstein, has the effect of distancing the reader from the truth: what the reader is hearing is reported incident, and thus open to scrutiny. The story of time travel is exciting, and one admires the hitchhiker's technical ability, but what stands out the most in the story is the setting at the twilight of the human race. The sophisticated computers of the far future have erased the desire for innovation, and the inhabitants of his city marvel at the machines that others have created. Certainly this will become a popular theme of science fiction--one that Arthur C. Clarke will pick up for The City and the Stars, among others--but it is also a warning of what Campbell and Gernsback were seeing at the start of the twentieth century: a profound disinterest in how things work, and instead a mindless wonder at the marvels of the technological age.

Huntington has to go through a lot of trouble to show that the stories in the prewar period are part of technocracy, and he is only somewhat successful. For instance, in his analysis of Campbell's story "Twilight," he is disturbed that it is not at all like H. G. Welles's Time Machine. Huntington prefers Welles, who uses time travel as a device to consider the consequences of the social order. There are no degenerate beings in Campbell, like the Eloi and Morlocks in the Time Machine, that one can blame for the situation. In terms of diction, Huntington decries Campbell's use of conversational fillers like "I don't know" as representative of some kind of human that is blinded by the technocratic establishment and no longer has the capacity to represent what he or she sees in language.[18] In spite of Campbell's clear monition about the dangers of

technocracy, Huntington condemns the story because he is "deeply enthralled" by the potential of technology (161). In the end, Huntington suggests that the only redeeming quality of this fiction is that it provides a ground for later fiction writers to perform critiques that are more thoughtful.

In fact, these stories that evoke strangers from other planets are more sophisticated than they might appear: they are a kind of cosmic declamation. This narrative perspective that employs personification to tell a story from the point of view of an alien outsider is akin to declamation, an exercise of ancient oratory that is at the culmination of the progymnasmata of ancient Greece. As indicated in the Introduction, the authors of social science fiction, then, get together in small groups to discuss what is likely going through the minds of people who have different perspectives, asking each other what is the best course of action--and the best structures of society that will support that action.

Obviously, social science fiction draws its power from its early involvement in organizations, analogous to civic organizations, that seek the betterment of society. (Isaac Asimov, for one, will not only continue writing science fiction but also be the president of the American Humanist Society until his death in 1992.) This concern for the group as the audience for one's fiction has important implications for the use of narration. First, the idea of the writer as a special kind of spokesperson, a persona that unapologetically uses scientific epistemology, is clearly a thread brought in from the literary realism of the nineteenth century. This narrative persona calmly speculates about the possible directions of scientific research and the cause-and-effect situation between science/technology and society, providing one person's opinion to the amassed individuals concerned with the direction of society how a technology complex is connected to a society's way of life and its ideals and aspirations.

What is more, this narrative situation is in a larger context that uses mass media to hail the audience to generate new creators of media. Gernsback and Campbell, themselves lacking fiction-writing credentials, instead employ a persona of the intelligent observer who is qualified to make observations. This is something that any intelligent persona can learn; because the stakes on the writing side are not that high, others with technical insight are encouraged to try their hand. The genealogy of social science fiction demonstrates the knowledge at the point of origin: the power of a utopian mode of inquiry, the information of hard and social science, and the first-hand experience of being a part of a scientific community. At the same time, this genealogy reveals the genre's convictions: modern social institutions are inadequate to address the direction that technology will take, and the typical citizen is inadequately informed about science to see connections between society's aspirations and its technological development. By giving citizens a place to explore what they know about science, and providing rewards for those who learn more, social science fiction offers citizens a space to resist the unthinking acceptance of technologies industry and government provide for them.

Chapter 2. Isaac Asimov and the Republic of Interstellar Letters

The writers of the golden age use social science fiction to question scientific ideals and to deflect, but not directly oppose, deterministic visions of the world. It is not as if writers, Isaac Asimov among them, exhort their readers to rise up against the scientific establishment; instead, they offers an exposition on how that establishment might be limited or damaging. The genre of science fiction at the time provides Asimov in particular a broad platform from which to make this critique. As presented in the previous chapter, Asimov is one of the early authors who participate in the collective hallucination of social science fiction. When the new wave science fiction writers come on the scene, however, they establish the convention of the golden age and cast the writers of social science fiction as hopelessly conventional. The big names like Asimov, understandably, are categorized as authoritarian and some of this rhetoric is easy to dismiss: it is partly an attempt of the next generation to discredit its forebears on the market, and it is partly a simplistic attempt at historicism on the part of critics. In the face of this criticism, it can be difficult to attribute cultural resistance to work that is composed of stable (and omniscient) narrators, authoritarian settings, and honorific characterization.

Even if it can be established that social science fiction authors create a free mental space for their readers, does the genre provide the reader any means by which to act upon this freedom? This is a larger question within cultural studies of mass culture, and critics can be hard pressed to find ways in which fans of mass culture actually achieve more than a simple sensation of freedom. One of the few to document the ways in which mass culture can provide a zone

for actionable freedom is Sarah Thornton. Others have ably documented science fiction fandom, and this subculture provides an obvious parallel to the popular music subculture. Unquestionably, the forms of actionable freedom documented by Sarah Thornton can be seen among science fiction fans; one has only to read the studies by Sam Moskowitz or Henry Jenkins to be able to make direct analogies to Thornton's study. However, this is not exactly relevant to the study of Asimov, who traveled grudgingly and lacks the peripheral access to the genre that some see as essential to fan culture.

Asimov is a "grand master" who is at the center of the genre for many years, so it seems disingenuous to suggest that his participation in fandom is where his access to cultural resistance is to be found. That is not to say, however, that Asimov's work provides no evidence of cultural resistance. To the contrary, there is actionable freedom to be found in the space for cultural resistance that his work provides, but what is needed are ways of understanding how that cultural resistance can be noticed. In three different areas--first, in what one might call the world of interstellar letters; second, the production of nonfiction library books, and third, as anthologist and science fiction expert--Asimov's work demonstrates a new way of thinking about cultural resistance based on the bourgeois ideal of the public sphere. Asimov's participation in, and later his encouragement of, the public sphere suggests how he himself sought to encourage cultural resistance for the fans of science fiction.

The new wave of science fiction embraces the anti-positivist critique of postmodernism, finding fault with one legacy of the Enlightenment, which it calls the promotion of metanarratives. Asimov, posturing himself as an free-thinking figure of the Enlightenment, will never be called out directly by the proponents of the new wave--he and Harlan Ellison, for instance, make public feuding a part of their public personae--but at the same time, the radical

potential for Asimov's fiction is never realized. He is somehow cast as the good son of John Campbell; Campbell may have created the genre but he is tragically flawed by his promotion of racism and pseudo-science, and his rightful heir (Robert Heinlein) is guilty in his own right for promoting war and curtailing personal liberty. Asimov for the most part escapes the harshest of the critiques of golden age writers and is seen as the doddering progenitor of what science fiction would become. Through Asimov's work, however, one can see a rethinking of the ideals of the Enlightenment and consider the ways in which one could reformulate the scientific establishment along other than debilitating metanarratives. Asimov, after all, is like Campbell a dissident of the scientific establishment, not a member of the scientific elite.

Nevertheless, if a critic of science fiction were looking for a novel that opens up a space for personal freedom, he or she would be unlikely to pick up something by Asimov; his work seems to be a summary of the Enlightenment ideas that inspired the bourgeois novel. His early work--The Caves of Steel (1954), for instance--has several qualities that a science fiction critic could find objectionable on ideological grounds. The narration, for one, lacks artistry: it is an impersonal and steady third person, reflecting a consciousness that does not question or doubt, and the reader simply follows along passively as the story unfolds. Even though the plot involves society reconsidering its fundamental assumptions, the resolution will involve a select few who will make a decision, and it would appear that the denouement will result in a society that is static, if different, and larger than the individuals who exist in it; the natural state outside of the complication and resolution is a state of a stable and monolithic society.

In order to see the cultural resistance provided by Asimov's work, one must turn away from what the new wave tells us is important--characterization,

narration, and plot--and examine the underappreciated element of setting to see how social science fiction, on a very basic level, presents a different worldview to its audience. Nevertheless, another problem is the immensity and scope of the Asimov oeuvre. Even if his fiction creates cultural resistance, there is also his science nonfiction to deal with; the fact that Asimov focuses much of his attention on science writing after the launch of Sputnik in 1957 would seem to make this writing complicit in nationalist projects and quite far away from any sort of cultural resistance. However, by taking a looking at his narrative persona--the first-person man of science--and contrasting it with the impersonal and inevitable voice of science that pervaded at the time, one can see that Asimov promotes an alternative public sphere, a sort of shelter from the prevailing discourse, for his readers.

As presented by Michael Denning, a cultural studies approach to science fiction must include an investigation of the author as a cultural worker. A study of Asimov then must consider the continuity in his science non-fiction writing, his science fiction, his writing about science fiction, his autobiographical writing, his public speaking, and his voluminous correspondence. Given that Asimov carefully divided his time between these activities, even when they generated little income, it is clear that he considered them equally important. What brings them together is an ethic of participation in civic discourse. Jürgen Habermas famously elaborates this dynamic in his formulation of the public sphere. Idealizing the patrician environment of the emerging bourgeoisie, Habermas turns to the first days of luxury capitalism to find a place where individuals could learn to exercise their reasons in public. The public sphere acts as a buffer zone between state authority and the private home and is necessary because in neither extreme can reason be exercised freely. In the realm of state authority, there are immediate and severe consequences for conversations and actions;

when dealing with a monarch, one might lose one's head or one's livelihood. In the private realm, where according to the popular aphorism a person's home is his or her castle, one must obey the customs of the host and respect the tastes of others, thus curbing one's ability to exercise reason. In the new establishments of the chocolate house, the coffee house, and (although not mentioned by Habermas) the tavern, the middle-class individual found a place to debate and argue.[19]

From the seventeenth century to the nineteenth, Habermas writes, institutions of culture developed that allowed individuals to hone their reason and practice the skills necessary for Enlightenment. Habermas points out that the function of art ("art" being a catch-all phrase for literature, poetry, painting, music, and the plastic arts) turned from its official duty as occasional accompaniment to events of the state--weddings, coronations, and holidays--and became a realm for consumers.[20] The public taste influences art; and viewers must make a case to others whether art is worthy of the admission price. Habermas also mentions the rise of the art journal as being foundational in providing a forum where one can write arguments about art, thus exercising one's reason before a literate (and worldwide) reading public. The advantages of arguing about art and music are obvious; the matter of taste is of little consequence for one's livelihood or well-being; what matters is the argument and one's ability to connect the art to larger issues. Since it might be perilous to argue about current events, one can argue about the ideal state.

What is important in terms of social science fiction in this story is what Habermas sees as the end of the public sphere: in the twentieth century the spirit of public debate is thwarted by the growing science of public relations. With publicity, Habermas writes, the possibility of debate through media is constrained. He writes that the destruction of the public sphere can be traced to

the encroachment of official speech. Since the public sphere is supposed to be a free space of debate between the authorities of the state and the private person, nothing could fossilize the flowing process of the public sphere more than preprogrammed speech.

Starting with the short stories before World War 2, but continuing in the novels thereafter, science fiction operates as a public sphere-like mechanism. Removing it from the present day, it is easier to speak freely; there are no preprogrammed assumptions about the future. As in the public sphere, the writers of social science fiction are able to put any material on the agenda that they wish, they may argue and decide the rules for discussion, and each member is allowed to participate in the discussion regardless of rank. Instead of being bifurcated into fans and authors, social science fiction encourages everyone to both produce and accept information, becoming hybrid fan-practitioners much like the hybrid speaking-listening subjects of a public sphere debate. While there are obvious distinctions--there is no corporate assembly where issues are decided, and there is no consensus at the end of the discussion, which are both conditions of the public sphere--fan-practitioners use social science fiction to invigorate the same type of discussion, a discussion that is loosened from practical consequences and involves the people who are affected by its outcome. A press release or a public persona that is massaged by experts is equally toxic to the public sphere. As Habermas lays it out, the public sphere is not simply a space for open discussion and inquiry. It might seem as if any conversation would qualify as a public sphere discussion, but it is not that simple. In the public sphere, the strength of the argument must remain the sole criterion for judgment, and economic or political exigencies must fall away to a judgment of who is right. There are conditions that must exist if an individual's argument is

judged solely on its merits. First, the public sphere must consist of private individuals in a public space, and all must be admitted, regardless of rank.[21] Second, the people in the conversation must have the power to set the agenda for discussion and everything, including the rules of discussion, must be open to debate. Finally, all people must be free to consider alternatives and, importantly, be able to change their minds.[22]

The Setting and Cultural Resistance

There is something to be said for the way in which science fiction, perhaps even all culture, can provide a way for an individual to maintain his or her dignity in the face of ideological oppression and create a place for oneself in society outside of the narrowly constrained ways of life often afforded to an individual in modern society. The worlds that art provides, whether they are worlds of art organized by an oeuvre, a genre, a folk, or a period, allow the aficionado to exist in a private mental space where the binds of ideology are loosened. In this way, all art is culturally resistant. The fact that different groups can find cultural resistance--a despotic leader may revel in opera, finding a place away from the atrocities he or she is committing, or an impoverished worker can find comfort in reading poetry--may lead us to believe that the use of cultural resistance is in bad faith, especially in the case of the despotic leader, but also in the hegemonic function of the poetry for the worker, who reads poetry by night and is ready to go back to work in the morning.

In order to tease out the first strand of cultural resistance from Asimov, it is instructive to indulge in a little biographical criticism. Asimov, when he first begins to write fiction in the 1930s, is a young man working in his father's candy store on Windsor Place in Brooklyn, NY. Most of his time had to be accounted for

by his family: if he were not at school, he was expected to be at home studying or working. There are few opportunities for independent action; money is tight and the subway is not free. With his family, Asimov would attend the theater and other activities. The primary escape he mentions in his autobiography is visiting the new Brooklyn Public Library at Grand Army Plaza, which beings construction in 1912, a little more than a mile's bus ride away on the other side of Prospect Park. Another aspect of this escape is assistance by his parents, who provide him with a typewriter.

Imagine, then, Asimov's experience of taking the subway to the headquarters of Street and Smith, the publishers of Astounding Stories (not yet Astounding Science-Fiction) on his own. He convinces his mother to let him leave the store, sneaking away during his father's afternoon nap, to find out what is causing the delay in the May 1938 issue. He writes:

> I may have been over eighteen by now, but a sheltered life is a sheltered life. It was one of the first times I had taken a subway ride into Manhattan on my own, except to go to school. I was going to wander about streets I did not know in order to make my way into strange buildings and ask questions of strange people. It made me uneasy ("Green" 191).

As it turns out, the delay is due to a change in the printing schedule, and a few days later the issue arrives. (Asimov assures the reader that, in spite of the fact that it comes on the day of his chemistry final, he is able to do well on his exam and read the magazine to boot.) Having made the trip to the publisher, Asimov writes, he now feels as if he had broken down an immense barrier: Astounding "existed in a real building in real space, a building I could reach and enter and it contained people who would speak to me" (192).

There are two ways of thinking about cultural resistance in this episode. The first is the experience of the young Asimov. Science fiction is, for him, an opportunity for pleasure and enjoyment. He describes the authors he reads as

"demigods" and attempts his own short story, "Cosmic Corkscrew," in homage to their efforts. A wedge is forced into his material conditions; he not only has a future because of his family's business, and his success at school, but also something quite removed: he has a dream of a future beyond the sanctioned environments of home and school. Even though he had interacted with the magazine in writing and by telephone, by actually visiting the offices he learns that the enterprise, however mysterious, has familiar features with which he can interact.

The second way of thinking about the cultural resistance will have to wait until the last section of this chapter. For now, however, think about the trip on the subway. Traveling from Windsor Terrace to midtown Manhattan brings one through several different neighborhoods. Even from the underground, it gives a rider the sensation of traveling through different neighborhoods as one can imagine different scenarios for the commuters who enter at each stop. One sees the infrastructure of society by means of this conduit; a literal cross-section of the city. Asimov does not forget this when he writes his combination detective and science fiction novel, The Caves of Steel (1954). In the novel, the main character Elijah Bailey must solve the murder of a human visitor to Earth. In his trip to the Spacer enclave on Earth, the narrator provides the reader with a fanciful description of the different people and structures of the city. Here, as elsewhere within Asimov's work, the reader is invited to examine the structure of society: the mechanisms that support life, the agencies that carry out the desires of the state, and the cultural differences that explain the strict demarcations in what one would presume to be a contiguous space. What is more, Bailey is asked to help perpetuate a noble lie, a tale told to the people like the shadows on Plato's cave designed to keep the populace happy and ignorant.

Bailey does not confront these structures; they are the back-story. The criticism of the new wave would be that characterization in these novels does not interact with the conflict between worldviews.[23] The new wave would condemn the story's setting not in itself, but because Asimov does not challenge it. However, simply because Bailey does not cry out against the overindustrialized state, or because the plot does not involve laying bare the noble lies that are fed to the people through the media, does not mean that Asimov respects or appreciates the setting he has created. In fact, one uses cultural resistance when one feels that directly opposing the prevailing ideology will be a wasted effort. In her chapter "A Cyborg Manifesto," Donna Haraway condemns dialectics as being part of a pure language. She suggests that a practice of challenging dominant ideologies by antitheses to create new and improved realities creates a new and totalized society out of every conflict: i.e., it is a hegemonic activity. If the only result of presenting antithesis is that it will be subsumed into the dominant culture, then perhaps another mode is in order. Asimov does not create a character who strives against totality because such an effort is doomed to failure; the way for the individual to master his or her environment, in Asimov's world, is not to tame it. Mastery of the environment involves not being mastered by the environment. In this way, Bailey explains his awareness of the structures around him.

The question of whether this aspect of cultural resistance succeeds must, as with so many evaluations of cultural resistance, remain without direct evidence at some level. The Frankfurt School's legacy of emancipation through critique does fall flat on occasion: is one truly emancipated when one knows that modern society is not a monolithic structure and that it does not inevitably follow rules analogous to the Newtonian laws of motion? But like the young man from Brooklyn taking the subway to Manhattan alone, the reader's eyes are

opened to a larger reality: there is no one way of life that governs society's development; there are many tensions within a society that explain why it tips in certain directions. Much of the new wave's aesthetic is informed by the message that the vast majority of citizens believe that society transforms according to an impersonal inertia, while in fact it is guided and shaped by a hidden elite class akin to Plato's guardians.

Because Asimov simply informs the reader of these facts, without creating art that cries in outrage against these facts--and certainly because Asimov suggests that the agents of government, like Bailey, who is a police officer, are the ones who can expose the noble lie--Asimov is presented as an agent of false consciousness. And yet it is someone like Asimov, someone who can present the facts of society without demanding the reader sign up for a revolution, who can provide a space for cultural resistance. Asimov's narrator takes the readers into his confidence and exposes them to these difficult truths. John Campbell's infusion of Realism into science fiction described in the first chapter has a definite result here: readers see that society has structure, and that the policy choices that are presented as necessary are in fact arbitrary.

This intertextuality is another way that Caves of Steel in particular provides cultural resistance, allowing the reader to follow multiple paths back to popular literature. Asimov, like other practitioners of social science fiction, is careful to indicate how his literature fits within a web of other works. For instance, Asimov calls upon the detective genre in this novel, providing a devoted fan or a good librarian the opportunity to suggest to someone who likes the novel what other books he or she could read. Here he makes it clear that the lover of science fiction is not alone in the world and that readers of science fiction are not the only ones in the world that are drawn together by genre. Mystery lovers, he tells his readers, are just like you.

The expansion of the generic conventions of science fiction adds to the cultural resistance provided by Asimov's use of the collective hallucination. Most obviously, the story alludes to Robert Heinlein's 1940 story "The Roads Must Roll." Heinlein, ostensibly the inventor of the moving highway, lurks behind the images of the moving sidewalk in Asimov's novel. This borrowing, a hallmark of science fiction writers, suggests to the reader a world behind the world: as indicated in Chapter 1, the collective hallucination beckons the reader to enter this alternative universe and, learning more about the world, to become an expert in its features and eventually respond by adding to the creation. In this way, social science fiction promotes this world of art, demonstrating that it has elucidated rules that rival the consistency of the objective universe. In this world, everyday demands and limitations do not apply; the reader is encouraged to put aside the humiliations of "the real world" and embrace the possibilities of the hallucination.

What saves the cultural resistance of social science fiction from being an incoherent fantasy akin to finger-painting is the particular cultures that it resists. Although the totalizing worldview that Asimov likes to disintegrate is present in Caves of Steel, it is much better seen in the stories he published as the Foundation Trilogy. Asimov's Trilogy concerns a scientist who develops psychohistory, a method of predicting the course of human civilization with mathematical certainty. This storyline can be seen as a vision of despair: in such a world, individuals have little meaning in the grand course of events, and a person's will and initiative under the principles of psychohistory cannot alter the development of civilization. This interpretation has led some critics to interpret the theme of the Trilogy to be that individual interest means little in the age of large impersonal corporations. Other critics have indicated that the theme is a critique of inhibiting effects of large world systems such as classical Marxism

that purport to chart the effects of economic pressures on a society but leave behind the question of individual freedom.

This deterministic interpretation of the theme, however, is challenged in certain parts of the Trilogy, most of all in the character of the Mule, an unexpected, nonhuman force in the Trilogy that disrupts the calculations of psychohistory. When critics take into consideration the character of the Mule, they sometimes suggest that the Trilogy is about the failure of deterministic methods of predicting reality. The Mule's ability to work behind the scenes of psychohistory and create unexpected ripples in its working smoothly are Asimov's way of calling attention to the logical limitations of such totalizing worldviews.

Psychohistory is the main invention that the Trilogy considers. Asimov is not only a writer of science fiction, but he is also one of its early theorizers. In his strictest definition of the genre, he suggests that science fiction is a literature that presents a world different from the reader only in one important detail.[24] That one detail can be anything, but it must be something that is changed due to a technological advance. In the Foundation Trilogy, that one detail is the development of a science that Asimov terms "psychohistory" which allows its inventor, Hari Seldon, to predict the future. The Trilogy then projects the implications of his foresight.

Psychohistory's quantification of a psychological understanding of large groups of people and the historical forces that change society leads Seldon to the conclusion that the existing galactic empire is about to enter a decline, resulting in a millennium of misery and ignorance. Seldon convinces the existing government to establish a Foundation to guide human civilization through the social and political tumult and shorten the period of chaos before the development of the next galactic empire. Seldon's predictions and plan haunt the

Trilogy long after his death as planetary leaders, Foundation agents, rebels, and citizens attempt to deal with the fact that Seldon has conclusively determined the future of civilization.

One implication of psychohistory is whether it is essentially a fascistic vision. Works of science fiction, the Foundation Trilogy among them, are often treated with suspicion due to their supposed conservative nature. Albert Berger suggests that the genre's consideration of historiography and social organization from 1934 to 1955 is overly simplistic, reducing human society inappropriately to a closed physical system so that authors may apply the laws of thermodynamics, particularly entropy, to their creations. Berger suggests that this treatment results in a loss of valuable literary considerations, such as character and personality, which he says leads to the promotion of individuality and freedom in the reader's mind. While admitting that more work needs to be done, Berger concludes that by the end of World War 2, "American SF had already produced a world-view reflecting the science, history, and politics its writers understood and accepted, by and large: a view thoroughly conductive, first to the tolerance, and later, to the acceptance of overt authoritarianism" (32).

Psychohistory does have a tendency to reduce societal decision-making to a mechanical process, yet unlike the mid-century dystopias (like George Orwell's 1984) the Trilogy fails to be appropriately aghast at the horrors of such a system. The narrative presents the development of psychohistory and the Foundation in general without any moral approbation; the absence of evaluative language leads critics to assume that Asimov wholeheartedly promotes his vision as a model for behavior. According to Charles Elkins, the Trilogy demonstrates that "Asimov does not believe in significant change" (99). In portraying history as a rigid natural science--what Jean-François Lyotard has called a "Newtonian anthropology" in conjunction with modernism--Asimov makes an appealing notion

that resonates with classical Marxism. However, Elkins writes, the strict determinism shows that Asimov does not really understand historical materialism. Angus Taylor is concerned with how far the Trilogy goes with determinism, writing that clearly not even Marx is this much of a historicist; Asimov goes farther and suggests that psychohistory is predictive and can be extrapolated from psychology and physics. Taylor points out that Marx himself writes there is no universal development or predetermined fate for all people. Marx, like Darwin, suggests that explanations can be found after the fact--this is a historical theory and not the predictive science that Asimov envisions. Along these lines, Donald Wollheim writes, psychohistory is the science that Marxism would like to be: "a science of the movement of history" (40). Marxism leads its adherents to predict the future, but they never get beyond making costly mistakes because they question the basic premises, never deal with psychological data and more rigorous study of economics. Asimov, according to Wollheim, sees a validity in Marx's and Engel's premise that the "motion and interaction" of society must follow rules--and tries to make Marxism what it could never accomplish (41).

If one accepts the premise that Asimov's works seek to create a space for cultural resistance, however, it must be possible to see these novels somehow offering awareness of an ideology or a worldview that Asimov finds distasteful. In the same way that Caves of Steel allowed the reader to learn about the contingent makeup of society, the Foundation Trilogy shows to the reader the way in which a totality is, in fact, a loose collection of assumptions. The reader brings to the text a sense of trust in the process involved: the idea of a highly developed civilization preserving what it sees to be the most essential component, a university or government think-tank.

The dominant mode of inquiry found in the universities and think tanks at the time Asimov is writing would have been the Modern Man discourse. Michael Leja documents how new forms of representing human figures, in art as well as literature and social science, develop in response to the body of knowledge about humans and human society that grows in the first half of the century. In Reframing Abstract Expressionism, Leja explains that scientists and public intellectuals popularize the idea that society could be remade according to the new knowledge of the human "body and soul" (234). This knowledge projects the individual naturalistically, substituting "the real man" for "an economic fiction, a biological fiction, a pseudo-psychological fiction, a social fiction and many other fallacies or half-truths," according to one opponent of Modern Man discourse (234-5).

Psychohistory clearly reflects the principles of this naturalistic belief system: individuals are products of their environment, locked into the forces of history and society. Hari Seldon's achievement of a method to determine the course of human events reflects the effort of scientists at the time Asimov was writing to uncover the fundamental principles of human civilization and implement programs to deploy the best of scientific knowledge to improve society. In fact, Asimov's experience of science (as a graduate student in chemistry) even at this early part of his career suggests that this technological establishment is something that needs to be resisted.

It becomes clear that, far from embracing the Technocratic ideals of the 1930s and 1940s, Asimov and other authors of social science fiction were interrogating a very public movement that threatened to circumvent the checks and balances of the political process. In "The New Word of 1932," originally published in the New York Herald Tribune but later incorporated into a book, Allen Raymond writes that the time has come for the "energy state":

> The reported details of that new state were a little vague, but from the first accounts of "Technocracy" one gathered that it would be bounded on the north by the Aurora Borealis and on the south by the Panama Canal. Within that blessed energy state nobody was going to have to do very much work any more. Everybody, man, woman, and child, was going to have an income which, measured in 1929 dollars, would be about $20,000 a year (Raymond 4).

This is going to be accomplished by recommendations made after a study of the industrial and social system made by "an organization of scientists" that is "located at Columbia University" (4-5), led by Howard Scott. It aims to provide a scientific method of government, and it sees the main problem of the economy to be the increased efficiency of production due to technology. "The method of science might be called 'mechanistic,' but the result of its application would be a greater release of so-called human values than the world has ever known" (19).

William Akin has chronicled the origins and efforts of the technocracy movement in the 1930 to effect a structural reform of the economic underpinning of society. In the 1930s, the movement gains national attention by calling for reforms to the price system that underpin the market. Alarmed by repeated periods of scarcity in an age of abundance, this movement of engineers feels that rational methods could better regulate the markets. While their "expressed ideal" is for there to be a rational decision-making process instead of human interests, in the end "they wished to establish a technical elite at the head of the social organization. […] Governance, they often repeated, would be by science rather than man" (Akin 137). The movement is in the press again in the early 1940s, as their plan to conscript all Americans (except Asians and other aliens) leads newspapers to believe that the organization is "native American fascism," in spite of its professed anti-fascist record (Elsner 157). Howard Scott's organization Technocracy, Inc. manages to weather this criticism and survives until the 1960s.

Asimov is not alone in using art to investigate this new use of social science. Michael Leja presents Elaine de Kooning's painting High Man (1954) as an emblem of the Modern Man discourse that developed in the years before World War 2. In the painting, de Kooning presents an abstraction of a basketball game with barely discernable figures engaged in a contest for the ball, positioned at the uppermost edge of the canvas. The viewer is presented not with an allegory of good and evil, heroic personalities to emulate, or even historical time to contemplate; instead, the viewer is asked to consider the dynamic capabilities of the figures of the study. The basketball players are rendered as vectors rather than objects, their bodies pulsating with force, and the spaces between the players are rendered equally with lines of force, areas of potential action where the same rules apply. In short, viewers of High Man are asked to consider the physical backdrop of the game, the energy of their motion, as well as the laws governing that energy. These figures, stripped of history and meaning, present an abstracted vision of the game, the representation of how the Modern Man discourse seeks to understand individuals. This is the same kind of art provided by Asimov in his exercise of social science fiction: he does not present finely-rounded characters and his narrator does not arrange the elements of plot interestingly. He uses social science fiction to focus attention on the abstract ideas that hold activity together, portraying not individuals and their institutions and but their intentions and aspirations.

Although he spends little time on this representation, Leja points to the harmony between the representative and nonrepresentative elements of the painting, suggesting that de Kooning's Abstract Expressionism is a "symbiotic relation" between abstraction and figuration (Leja 262). In the painting, the viewer can plainly see this transformation: instead of coherent subjects, the representation of the figures presents the viewer with a distillation of the

presumed forces within the individual and the representation of the space between the figures presents the viewer with a distillation of the presumed structure of the reality that contains the figures. The viewer has to fill in the gaps between the forms of the canvas, taking an active part in assembling a relationship between the colors and the game. The viewers realize that the players are not the subjects of the painting, since the artist represents the motivations of the players and the rules of the game: the subject of the painting is the context. What is interesting is that the figures are not in a site of control; Leja writes: "They do not register as others and are not made the source or site of uncontrol, rupture, or division in the picture" (262). More specifically, the viewer is not asked to praise the artist for disciplining the subjects, crafting them into a thematic statement. The viewer's imagination is freed from the tradition of discipline because the artist avoids surface representation. The basketball players are not used for the artist's purpose; they are not symbols of disruption, employed to fracture or enliven the surface of the painting. The artist, instead, asks us to contemplate motion, see the game and its color and motions on its own terms.

De Kooning, like Asimov, creates a sense of cultural resistance by directing the viewer's attention to the underlying structures of society. With an evolved sensibility honed by artistic experience and the entry into a discourse with powerful thinkers in the sciences, they hope, the audience may be encouraged to go beyond what seems natural and contemplate the environment in which action takes place. Not all uses of abstraction have this effect. One can compare Marcel Duchamp's iconic Nude Descending a Staircase, No. 2 (1912). In this painting, like de Kooning's, the artist's eye is filmic; the artist takes multiple snapshots of the nude. The concentration of the artist's perception is evident to the viewer; one praises the high degree of rationality. The argument of early

modernists is that they inherited the mantle of the Realists: they are using the actual facts of perception to create a truly authentic impression of reality. In this painting, Duchamp disciplines his subject: he puts the subject through its paces and takes Muybridgian images of it at regular intervals to prove a point about perception: the artistic subject does not stay still; the artistic stillness is a façade. At the same time, Duchamp uses his subject for a site of the very "uncontrol" that Leja does not want to see: the artist places a figure in his painting to make a disruption, using the subject for his own purposes. The nude does not "want" to descend the staircase, or at least, the nude does not "want" to be observed descending the staircase. Duchamp wants the nude to descend to present an argument about art and the use of female nudes.

The difference between High Man and Nude Descending a Staircase may be summarized as the difference between induction and deduction. Early modernism presents the work of art as an induction: the artistic creator had a principle to prove, and he or she assembled the figures and used the elements of the medium to prove that point. Later, artists create work that is more deductive: here are the ideas and information that is recorded by the senses; how do they come together to prove a point? This is not to say that one is better than the other, since both induction and deduction are part of the scientific method. In the scientific method, one must first open one's mind to the outside world and observe phenomena without prejudice (deduction); after one has isolated a question or an issue, one uses the inductive method to provide reliable knowledge to the community. However, the overuse of induction leads to a cultural inertia; as Asimov points out in The Intelligent Man's Guide to Science, the inductive testing of Aristotle's principle that heavier objects fall faster than lighter bodies hid the truth that objects fall at the same rate; it took nearly 2,000 years for anyone to be skeptical or curious enough to come up with an honest test

of the proposition. De Kooning does not come to the basketball court with preconceived notions of what she will find; she allows her canvas to work as a tool for capturing uncensored impressions and thus promotes a deductive method.

Asimov's work in the Foundation Trilogy takes a similar approach. He begins his narrative with a description of the great pinnacle civilization has reached, and the narration seeks to contextualize that world. In doing so, he is echoing the popular political rhetoric of that moment. For instance, George Kennan's Mr. X memo, "The Sources of Soviet Conduct" (1947), presents a worldview not much different than Gibbon presents in Decline and Fall. Kennan begins: "The political personality of Soviet power as we know it today is the product of ideology and circumstances: ideology inherited by the present Soviet leaders from the movement in which they had their political origin, and circumstances of the power which they now have exercised for nearly three decades in Russia" (part 1, para. 1). Like Gibbon, Kennan reduces the actions of the nation to a singular personality, and promises to lay out the inevitable consequences of that personality for his readers. His conclusion--that the United States has an opportunity and a responsibility to stymie the development of Russian communism, forcing that empire to strain harder to achieve its aims--is couched in an overture to the reader's presumption of his or her country's excellence: "To avoid destruction the United States need only measure up to its own best traditions and prove itself worthy of preservation as a great nation" (part 4, para. 6). Asimov's readers, then, share the experience of popularized political science and history, the evaluative professional viewpoint that can regard vast swaths of history by virtue of an advanced understanding.

The development of psychohistory in the successive chapters of the Trilogy furthermore undermines the affinity of Modern Man discourse for

quantitative notions of behavior. In the first section of the Trilogy, it is easy to see psychohistory as a large-scale, centralized administrative task of a solitary expert at the heart of a large bureaucracy. However, "The Psychohistorians" is a deceptive opening. Since it is written especially for the book version after the publication in the pulps of all the other sections of the Trilogy, it is important to find both the deterministic vision allegedly promoted by the Trilogy and the undermining of that same vision. The psychohistorical idea that human identity is predictable in aggregate when a scientist considers large populations is not new to Asimov's time; one of its most famous proponents is the French statist Adolph Quetelet in the middle of the nineteenth century. That this vision is present at the originating moment of the Trilogy points to the fact that it is a central element of Asimov's critique.

While at the start of the Trilogy Seldon seems to be implicitly an emblem of his time and a representative of a stagnant and repressive social order, he is placed in a different context by successive developments in the story. Particularly, in Second Foundation the Foundation is revealed to be a clandestine organization that seeks to effect changes in larger social patterns; the predicted likelihood of success is little better than twenty percent at the end of the Trilogy. As pointed out by Manlove, the central theme of the Trilogy seems to be the idea of dialectic: "movement is the idiom of the work" (26), and the narrator brings the reader to different vantage points. The large, deterministic representation of the first Foundation, originally as a home for the Encyclopedists and then as a home for the rulers of history, crumbles in successive chapters. While the Foundation still seeks the betterment of human civilization according to the best scientific methods available and stays true to its root in Modern Man discourse, Asimov questions the interest and ability of large, bureaucratic governmental agencies to affect the necessary changes. While a

government may believe that using the principles that insurance actuaries draw from Quetelet will result in a rational, and foolproof, method of decision-making, Asimov points out that this method of social organization fails to account for human freedom. In the end, only the concerned and informed actions of individuals are validated by the narrative.

In doing so, Asimov also calls into question the efficacy of deterministic visions of the past promoted by the study of historians like Gibbon. It is satisfying from the view of the present to see the past as a natural and necessary progression to the present, and such a view can be used to justify one's actions in terms of historical or economic necessity. While this seems logical enough looking backward, when one turns the situation around and applies a deterministic vision to the future, the futility of determinist models becomes clear. If the past is neatly ordered according to strict rules, it follows that the events of the future will obey certain rules. The failure of rules to infallibly predict the future calls attention to the fact that the reverse project is unstable as well.

When reading the Trilogy as a whole, as one is encouraged to do after the 1955 edition by Doubleday that brought the three novels together, one starts to wonder "what Asimov thought" about the Foundation. Is one supposed to see Seldon as a hero of this narrative? Did Asimov as he began the first stories before World War 2 hope that such an organization could, through the power of the rational intellect, direct or guide the course of society--and save it from its otherwise inevitable decline? Certainly by the time Asimov wrote Prelude to Foundation (1988) Seldon is no longer the master thinker who dreamed up a totalizing plan for an intergalactic society: he is a scientist at a conference, taking part in publication, or the last stage of the scientific process. His findings are tentative and open to scrutiny, and the ideas he presents fit in so well with

an overwhelming pressure from the imperialist society that he becomes a tool of bureaucracy. This is no hero of an authoritarian state; people with much more money and power than he has easily co-opted this philosopher's ideas. Toward the end of his life, Asimov portrays Seldon as a pawn. One wonders if this is a capitulation, or if the cultural framework brought to bear on fiction from the 1950s is more to blame.

The Trilogy started as a thought experiment: in discussion with John Campbell, Asimov extrapolates from the current state of play, the discourse that so thoroughly permeates the general culture. In wondering "what if" the science of society progressed to such a state in which the future could be predicted, then, Asimov is considering the efficacy of the contemporary moment's love for positivistic certainty. That the original Trilogy is less interested in the glories of the intergalactic federation and moves quickly to its decline--and that the original idea of the totalizing Foundation is quickly supplanted by contingent and unrecognized ad-hoc organizations much like the personal bureaucracies depicted in Robert Heinlein's work--seems to indicate that from the start, Seldon is a puppet. In creating this superindustrial think-tank, Asimov is doing nothing less than challenging the stranglehold that the supposed perfection of the scientific establishment by governmental support. Just as it might be difficult for a scientifically-minded reader to accept a nonfiction account of the inability of modern science to live up to its reputation, certainly it would be difficult to write a convincing argument that some of the first principles of the prevailing social science too thoughtlessly assume that human behavior can be calculated as simply as Newton calculated the pristine paths of heavenly bodies. Here as elsewhere, Asimov is promoting an ideal of scientific citizenship, contrasting the work of individuals who work scientifically with the idea of a totalized scientific establishment of preordained fact.

Actionable Cultural Resistance in the World of Letters

Working in his father's candy store when he is not in school, the young Isaac Asimov begins reading pulp fiction at the age of nine. Asimov reports that there is a boomlet of science fiction periodicals at this time: Having lost ownership of Amazing Stories, Gernsback founds new magazines: Science Wonder Stories and Air Wonder Stories. In addition, Gernsback continues the tradition of Amazing Stories Quarterly that he initiated while owner of Amazing Stories by publishing Science Wonder Quarterly. The fifth-grade Asimov's father forbids him to read the magazines at first, "for he considered every one of them cheap and sensational trash that would only blunt and ruin my razor-sharp mind" (Before, 25). However, Asimov writes, the word "science" in the title, and the illustrations of the machines of the future, encourages him to approach his father for permission, which he is grudgingly granted. The Asimov family not being wealthy, at first Asimov is not allowed to keep the magazines, so he learns to read them as they arrive without damaging the copies; no one can tell that he has read them, and he would put them back on the shelf. Thus, Asimov immerses himself in the language of the pulps in the context of the market where they are sold without having to make a financial commitment to one particular title or genre. He reads widely.

In his autobiography and the preface to Before the Golden Age, Asimov does not offer any suggestion that he read science fiction as some sort of cultural resistance. In the guise of the authorial persona, he does mention a "remarkable youngster" of the same age, slightly smaller, with a darker complexion, whom he met before he started reading science fiction. He had the talent for telling stories. Asimov would listen ("play audience," he terms it) and his friend would invent stories or, perhaps, synthesize what he had read and seen in the movies. "Both of

us were careful never to let anyone overhear us in the enjoyment of the process. My friend once explained that the other kids would 'laugh at us'" (26). This friend moves away unexpectedly, and Asimov soon moves himself, so there is no longer any opportunity for Asimov to be enthralled by a friend's imagination. He suggests that one explanation of his voracious appetite for science fiction is that he missed the opportunities to hear adventure stories from another's imagination. This other, however, is marked by Asimov as different, and ephemeral: darker and shorter, a boy who moves away unexpectedly.

Since this might seem to be an analysis based on the intentional fallacy that the New Criticsm attempts to expunge, it is important to remember here that these words from the presumed author are, in the end, an autobiographical persona. Asimov's persona does not suggests that anything radical is going on with the storytelling; in fact, he goes to great lengths to naturalize this process. He writes of the conflict with his father and of his secret friend as if they are a normal part of adolescence. It is here, then, that Asimov's persona demonstrates the difference between cultural resistance and oppositional culture is found: science fiction resists hierarchical personal relationships by promoting lateral relationships. Oppositional culture would promote direct confrontation and rebellion against an established authority. Asimov avoids this; the persona of the autobiography could have painted his father as a force having to be resisted and the social order that keeps him apart from other boys as deleterious. Certainly, this type of youth culture has existed; that kind of persona would almost write itself. It demands, however, that the audience join a revolutionary movement and formulate antagonistic relationships. While such opposition can be exciting, and for a time an individual can live a life apart from sanctioned relationships and ascribed roles, this rebellion cannot last forever for everyone.

Instead, the autobiography presents the young Asimov using science fiction to make lateral moves within a hierarchical society. He cannot, or does not want to, confront his father's authority directly. He does not want to defy the set of accepted roles and responsibilities provided to him by his father. However, science fiction allows him to make a case to expand his purview slightly. Literature and science are acceptable genres in Asimov's cell; according to his testimony, Asimov is able to simply shift the location of his cell to one next door, one where reading science-fiction is acceptable. There is little confrontation here; it is simply a logical sideways move.

In the same way, it seems as if at the bottom of the hierarchical tree, Asimov is friends with other young people, but these friends like him are dependent upon the nodes above him. These nodes, dependent upon family relationships, economic relationships, and other social factors, sanction certain relationships and make other relationships more difficult. While today--in a world where networked computer games and widespread popular culture make association by affinity quite simple--such an unsanctioned relationship might seem trivial; in the 1940s the opportunities for making such lateral moves among members of the peer group were more limited. Storytelling and entertainment serve as a mechanism to make lateral moves, connecting to people outside the social relationships sanctioned by hierarchy. In the same way that a public sphere discussion about art allows individuals to form into a collectivity, science fiction serves as a mechanism to introduce him to others outside of his regular place. Even more so, it helps him to make the transition gradually.

The gradual transition is important because the fan-practitioner promoted by science fiction provides resistance to the opposition between reader and creator without creating an oppositional relationship. Certainly, one could approach the transition with opposition in mind: train at home to become a good

writer, assemble one's techniques, and demand entry into the realm of practitioners. Should one's attempt be successful, one's merits would be acknowledged and one would make the transition away from being a fan. Services that support such breakthroughs are in evidence today. The idea that an educational program will provide training and, at the end, support the individual's effort to gain entry into a different realm is prevalent in education, where the university provides a student with letters of reference, a portfolio of projects, and access to recruiters to successfully breach the working world; well-respected programs have the reputation of guaranteeing professional recognition on their completion, such as those creative writing programs that are known because each graduate will be offered a contract to publish a book upon completion of the master's program. Yet, this model of preparation and acceptance, of candidacy and transformation, is an oppositional model that is not successful for all. Not everyone can gain acceptance to these programs, or would even think such programs were worthy of attempting. Being in the position to apply for such a program relates to other decisions one made farther down the line, making the idea of the oppositional type of transformation available only to a select few.

Science fiction, as a fan-based community, provides for a more gradual transformation. Asimov's first published writing is not a science fiction story, nor a scientific article, but a letter to the editor. In 1935, coming to the end of high school at the age of fifteen, Asimov marshals his five years' experience of reading science fiction and writes a letter to Astounding Stories. In his autobiography he remembers, "It was a perfectly ordinary letter. I commented on the most recent issue I had read. I praised and denounced stories and authors, with the usual lordly condescension of the critic, and I asked for trimmed edges" (Green 146). It would be years later that he would attempt to place his first science fiction story,

and even later that he would write his first nonfiction article about science fiction. This particular entry into publishing demands a specific treatment in an examination of his work: the result of the young writer's immersion in pulp fiction is an article written to other readers expressing his judgment on the work they shared an interest in. Asimov and other practitioners of social science fiction will retain this early spirit of Campbell's "Brass Tacks" feature: providing opinionated arguments in an engaged conversation among peers.

In his science writing and his science fiction Asimov participates in a critique of the Enlightenment, in many ways prefiguring the postmodern critique of disembodied reason that gains prominence at the end of the twentieth century. For this reason, the best foil for Asimov is Immanuel Kant. In his essay "What Is Enlightenment" (1784), Kant suggests that the free use of reason before a literate audience alone can bring about enlightenment. Asimov, who even in his later years is a high-minded young man from the boroughs of New York City, seems to have at his back great works of literary humanism such as this when he writes. In his science writing as well as his science fiction, Asimov frequently exemplifies Kant's ideal. Far from being exceptional in this career path, Asimov exemplifies the fan-practitioner that rises in the public sphere of social science fiction, and the cultural resistance afforded in this alternative public sphere allows individuals to achieve an actionable freedom.

Some earlier studies of science fiction have constructed a vision of genre that suggests that the mass of fans, operating as a group, has a power that can rival the large media corporations so that in collectivity, fans can obtain entry onto the market's stage. Sam Moskowitz, with the best of intentions, has promoted a vision of a participatory genre of science fiction that is limited and somewhat contrary to the current study; his story is that science fiction fans can make their voices heard and demand that centralized producers of media develop

entertainment that suits their needs on their behalf. Henry Jenkins, in Textual Poachers, creates another anomaly by suggesting that it is not until Star Trek that fans actually make and share their own culture, and he seems convinced that the legacy of the fan's power is that it can influence mass media; fans can bring pressure to bear on the media so that they can see what they want.

While it is nice that fans can make their voices known, bringing back dead characters or convincing networks that they should not cancel a program is not necessarily an actionable freedom; indeed, if television is exploitative, customizing the entertainment for them is simply the fans asking to be exploited further. This study seeks to demonstrate that this process is not the full story of what is happening in social science fiction. By engaging in the genre of social science fiction, fan-practitioners use mass media to create an alternative public sphere, analogous to the coffee houses of the Enlightenment. This alternative public sphere provides not only the training for a fan-practitioner to use his or her reason in public, but also creates a space for cultural resistance. In looking at Asimov's own personal changes and the changes other readers of science fiction expect (as indicated by his fan mail), one can see how social science fiction in the golden age provides an opportunity for individuals to imagine alternative futures for themselves and outline a program of action to develop a different place for themselves in society.

Popular culture seems to encourage its fans to move beyond private consumption and enter into the realm of public discussion. Incongruous as it may seem, in this way even the most mundane mass-produced entertainment has the potential to spur Kant's process of Enlightenment. This ideal is clearly stated in Kant's essay, where he makes a distinction between the private use of reason, such as a government official reasoning at his or her official duties or a pastor tending to his or her flock. In such a case, the individual is bound by duty

and propriety; he or she must consider what is necessary in conjunction with what is right. The public use of reason, on the other hand, Kant calls the voice of the scholar. For Kant, this scholar may be a government official or a pastor; in either case, the scholar must speak forth to the world at large about the general concerns of the general population. Applying the idea to Sarah Thornton's work, one can see the scholar as the aficionado among friends, the producer of off-market entertainment that recycles mass-produced entertainment, or the chronicler of the genre's sagas; in these cases, the scholar must assemble and choose, define and limit the rules of the genre and the correct participation of fans. As a scholar, one has the power and the right to think about what could be better about their calling and the society; in his or her duty, and rightly so, the individual is bound by institutional context. The clerk must follow the rules, the pastor must obey the creed, and the disc jockey must match the beats: to a particular post a person is appointed, and to the strictures of that post the person must adhere. But when scholars are allowed to exist in a state of free enquiry separate from the requirements of everyday life, Kant writes, a society can achieve Enlightenment.

This ideal of invigorating the alternative public sphere is clearly seen in the novels Asimov writes under the pseudonym Paul French. Providing cultural resistance for a juvenile audience will be presented more fully in the next chapter, and Asimov's juveniles, unfortunately, do not meet the criteria very well. One redeeming element, however, is the inquiry-based plots that are reminiscent of a detective story. From the very start, David "Lucky" Starr is a puthistic hero, asking questions and testing hypotheses. He is a role model based on the Enlightenment ideal of the public person using reason; in presenting this figure, Asimov hopes to encourage his audience to see the benefit of a scientific inquiry and think about how these ideas can apply to everyday life. This model is

somewhat flawed; the omniscient narration and the inevitability of the plots, qualities also found in a detective novel, lead to a passive reader who witnesses the power of scientific inquiry but is not asked to engage in it himself or herself. However, one consistent element of Asimov's science boosterism is the difference between the modern assumptions about science and the use of a scientific method, which can turn out to be quite different.

In his public life as an author as well, Asimov chose to express his persona as the figure who is trying to inculcate a scientific attitude in society. Even though Asimov did not archive many of his personal papers before 1955, there is plenty of evidence that Asimov took seriously his position as a spokesperson for science in his public appearances and his correspondence. When he is invited to speak to community groups, professional groups for scientists and engineers, and science-fiction fans, he would present arguments to the audience. For instance, when he addressed the Bookbuilders Club in 1964, his purpose is to explain, "why science fiction is, in my opinion, an extremely important form of literature" (Letter to Michael Bodden). Asimov frequently states that he liked to keep his addresses off-the-cuff and lighthearted as a disclaimer, suggesting that he uses the after-dinner occasions as an opportunity to present theses to his audiences.

Asimov is also frequently consulted for his opinion on the value of science fiction for young people. Writing to Joan Novak in 1964, he admits that science fiction must entertain, or it will not be read--but entertainment cannot be its sole purpose; it must also "have significance for the present." The themes of science fiction must be examples such as "the social effects of space travel, the way of life in a drastically overcrowded world, the consequences of fusion power development[,] and so on." These two examples demonstrate the duty Asimov felt to function as a public authority, to make opinionated statements to his audience. Certainly, there would be other ways to promote his work; speaking of

his humble beginnings, painting romanticized visions of the future, or simply telling engaging stories from his latest writing would be equally viable approaches. Asimov resists publicity culture, instead taking the approach of infusing public conversation with opinion (and as will be discussed shortly, helping others to rise to a similar position).

Literature in general is opposed to publicity culture when it is packaged as the expressions of a private individual; the ideal of the public sphere is mimicked by the author who writes for a literate audience and when that audience may purchase copies of the book for the same price as everyone else, like a cup of cocoa. In the scientific and technical fields, however, the public discussion of ideas is overwhelmed by official speech. Government publicity agents make announcements of the future developments in technology, researchers write official papers with their sponsoring agency's imprimatur, industrial sources provide "information" to journalists and the public so that consumers will see their products as part of the general progress of society. The first publications of science fiction after World War 2 are striking in a material sense, in that on the back covers or the inside flaps there is a picture of the author and a biography that usually includes technical research background, war service, and higher education. In the Science Fiction Book Club editions in the 1950s, this pantheon of private individuals speaking in public is striking because each of their volumes is the same size and each back cover is devoted to a sense of who the author is, with a three-quarter page black-and-white photo and a paragraph of the author's qualifications. These editions announce to readers that science is not a monolithic whole, but a conversation between concerned private individuals.

Social science fiction's roots in the extragovernmental discussion of concerned individuals in the previous chapter should resonate here. If one

accepts Habermas's position that the publicity industries of the early twentieth century effectively shut down the efficacy of the public sphere institutions of the press, reform movements, and civic associations that had developed in the previous century, then perhaps one can see the vacuum filled by science fiction and, particularly, the social science fiction subgenre. The possibility of debate having been foreclosed by the use of publicity messages in mass media, social science fiction develops into an effective substitute. In this way, Asimov, one of the most influential and successful practitioners of social science fiction, and certainly the most prolific, is at the same time the prototype fan-practitioner.

Cultural Resistance in Science Nonfiction

According to several of Asimov's public statements, he stops writing science fiction after the launch of Sputnik on October 4, 1957 out of concern for the United States' falling behind the Soviet Union. However, it is not quite true that Asimov write no science fiction after Sputnik nor is it true that nonfiction has little interest for him beforehand. When he is reviewing a biochemistry text in 1952, Asimov expresses an interest in science writing. In a letter to Frederik Pohl, he says the reason is to distinguish himself from the other big names in the field (specifically, Bradbury and Heinlein): "I'm a pretty fair chemist and a very good (but not the best) science-fiction writer. I am the best combination scientist-science fictionist in the whole lousy world and I want to cash in on that."

Despite this monetary interest, however, Asimov's concern for the state of the scientific establishment also inspired him to write nonfiction. In response to a 1955 fan letter about his essay "The Sound of Panting," Asimov reiterates Vannevar Bush's sentiment about the volume of scientific research: the rate of collecting data is far greater than science's ability to organize and interpret it. In

his response, he worries that the cure for cancer, or some other important discovery, may be waiting in already-published findings; all one needs is to correlate two items from different fields "which no one has yet thought of co-ordinating because no one person happens to be aware of the existence of both items." He refers his fan to his story "Sucker Bait," certainly seeking to promote his own work, but also suggesting to his reader that there is more to this story than what is immediately apparent.

In the summer before the launch of Sputnik, Asimov writes that he has been on an "article writing kick" and has arranged for a collection to be published at the end of the year.[25] He is selling as many nonfiction articles as possible, he writes, because he wants his reputation for nonfiction to match his reputation for science fiction. Asimov experiences what he calls a "post–Sputnik boom" for science nonfiction. In addition to many articles, he is making personal appearances, even charging a hundred-dollar honorarium every time he speaks.

In the letters from his fans, it is easy to see the ways in which Asimov's readers imagine that his nonfiction would help them create a new identity. This is particularly the case from female and youthful writers. In the 1960s, the letters that Asimov receives from women frequently come on preprinted stationary that contains the honorific "Mrs." followed by the women's husband's name. They sometimes sign their names this way as well, recalling an age of marked gender difference where politeness dictated the erasure of the women's identity. One woman writes to Asimov that she finds his nonfiction articles in Fantasy and Science Fiction fascinating, but regrets that her most formal training in science is a high school biology course in her senior year and that she lacks any training in physics or chemistry. She asks for Asimov's help in learning more about science--not only to satisfy her own curiosity, but also to help her young children when they get to science and math. Asimov writes to her

warmly, suggesting that she read his own Realm of Numbers and Realm of Algebra, which he thinks she will be able to read quite easily even without formal training. He goes so far as to say that he is "sure" that she can find this book in her public library (letter to Mrs. John Lorenz). Certainly this tells something of Asimov's intention in writing books: there should be, in every public library, a resource to which people like this fan may turn to supplement their educations. But also it demonstrates how Asimov's writing, and science fiction magazines in general, leads individuals to step outside the proscribed boundaries established by their high school educations and to imagine new places for themselves.

Parents and children also imagine new futures for each other after reading Asimov's work. A father writing in 1961 reminds Asimov of his kindness in responding to his son's mailed question about chemistry. He drives with his son, a junior in high school, to Purdue University, finds Chemical Abstracts, and looks up the references so that a librarian can acquire the articles from the state library. The father explains that he and his wife have degrees in journalism and banking, so it is hard for them to find a suitable mentor for their son. Asimov returns the appreciative letter on 7 August 1961, saying that he does not "deserve" the high praise.

> I write in order that I may be read, and while the facts of life compel me to make a living in it in some way, my real reward is the knowledge that I arouse interest and curiosity. If your son does me the honor of inquiring further into the material concerning which I write, it is my duty and pleasure to answer him as helpfully as I can.

It seems clear from this letter and many others that Asimov's goal in writing science nonfiction (what he calls "science writing," which is opposed to "science reporting") is to continue the attempt of the rocketry societies to excite the audience into scientific inquiry discussed in Chapter 1.

In order to understand Asimov's ideal of science writing better, it is helpful to see how it is attuned to the Enlightenment ideal of the intellectual exercising reason in front of a literate audience. In his correspondence he writes several times that he is uncomfortable writing in the style of textbooks; the closest he would come would be to write The Intelligent Man's Guide to Science, with its colloquial and sometimes amused tone. In 1960, after delaying a general textbook on physical science for three years, he writes to A. H. McLeod to say that he is returning the royalty (with interest). He only knows one way of writing about science, "and it just plain isn't a good way to write a textbook." What is his style, then, and what can it tell us about cultural resistance? At first glance, it would seem that Asimov would be an excellent candidate for writing textbooks. His style is encyclopedic. Despite its sexist title,[26] The Intelligent Man's Guide to Science is comprehensive in its scope; it starts with an essay about the nature of science, then begins with a 60-page description of the universe, turning next to the Earth, and continues on a tour through the physical sciences. In the second part, Asimov divides the biological sciences into eight parts of roughly 50 pages each, starting with biochemistry and ending with the mind. Inside the text of each section, Asimov summarizes and explicates the current knowledge of each subject without, however, making his sources obvious. There is no way to go back to the sources he uses for the summaries of each topic of the sciences; he does not document his sources. In a 14 February 1964 letter in response to an inquiry about the sources behind The Human Brain, Asimov writes:

> Your letter places me in an embarrassing predicament. I am not a great authority on the matters concerning which I write--I am a mere translator. That is, I take the material that others write (and do) and simply arrange it in what seems to me to be a reasonable order and speak of it in understandable English.

He suggests to the writer that the information can be found in textbooks, encyclopedias, and articles in Scientific American. The lack of sources makes the writing Asimov presents seem finished, closed, and the product of an impenetrable consciousness, much like a textbook. This encyclopedic style, in fact, is odd for the student of his fiction; Asimov's love for synoptic science books does not fit well with the thesis that Asimov would like his readers to question the Seldon-type expert who would present such a closed story of knowledge. Asimov's narrator, it might seem, stands before a completed summary of science and explains it to his audience with the neutral authority of an expert; because the scientific narrator uses logic to make reasonable conclusions, the audience can only apprehend, not grapple or argue.

With a closer look, however, one begins to see that Asimov's summary is not neutral. For instance, in his recounting of the story of penicillin, one can see Asimov grinding one of his favorite axes about communication in science, but there is also a subtler attack on the idea that scientific progress is made according to market pressures or the work of isolated geniuses. The story of the bacteriologists he recounts in the tone of a hunt; the involved scientists identify the bacteria, assemble an agent to destroy them, and succeed in developing the sulfa class of antibiotics in the years before World War 2. However, the truly revolutionary antibiotic is, of course, penicillin. Asimov goes to some pains to point out that in 1929, long before the sulfa drugs had been produced, Alexander Fleming has published a paper about an enzyme produced by common bread mold, Penicillium notatum, that has ruined the cultures of staphylococcus he is trying to grow. In 1941, a British and a German scientist learn how to isolate the enzyme. Britain in 1941 is in no position to produce the medicine, Asimov writes,

so they move to the United States and find a method to produce it in mass quantities.

The way Asimov tells this story is interesting in several respects. Asimov uses genealogy to deny chronology. First, he brings up a linear story of origination, using the sulfa drugs with an origin in the nineteenth century work of Pasteur. Thus for the reader, Asimov demonstrates the blindness of the great march of ideas. However, unknown to the scientists and the reader, in 1929, there is a discovery from quite another branch of science that was relevant. The pride those who work on sulfa drugs must have felt--and the triumph that the reader witnesses in the narrative--is quickly deflated by the simple story of Alexander Fleming. The dutiful Fleming, paying attention to anomalies during his routine work as a scientist should, is the true hero of that story. The progress of science, the narrative one might expect to be the valued narrative, is given its due, but at the same time is shown to be limited.

There is a similar phenomenon in Asimov's almost gleeful description of Galileo's use of the inductive method. In explaining what science is, Asimov is obligated to discuss how the scientific revolution changed the method of investigation. The story about Galileo and the Tower of Pisa, Asimov admits, is probably apocryphal, but it is illustrative about the difference of the scientific mindset:

> According to the best-known story about him, Galileo tested Aristotle's theories of falling bodies [the presumption that heavier objects fall faster] by asking the question of nature in such a way that all Europe could hear the answer. He is supposed to have climbed to the top of the Leaning Tower of Pisa and dropped a ten-pound sphere and a one-pound sphere simultaneously; the thump of the two balls hitting the ground in the same split second killed Aristotelian physics (12-13).

The story here is told in a way peculiar to Asimov. First is the emphasis on communication: the experiment is a serious question of science, but it is told "in

such a way" that common people can understand. In this way, Asimov values the elegant demonstration that should be the center of experimental science. Second, a solitary, reasoning investigator is like a David going against the Goliath of long-established tradition: Galileo's little inquiry broke free from nearly 2,000 years of accepted wisdom. The reader walks away from passages like this having a respect for skepticism; what scientific laws, the reader wonders, are simply assumptions that have not been verified? This story and many others in the volume also help the reader to understand the experimental method of science: readers learn that results must be repeatable and that speculation about causes must be verified through controlled experiment. Instead of a textbook style that would include a series of steps that one would need to follow, Asimov works to establish the ethic of scientific experiment. The third way is the word "thump": Asimov's articles employ a careful use of informality to demonstrate the everyday nature of the events that seem so overwhelmingly iconic to the student of history.

It cannot be the encyclopedic style that is inappropriate for textbooks; textbooks are, if nothing else, encyclopedic. There are two problems. One, whereas a textbook is supposed to provide the true facts about a discipline, Asimov is providing the institutional context for those facts. He delights in the permutations of ideas, and explains how old ideas hold sway even when better ideas are available. Science textbooks are supposed to be explanatory, not placing the facts into a narrative. What is more, he adds his own personal agenda items to the discussion, making sure that his readers understand how the proper use of communication and reasoning are important for scientific progress. One might argue that these qualities would result in a superior textbook, but this is not the kind of writing textbook publishers were looking for.

Textbooks are supposed to provide essential information clearly, and are expected to go out of date as new knowledge comes to the attention of the editors; textbooks are the tools that professional experts use in the classroom as a stand-in for the abstract knowledge of a profession. No one owns the information in the textbook; it is the distilled knowledge of a profession. This abstracted and depersonalized knowledge is a problem for the student of science. It suggests to the student that there is a large, difficult mass of information that needs to be assimilated. This may be true. However, it also suggests to the reader that that knowledge is a set of predefined constructs.

This abstraction of knowledge, studied most effectively by N. Katherine Hayles in her study How We Became Posthuman, is not unknown in the 1960s and is, as will be shown in Chapter 5, a primary impetus behind the new wave. The critique of abstract knowledge is seen in the Frankfurt School's work after World War 2, particularly Theodor Adorno's condemnation of popular music and Hanna Arendt's description of instrumental reason. Jacques Ellul's The Technological Society (1954, trans. 1964) is most relevant. The problem of the modern state, according to Ellul, is that knowledge is no longer embodied in individuals. In a move similar to the argument about the alienation of modern labor, Ellul suggests that the widespread use of specialized tools and procedures means that expertise no longer resides in the individual. The sickness of modern thought, Ellul says, is the belief that there is an outside authority that represents the right way of acting. A craftsman no longer works in accordance with a personal knowledge of how things should be done, but instead with the conviction that what he or she does is in accordance with the way things are done. Ellul's contribution is his depiction of the totalizing nature of this abstract knowledge, a knowledge that forms a culture and logic of its own. The stultifying effect of this culture of disembodied information is frequently depicted in popular

culture using the mainframe computer as a dystopian microcosm, such as in the Raymond Jones novel The Cybernetic Brains (1962) or Jean-Luc Godard's Alphaville (1965).

In his science nonfiction, Asimov attempts to put knowledge back into its human context. People know things, and these people live in different countries and represent a variety of professions. These people, doing their work in science, construct a body of knowledge that is contestable and contingent on further discovery. In so doing, Asimov creates a space of cultural resistance for the scientifically-minded individual. The way in which he addresses the reader, providing models for scientific inquiry and examples of how seemingly inviolable principles fall to the inquiry of a thoughtful actor, are attempts to deflect the belief that scientific knowledge is a pristine field of established fact. Far from being a Seldon-type expert, then, Asimov's narration in the science nonfiction book is that of model scientific citizen. In his emphasis on an individual's ability to reason and communicate, Asimov seeks to create a space for cultural resistance against the onslaught of messages in a variety of media that seek to convince the consumer that scientific is formless or uniform. Like Deleuze's and Guattari's concept of the debilitating image of the "body without organs" in A Thousand Plateaus (1980), Asimov seeks to counter the image of the field without actors.

The individual's response to the saturation of media messages can be a stultified silence. A comparison can be made to Baudrillard's description of the individual in the face of publicity messages derived from opinion polls. He writes that the "whole universe of the media, and perhaps the whole technical universe," cannot be seen as a revolution against the demand of the Enlightenment that an individual be rationally acting and choosing liberty and

knowledge. Instead, he would like us to consider the shift as a "devolution," a draining of will to act and choose.

> We might argue that there exists another philosophy of lack of will, a sort of radical metaphysics whose secret is that the masses are deeply aware that they do not have to make a decision about themselves and the world; that they do not have to wish; that they do not have to know; that they do not have to desire (109).

Certainly one of the best ways to accomplish this devolution is to present the scientific world as finished, as self-sustaining, and as already-formed. When the world of knowledge is presented as accomplished, it needs individuals who can polish and repair the mechanisms that already exist; in order to maintain the scientific order, one thinks that one must be an able functionary in the bureaus of science. However, Asimov asks something different of his readers: he would like to see a class of individuals who understand from whence the scientific world arrived. Instead of seeing it as an accomplished fact, he would prefer there to be individuals who understand that the scientific world is a dynamic state of activity and not a steady state of civilization, that there is a necessary argument, reevaluation, and reconsideration behind a technologically advanced society.

Asimov the Editor

The final way of thinking about cultural resistance in the episode from Asimov's biography where he visits the offices of Street and Smith is by being skeptical about why indeed one can say that science fiction in the age of Campbell's Astounding provided Asimov with a space for cultural resistance. From what Asimov writes, it would seem that science fiction called Asimov from his humble environment into the world. All the same, is it not the case that one should be suspicious of biographical criticism? Asimov certainly seems to be an honest

man, but of course, the "honest man" we know is not the man but the autobiographical persona. Asimov may himself be a swindler and a cheat, and his entré into Street and Smith may have been due to circumstances that he chooses not to tell. One must avoid the intentional fallacy; indeed, the second way of thinking about the cultural resistance in this episode is to think about the ways in which Asimov creates a public persona through his editorial comments. In his introductions to his own volumes and his commentary in the volumes he edits, Asimov seeks to disintegrate the field of science fiction, reducing the totality of the genre presented to consumers and helping others to negotiate the genre by encouraging them to realize that it is created by interested individuals who have made a place for themselves. In a similar way that he breaks apart the seamless world of technocratic science, Asimov helps to find the seams in the world of publishing.

Just like John Campbell and Judith Merril, Asimov takes the role of editor in the field of science fiction. Midway in his career, Asimov begins his own effort as an anthologist with The Hugo Winners (1962), a volume that collected the winners of Hugo Awards from 1955–1961, which were invented for the Thirteenth World Annual Science Fiction Convention in 1955. Although he publishes two more anthologies in the sixties and ten in the seventies, it is in the 1980s that he hits his stride, with over one hundred anthologies to his name.

Asimov uses the opportunity afforded to him as editor of the anthologies to increase the reader's awareness of the field. Adopting the mechanisms of epideictic oratory, Asimov establishes the lineage of the contributors, encourages pride in the history of the practice, and places the field in the context of the larger society. For instance, in The Hugo Winners, Asimov provides an introduction that reads like a speech: "Let me introduce this book in my own

way, please; by which I mean I will begin by introducing myself. I am Isaac Asimov and I am an old-timer" (xii). Asimov carefully follows the rules of classical oratory: he presents a sense of who he is (ηθος) and, as Cicero would have told him to do, he asks for the audience's indulgence. From there, he proceeds to a narrative of the case--in this instance, the story of science fiction starting with Gernsback--and ends with the suggestion that the winners of the Hugo awards be collected into an anthology. He concludes with humor and by giving thanks, much the way one would speak at a banquet. From there, the book presents reprints of the winning selections; Asimov inserts a divider page that states the year, the ordinal number of the convention, and the location. After turning the page, he writes about 500 words to introduce each writer, including a list of the person's significant achievements, interesting facts from the biography, and sometimes stories about the actual awarding of the Hugo or amusing personal interactions. In short, it is as if the authors of the Hugo winners are being presented as part of a civic association.

This effort for The Hugo Winners encourages the reader to see the genre as a community instead of an abstract, reified set of qualities. Maintaining his roots as a public speaker, Asimov uses the tone of a speaker at a dinner party to portray a vision of a vibrant but contingent community to the reader. These notes and letters contrast strikingly to other anthologists. As is noted in Chapter 1, John Campbell's style in this genre is authoritative, seeking to promote the social value of science fiction and the excellence of his authors. While this serves an important function as well, it does create an impression that the genre is filled with untouchable luminaries. Asimov's style, which is unique to the anthologies he edits, introduces the reader to a variety of individuals, allowing the reader to find his or her place among them.

An anthology provides a reader with the opportunity to augment his or her cultural capital, since the selection and commentary on the selections help the novice to learn more about the subculture and the expert to evaluate another expert's choices. This technique of providing entry tools into a subculture is not unique to science fiction. Subcultural collectivities offer an opportunity for individuals to imagine, experience, and even apprehend the tools for cultural resistance, like Sarah Thornton's promoters, deejays, and fans. The subcultural expert acts doubly to create a space for cultural resistance: his or her stature creates a personal space where he or she can use his or her agency to create and influence the subculture, and his or her expertise helps others to become acquainted with the rules and conventions of the community.

What is remarkable about Asimov's 1985 anthology Great Science Fiction Stories by the World's Great Scientists are the head notes. For instance, in the note about "James Tiptree, Jr.," Asimov recalls how after ten year's worth of stories from Tiptree it is revealed that he is actually a she, Alice Sheldon, an experimental psychologist and daughter of famous explorers. In 1967, Asimov writes, she begins using the pen name and hides her gender because of "[f]ear of losing her dissertation grant, ruining future employment opportunities with the CIA and damaging her reputation with her colleagues." Because she is a nontraditional student and a woman, Asimov speculates, she would not have been able to enter the field, even though her dissertation (completed when she is 52) is a "recognized classic in the field" (265). In addition, he writes a headnote for himself, saying that he is "[p]erhaps the world's greatest explainer of science" (209) and reminding his readers that he himself is a Ph.D. in Chemistry who worked for the U.S. Navy Air Experimental Station and taught biochemistry for several years at Boston University. The other contributors have similarly

diversified pedigrees: education in the sciences, frequently serving in the military, many professional publications, and a range of scientific publications.

Asimov's affection for the omniscient narrator takes on new meaning when he is editing an anthology: the ultimate insider, he knows everything about everyone associated with the project. Based on his correspondence with the contributors, this may be somewhat true; he seems to be on a friendly, personal level with many of the people he works with. However, Asimov's inside status has something to do with his longevity. He is writing science fiction before there were science fiction books published in hardback. He understands how the field has developed, and he uses this understanding to help others enter into the genre. Instead of using his editorial space to make grand pronouncements about science fiction's cultural efficacy, Asimov creates a space for others to enter into the alternative public sphere set up by the genre. In so doing, he encourages readers to see the genre as a field of cultural resistance: a place where they can join in discussion with others who have intelligence and a concern for society. This discussion, however, is much less of an escape than it is a discussion about the aims and direction of science and the technological civilization. Even though they might not be able to join such a discussion in their private lives--this activity is removed from the scientists and engineers and taken over by the publicity offices--in social science fiction they can step out of their narrowly constrained lives and enter into a debate between equals. By making the qualities of the individuals clear and speaking to his audience as if it were a gathering at a civic association, Asimov makes it possible for the reader to imagine himself or herself as part of the conversation.

* * * * *

Asimov's work is so successful in creating a new rhetorical situation that he is one of the first to be asked to participate in the State Department's project to use science fiction as a cultural weapon of the Cold War. Under the aegis of the United States Information Agency (USIA), Asimov's work is translated into other languages and exported to promote American culture (more information about this program is provided in Chapter 5). From the bright young man in the candy store, Asimov rises to such prominence as to be used as a tool of diplomacy. Asimov's ascent to fame is not just a by-your-bootstraps success story. Since his fame is predicated on his rhetorical stance, not on his capacity as an artist, Foucault would say that one must consider how the veneration of his fiction as a proud but naive moment at the origin of the genre might limit the convictions and knowledge present in his work. Primarily, he is a spokesperson for science; he presents himself repeatedly as an author, a public speaker, and an international expert as the voice of reason. He does not attempt to create literary works of art in the traditional sense--he does not innovate form, he does not create round characters, and he certainly does not assault the reader's consciousness with convoluted plots and unknowable settings. His art is in the creation of the narrative persona--the amateur that raised himself to expert status. This art is bountiful in the space for cultural resistance it creates for his readers, not to mention himself--and his skill at his art is demonstrated by the millions of copies of science and science-fiction books he wrote, edited, and promoted.

Chapter 3. Robert A. Heinlein: Space Cadets and Interstellar Citizens

The cheering of the victorious soldiers at the end of Paul Verhoeven's film adaptation of Robert Heinlein's Starship Troopers (1959) has become an emblem of stereotypical Cold War ideologies of repressed identities, atomized individuality, and the authoritarian state. The cheering comes from a select group of soldiers who have suppressed the attack of a nameless, faceless enemy rendered by Heinlein and Verhoeven as a society of insects; these soldiers are an elite class that, in the world of the novel and film, will be responsible for the governance of their society when they return home. In the world of Starship Troopers, the military establishment has supplanted the Democracy. For this reason, among others, Heinlein is the tarnish on the pips of social science fiction. What could be more culturally resistant than Democracy? Moreover, who would be willing to assert that an author who trifles with Democracy promotes cultural resistance?

The analysis in the first two chapters of this dissertation might have been difficult for some readers because everyone knows that the early days of science fiction are marked by the imperialist, totalitarian dogma of the nascent Cold War. The assumption that mid-century science fiction writers tacitly support authoritarian thinking and prepare a home for fascism is an understudied facet of twentieth century literature. Certainly, the practitioners of what Isaac Asimov terms "social science fiction" often rely on settings in a future world dominated by social engineers who are not elected. In these worlds, individuals are literally treated like numbers.

Evaluating literature along mimetic lines with the New Criticism leads critics to dismiss such literature. Michael Moorcock, in his essay "Starship

Stormtroopers" cited in Chapter 1, is one such detractor. He finds that the events and characters in Starship Troopers are representative of a reprehensible mindset:

> In Starship Troopers we find a slightly rebellious cadet gradually learning that wars are inevitable, that the army is always right, that his duty is to obey the rules and protect the human race against the alien menace. [… The novel] set the pattern for Heinlein's more ambitious paternalistic, xenophobic (but equally sentimental) stories which became for me steadily more hilarious until I realised with some surprise that people were taking them as seriously as they had taken, say, Atlas Shrugged a generation before--in hundreds of thousands!

Such pronouncements were typical of Moorcock and other proponents of the new wave, and Heinlein is increasingly used as an example of all that is wrong with Campbell-age science fiction. Certainly, the simple engagement of fascism in a setting does not necessarily mean that an author seeks to promote fascism; even a seventh-grade literature student would be prepared to distinguish between a fascistic narrator and a fascistic author. Indeed, the significance of fascism in social science fiction is that authors seek to challenge simple good and evil narratives where fascism is safely made "other." It is strange that a fiction that supposedly comes from an impulse to debate ideas about society and encourage readers to enter an alternative public sphere is met with this evaluation.

The tendency to read Heinlein's work as monomythic is even more disturbing given the context of the social science fiction aesthetic. The characters in Heinlein and Asimov are often straw people designed to serve as intellectual examples; because these effigies are not real people, they cannot be harmed by the rough treatment their authors demand. Heinlein's innovation is an environment for the straw people of social science fiction: more than anyone else, he creates cardboard cultures in which the straw people can live, providing his

readers with the opportunity to think about the connection between culture and character. This function of providing a foil to the everyday assumptions about one's own daily life had primarily been the province of the sociologists and anthropologists earlier in the twentieth century, and the purview of the historians and utopians before that. The social sciences, unquestionably, deal with real people, and with the increasing use first of scientific history and second field research in anthropology and direct experimentation in sociology, the comparisons offered by social scientists are imbedded with assumptions about the other: they may be like that, but we remain different. Heinlein's cardboard cultures create a space for cultural resistance that readers can use as a vantage point to examine their own assumptions.[27]

All this being said, still the thesis that social science fiction provides a space for cultural resistance is easier to accept in the previous two chapters: one can see Campbell's resistance to the scientific establishment and Asimov's effort to engage the world in a conversation about science. It might be better to leave Robert Heinlein out of this dissertation; however, it is impossible to leave Heinlein out of social science fiction. Like Asimov, he is a protégé of Campbell; as discussed in the introduction, he formulated one of the primary statements about social science fiction. Nevertheless, even in this chapter, primarily focused on Heinlein's so-called juvenile novels, the serious critic is still not on safe ground. The series of novels published by Scribner's in the 1950s for young adults have simplistic plots and language, making dubious the claim that they have the artistic power to critique culture.

The space for cultural resistance created in the wake of Campbell's and Asimov's work is easier to accept, in part, because it is more obvious. The work of the editors can be seen in their editorial practice; furthermore, in the case of the rocket societies and the Futurians, organizations leave behind the memory of

their existence. The records, drafts, correspondence, and memoirs of the people involved with the editors and organizers can be clearly seen so that a reader may observe the cultural resistance of social science fiction; while some achieve financial and political influence, even those who do not attain a direct benefit do find a way to assemble what Sarah Thornton calls "cultural capital" (see Introduction). Asimov's correspondents testified to the power of his words to help them craft a space for themselves within the discourses that seemed to offer them little in the way of an identity that they could choose for themselves. Campbell used science fiction to promote an alternative dialogue about world affairs that, although official governmental channels supported it, did serve as an alternative cultural space in which official pronouncements and verdicts could be resisted. These sites of resistance offered by Campbell and Asimov are available to those who look and are documented, even though not always in immediately available form.

It is possible to rethink the notion that Heinlein's novels promote fascistic tendencies and explore how they provide a space for cultural resistance. Starship Troopers, the novel most often associated with Heinlein's supposed fascism, can also be read as a tool that creates a space for cultural resistance in the reader's consciousness. If we look at the so-called juvenile novels, we should be able to find evidence that they engage the prevailing ideology about adolescence. For this reason, this chapter assembles an idea of the prevalent thinking about adolescence and the possibilities outside that ideology. From there, it is possible to see when science fiction may not assist in providing cultural resistance. By turning to the novels by Heinlein, one can understand more fully how the novels are cultural affordances that a citizen can use to shelter oneself from the dominant ideology and use the resulting cultural space to imagine a different set of possibilities.[28]

The Adolescent Problem and the Juvenile Market

In his stories published in the pulps from the 1930s until just after World War 2, Robert Heinlein fits the mold of a Campbell devotee. Like Asimov, Heinlein adapts under Campbell's domineering vision of the short story. In the novels Heinlein writes in the years immediately after World War 2, he takes what he has learned and, combining it with his interest in utopian political thinking, develops an aesthetic specifically aimed for the library and home markets. The dozen novels published by Scribner's, starting with Rocket Ship Galileo in 1947 and ending with Have Space Suit--Will Travel in 1958, are often known as his "juveniles." This label suggests a literature that is simplified and derivative, but these novels are rich and complex representatives of his work, and the fact that they have young adult protagonists does not mean that they are lesser literature. Furthermore, the "juvenile" category leads one seeking for evidence of cultural resistance to think about the discourse of adolescence in the period immediately before Heinlein begins writing: perhaps he is offering a space of cultural resistance from the prominent ideology about youth. While most social science fiction constructs shipboard cultures for its readers, the so-called juvenile novels directly engage that obvious but overlooked metaphor, the ship of state. Perhaps Heinlein is not writing to create fanciful escapes for young people.

The idea of a series of novels for boys comes to Heinlein in 1947, when a publisher approaches him. Along the lines of the Tom Swift series, he comes up with the concept of a "young atomic engineers" franchise. He pitches the story about Nazis on the moon that would become Rocket Ship Galileo (1947), but this does not appeal to the publisher. His agent takes the story to Scribner's, "a prestige publisher," who likes the story but not the Tom Swift framework (Patterson and Thornton 11). The novel is popular enough that Scribner's took

an option for a dozen books, each serialized in the pulps before hardback publication. Scribner's publishes a total of twelve Heinlein novels for the young adult market, approximately one per year, until 1958 when it rejects Starship Troopers. Some have seen the "juveniles" as derivative works of science fiction, something that Heinlein wrote on his rise from the mindless stories for the pulps to the mature, adult fiction of the 1960s, such as Stranger in a Strange Land (1961), The Moon Is a Harsh Mistress (1966), and I Will Fear No Evil (1970). The idea that Heinlein is a simplistic writer at the start of his career, who attempts to market books to an older audience later in the career, does not seem accurate. For one thing, the stories in the Scribner's novels seem more complicated than the typical science-fiction fare offered to young adults. This position is backed up by bibliographic evidence: Heinlein writes For Us, the Living in 1938 but it is not published until after his death in 2003; this novel has shown that Heinlein is capable of complex novels with adult themes early in his career. Another hint that the Scribner's novels are more complicated than might first appear is the fact that the Stranger in a Strange Land is not written suddenly after the Scribners' novels; biographical and bibliographical evidence supplied by William Patterson and Andrew Thornton in The Martian Named Smith shows that the earliest idea of "a satirical story about a man raised by aliens" (12) is completed in 1947 and that Heinlein returns to the novel several times during the 1950s, while he is also writing the juveniles. It is not as if complicated novels for adults is a new idea that Heinlein tries after 1960.

Heinlein's creation of intellectually and socially challenging literature for young adults is a brave task given the assumptions about teenagers after World War 2. Adolescence becomes an issue in the period between the two world wars. The traditional answer to "the adolescent problem" is found in books written by sociologists and psychologists of the period. Heinlein seems to have followed a

different path than these writers, but it is instructive to consider their writing in the context of the Tom Corbett television series, which is loosely based on a Heinlein novel. A survey of contemporary adolescent research reveals a discourse about young adults emerges that fits quite nicely with the young adult science fiction of the period. Additionally, by understanding this discourse we can better see how Heinlein's so-called juvenile novels serve to disrupt traditional thinking about adolescents.

The idea that teenagers are a special case that demands special treatment is well established at the start of the century. Even though the nineteenth century had considered teenagers to be adults with fewer years, in the early twentieth century adolescence is split off from adult life, described as a phase of diminished capacity, and more importantly, cast as an inevitable biological process. According to The Rise and Fall of the American Teenager, G. S. Hall establishes the paradigm for thinking about adolescents in this period in his 1904 book Adolescence. Relying on Darwin and Freud, Hall invents the field of adolescent psychology. Hall establishes the idea that the adolescent faces unique challenges, and later investigators will augment his claims that the teenager exhibits symptoms of distress and difficulties in cognition that would be diagnosed as madness in an adult. This kind of thinking embraces the turn-of-the-century impression of a deterministic and naturalized interpretation of Darwin and Freud: the psychic distress noticed in teenagers is due to body chemistry and a necessary reflection of the advanced evolutionary state of the human race. Teenagers cannot help their condition; the problems exhibited by this segment of the population are not their fault and, more interestingly, not the fault of the society in which they exist.

Notwithstanding this questionable vision of Darwin and Freud, the effect is profound: by 1945, advertisers begin to use the category of "teenager" for the

first time, and the first book with the word "teenager" is published in 1945. This is a striking development when one considers that there was no high school in New York City in the 1890s.[29]

For the first time during the Depression, the majority of teenagers go to high school; high school for all teenagers is not possible until after World War 2 (139). Under the influence of Hall's ideas, by 1945 all states have separate juvenile justice systems (173). As Thomas Hine points out, however, the creation of the protected and fragile state of adolescence comes with a tradeoff: teenagers in the juvenile courts lose their civil rights, including the right to trial by jury, public trial, and the right to appeal. It is not until 1967 that the Supreme Court upheld the teenager's right to due process (174). The social structures of this period create a problem for adolescents when courts and legislatures take away their place in society, but then come to the rescue with programs that further separate the teenager from his or her responsibility to the world. Based on Hall's science, this program seems sound; one can hardy expect reason and hard work from a person in the supposed throes of hormonal surges, and yet there is something circular in this science of the teenager that suggests that the solution is to separate the afflicted adolescents from work and responsibility. One is reminded of the narrator in Charlotte Perkins Gilman's short story "The Yellow Wallpaper," who drifts into madness while under the influence of the "rest cure" and pharmaceuticals. With women as with young people, the expert opinion that they are not capable leads to further isolation.

Far from questioning Hall's 1904 presumptions, most investigators of adolescence in the interwar period agree that teenage delinquency and adult crime derive from a failure of society to educate the teenager. In his book Adolescent Education (1931), Frederick Elmer Bolton reminds his readers that even though troubled adolescents are an important problem facing educators,

there are no insane youth in the lower grades. He clearly sees that schools have a unique responsibility to prevent developmental problems. In order to prevent insanity, Bolton suggests a standardized regime, allowing routine tasks to promote thinking outside of the self and prevent "over-introspection" and "moodiness" (266). Furthermore, a school should work toward the prevention of failure--each child should be allowed progress at his or her own rate. As much as possible, education should inculcate the "thrill of accomplishment" (268). Finally, because insanity comes from sorrow, Bolton writes, schoolwork should promote clean thinking and cheerfulness:

> Education should be such as to preempt entirely the mind with noble thoughts instead of anti-social obsessions. We tend to become what we idealize. If a boy idealizes worthy companions, fine characters from history and literature[,] he tends to become like them. If he idealizes and idolizes degraded companions or debasing characters from the movies or the trashy literature[,] he tends to become low, debased, and degraded (322). Bolton is hardly alone in this call for a stable life filled with routine and heroes. Douglas A. Thom writes in his study Normal Youth and Its Everyday Problems (1932) that adolescents get into trouble when they encounter regular problems of life: when they try to answer "questions of origin and destiny," establish "a working philosophy of life," relate to parents, and seek "satisfactions from work and play."

> > The whole situation is more difficult for the present generation than it has ever been before. There are fewer standards by which they may guide and direct their activities, and it is not surprising that they become filled with doubts and indecisions (148).

According to experts in the 1930s and 1940s, the solution to such confusion is sticking to pure thinking and maintaining a fixed bearing on moral certitude. DeAlton Partridge writes in his Social Psychology of Adolescence:

Good citizenship, vocational excellence, and the worthy use of leisure go hand in hand with ethical character; they are at once the fruits of sterling character and the channels through which such character is developed and made manifest (276). Even some practitioners of social science fiction fall in line with the authors presented above. Arthur C. Clarke, for instance, writes a stunning triptych in The City and the Stars (1953) in which the young protagonist, Alvin, rebels against the staid forces of the planned city of Diaspar. We see Alvin in the city, we see Alvin escape the city and commune with the outside world, and we see Alvin attempt a synthesis of the two. The narrator and the reader alike warrant his rebellion: at the heart of Diaspar is a vast computer that monitors and shapes every molecule of the city, creating an idealized atmosphere for the population. Even though the novel seems to promote the idea that Alvin's restlessness is necessary, he is an exceptional character: a deliberately unplanned personality designed to keep Diaspar fresh. One cannot aspire to be Alvin because one's destiny is preprogrammed, and the opportunity to lead a successful rebellion is exceedingly rare. The City and the Stars is a wonderful novel that inspires the imagination and instills an ethic of freedom that predicts the critique of the antitechnologists of the 1960s like Jacques Ellul. It deserves a more prominent place in the history of technology for its stunning vision of a planned society. That it is a good read, however, does not mean it creates a space for cultural resistance. In fact, in the sense that it promotes Alvin's biological imperative to create disorder, the novel seems to accept the ideology of adolescence, enforcing the idea of the impertinent youth. This ideal is exasperated by the exceptionality of Alvin: when he leaves Alystra, his equally talented and mentally aware friend who, however, cannot bear the feeling of the

fresh air, Alvin's character announces itself as unique. He is a special case that demands extraordinary treatment because he is an important resource. The social ethic that one can obtain from this novel is not unlike the vision Hall inspires in Bolton, Thom and Partridge: the adolescent is in a time of crisis, but if we give him or her the proper environment he or she will lead the way to the future.

There are a few exceptions to this vision of the adolescent, however, the most notable being Heinlein and Margaret Mead. In her effort to grapple with the problems facing modern youth, Mead turns to Samoan culture, which does not seem to be plagued by the problems of the modern adolescent. (Hines writes that Mead went to Samoa to show that Hall's vision of adolescence is "neither inevitable or necessary" (54)). In Coming of Age in Samoa (1928), Mead finds that there is no profound psychic distress in the teenaged members of Samoan society. The difficulty seems to be, Mead writes, that our modern youth has a multitude of choices. A Samoan can choose to believe strongly in an aspect of her culture, or perhaps to believe less, but there will never be conflicts between different belief systems.

> Because our civilization is woven of so many diverse strands, the ideas which any one group accepts will be found to have numerous contradictions ... While the less thoughtful receives her worst blows in the discovery that what father thinks is good, grandfather thinks is bad, and that things which are permitted at home are banned at school, the more thoughtful child has subtler difficulties in store for her (150).

To make the problem worse for a modern youth, when there are immediate choices, choosing one or the other only leads one to realize that there are many gradations and contradictions within each choice. Even when a youth's education, ability, and economic standing might limit choice, Mead writes, the American culture of choice causes discord. She suggests that youth have a

Cinderella complex, and demands that educational efforts must prepare youth to learn to make intelligent choices. A modern youth needs an open mind and the know-how to use it--education that is directed toward preparing youth for one proscribed vision of society is the root cause of the alarming problems of adolescence. Traditional societies prepare their young for their future, and our society[30] fails to prepare adolescents for the multitude of choices they will face.

Mead's 1943 study And Keep Your Powder Dry more pointedly addresses the issue of the adolescent. In the contingent experiment of America, Mead writes, Americans compensate for the lack of a stable tradition and unified pedigree by eliminating standards. Whereas other societies create fixed standards to evaluate a youth's progress toward full citizenship, Americans view this standard as inappropriate for a new society in a technological age. The only acceptable standard a parent sees for the comparison of a child is the coeval: how does the child compare with other children of the same age? From this, Mead writes, "A mother learns to see her child in terrifically flat perspective" (103). She wants to fulfill the child's promising future, but she cannot compare the child to anything but the present, "shoulder to shoulder, weight for weight, with the baby next door" (103). In a static society, there would be absolute standards: does the child lose its baby teeth? Can it take the cows to pasture? In a changing society, Mead writes, the American likens the group of children to a season's crop, with unique characteristics that must be understood on their own merits. Heinlein will lampoon this attitude in education many times, most famously when Kip's father becomes enraged by the school's methods and supplements his education with additional reading assignments in Have Space Suit--Will Travel.

Heinlein's Interplanetary Consumers and Interstellar Citizens

Although Heinlein embraces the ideas of Mead in his writing in many ways, it is not as though all science fiction or even all science fiction by Heinlein will promote resistance to the deleterious vision of adolescence. The "Tom Corbett, Space Cadet" franchise embodies the ideals of Bolton and Thom while avoiding the insights of Mead and Heinlein. The franchise began with a 1950 television series loosely based on Heinlein's novel Space Cadet, the television hero Tom Corbett being modeled after Heinlein's Matt Dodson. After the television show premiered (it would continue until 1956), the Corbett franchise expanded to a newspaper comic strip from 1951 to 1953, six radio shows in 1952, eight hardback books from 1952 to 1956, fourteen comic books published 1952 to 1955.

According to Heinlein biographer and archivist William Patterson, Heinlein licensed the name "Space Cadet" to the advertising company that set up the series, Kenyon & Eckhard. While he took a weekly royalty for each show, Heinlein never had anything to do with the scripts. Patterson reports that what Heinlein did know of the show did not impress him--he told his wife Virginia that they had the morals of soap operas and he cautioned his editors at Scribner's that they would not want to be associated with the show. The Corbett franchise, then, serves as an important contrast to Heinlein's juvenile novels. After examining Corbett, it is clear that the similarity between the story of Corbett and the story of Dodson is superficial; Heinlein's work inhabits a different discourse than the truly juvenile franchise.

The social order is the major preoccupation of the Tom Corbett novels, fitting them into the interwar discourse about adolescence. The literature of the Corbett franchise is essentially comic in nature. The stories begin with things being out of place, but by the end of the narrative, the aberrant parts have been

mastered. This use of comedy reinscribes social norms, and one can see comic resolution at two different parts of the novels: the cadets' assimilation into the militaristic atmosphere of the Solar Guard and the cadets' mastery of technology.

The defeat of discord is the theme that demonstrates the comedic nature of the entire series: the stories begin with the unruly cadets who cannot work together, but through a series of events they find their place in an organization where they can apply their abilities to projects greater than themselves. In the first novel, Stand By for Mars, the sparring between Tom, Astro, and Roger is a plot element. Their barbs, focusing on each other's mental abilities, skill level, and planetary origins, threaten the unit's ability to function. At the start of the novel, Roger tricks Astro and Tom into carrying his baggage as the cadets assemble at the academy--a clear use of intelligence for personal gain. Midway in the novel, our cadets compete in a game of mercuryball and, as they face other teams, learn to work together as a unit. Their cohesion is so striking that even their commander, Captain Strong, is touched:

> Up in the stands, Captain Strong turned to Commander Walters. He found it hard to keep his eyes from filling up as he saluted briskly. "Captain Strong reporting, sir, on the success of the Polaris unit to overcome their differences and become a fighting unit! And I mean fight!" (107).

This sporting teamwork culminates when, at the end of the novel, the trio is forced to crash-land on the surface of Mars. Trapped by a sandstorm, the team is cut off from rescue and must make its way on foot to an atmosphere station on the water-filled canal. The careful characterizations of the novel demonstrate how each must use his skills and strengths to ensure their survival. They survive the desert, testifying to the power of their leader: the youth potentially could have strayed from the virtues of teamwork and sacrifice, as is thought to

be the typical danger for adolescents. However, this course has been thwarted. The restricted training program--free from dreaded demons of idleness and cultural diversions--has transformed them into disciplined subjects. They were at the start of the story out of place, but by the end, they are fully functioning members of the solar guard. The words of Partridge quoted earlier resound here: the cadets have found a way to channel their energies into effective citizenship and demonstrated their learning through accomplished deeds.

The second way in which the Tom Corbett stories exhibit a normative comedic form is in cadets' effort to master technology, particularly the atomic pile that powers the ship. The energy source that created so much havoc for civilians in the first novel becomes an allegory for mastery in the second novel, Danger in Deep Space. The cadets' adventures take them to a planet orbiting Alpha Centauri, which they learn has a copper asteroid fifteen miles in diameter that they have to retrieve to alleviate a copper shortage. The ultimate challenge in this novel, then, is not survival or assimilation but being able to master the technology of the Solar Guard. Under skilled leadership, the cadets use the ship's atomic pile to catapult the copper asteroid out of the Centauri system and on a trajectory toward Earth. Their mastery of the skills they have been taught--physics, astrogation, piloting--leads to the success of the mission and the survival of the empire (a copper shortage, of course, would call an end to the electronics).

In spite of the overtures to scientific knowledge, the Corbett series is alarmingly riddled with scientific fallacies. While the nonviolent paralysis ray used by the Solar Guard is certainly an improvement in humanitarian terms over laser blasters, it ignores the interrelatedness of human systems. The ray supposedly paralyzes the human nervous system, but this of course would cause death when the cardiovascular system shut down. The narrator, however,

suggests that the reader ignore his or her knowledge of the body and instead believe that for some reason the nerves of the human mind and the cardiovascular system are not affected by the beam, allowing the victim not only to live but also to think about what he has done. Furthermore, the space flight in the series is less than accurate. Even though the Patrol employs astrogators, the pilots fly the ships as if they are airplanes, in emergencies banking as if they are in atmosphere. The failure to use science in these novels is more than misleading; in true science fiction the reader learns that the world is fashioned, built from decisions of experts. In the Corbett franchise, technology is provided ready-made and the duty of the citizen is to master it. While we often take the scientific realism of post-Campbell authors for granted, here is a clear example of how it provides a necessary component of the science fiction experience.

John Campbell's imperative that social science fiction produce a world that makes scientific sense is not in evidence here; what we see, instead, is a technologic world order justifying itself. Instead of providing a space for cultural resistance, the narrator demands a submission to a scientific authority that does not know what it is doing and an allegiance to leaders that may not be warranted. The literature of the Corbett franchise then is juvenile in the interwar sense in that it provides young adults with a literature that demonstrates young people's ability to integrate themselves successfully into society, represents the virtues of cooperation and teamwork, and demonstrates the accolades that await the young person who succeeds. This no surprise given the series publisher, Grosset and Dunlap, which is responsible for the earlier Hardy Boys and Nancy Drew series. The Corbett franchise, hoping to draw youthful readers from the pulps, puts a science fiction façade on literature meant to discipline young adults.

Heinlein's 1948 novel Space Cadet, however, falls squarely into the paradigm offered by Mead. From the earliest moments of the novel, the reader is presented with authoritative information, such as the dioramas in the great rotunda. The cadets, however, then comment on (and complicate) this official speech; the heroes and legends of the Interplanetary Patrol become real men as the cadets tell their knowledge of the story. More than a simple ideal after which to aspire, the icons offer paradigmatic knowledge for the cadets, educating them in the problems associated with their profession. When Tex follows Matt's suggestion that he ask for his senior cadet, Dynkowski, to put his orders in writing, Matt and Tex attempt to put official knowledge into action, and they learn a lesson about obedience. More significant for them (and the reader) is their dialogue about the incident; in talking about what happens, they gain insight into the command structure and the relationship between regulations and life as a cadet. The reader walks away with two lessons. On the one hand, one knows the options one has when one receives disagreeable orders (ask for them in writing). On the other hand, one learns about how knowledge exists in the community, encouraging one to turn to a companion for help and insight. It is not as if one must be dominated without support in a bureaucracy; one learns from Heinlein that life in a bureaucracy is a matter of give-and-take, and that there is a space for thinking and debate even in the most regimented of communities.

The kind of training demanded by Mead is further demonstrated when the cadets crash-land on Venus. Even though Oscar has some knowledge of Venerian custom and language, here near the equator he has very little to go on. With a conflict between the humans and the natives having preceded the cadet's arrival, Oscar becomes a hero in his part of the story by acting as a diplomat. Heinlein sets Venerian speech in italics and uses an archaic diction to point out

to the reader that we are reading translated speech, but the most striking technique is the cultural relativism that Oscar must employ in order to communicate. The matriarchal Venerians only recognize authority from females; the men are not seen. In discussing his injured commander and the Interplanetary Patrol to which he is ultimately responsible, Oscar uses feminine pronouns and feminine roles:

> We come, my 'sisters' and I, seeking shelter and help for ourselves and our 'mother,' who is gravely ill. I myself am injured and unable to protect my younger 'sisters' (185, emphasis in original).

Later, the narrator explains parenthetically, "(The root word translated as 'mother' is used for every position of authority in the Venerian speech; the modifiers and the context give the word its current meaning)" (190). Again, the education the reader obtains from this experience is twofold: certainly, on the one hand, the reader learns about the fanciful world of the natives of Venus, like a reader of Tolkien is entertained by the culture of Middle Earth; even more, on the other hand, the reader learns something about how language works. This experience of language-in-translation--not how to match Venerian verbs with their Venerian subjects, but how to deal with larger cultural issues of translation--is a lesson one needs to work peacefully with other species.

From a very early point in history, Heinlein is offering a space for cultural resistance by suggesting that what seems like a dominant language is, in fact, limited unless it is open to other languages. C. K. Ogden's 1930 program for Basic English is fairly well known. His aim is to help people rapidly learn functional English, using a simplified grammar and limited vocabulary to 850 words. While this list of words would not be the ending point for all learners, it does require a certain single-mindedness of purpose. Ogden's vision of language

is not unique. Rita Raley, writing about machine translation, notes that the dream of language derives from military code breaking. Machine translation inherits a presumption of language as encoded meaning. Machine translation begins with the supposition that languages are simply ciphers that can be decoded (295). In order for this dream to work, one must assume that the two languages being translated are neutral and transparent, with "emphasis falling on the process, accuracy, and functionality of the exchange" (293). This is strikingly similar to Ogden's vision: language is a container for meaning, and one container is just as good as another for transporting meaning.

The purpose of language, according to the proponents of machine translation and Basic English at mid-century, is to function as a medium of exchange. In order to function properly, it is assumed, language must be streamlined--stripped of cultural references, allusions, irregularities of grammar, and fanciful metaphors or similes. Raley writes: "To reduce the chance of misfire, to eliminate noise, a networked Global English must necessarily be universally readable, particularly by machines" (Raley, 304). This version of language works in standardized, simplified situations.[31] The difficulties that arise---when a pilot who only speaks Airspeak suddenly needs to communicate something out of the ordinary---can be significant.

The idea of Global English is mostly a private affair before World War 2, the primary responsibility for education falling on philanthropic institutions. After World War 2, however, the United States makes the spread of English a matter to be directed by government. In particular, the private foundations that have worked to spread English before the war are now coordinated by the State Department.[32] The rationale is quite simple: combating fascism would be easier if American propaganda can be easily understood. Furthermore, the use of

English as a business language would serve to secure the place of the American system during the Cold War.

It is in this change from private to state support of English as a global language that linguistics professionals invent training programs in English as a foreign language. The private foundations (particularly the Ford Foundation) invent a discipline of teaching English as a foreign language, and these programs are streamlined and codified as the teaching of English becomes a matter of foreign policy. Universities form subsidiaries abroad in areas of strategic interest to the United States, programs for foreign nationals in management and public policy, and teacher training help perpetuate this program.

Heinlein investigates this dream (or nightmare) of English as a global language. John Campbell obviates the difficulties involved in translating, and the different epistemologies provided by different languages, through the mechanism of mental telepathy. However, Heinlein, in Space Cadet, is an overt example of an author who complicates the clean split between sign and signifier. The society and cultural assumptions of the Venerians are embedded in their speech, and the narrator points out the difficulties in smooth communication. This dissonance between the expectations that an English-only education will be sufficient and the desire for an interplanetary consciousness opens up a space for cultural resistance.

Strangely, part of Cadet training involves learning languages--a task that Matt Dodson accomplishes with the aid of hypnotic suggestion and audio tapes he plays while he sleeps. Clearly, this program is based in Ogden's ideals of language acquisition. At first, this seems to be a boon: no more teachers, no more books. Unlike the student readers who are trying to understand foreign literature in high school, Dodson does not have to read Venetian literature to

cement his understanding of the languages of Venus; he is trained in the words he is most likely to encounter in his duty as a patrol officer. Dodson's training is effective enough during routine operations; he is able to communicate with colleagues from different planets in the formalized atmosphere of a space ship. There are truly no language complications at all until the unexpected happens: Dodson and his patrol crash-land on the surface of Venus. The cadets immediately seek the help of the locals, but they frequently offend the native people, threatening the willingness of the Venetians to help the stranded cadets. However, when stranded on the planet, Dodson realizes that his training is inadequate and he must to develop his language abilities further.

What is interesting is that at no time is the problem on the surface of Venus seen to be a language problem--it is always presented as a culture problem. Heinlein presents the difficulty of the cadets in negotiating the customs of their hosts, and the lessons they learn about nonindustrial technology, as a matter of opening up the cadets' minds to new ways of life. There is no suggestion that a better understanding of the language of the Venetians, which presumably would have some encoded clues about the connection between the shame of eating in public and the use of organic compounds for industrial aims, would have better prepared the cadets for their duties.

While the narrator of the Corbett franchise demands that the reader accept anomalies in biology and physics, Heinlein's narrator demands the reader think about the difficulties of cultural difference. The education that Heinlein provides for his readers, then, prepares them for a complex world. Heinlein's 1958 Have Space Suit--Will Travel also explicitly challenges the dichotomy presented by the adolescent experts and Mead's anthropological analysis. It begins with Kip Russell's proposition that he wants to go to the Moon. With the support but without the assistance of his father, Kip then ponders the

alternatives available to him: he could join the air academy, he could become an engineer or another needed profession, or he could become rich. All of these choices seem unlikely to Kip, but he does not become violent or antisocial after he is faced with these unobtainable choices. Instead, he maintains his spirits and is encouraged by the opportunity for a free trip to the Moon offered as a promotion from a soap company.

This opportunity is ironic, because it is the education that Kip's father found objectionable that prepares Kip for this challenge. Kip's "modern education" had included a course in applied writing, and he had chosen "Slogan Writing." Kip works diligently as a consumer to brainstorm slogans for the contest, organizing his work on index cards and mobilizing his community to collect soap wrappers for his entries. This is the best that a consumer citizen can do. The false promise of the consumer society is illustrated when Kip watches the announcement of the prize; his slogan is read on the air, and Kip thinks he has won. Amazingly, however, someone else appears on the television to claim his prize. Kip's free trip to the Moon dissolves as he learns that his "winning" slogan is not original; eleven people have submitted the exact same words, so the winner has to be determined by a postmark.

Kip's high school had promised to make him a unique individual; the fraud of this promise is revealed by the contest. Even though there will be no free trip to the Moon, Kip's consolation prize, a decommissioned space suit, will provide him with the opportunity. In an overture to John Dewey's ideal of an experiential education, Kip finally gets his education through this castaway the space industry. In learning how the suit operates and preparing it for space, Kip investigates scientific principles from physics and biology and applies them in the technological fields of mechanical engineering, electrical engineering, and pharmacology. With a project in mind, Kip uses the manuals that came with the

suit and engages in an inquiry-based project that Dewey would have applauded. Kip follows the diagrams for the suit's systems, writing questions to manufacturers when he needs clarifications and reaching out to members of his community when he needs assistance.

This Dewey-inspired project that prepares Kip for something greater than his trip to the Moon: but to defend humanity as a spokesperson in an interstellar court. The consumer society would have let him down, and he had neither the time nor the interest to complete the college program that his father laid out for him. If he had been on the free trip to Moon, he would have nominally accomplished his goal, but as a tourist, he would not have had the ability to appreciate the experience. The well-rounded young man his father desired would not have succeeded either; had the bilingual student familiar with English grammar and algebra been a hostage, he would not have been able to escape the ship. Kip's father's vision for his son is well minded but inadequate. The solution that Kip finds for himself--the solution that adolescent science would have warned to be dangerous and potentially a cause for insanity--is the one that allows Kip the best chance to live a fulfilling life.

While the term "juvenile" will not go away when referring to the dozen novels Heinlein wrote about being young, the preceding analysis has shown that they are anything but childish. Just because a young person can enjoy novels like Space Cadet or Have Space Suit--Will Travel does not mean that they are for young people only. Like Rousseau's Emile, Voltaire's Candide, Austen's Northanger Abbey, and Twain's Tom Sawyer, Heinlein examines society's interaction with its young and the process of becoming an adult. Certainly one of the primary functions of society is to prepare its young for their positions as adults, and creating a literature that examines this responsibility is a valid project for social science fiction. These novels promote the attitude that youth

must break away--and their textured composition provides layers of discourse that train the reader.

The Challenge to the Bureaucratic State

Heinlein's novels are rife with situations where individuals face bureaucracy. Images of queues and checkpoints, protocols and forms, and document creation and retrieval fill his novels. A common Heinlein character is the foot soldier and the military as in Between Planets, Space Cadet, and Starship Troopers. Heinlein also writes frequently about the free spirit and the megacorporation, as in Farmer in the Sky, and many of the small-time inventors he creates have amusing interactions with bureaucracies in the short stories and in novels like Have Space Suit--Will Travel. These situations speak to a concern with the relationship between a bureaucracy and the individual. They also offer a space for cultural resistance by suggesting that social structures are contingent and arbitrary. More important than providing images of contingent and arbitrary organizations, however, is the information Heinlein provides about how one might organize and maintain such organizations.

Bureaucratic literature fills the imagination with ideals, certainly, of beneficial organizations; in addition, it provides the tools the imagination would need to create its own organizations. Heinlein's convincing analyses of how organizations are formed and the means used to maintain them read like a sociology textbook; the novels are full not just of fanciful tales but also of practical information. It is as if Heinlein has produced facing-page translations of a work: half of the pages provide the familiar images of science fiction, like the right-hand pages in the vernacular language, and the other half of the pages provide sociological insight into the images, like the left-hand pages of the unfamiliar language. The combination of the two sets up an oscillation in the

reader's consciousness, the mind traveling between the images of organization and the analysis of organization. Through this oscillation, the reader's mind is trained to observe organizations critically, looking for the principles and assumptions behind any organization he or she experiences. Furthermore, the depiction of organizations being formed in this facing-page translation also imparts to the reader the tools needed to imagine alternative organizations that might provide more freedom than the ones the reader finds himself or herself. Thus, these organization dramas are central to the cultural resistance that Heinlein's novels provide.

Although Heinlein often writes about bureaucracies, he does so differently than most of his contemporaries. Others were suggesting that bureaucracy threatens individuality and they create nightmare worlds that are out of control; Heinlein depicts bureaucracies that are created, controlled, and challenged by individuals. Heinlein suggests that people in the face of totalizing bureaucracy can find their individuality and form communities, much the way an individual in the armed services or a large corporation has the opportunity to learn how things work and make good things happen even in desperate situations.

Since Heinlein's biography includes military service, we might credit his inside experience with bureaucracy with the vision he presents. Nevertheless, it would be wrong to assume that this insight is the sole result of his experience and not an attempt to revise the literary tropes available to him. Heinlein purposefully adapts the genre of the spy thriller as a mechanism for his bureaucratic fiction. In doing so, he rewrites a mode of fiction that is typically escapist and replaces it with a form that allows for a vision of social change and survival. Heinlein's challenge to the bureaucratic state through his adaptation of the spy thriller genre is seen in his early work (the novella "Revolt in 2100" (1955) and the novel Sixth Column (1949)), the so-called juveniles (like Citizen of

the Galaxy (1957)), and even his later work (represented here by The Moon is a Harsh Mistress (1965) and Friday (1982)). These stories challenge the assumption that bureaucracies are so large and so dehumanizing that they cannot be resisted.

In this challenge, Heinlein installs a utopian element into his fiction: his audience is invited to consider the alternate realities he presents as speculative models for society. In doing so, Heinlein has improved on the genre of the spy thriller, deleting its limitations so that it becomes a genre with utopian possibilities. Heinlein called this new genre a "future history," or a series of novels that fit into a coherent universe, as if it were something that one can learn from, just as one learns about the present from the study of the past. By setting the novels in the future, however, Heinlein and other practitioners of social science fiction create a space for cultural resistance by suggesting that the works of the future history are extrapolations of the present; if we do not like the lessons of his future history, then we must do something about the present. This serves as a stark contrast to the spy thrillers Heinlein mimics. Instead of the future being inevitable, future history presents it as contingent.

The spy thriller excites its audience by new ideas of freedom. Its central characters trade in conventional notions of freedom founded on the strictures of society for new constraints that demand absolute mastery of the self and one's tools: the strictures of time running out, capable enemies who know how to use force, and a heightened vulnerability to unexpected danger. A spy is an idealist, a free individual who embarks on a mission of extraordinary importance. His or her honor derives from that purpose, and the fact that a spy has discretion makes it a more interesting profession for a novel than a foot soldier. Furthermore, the spy is free from the exigencies of existence, such as the workaday world, family, property, and even an identity bound by history. A spy

transcends boundaries, the ultimate cosmopolite, taking extended excursions into divergent cultures and professions with extreme competency. These qualities would seem to be ideal for an American audience, and this audience appreciates its qualities of escape: through the adaptation of third-person narration, the reader witnesses the expert in action, excusing his or her detestable acts of murder, thievery, and sex as part of a day's work.

According to critic Jacques Barzun, the spy takes on a new function with the rise of centralized, bureaucratic governments: the government is watching the people at the same time that the people are watching the government. The window between the government and the people becomes increasingly opaque as the size of each increases. It is in this moment that Heinlein is writing: his novels are often predicated on large, bureaucratic governments that may have lost their integrity due to the vast size of their operations. This is the connection to Heinlein's novels: several of his works depict the struggle of individuals against tyranny. Furthermore, a plot where a common person is turned into an agent or spy is at the center of both the espionage thriller as well as several Heinlein novels. In this context, Heinlein capitalizes on the allure of the spy theme, but adds to it a utopian element that the spy thriller lacks.

The advantage of the espionage thriller is that it allows an author to bring large social structures into view. A spy leaves the comforting strictures of his or her home and travel beyond the frontier, where traditional laws and morality are suspended. In this way, the protagonist of an espionage thriller is like the narrator character of a utopian novel. As noted by C. S. Ferns, when a narrator enters into the utopian world he or she is confronted by the loss of rules and mores that he or she thought were unchangeable and is amazed by a new society. This amazement challenges the narrator's preconceptions about how a society is organized (9). For Ferns, then, the value in reading a novel like More's

Utopia is not in considering the stable, perfect world founded by King Utopus; instead, it is in the conflict the reader experiences between what he or she assumes the perfect society to be and its associated notions of freedom and individuality and the notions of freedom and individuality the reader experiences in the investigation of the utopian world (33). Heinlein's use of spies and secret agents functions in this utopian manner. While he borrows the themes and techniques of the espionage thriller, however, he takes the genre in a new direction that increases this utopian effect.

Spies and adventure stories have been recurrent themes in literature, but they develop into a specific genre in the twentieth century.[33] According to Michael Denning, espionage thrillers are not about spies. Instead, spy stories serve an important cultural function as a genre: the shadow world of espionage is a stage for magical figures who can cut through the "opacities" of late capitalism (29). Spies are involved in "decoding operations" (34), where they set out into international space to uncover the underlying realities of large social structures and set world events back into a favorable motion. It is easy to see the role of plot in this type of interpretation: the readers of spy novels delight in the ability of the protagonist to master confusing, tangled situations with a combination of wisdom, wit and technology. While there may be unpredicted turns in the plot, overall there are no surprises: readers expect their spy novels to be built with formulaic elements: evil characters, time constraints, fantastic chases, traitorous companions. These are not mystery stories, where readers are in a state of wonder, hoping to figure out what has happened. Instead of mystery and wonder, the primary mode of reading an espionage thriller is witness.

Many famous espionage thrillers develop in a way that encourages this sort of voyeurism. Hitchcock classics such as North by Northwest and Foreign Correspondent both involve everyday protagonists who get caught up in a web of

world events. These thrillers, however, do not inspire action against the netherworld of espionage. In fact, the protagonists take an extreme distaste for their work, reacting in moral outrage to the machinations of international criminals even as they themselves commit international crimes. Heinlein is not immune to the allure of this genre; novels such as Double Star, The Star Beast and Between Planets are steeped in this tradition. These adventure stories take readers on tours of the back halls of government and commerce, but the most significant lesson they teach is through catharsis: both Hitchcock and Heinlein when operating in this mode evoke feelings of pity and fear against the dark side of society they unveil. Readers and viewers of this version of the espionage thriller are immobilized; the logic of the spy thriller removes the action from the everyday where the viewers live, so the viewers must attend to the story for the complication to be resolved. There are no answers here from the everyday world; the only possibility for resolution derives from the superhuman mastery of the spy.

The spy thriller, removing the action from the reader's and author's world, fails to offer an actionable critique of that world. Indeed the lesson of this branch of the genre seems to be less about questioning the true nature of politics and commerce and instead a confirmation that the reader's social and economic upbringing is strong: by taking these unwitting protagonists out of their normal environment and allowing them to succeed in situations for which they have not explicitly prepared, an author can help a reader reinforce his or her position in the world. Despite their feelings to the contrary, these narratives help Boy Scouts and advertising executives feel as if they are not ineffectual, domesticated functionaries. The readers become thankful that they live in the United States ,where opportunities to improve oneself are available, and may be encouraged to

take advantage of the opportunities that come available and to seek out new ways of preparing oneself if none is apparent.[34]

Several critics of the spy thriller are unfriendly to this aspect of the genre, such as John Cawelti and Bruce Rosenberg, and Timothy Melley. Instead of opening up new worlds for readers to consider and use as a standard to judge their own society, the espionage thriller seems to function as a psychological prop to assuage the loss of agency readers feel in an age of increasing totality. Readers admire the spy, as Cawelti and Rosenberg show, because he or she is "an alien body in his host society." The spy's ability to move freely throughout various areas of society that attracts readers; "we want to be a part of that life" (78). Melley takes this further in his description of "agency panic": he writes that the allure of the espionage thriller is the reader's own fear that he or she is unable to act in a socially constrictive time. According to Melley, the spy lives in a world that is decipherable and knowable; by witnessing the spy's maneuvers, readers are able to escape from a complex, indistinct world into a representation of a world that can be easily deciphered.

In terms of its escapist branch, the espionage genre is unsuitable for Heinlein. Speculative fiction that has a central, investigative figure in the utopian mode can instigate a process of change in the reader. Outwardly utopian literature like Charlotte Perkins Gilman's Herland creates a disruption between the world of the protagonist and the world of the reader. This zone of disruption is a source of potential change; by considering the disruption, the reader may conclude that the disparity is worth addressing. This is not possible in a British spy novel because the spy is so heavily implicated in the social setting. The solution that Heinlein develops in response to these shortcomings is the creation of futuristic espionage thrillers. Like their wartime predecessors, Heinlein's spy thrillers take their heroes from the common stock of society; they are trained

regular people, not gentlemen born into polite society. In these speculations, Heinlein takes a much different path in the depiction of bureaucratic states than do many of his contemporaries, in both fiction and the social sciences. His aim is not to frighten his readers about the negative potential of large bureaucratic structures, but instead to examine how such structures work and how an individual can challenge them or live in their shadow.

An early example of Heinlein's adaptation of the espionage thriller for this purpose is Sixth Column. The title of the novel alludes to Ernest Hemingway's play Fifth Column, which is about a secret antidemocratic force during the Spanish Civil War. In using the name Sixth Column, Heinlein is taking a new tack on history. The previous "column" is a repressive secret effort, its immoral and antidemocratic moves a part of its fascist loyalties. The new "column" is a secret effort to repel an invasion, the United States' last hope of survival. The military officers and scientists who remain free after the invasion are not exactly "common person" agents, but they are not used to leading military maneuvers either. They form a small organization to counter the large bureaucratic structures left by the enemy. In the guise of a religious movement, the team recruits a network of advertising and sales experts and forms a strike force that is able to demoralize and overthrow the invading force.

In its attempt at hardboiled realism, Sixth Column is most aligned with its generic forebears. The world is exceedingly simple in terms of race. The conflict falls along strictly demarcated racial lines, with Heinlein supplying a range of racist epithets to describe the "PanAsian" invaders. That the magical Ledbetter effect can be calibrated to affect certain races is less worrisome in its application than it is in the promise that advanced technology will be able to find deterministic biological differences between races. Furthermore, the tough-guy stance toward the enemy lends a disturbing tone to the exigencies of the

rebellion; the fantasy of losing control in the face of an overwhelming force leads Heinlein to promote indiscriminate, personal violence in a way that will be absent from many of his later works. In these ways, Sixth Column is cast in the tone of the espionage thriller: unexpected heroes having to slip out of their constrained lives into wide-ranging action due to an emergency situation. This aspect of the novel makes it seem more like an escape from everyday life than an experience to make the reader challenge his or her worldview.

There are several emerging elements in Sixth Column, however, that point to how Heinlein will transform the genre of espionage thriller. The first and most obvious is the transfer in mode to science fiction. The use of historical situations (as in Hemingway) or contemporary situations (as in Hitchcock) has a limiting effect. The use of "real" space for a setting causes readers to make a me/not me distinction. A reader of Hemingway knows that he or she is not in revolutionary Spain, but that there were other people in revolutionary Spain, and those are the ones with whom one equates the characters. Thus, the reader sees the events at a remove: those other people who were there are the bases for the characters, and I am not them. I am not there, and the characters are not I. While a reader could extrapolate values such as heroism or honor, they do seem tied to a situation that is far away in both time and space.

Finding this unsuitable, Heinlein chooses to transport his characters to a nonexistent society that is a possible extrapolation of the current moment. Certainly the readers are not in the future, but there are no real people in the future either; the characters are not tied to actual people or places in real time. Since no one is tied to the characters, they could be me, or my progeny; the citizens of Spain and I have equal access to the characters in the future. While readers will recognize some national and supernational structures, here they are purposely modified so that it is "possible" that a reader could find himself or

herself in the situation of the characters of the novel. This is a common effect of science fiction in general, but Heinlein's combination of science fiction with espionage results in an increased speculative advantage. Some might prefer the places where alternative rules and baselines provide an entirely new sense of difference--the way in which Mission of Gravity, for instance, provides a novel environment--but this kind of science fiction provides for a special kind of imaginative freedom.

Instead of delivering self-satisfied didacticism where characters expostulate the need to conserve democratic values against an overdetermined fascistic enemy, Heinlein is able to examine gradations and consequences of values his readers presumably share. In Sixth Column, the characters do not debate the merits of democratic systems against totalitarian regimes; while this is a favorite discussion in an espionage thriller, where spies are engaged in a battle for "our" way of life, it serves only to assure readers and viewers that they are right-thinking individuals. Instead, the characters of Sixth Column engage in a discussion of how a free and democratic society could have succumbed to an enemy force, serving as a warning to guide future action, and of what structures and institutions should be valued because they could be exploited in an emergency, such as undercover agents, hobos, and religion.

The theme of religion that is so prominent in Sixth Column is in fact a typical Heinlein adaptation. The relativism of the devotees to Lord Mota is more than just a scheme that the protagonists invent to cloak their military operations, however. On one level, the novel seems to disparage all religion by creating one that is a sham. However, Heinlein brings this discomfort into the dialogue of the novel itself. In protagonists' discussions about how to form the religion, and the insistence that the religion that they are creating follow the same general precepts of many world religions, the characters in the novel

promote a relativistic, accepting attitude toward all religions. Under the occupation, native religions had been allowed to operate; these are easily subsumed into the military operation. One group in particular, the Mormons, receives special attention as being extremely well organized despite the societal turmoil. This adds to the feeling of religion being a special, revolutionary force. Not only is the sham religion a form of resistance, but also established religion joins in the fight against tyranny. (Religion here and in other early Heinlein is primarily figured as Christian, but later works increasingly bring in other established groups from around the world as well as point to new offworld religions.) In its desire to accept all willing fighters, the followers of the Lord Mota promote religious tolerance, demonstrating how religion can be successfully used in a society to bring people together rather than keep them apart.

In Sixth Column, religion figures into the plot as it does elsewhere in a manner that asks readers (in a utopian fashion) to reconsider their preconceptions. Piety and subservience, traditional religious attitudes, are demoted in favor of the organizational potential of religious groups. Instead of thinking of religion as an inert, conservative force, the novel recommends that readers observe its community-building aspects and the alternative power structures it enables. In so doing, readers must consider religion in a new light: Heinlein's depiction of a radical religious group challenges the typical reader's previous pop culture experience of religious demagogues, idolatry, hypocrisy, provincial conservatism and religious discrimination. These negative stereotypes are often aspects of the bureaucratic nature of organized religion, since religion in the form of a business often falls prey to the problems found in modern corporate structures. After the experience of reading Sixth Column, readers have to ask themselves if their conception of religion is accurate--have they been

misled about the nature of their own religion, or perhaps have they neglected the power of religion--or is their conception about religion actually about the bureaucratic structure of a particular religious organization. Due to the arbitrary and relativistic nature of religion that the resistance creates, it is not as if Heinlein ascribes one particular religion with this hidden power; while historical or contemporary stories are often told about religious groups that have acted in resistance to fascism, these stories are tainted in the public sphere because not all people subscribe to the same religion. By creating a responsive, nonrealist vision of religion, Heinlein's novel is able to speculate about the function of religion and like a utopian novel, offer readers the opportunity to examine their beliefs.

In terms of Heinlein's critique of bureaucracy, it is important to note that the novel is not simply couched in a dichotomy between a free and democratic society against a totalitarian society. While the enemy is portrayed as a well-organized totalitarian state, the novel blames the bureaucratic nature of the United States before being overrun as much as it does the ruthlessness of the enemy. In both instances, Heinlein points to the inward looking nature of bureaucracy as its weakness: it leads to totalitarianism because it is organized around abstract notions of supremacy, and it leads to complacency because the information it receives is generated by people who are mired in its structures. The bureaucratic structure Heinlein portrays is unable to adapt to changing conditions and does not receive information that is vital to its success.

This is not to say that Heinlein promotes anarchy; on the contrary, he promotes rationally organized, purposeful, and responsive organizations. The resistance from its earliest stages depends on hierarchical structures to function, and as the organization grows the leaders continue to deploy bureaucratic structures to handle the growing complexity of the enterprise. The difference

between this "good" bureaucracy and the other "bad" bureaucracies is that this one is created for a specific purpose, it adapts due to exigencies of the situation, and at no time do abstract notions of balance or order control the resistance; in other words, the people are in charge of the bureaucracy, and the needs of an orderly bureaucracy never take precedence over the bureaucracy's mission. It is Sixth Column's dramatization of a revolutionary structure under development that most fully represents Heinlein's adaptation of the espionage thriller to speculative purposes.

The ability of individuals to fight freedom-limiting bureaucracies is developed many times in Heinlein's early work. Like Sixth Column, the novella "Revolt in 2100" and the novel The Moon is a Harsh Mistress transport the action to a time and place extrapolated from the present moment of the reader, increasing the speculative dimension for the reader. Instead of witnessing a historic battle between stereotyped forces of good and evil, these stories demand readers who are willing to consider the ideas and actions of both sides objectively. In "Revolt in 2100," Heinlein describes a religious totalitarian state. In typical Heinlein style, he details the large, bureaucratic nature of this government by following the transformation of a soldier: in this story, Johnny turns from his position as a faithful guardian of the totalitarian state into a member of the conspiracy to overthrow it. Here the protagonist is a regular person, not a specialist as in Sixth Column or a gentleman as in a spy story: the tests he is put through, and his conversations with his roommate and fellow conspirator Zeb, serve to awaken the reader's cognitive faculties: what should people do when confronted by an unjust situation? The novella provides two answers.

The first answer is provided by Johnny's actions. The bureaucratic state relates to people on an individual level: each member of a population is

identified, categorized and deployed according to abstract, logical principles. This allows the state to operate efficiently, but it also causes individuals to lose their ties of kinship. This makes a dissenter ultimately alone; there is no one to help him or her. It is an innovation of Heinlein's novels that his characters form alternative groups of organization to resist the totalizing force of the bureaucratic state. These alternative kinship ties form naturally as individuals seek help from each other in negotiating bureaucratic systems; they grow in power as the individuals involved are threaten by those systems.

The second answer is provided by the conspiracy's development of a revolution. One of the telling moments in the story is when at a planning meeting a prototype of a hypnotic method for creating freedom is demonstrated. Instead of teaching the virtues of freedom, the Cabal considers using mind tricks and drug stimuli to implant the ideals of free American society in the minds of television viewers. While this solution seems administratively convenient and necessary due to the Cabal's precarious position, after an argument the team decides that it is wrong to use such devices, even though the dictator it hopes to overthrow deploys them regularly. In this way, Heinlein reminds us that the fight for freedom is not just a struggle between two skilled opponents; just and unjust governments alike are physical organizations that have effects through the structures they employ. Furthermore, Heinlein demands his readers see bureaucratic structures as the result of decisions; no structure is ever built up by chance, but all structures result from the decisions of the individuals involved.

Heinlein's The Moon is a Harsh Mistress builds on the themes of "Revolt in 2100." Again, we read of a conspiracy that seeks to confront a repressive bureaucracy. The main characters, in particular the technician Manny, are again common people called to duty due to the exigencies of their daily life. Even more so, in The Moon is a Harsh Mistress we witness the challenge to bureaucracy.

Manny befriends the city computer and a small group of like-minded friends who decide that things must change. Like "Revolt in 2100," this companionship gives power to individuals. In the novel, Heinlein goes much farther in his presumption that the individual's duty is to engage a bureaucracy and make it answer to the needs of people. The sections of exposition are practical handbooks for creating a secret society.

Certainly The Moon is a Harsh Mistress follows "Revolt in 2100" in its adoption of the anti-fascist espionage thriller. Here, the challenge to bureaucracy increases the utopian potential. The historical allegory portrays the resistance to colonizers from the Earth as both an ideological and a commercial struggle. The undertones of the Revolutionary War slowly dawn on an American reader: first readers realize that the inhabitants of the Moon are there for many of the same reasons colonists came to the New World. The political situation seems to have grown out of a normal desire for economic expansion and scientific curiosity that drove the creation of the Colonies. This repetition of history is alarming to readers who assume that human society naturally transcends past wrongs and achieves a greater degree of civilization. If we are likely to commit the same injustices that were committed against us, the story explains, then perhaps we need to reexamine our own society with fresh eyes.

In "Revolt in 2100" and The Moon is a Harsh Mistress, as in Sixth Column, it is important to note that Heinlein does not want to throw out the idea of establishment. Although he is commenting on the destructive power of organized religion and bureaucratic government, religion and bureaucracy are not the enemies. His rebels retain their faith in God, and in "Revolt in 2100" dissident Catholics and suppressed Mormons are vital to the resistance. In both examples, the rebellions challenge bureaucracies by forming bureaucracies of their own. The difference between a good and bad bureaucracy seems to be not

just a matter of personnel, although having sensitive and aware individuals in a bureaucracy does seem to make it more humane. The difference is that the good bureaucracies maintain their connection with real people instead of being led by abstract principles. The aesthetic of the small, contingent organization promoted by Heinlein, where all people affected by decisions are involved in making the decisions, harkens back to an idealized democracy that is central to the principles of Habermas's public sphere (see Introduction).

The utopian possibility of these examples results from Heinlein's adaptations to the spy thriller. The use of the common hero and the displacement to an alternate reality, however, are simply formal qualities. What is more important for the purposes of this chapter is his use of the utopian imagination. Far from the static homeworlds presented by an espionage thriller, Heinlein's work encourages active speculation on the part of the reader. His description of espionage techniques thrills the reader, but more important is his description of smaller communities that can be formed in contrast to, and apart from, larger bureaucratic forces.

Two excellent counterexamples of Heinlein's transformation are George Orwell's 1984 and Orson Welles's 1963 film adaptation of Franz Kafka's novel The Trial (1925). The type of nightmare worlds these works portray were certainly options for Heinlein, but options he did not exercise. In 1984, a common worker begins to unravel the mysteries behind the society in which he lives. He is a knowledge worker for a vast bureaucracy, one that carefully monitors his activities and plans society according to abstract principles. He discovers the conspiracy, yet he is unable to make meaningful relationships with his companions. Furthermore, he does not have the training or the gumption to mount an effective response and in the end, he is quashed. Likewise, Orson Welles's film brings forth the repressive nature of bureaucracies without

providing any means of escape. The novel's chief concern is the protagonist Josef K, and the convoluted society in which he lives is merely a backdrop. Welles brings out the spy qualities of Kafka's story, creating an inquisitive Joseph K. who is trapped in a nightmare world. Welles carefully creates an image of an advanced repressive society that looks frighteningly like a modern corporate office, but by the time of K.'s assassination, all we are aware of is the dangerous nature of bureaucracy.

While Orwell and Welles have, like Heinlein, created an anti-fascist alternative to the spy story, Heinlein's is only one that is hopeful. The worlds they create are oppressive, and there is no hope for escape; even the most momentary of transgressions are crushed. This dystopian vision has a normative effect: it serves to frighten its audience from difference and supports the belief that whatever freedoms they have, they must be carefully guarded. Instead of promoting a mindset of discussion and change--the cultural resistance offered by social science fiction--Orwell and Welles provide no possibility for change. The worldview of Orwell and Welles is satisfying to the reader because they set up a dichotomy between the modern day and the nightmare future: the dystopia is the current world gone wrong, and the nightmare encourages the reader to hold to the beliefs of his or her own world. In this situation, the reader believes that he or she is in an advanced, privileged society in contrast to the regressive, unfortunate nightmares. This confidence may not be warranted, and is perhaps dangerous. There are certainly repressive elements in the worlds in which the reader of Orwell or the viewer of Welles live; these elements, however, will be overlooked or explained away by the audience.

Although it is not absolute, the dichotomy between the audience's world and the nightmare worlds of Orwell and Welles may cloud similarities between the two. Heinlein's speculative responses to spy fiction, on the other hand,

employ a vision of the nightmare world but retain hope: his stories allow readers an imaginative zone where they can watch the elements of a society being examined and challenged, and, at the same time, consider the possibilities in their own situations. In Citizen of the Galaxy and Friday, Heinlein complicates Dickensian change-of-fortune plots: the orphans with hidden connections turn out to be the individuals best suited for high standing in bureaucracy precisely because their nontraditional backgrounds have gained them different perspective. The paths of these characters teach them that the structures of society that seem so permanent are in fact arbitrary; in a like fashion, the readers of these novels learn that, in the face of dominating social structures, individuals have the ability and the duty to create, challenge, and change social structures. Thus, Heinlein's adaptation of the anti-fascist espionage thriller promotes an ethic of cultural resistance.

Citizen of the Galaxy challenges the bureaucratic notion that individuals have a single place in society, a notion with its roots in Plato's Republic.[35] As a work of social science fiction, the novel provides an element of cultural resistance by suggesting that there are many competencies that make up a successful individual. A person who allows himself or herself to be trained in a solitary skill--leaving behind not only the interdisciplinary aspects of technical ability but the capacity for creative imagination occasioned by knowledge of the history and philosophy of a field--is going to fall behind in a society of change. Like W. E. B. Du Bois writing at the start of the twentieth century, Heinlein warns his readers that the technical education being offered to them is a program to deal with "the adolescent problem" and is in fact not sufficient for them to succeed. An education vacated of ideals, contexts, and society will result in a servile individual who lacks the flexibility to understand the variety of cultures he or she is likely to encounter in daily life in the modern technological state.

Through the events of the novel, a reader is encouraged to understand the heteroglossic nature of modern society. In Citizen of the Galaxy, the reader admires Thorby's ability to adapt to each new situation, and like Thorby the reader learns that different groups of people have different sets of rules that can be learned and lived by. In this way, Citizen of the Galaxy is like a spy thriller in that the main character is a secret agent who must adapt to his surroundings to survive. When it turns out that Thorby is the heir to a huge corporate empire, he must assume the reigns of a vast bureaucracy that promotes the very institutions that enslaved him as an orphan. Instead of horror and revulsion, however, Thorby again amazes us: this time by his ability to challenge head-on the bureaucracy he has inherited. His experience of mastering different walks of life makes him the ideal candidate to wipe out the slave trade. His training, and the training a reader gains from following his adventure, demonstrate that social structures are created and maintained. They may be impossible to oppose directly, but since they are malleable, there is the possibility--and the duty--to change them when they go awry.

Heinlein's novel Friday works in a similar fashion: Friday's training as a combat courier gives her the ability to survive in adverse situations at the same time as it provides her with a variety of experiences in the field. When she is brought into headquarters, she studies to become a social scientist. With this training and her superior mental faculties, she becomes an adept cultural critic and tackles important projects in history and public health. Most notably, she both predicts the next occurrence of a deadly plague and provides a method for preventing it. Her job is her stability until suddenly, not much more than halfway through the novel, her boss dies and his company folds. It is here that Heinlein demonstrates his discontent with the genre of spy novel and adapts it to speculative purposes. With the death of Hartley Baldwin, Friday's boss and

adoptive father, Heinlein again returns to the theme of the adaptable bureaucracy.

Friday is a special agent who lives in a particular world: a world of vast, interlocking governmental and private bureaucracies. Her job is her purpose, but it turns out to be dependent on the vision of a single individual, Baldwin. When he is gone, the pressures of the outside bureaucracy immediately crush the small utopian bureaucracy where Friday had found her home. Suddenly the espionage thriller is over, and Friday is forced to adapt. Her task in the rest of the novel is to create her own social structure on Botany Bay. The readers of Friday, like Friday herself, learn that there are a variety of ways of organizing a domestic situation and a workplace. The conflict with the bureaucracy here does not lead to its overthrow, but that would be opposition; instead, the novel demonstrates that individuals have the ability and responsibility to adapt what is available to them to their own purposes, thus promoting a hero of cultural resistance.

In Friday and other depictions of bureaucratic states, Heinlein carries through his challenge: one does not have to passively accept the roles and positions that one is granted through bureaucracy. In order to portray this, he adapts the escapist genre of the espionage thriller into a form that has utopian potential. The speculative bureaucracies demonstrate to the reader that individuals can be quite successful in an attempt to learn from what others have done and so create a place for oneself, even in the presence of large, repressive systems. There is not a multitude of possibility here; Heinlein is not exhorting his readers to do what they will with the state of the society in which they find themselves. In the multifaceted modern state, Heinlein's characters thrive, but it is not because they are exceptional or because they have found themselves to be the focus of a special training program that is part of their rights as citizens. In

fact, it is because they have limited abilities that his characters strive to adapt, and because their societies have failed to provide them with resources that they assemble their own forms of assistance. The reader of Heinlein witnesses time and time again the ways in which individuals create an alternative space for themselves, outside the limiting expectations in which they live, and mobilize their resources to create a personal zone for independent action.

Fascist Sci-Fi?

With these works of Heinlein as background, it becomes more difficult to conclude that anything he has written would promote a totalitarian mindset. One of the reasons that the charge of his fascism persists is because only a few of his works continue to be read widely, and those without the interwar context of adolescence. Reading Starship Troopers with a New Critical mindset would cause a critic to dismiss the novel. Unfortunately, because this critical apparatus is the one generally brought to bear on social science fiction, the force of science fiction's critique cannot be seen. By expecting science fiction to be the uncritical representation of the author's consciousness, the New Criticism strangely enough retreats into the intentional fallacy: examining the work on its own merits has promoted an identification between the work of art and the author, who in this case is seen to be misled about the nature of freedom. Clearly, a different methodology is needed to understand social science fiction. Umberto Eco's methodology in "Lector in Fabula" may be used to reveal the attempts to disrupt the reader's worldview. By applying this methodology to Heinlein's Starship Troopers, a work that is often thought to "prove" Heinlein's fascism, one can demonstrate how social science fiction can be read as a critical investigation of fascism.

The student of social science fiction should not think that his or her duty here is to prove that Starship Troopers and other such works in fact promote an individualistic freedom to think for oneself. It is somewhat fashionable to allegorize the attainment of this mental freedom as the romanticized journey of the strange prisoner of Plato's cave, breaking the bonds of the noble lie and independently regarding the light of truth. In the end, however, what is one to do on this surface? One cannot simply think what one wants; after a lifetime within the cave, one's perception will be predisposed toward certain ways of thinking. This freed individual (like Clarke's Alvin) will have limited agency in this model; the aim of social science fiction's cultural resistance is not simply to encourage someone to think what one wants. Indeed, an individual needs a tool to resist the hegemonic ideal that personal freedom is the ability to assemble one's personality from the cultural affordances provided by the market. The idea that the problem facing youth is to choose the appropriate elements of a personality (the idea that is promoted by the psychologists and sociologists in the wake of G. S. Hall) is essentially hegemonic. Like the home decorator furnishing a kitchen, one might experience the feeling of freedom when faced by the multitude of choices between models of toasters, refrigerators, and ovens; the true individual who might not want a toaster (or even a kitchen) is not accounted for. The question facing Heinlein and other social science fiction practitioners is whether a work of fiction can create a genuine zone for cultural resistance against this idea of the individual with augmented aspects of personality.

The critical reception of social science fiction in general and Starship Troopers in particular would seem to be a resounding "no." While the Verhoeven film Starship Troopers certainly cements the critical attitude about Heinlein's fascistic tendencies, this charge exists before the film and in fact is not even limited to Heinlein. Works of science fiction in the middle of the twentieth

century, Starship Troopers and the Foundation trilogy among them, are often treated with suspicion due to their supposed authoritarian worldview, and Asimov and Heinlein are often written about in the context of the authoritarian visions they use as a setting for their fiction. Albert Berger suggests that the genre's consideration of historiography and social organization from 1934 to 1955 is overly simplistic, reducing human society inappropriately to a closed physical system so that authors may apply the laws of thermodynamics, particularly entropy, to their creations. Berger suggests that this treatment results in a loss of valuable moral considerations, such as character and personality, that he suggests lead to the promotion of individuality and freedom in the reader's mind. While admitting that more work needs to be done, Berger concludes that by the end of World War 2,

> American SF had already produced a world-view reflecting the science, history, and politics its writers understood and accepted, by and large: a view thoroughly conductive, first to the tolerance, and later, to the acceptance of overt authoritarianism (32).

Momentarily putting on hold the question of whether or not social science fiction practitioners promote authoritarian thinking, it is true that many of their works are set in worlds that are predominated by the fascism that Berger finds alarming. Authors, assuming that human society does not welcome or seek technological change, have proposed heavy-handed leaders often faced by political exigencies that they use as excuses to curtail human liberty and enforce drastic technological changes. The thrilling but temporary release from conventional morality that predominates what Michael Denning calls the anti-fascist espionage thriller is taken to new heights in mid-century science fiction, where the philosopher-scientist gone wrong is called upon to make disturbing but necessary decisions for the survival of the race. The important question is

whether the representation of these heavy-handed leaders causes a troublesome reaction to the literature. We read William Wordsworth, supposedly, because the narrative personal provides a positive image of the erudite communal with nature. Separating the work from the narrative situation, a New Critical reading values the finished product and not the process by which it is made. Reading the portrayal of fascistic character in a totalitarian setting would seem to be a negative image, thus making it an inappropriate use of literature.

The invasion of hostile forces, whether from outer space or around the globe, is another common problem investigated by science fiction, requiring the heroes of these novels to commit inhuman acts against those who are (presumed to be, at least) inhuman or less than human. In this type of event, individuals are reduced to numbers and forces, while human collaborators are treated as soldiers, their subjectivity and individuality subjugated to the leadership's need to evaluate personnel as an abstract potential resource. Furthermore, matters of life and death are decided by a solitary, rational expert's use of reason; authority is backed by deadly force with no way for individuals to redress their grievances; the powerful see fit to misrepresent reality and create injustice in order to serve the "greater good." These moves, clearly, signify fascism.

The idea that mid-century science fiction writing promotes fascism has gained currency in recent years as critics investigate the Neo-Nazism and White Supremacy movements at the end of the 20th century. Elana Gomel, for instance, denies that she is trying to portray Heinlein as a "crypto-fascist" at the same time she seeks to establish a connection between the visions of fascism in Starship Troopers and Puppet Masters and the racial othering of Nazi Germany to serve her thesis that science fiction's connection to authoritarian thought demonstrates postmodern literature's complicity with fascism. Michael Orth, looking at libertarian ideology at the end of the century, likewise points to

Starship Troopers as a foundational text for the growing libertarian movements during the Reagan years. Heinlein's novels in particular, according to Orth, are models for this generation because they "cloak misogyny and fascism" in the supposed freethinking philosopher-soldiers Heinlein uses as heroes (293). Brooks Landon, who in some ways attempts to recuperate the place of golden-age fiction, sees this novel as flawed: "it presents Heinlein's opinions about those matters through a series of lectures by authority figures […] offering Heinlein's audience not something to think about but something simply to accept" (68). These critics, perhaps seeing science fiction as being a shallow form of propaganda that cannot engage ideas for literary effect, find traces of the supposedly technocratic author in the literary elements.

The inappropriate use of a New Critical methodology to connect the author's consciousness with the work of art often leads to such mistaken assumptions. Even though the New Criticism aimed to sever the connection between the work of art and the artist, the fallacy remains that an author's consciousness is encoded in the work of art--and that this encoding is not perceived by the author and cannot be manipulated for artistic purpose. For this reason, critics often misread utopian literature as philosophy or mimetic fiction, and this misreading has carried over to the academy's response to science fiction.[36]

In "Lector in Fabula," Eco suggests that it is possible for a writer to structure a plot to confound the correlation between a reader's worldview and the artificial world of the story. When the reader's expectations (what Eco names W_0) and the fabula of the story (what Eco names W_N) conflict, a series of misreadings develop in the reader's mind. The misreadings allow a contingent and temporary version of the narrative to develop as the reader progresses in the text (what Eco names W_C). This W_C persists until the contradictions between

what the reader is reading and what he or she thinks she is reading become unstable. At this point, the misunderstanding has built to such a point that the W_C comes crashing down, allowing the reader to appreciate a new way of looking at the world. According to Eco, this process is an effective tool that authors use to challenge their readers' preconceived notions and create an artwork that is disruptive to accepted notions and mores.

The experience of reading Starship Troopers can be understood according to this model. For instance, the story begins with the proposition that in order to achieve a just society, the idea of universal suffrage must be abolished and instead suffrage must be limited to those who have completed military service. Like much of social science fiction, this is a "what-if" scenario: how would our society be different if just one aspect of our current situation were changed? Perhaps recognizing that he is on dangerous ground, Heinlein situates most of the exposition of this change in the classroom--a typical location for the battleground of truth where ideas are expected to be advanced, no matter how preposterous, and then their consequences evaluated and their implications understood so that students (and teachers) may obtain wisdom.

In order to examine the proposition that literature about totalitarian environments challenges a fatalistic worldview, it is necessary to consider whether the text explicitly constructs a conflict in the "model reader's" worldview and the fabula of the trilogy. In other words, the proposition that Heinlein is critiquing a fatalistic vision of civilization would require there to be a conflict between what Eco calls the encyclopedia (the "world of reference") or W_0 of the reader and the world of the narrative or W_N. As Eco describes through his explication of "Un drame bien parisien," it is possible for a writer to structure a plot that confounds the correlation between the W_0 of the reader and the W_N of the story. Heinlein's model reader would have many expectations that would be

initially confirmed by Starship Troopers: given the loss of universal suffrage and a government led by the military, the model reader would expect to be in a fascistic state where personal liberty is curtailed and individuality is thwarted. Furthermore, given the fact that the model reader's encyclopedia contains a good deal of antifascist thrillers, the model reader would expect that the society run by the military will be overcome by the forces of freedom.

As the plot unfolds, these elements build the W_C in the reader, a temporary reading of the narrative that attempts to hold the contradictions between a model reader's baseline universe and the alternative that the narrative would like him or her to consider. For instance, the model reader is thrilled by the augmented individuality of the Mobile Infantry. The training regime is extensive, and a model reader is treated to a variety of lessons in combat and examples of military culture. The enhanced individuality offered by the power armor and the thrill of being deployed like a missile in a carefully scripted campaign cause a tension in the model reader's mind.

Carefully, as the narrative progresses, the reader is nagged by the sense of unfreedom. In particular, the loss of freedom by those who choose alternatives that go against the needs of the infantry are reminders that we are in an unfavorable alternative universe. Johnny's uniforms do not fit, and he has to tailor them himself in order to pass inspection. One of the privates is publicly whipped and discharged for disobeying an order and striking an officer during an argument; Johnny wonders if he might make the same mistake. At first, the model reader attempts to accommodate both sides of the story into a W_C. This preliminary, contradictory novel is what the reader assembles while reading both the hatred of fascism and the premise that the exigency of war sometimes creates the need for the loss of ideals. Thus the W_C is somewhere between the model reader's baseline world, where it is uniformly, unconditionally assumed

that universal suffrage is the best way to achieve freedom for all, and the opposite world of the narrative, where it is proposed that limited citizenship is a worthy substitution.

It is the inability of critics to appreciate this contradiction that yields the charge of Heinlein's fascism. Certainly, if one is using the New Criticism to look at the work as contained by the pages and disregarding what assumptions a reader brings to a story, the representation of fascism would be appropriate only if one were promoting fascism. Seeking mimesis, these critics would prefer that there be a character that recognizes the situation as wrong, speaks out about the injustice, and perhaps mounts resistance or at least attempts to promote a new way of seeing. The problem with Starship Troopers would seem to be that a critic worries that an unsophisticated reader might be swayed by the argument in favor of limiting citizenship when it is the price to pay for living the cybernetically enhanced life in the Mobile Infantry.

The accepted discourse about fascism is that everyday life in an authoritarian regime should be unfriendly to the individual--think here of 1984 and We--and that it should stifle scientific creativity and require the use of a police state to remain in power. This is not what we read in Starship Troopers. Instead of being a flaw of the novel, however, this is its artistry. The changes in a society that the discourse about fascism leads the model reader to expect from the loss of universal suffrage do not appear in novel. Since the novel seems plausible, the model reader builds up the world of contradictions that attempts to account for the fact that many of his or her treasured ideals exist--and indeed thrive--in this world that he or she would have supposed could never support them. For a time, this contradiction enthralls the reader.

In order to achieve its effect, the novel tangles with the reader's notions of the antifascist thriller. By 1959, the year Starship Troopers is published, the

reader would have been familiar with the world of espionage demonstrated in literature. In these texts, brave agents and everyday soldiers carry out extreme acts in the name of freedom to defeat the creeping forces that threaten the model reader's way of life. As addressed earlier in this chapter, Heinlein participates in this genre. The expectations of this genre taint the reader's reception of the plot. The reader would like to read the events as a rising action, each episode giving the protagonists the experience and wisdom they will need to meet their ultimate challenge at the climax of the plot.[37] The expectations of the genre and the expectation of a reader familiar with Heinlein's work help to build up the model reader's world of contradictions.

This "false reading" set up by the reader's expectations about the plot, however, is not resolved by the plot: The heroes in Starship Troopers are defeated in spite of their excellence. The greatest army in history with stupendous cybernetic enhancements seems powerless in the face of the Bugs. In fact, the Mobile Infantry's hierarchical epistemology prevents it from understanding the emergent, associative organization of the bugs. There is a direct conflict between what the reader expects and what the reader gets; for a while the model reader can pretend that this is just another antifascist novel, but Heinlein subversively causes tensions that disrupt the genre. Because of this discrepancy between the model reader's encyclopedia and the model reader's experience of the narrative world, the contingent world builds. The reader wants the forces of good to express their outrage against the forces of evil, thus gaining satisfaction when the good prevail as well as learning the proper ideology he or she is to have concerning his or her own way of life. This expectation is confounded because the Bugs do not espouse any particular ideology and the Mobile Infantry seems incapable of mounting an effective resistance, let alone proposing a path to win the war.

Two overt elements of the novel support the use of reader-response. These two elements cause the W_C to crumble. One overt threat to disrupt the reader's attempt to reconcile his or her encyclopedia with the narrative of the novel is the deployment of the Sensors to understand and map out the Bug colonies. These clairvoyant social scientists are grossly out of place in the totalized, rationalistic hierarchy of the Mobile Infantry. They do not report to the local command, they have not been processed by boot camp, and perhaps most importantly they do not wear power armor because they cannot do their work while cybernetically enhanced. The soldiers bristle at their presence--clearly they are an indication that the equality espoused by the MI is not equally distributed; one unit does not fit all. These unassimilated, mutant, and individualistic intellectuals are typical Heinlein heroes and the fact that they are not portrayed sympathetically should lead us to realize that we cannot trust the insights of the narrator. Furthermore, the fact that the best army in history is helpless without these multidisciplinary thinkers on the ground causes the model reader's expectations to come crashing down. Cybernetic individuality encouraged by the promise of full citizenship is not the proper ideal to aspire to; the reader is curiously drawn to the less rational hope for the human race as he or she attempts to fit these odd clairvoyants into the world of the novel.

The second overt threat to the W_C is the novel's plot. At the climax of an antifascist espionage thriller, one expects to see the enemy defeated, often in spectacular circumstances: the strategic bridge is finally destroyed, cutting off the enemy's supplies; the exposed spy falls to his or her death, leaving the hero to stop the doomsday device; the headquarters is destroyed or the Death Star explodes. There is, tellingly, no such climax to Starship Troopers--no such climax in the novel version at any rate. We leave Johnny Rico in the middle of the war, with only the barest hope that the humans who have taken the wrong path will

be able to find a way to protect their homeland. Heinlein avoids the cathartic effect that defeating the enemy would convey; certainly, Heinlein is unwilling to suggest that these divergent humans who have abnegated their individuality have the power to defeat a force that operates as a community. This catharsis would lead the model reader to believe that the current state of events--an environment where the individuality of a few soldiers has been cybernetically enhanced so that they may live or die for freedom while the remainder of their civilization is working quietly to support their work but not participating in their defense--is the proper path.

As one realizes if one considers the experience of the novel, this is not the promotion of authoritarian thinking. When one turns outside of the text to the reader, one knows that the clear distinction between fascism and freedom is questioned by the novel. The model reader putting down the novel is forced to wonder, then, if this new model army is the future that he or she would want to embrace. In so doing, he or she is forced to ask in what ways, exactly, is the world of Starship Troopers different from his or her own? Certainly the reader's world in the United States is a place of universal suffrage, but there are frightening similarities between Starship Troopers and the mid-century United States: many have the right to vote and participate in politics, but many do not consider it to be a responsibility. There are relatively few who are called upon to defend the country, and while they do so that they might fully participate in their society, they are not yet full members and, while they serve, they are not able to influence the direction their operations take, the objectives of the force they apply, or the manner in which that force should be organized. Furthermore, in spite of the excitement of the power armor, the model reader must wonder whether he or she would rather be a member of the Sensors or the MI. Even though the MI seems to be excessively independent, the soldiers are clearly most

easily used as tools by a misguided command. Ironically, the members of the Mobile Infantry are supposed to be the most powerful, and yet lack agency to the greatest degree. The joy the model reader experiences as Johnny Rico demonstrates his suit fades as we consider that he has become so atomized that he has been alienated.

Thus, the world of contradictions that comes crashing down is much larger than the reader's experience of the novel and is indeed the reader's opportunity to make choices and changes in his or her government. As the W_C crumbles, it takes more with it than the cardboard culture that Heinlein proposed for our edification. For instance, one reason the world of contradictions arises is due to the way the history of representative democracy is taught to schoolchildren. The origin of democracy, we are to believe, is in the polis of ancient Athens. This ideal is thoroughly implanted in the model reader's encyclopedia, so that ancient Greek art and literature are used as metonyms of freedom and individuality: the stories of Greek heroes are learned as emblems of the free individual. The problem is, of course, that this idealized democracy did not gain its authority in universal suffrage. While the model reader might identify Greek democracy as the inspiration for that of the United States, this identification tends to hide the fact that universal suffrage is a bold experiment, one that even the founders of the United States had not imagined. The rhetoric of freedom that the model reader subscribes to actually clouds his or her ability to appreciate the unique nature of the experiments with democracy in the modern age. Even worse, the typical antifascist thriller does nothing to excite this understanding in the reader; one is encouraged to love freedom but also to wait silently while the agents of freedom break the law to bring down threats to it.

It is not as if this realization is inevitable or even likely; so many responses to the novel suggest a process counter to the mechanism described above that one begins to question whether any form of cultural resistance is possible. A fallback position would be that one "could" read the novel as a form of strategic resistance to hegemonic aspects of personality performance and one "could also" simply read the novel as an adventure--just as the film adaptation seems to do. One could also think that the charges of fascism are sinister attempts to squelch the speculative possibilities of the novel. Even if one does not appreciate the social critique of the novel, which is difficult on the first reading, one is left in the end with a series of strange feelings that beckon the reader to turn the ideas over in his or her head after the novel is closed. Where is the rest of the novel, one wonders; what happened to the climatic finish and careful denouement that one expects from Heinlein? Why are the Sensors so attractive, successfully competing with the power suits in the reader's imagination, and are we destined for the disquieting couplings suggested by the canine corps? These questions send the reader back through the novel, wondering again whether it is promoting the values it seems to be on the face.

The reaffirmation of this freedom is best done in the method of Heinlein in Starship Troopers: test out a proposition, suggest that some of the supposed differences are actually not so different after all, and thus encourage the model reader to recognize a way to exercise his or her freedom: participate directly in the governing of his or her nation. Although this chapter has focused on the ways in which Heinlein's novels create a space for cultural resistance, it is not only here that this phenomenon is seen. Certainly one can see the same disruption of the model reader's consciousness in Asimov's fiction, in particular the Foundation trilogy, as the stable, static, and totalitarian Foundation is supplanted by a contingent and mobile organization. Social science fiction, as a

pulp genre, readily adapted and transformed the rules of other genres, creating an additional space for cultural resistance. While Heinlein is clearly expert in these transformations, the attention that is paid to him in the literature about social science fiction clearly indicates that he is emulated as much as he is admired. This demands that works of social science fiction be analyzed as more than facile reflections of Cold War ideologies.

* * * * *

The reason why the tarnish caused by Heinlein on the pips of social science fiction must never be polished away is that his novels provide an opportunity to examine how the social science fiction operates as a tool to push back the inward force of mass culture, giving the reader's mind a little space to develop its own interests and resist the pat assumptions and political messages that surround the reader. This is not to say that a work of social science fiction produces a disruption in the reader's consciousness that "wakes up" the mind. Such an effort, more aligned with counterculture, is readily seen in the so-called new wave, the genre of science fiction that comes after social science fiction. Heinlein himself will be a part of this counterculture, becoming a cult figure with his novel Stranger in a Strange Land. However, the cultural resistance offered by social science fiction is subtler, and it continues as a unifying principle throughout his work. The new wave demands a new way of thinking, a radical change; social science fiction pushes to the slide gently, using resistance instead of opposition. This chapter has clarified the various sites of cultural resistance. In the collection of novels known as the juveniles, Heinlein intervenes in the contemporary discourse about adolescence, promoting an alternative vision to the assumptions about the problems that these young citizens face. More than

that, however, his novels employ a heteroglossia of real and imagined social structures, customs, and professions that prepare the reader for the multiple challenges that face him or her as an adult.

Chapter 4. Cultural Resistance from New Media Ethnography: Star Trek and Identity

Based on the previous pages, the critical word on Star Trek may seem a little strange. Star Trek, critics will tell us, invents fan fiction. Henry Jenkins's supposition in Textual Poachers is that Star Trek enables a whole new set of responses to mass media. This critique of the series bears the mark of the revisionism of the new wave's approach to social science fiction: science fiction after the new wave must be literary and demonstrate a fascination with the unknown. The fans, as Jenkins presents them, are immersed in the fantasy environment created by the series.

The mythological or fantastic approach to Star Trek is clear in the criticism, and these critics point to a reformulation of the imagination that the program enables. Ace Pilkington honors the shows "luminous and numinous world" that remains tied to the viewers' "real world," applauding the diversity of the program but not thinking about how the program's staff and structure challenge prevailing notions of culture. Donna Reid-Jeffery points to the moral lessons the viewer sees that arise from the consistent mythological system of the series, going as far to say that the program "supports a new 'religion'--science" (41). Daniel Bernardi credits the program for attempting to create a new mythology of race in the show, which might have shown viewers a new way to think about diversity, but as a whole he says that he is disappointed in the way that the program "participated in and facilitated racist practices" (224). While some cultural theorists would see these mythic or fantastic themes as being a

source of cultural resistance, Pilkington and Reid-Jeffery are somewhat split; in parts of their essays, they try to suggest that Star Trek allows viewers to escape their daily lives and enter into a space for critique, they also suggest that the viewers are implicated in a ideological project to support mainstream values.[38]

The issue of cultural resistance in the program is somewhat vexed, then. To the viewer of the show who does not participate in fan activities, the show tends to reinforce values as much as it creates an alternative cultural space. For those critics who consider the alternative society that arises as part of fandom, critics see a new freedom in the audience, but the fans are nevertheless tied to the original distribution from the mass media outlet. To the reader of this dissertation, however, it would seem that Star Trek killed fan fiction: social science fiction is from its beginning a genre of fan-practitioners, where individuals argue and debate the assumptions and goals of the field.[39] The premise of social science fiction is more appropriate to bring to bear on the series, and as this chapter will demonstrate, Star Trek is firmly established in the tradition of thought experiment promoted by John Campbell, Isaac Asimov, and Robert Heinlein. The television program is contemporary with the new wave, and it did follow Judith Merril's call to make science fiction available to a wider audience, but it does so as a work of social science fiction.

It is not necessary to discard this idea of the active Star Trek fan because it is not often that one can ascribe any sort of activity to an audience. However, it is a real question whether that activity involves any actionable freedom. The problem has come to the fore with the growing popularity of cultural studies, since it is becoming all too easy to read every text as an opportunity for cultural resistance. In the essay "Banality in Cultural Studies," Meaghan Morris deplores the cultural studies that have arisen from theorists such as John Fiske and Jean Baudrillard that suggest the individual's reaction to mass media is to pull

strands of content together to form a unique text for him- or herself. She notes these readings are only performed on black music or punk culture, never on European classics of high culture. Leaving aside this negligence, Morris also says the banality of cultural studies has to do with the type of thinking subject posited by cultural studies. The cultural studies program outlined by Fiske and others:

> runs perilously close to this kind of formulation: people in modern mediatised societies are complex and contradictory, mass cultural texts are complex and contradictory, therefore people using them produce complex and contradictory culture. To add that this popular culture has critical and resistant elements is tautological--unless one […] has a concept of culture so rudimentary that it excludes criticism of and resistance from the practice of everyday life (para. 51).

Morris points out that the one individual this type of theory leaves out is the critically aware, "unequivocally pained, unambivalently discontented, or aggressive theorising subject," and that this omission is not an accident. "It isn't just negligence. There is an active process going on" (para 54). The bleak nothingness against which Baudrillard sees the reader enacting cultural resistance seems to indicate that the only thing an individual can do is switch channels, creating a personal montage that substitutes for a critical attitude toward culture.

Given these condemnations of the fans, what can one say of Star Trek, which like much of social science fiction is so dependent upon fan-practitioners for its existence? Is their activity a banal attempt at self-fashioning? Morris is right to pick Fiske's criticism for her polemic. In a move analogous to reader-response criticism in literary theory, Fiske explains in his study Television Culture how viewers, in creating their own texts from a television program, engage in a creative process that results in a meaning that is quite different than the producers may have intended.

The critics of Star Trek have been vocal in their assertion that Star Trek is an exercise of the imperial imagination. Like the detractors of Starship Troopers in the previous chapter, Trek critics suggest that the worldview behind the Trek universe is unsuitable for free thinking. Fiske's work can be used to appease them, showing how the viewers can create their own texts from the show they are watching, but it is much more difficult to work with Fiske's ideas if a serious critic-fan would like to assert that Star Trek promotes an alternative public sphere, fitting it in with other works of social science fiction. The critic-fan who would like to say that Star Trek is something special in television is at a disadvantage here because if one takes Fiske seriously, then the contingent and debatable reality presented in the earlier chapters of this dissertation is intrinsic to the experience of television viewers, regardless of the content.

If one follows Fiske, Star Trek does not represent a watershed moment on television. The fact that viewers are always creating their own texts from the television programs they watch is proof, according to Fiske, that television always creates the very disruption in the viewer's consciousness that one would have expected from a work of social science fiction. If this is true, then there is a problem for the serious critic-fan of Star Trek, since Fiske would have us believe that Cagney and Lacey (or any other popular television program) would serve just as well. What is more, if Morris is correct, is this activity simply a banal abandonment of any critical approach to the world of culture?

This chapter begins by considering the detractors of Star Trek. It turns out that the arguments to take away Trek's effort at cultural resistance are strangely in line with what Fiske suggests is the way television viewers make their own version of a television program. By examining the ideological and identity critique of Star Trek, one can actually see Fiske's theory of the readers who create their own texts at work. Critics such as Mark Lagon and Jay

Goulding miss the point that the text of the television program provides them the ground for their critique.

I then turn to the other side of the argument: what is it that makes Star Trek different from the texts Fiske describes? It is not as if one can argue anything at all in reaction to Star Trek; the text is not completely open. I argue that Star Trek evokes a different kind of expert, separating the series from standard television programming. Media critics who address Trek on ideological grounds and the fanzine writers who present an erotic relationship between Kirk and Spock are two sides of the same coin. Because Star Trek is social science fiction, and because works of social science fiction are supposed to be works of art that one sends out into the public sphere in order to promote argument, encourage others to debate, and inspire creativity in others, the wild divergence in the critical and fan response to Star Trek is exactly what one should expect. What is helpful about Star Trek is that it encourages debates about media and society, and the nature of representation, and how art interacts with culture. Debate and redeploy is exactly what the viewer is supposed to do with social science fiction, and these responses do not represent different camps of the Star Trek universe as much as they demonstrate the far-ranging power of social science fiction's collective hallucination.

Gene Roddenberry's process of creating Star Trek owes a great deal to the pulp tradition. As producer of the series, he can be credited with the creation of a consistent universe in which a variety of culture workers can collaborate in a collective hallucination. He does not invent this idea, of course; in fact, he seems to be embodying the position of the pulp magazine editor who, like John Campbell, assembles a competent team of writers and encourages them to create a consistent fictional world. To do so, Roddenberry recruits heavily from pulp authors. For instance, Theodore Sturgeon, author of the episodes "Shore Leave"

and "Amok Time," is published in John Campbell's Astounding, not to mention the general-interest pulp Argosy; additionally, his novels are well regarded in the 1950s. Roddenberry also recruits Harlan Ellison, who publishes in most of the science fiction pulps in the explosion of titles in the 1950s and is drafted into the Army for two years; even though Ellison has voiced his objections about the ways in which Roddenberry uses his script for "The City on the Edge of Forever"--according to Memory-Alpha.com, only two lines from Ellison's script remain in the final script, and Ellison's subplot about drug dealing is eliminated--the episode remains a popular one among fans and critics.

In addition to these and other authors who emerge from the pulps, Roddenberry recruits other less obvious choices; when complaining about the bad writing on Star Trek, a critic is likely to say that the reason is that Roddenberry lets his secretary write scripts. Whether this is a fair accusation is hard to say, but it is true the D. C. Fontana, who begins as Roddenberry's secretary, writes several scripts for the original series, including "Tomorrow is Yesterday," "Journey to Babel," and "The Enterprise Incident," among others. Roddenberry also recruits from the television community, using Gene Coon, a World War 2 veteran who served in the Marines and later wrote for Dragnet, Bonanza, and The Wild, Wild West. Coon writes the Khan episode "Space Seed" and "Let That Be Your Last Battlefield," among others. Roddenberry even recruits comedian Shari Lewis and her husband, fans of the series, who write "The Lights of Zetar."

Also borrowing from the pulps, Roddenberry's vision for Star Trek clearly owes a great debt to the tradition of the galactic empire stories, and although he does not credit Isaac Asimov directly in the first television series, he does hire Asimov to be a scientific consultant for the first Star Trek motion picture. Like Asimov, Roddenberry is as interested in the transmission of information and the consequences of the high regard the empire has for information as he is

interested in interstellar hegemony. The vision also shows a debt to Robert Heinlein's juveniles; although there are many points of collaboration, the most relevant is the idea of the contingent and temporary organization. In its mission to enforce the rules, dispense justice, classify the elusive, and defeat the unknown, the crew is aided by the Enterprise, the computerized space ship that carries and protects them.

It is in the ship, however, that Roddenberry begins to deviate from the traditions of the golden age. Far from being a force of stable might, the Enterprise is continually falling apart. The contrast between the Tom Corbett series airing from 1950 to 1955 described in Chapter 3 and the Star Trek could not be starker. Technology in Corbett--as with other, shorter-lived television programs like the 1950 Buck Rodgers and Flash Gordon in 1954--is reliable, allowing the protagonists to achieve feats of superhuman ability in the tradition of Astounding Stories of Super Science. The crew of Star Trek is faced by equipment malfunctions, limitations of design, and damage from enemies and phenomena alike. The crew's effort to "hold the ship together" is an emblem of what N. Katherine Hayles calls "autopoiesis," a word derived from the ancient Greek verb "ποιεω," to make, to fabricate. This verb is behind our English words "poet" and "poetry," the person who fashions, the thing that is fabricated. It is also a word of construction. Hayles, as I discuss later in the chapter, asserts that autopoiesis is one important legacy of the post-World War 2 experiments in cybernetics.

Cybernetics calls attention to the fact that organisms have a power to make themselves, that their identities are not fixed but result from the assemblage of mechanisms, both conceptual and physical, that allow it to interact with the individual. The crumbling Enterprise, and the crew's valiant and ingenious methods of repair and adaptation, offer a useful analogue that

points out how identity is an ongoing process for individuals and for organizations. Sometimes, the autopoiesis is brought to the audience's attention in moments of gender humor, such as when the Enterprise is overhauled by a society of women engineers and a saucy feminine mistress supplants the computer's generally efficient personality.

Just as the crew points out to the inhabitants of other planets that their customs and survival technologies are arbitrary and must be evaluated according to their social costs, so too the crew of the Enterprise learns to evaluate its own societal structure. For is it not the case that the crew reconfigures its own templates for understanding reality just as often, if not more often, than it reconfigures the ship's systems? Fans replicate this process. Through observing these discussions among crew and between the crew and the natives, and entering into discussions of the relative merits and detractions of different societies, the autopoietic nature of the program's setting provides ample opportunity to engage in cultural resistance.

Although not part of the original series, the instability of the Enterprise can have deadly consequences, as is shown in the first feature-length movie when the transporter scrambles the molecules of a young crewmember. The crew is forced to create and recreate the tool by which they accomplish their mission. Weapons from the enemy damage the ship, temporarily changing its capabilities and causing the crew to adapt to the limited functionality; new life forms are encountered that interact with the physical world in unusual ways, causing the crew to adapt the ship's systems; insights and innovations from the crew lead them to adapt the ship's systems, creating for themselves a new tool.

With this in mind, it is easier to see the challenge the new media ethnographer makes to the technological establishment. The autopoietic ship is an allegory for the self that is continually made by the self, the self composed of

arbitrary systems that one can know, understand, and adapt. Michael Curtin reminds us that the idea of global television is just coming alive in the 1960s; the first commercial communications satellite is launched in 1962, when Roddenberry is learning his way in the television industry. The imperative of American television, Curtin writes, is to act as a cultural weapon in the era of the Peace Corps and escalated development aid. "Among foreign aid policymakers," Curtin writes, "the reason to enhance communications is both to deliver information and to alter the worldview of people in premodern societies" (Spiegel and Curtin, 249). Curtin goes on to say that this imperative led television to mobilize international support for the United States as a purveyor of democratic choice and freedom of thought. Curtain writes that television "would offer an explicit vision of the values, attitudes, and ideals that motivated the New Frontier" (259), and in this context, it is startling to consider that Star Trek is doomed nearly from the start.

Star Trek, instead of being an unconscious purveyor of United States ideology, needs to be remembered for its short-lived, cynical vision of modern society, much like another doomed series of the 1960s, The Outer Limits. One might expect that the vision of the technologically advanced crew would fit well into the desire to spread global commerce, inspire democratic dialogue, and, not least of all, sell television sets. However, as it turns out, the images of the technologically savvy crew armed with deadly weapons and facing sometimes difficult decisions were not suitable to the soap and cereal advertisers at the end of the 1960s. The depiction of technological might, and the challenges of technology to identity and freedom, is too on-the-nose to fit into the paradigm of global democracy. This may help one to understand why, then, the voluntary associations formed by Star Trek fans are despised as geekish rather than honored as democratic training grounds, why the ethic of respect for different

cultures is forgotten, and why the limitations of the actors and writers remembered.

Imperial Trek

The ideological critics of Star Trek have been vocal and provocative, perhaps because Roddenberry, like Campbell, uses scientific and military personnel to create his series. Mark Lagon writes that Star Trek allegorizes U.S. foreign policy in its "zealous missionary style," breaking commitments to nonintervention and enforcing American norms of society, among other evils (248). Certainly this is easy to see during the episode "A Private Little War" from the second season. Kirk, returning to a primitive planet he had surveyed thirteen years before, is startled to find that the inhabitants have begun using weaponry. Even though the Federation has signed a treaty with the Klingons restricting both parties from interfering with the planet's development, he suspects and confirms that the Klingons have been corrupting the local culture, helping the wrong sort of natives to gain the upper hand. Instead of letting the tribe he knows perish, Kirk decides to arm them, creating a balance of power. Most startling in this action is Kirk's reasoning for this action. "Do you remember the brush wars sponsored by superpowers in the twentieth century?" he asks. The only way humanity is able to reach the stars, he asserts, is through a balance of power between local insurgents. By giving a little weaponry--not the most deadly--superpowers create "the trickiest, most difficult, dirtiest, game of them all, but the only one that preserves both sides." If overwhelming power had been supplied, then there would have been no development of technology; it is through the careful application of weaponry that a balance is reached between the destructive nature and the productive forces of civilization.

The close tie between the ignobly named "brush wars" of the 1950s and 1960s with Star Trek is a recursive bit of metafiction. This depiction of choice and its consequences for progress is echoed in "The City on the Edge of Forever," when Kirk in the 1930s must allow peace activist Edith Keeler to die so that her influence does not forestall American involvement in World War 2. Even though her vision of the future is strikingly like that of the Star Trek universe--Keeler believes that the technology to visit other planets and feed the hungry is within reach--she must die in order for history to follow its proper course. These Seldon-like heroes, however, are much more closely tied to the viewer's present day than anything Asimov wrote. The narratives seem to suggest that without the defeat of the peace movement in the 1940s, and without American involvement in Vietnam, there would be no exploration of space and hence the program to which a viewer has turned would not exist. This speculative history seems to justify the American military action and indeed the entire paradigm of the Three Worlds. That the producers have cast Kirk and the crew into these unavoidable predicaments would seem to reinforce the notion that American action is inevitable and necessary, and is the type of trope that prompts the ideological critique of Star Trek.

Even so, if we look at the other episodes of the series, using Star Trek to make a defense of war does not seem to have been the intention of the series producer, Gene Roddenberry. A World War 2 fighter pilot who also works as a police officer, Roddenberry has other television experience before coming to Star Trek. As a writer and producer who wants to tackle controversial topics, however, he is not entirely successful. William Shatner reports that being denied the opportunity to air a program about racism in the military led Roddenberry to cloak his ideas in allegory. Roddenberry's intention with Star Trek, Shatner writes, was "to mimic Gulliver's Travels" and "write a thinly veiled and

substantive societal commentary within a less obvious and somehow more acceptable framework like fantasy or science fiction" so that he can "speak out on some fairly important, even controversial topics" (17-8). H. Bruce Franklin asserts the success of this effort in conjunction with other attempts by Star Trek to address the Vietnam era. "The Omega Glory" and "Let That Be Your Last Battlefield" are

> thoroughly infused with the desperation of the period that they openly call for the total change of historic course, including an end to the Vietnam War and the war at home. Only this new course presumably would take us to the use of the U.S.S. Enterprise (33).

Again, we have the idea that the fate of the crew is somehow tied up with the decisions we make today, but not the opposite message: according to Franklin, the viewers of the program are told that if they continue to support warlike policies, the television program they love so much will be impossible. Viewers who would like to realize the technological utopianism of Star Trek are given a stern warning that the status quo concerning foreign policy will not work; they must take action. Every viewer is a Seldon, and every viewer must observe the forces of history and bring about the Federation.

This positive discussion of Star Trek politics is far from usual, however. Jay Goulding, performing a more representative ideological critique, writes about Star Trek being part of the ideological superstructure that masks the ideologies of an advanced industrial society. Even though Star Trek seems to model the ideals of equality, peace, expansion, and freedom for young people, in reality it clouds how "democracy itself is far from the ideals: inequality, war, imperialism, unfreedom" (4). Goulding situates his critique by noting that nothing found on Star Trek could irritate a member of the network, NBC, and reminding us that RCA owns NBC. Thus, in order to enjoy Star Trek, Goulding

says, a viewer must enjoy a fantasy that is to the benefit of a manufacturer of communications systems, television sets, radios, navigation systems, radar, military (and space) electronics, air defense, frozen foods, and book companies. Echoing Ben Bagdikian's idea of the "endless chain," Star Trek is then part of a conversation between members of the international power elite. Although media do not "program" the viewers in this model, the viewers are subject to a discourse that they do not initiate and they cannot modify. Star Trek does not reach its viewers unless it is approved by the power elite, and the conversations it engenders are to the power elite's benefit.

Goulding suggests that in order to enjoy Star Trek a viewer must engage in an act of bad faith. First, he suggests, the heroes that the program promotes are inaccessible to the viewers. He takes the fantasy of the bridge crew as emblematic of the false sense of freedom engendered by the program. Since the program focuses on the bridge, the rest of the crew is "virtually superfluous unless they are to die" (18). The program encourages viewers to defer to authority figures, like Kirk, Spock, and Scotty--and in fact demands that viewers defer to these figures in order for democracy to function. While viewers may train for the honor of being selected for the bridge crew, the likelihood is that they will be one of the 430 who remain unseen until they are doomed to die on an away mission. Second, Goulding suggests, the program encourages bad faith because it hides the nature of the quest--and the true nature of modern industrial society. "With a minimal amount of effort anyone can join into the discourse … and play out all the fantasies necessary to legitimatize a western democracy gone sour" (78) Watching Star Trek, he suggests, helps viewers to forget the gaps between rich and poor, militant unions, and the control of the individual by the state. We watch individuals who simply follow orders, but never do people ask why or how, Goulding writes. This instrumental use of

reason is promoted to legitimate social oppression. In the end, the quest for the final frontier hides the contemporary "questionable interventions" in the Third World. Goulding then asks, whose interests does this masquerade serve? He answers:

> A small ruling class controlling multinationals seems to benefit from these strategic wars with millions of dollars [sic] profit going to war production while thousands of soldiers perish. ... Shows like Star Trek emerged at precisely the right time to give the bewildered populous something to hope for--a new religion to grasp onto and worship.
> This hope was not for equality and justice but for more conquest, more exploration (and exploitation) while the U.S. continued to escalate war and war production. Star Trek became a diversion from the reality of American imperial domination and a self-consumptive feedback which beckoned viewers to live the mythology of the future while avoiding the here and now (85-6).

The problem with this critique is neither the acuteness of its observation nor the accuracy of its claims. No one can deny that Star Trek encodes the fantasy of an imperial power equipped with superior communications and navigation equipment; certainly, Star Trek is the fantasy of the endless chain. The problem is that Goulding writes from the position that his reading of the series is unique, separate from what a common viewer would have been thinking when watching the program. Surely, a fallacy of critics of popular culture is that only the critic knows what an artifact truly means; could this be the case with Goulding?

The issue of the appropriate critical methodology to use with social science fiction has arisen several times in this dissertation, and it must be mentioned here. Using the New Criticism to evaluate the environment of Star Trek is bound to generate such criticism. The question of whether providing images of the military-industrial complex is the same as promoting the ideology of the military-industrial complex must be asked: certainly, as indicated in the

discussion of Isaac Asimov's Foundation, social science fiction aims to offer images of totalitarian regimes not because it expects viewers to uncritically consume them, but because it would like them to be analyzed and discussed.

The military-industrial complex that lies behind Star Trek is never far beneath the surface, and indeed, far from being at the whim of their imperial imaginations, the bridge crew is regularly subject to commands from a hierarchy that they cannot influence. The 430 crew members belowdecks are not unique in being bound to duty--Kirk is always seconds away from being interrupted by Uhura announcing an incoming call from an Admiral. Throughout the series, the crew is engaged in missions of securing trade for raw materials needed to perpetuate the Federation (particularly, dilithium crystals) and attempting to negotiate their needs and the integrity of the societies they do business with. Several episodes deal with weapons of mass destruction--both those created on other worlds and those, like NOMAD, that seem to have originated from Earth. Certainly the series has provided a groundwork for viewers to critique a culture founded on a military-industrial complex--the question is, however, does that groundwork encourage viewers to make that critique, or does it in fact blind them to what is really going on.

Identity Trek

Another area in which Star Trek is taken to task is in the realm of identity. Like the ideological critique of Trek, the identity critique seems to miss the point. The series may not be racially, ethnically, or economically diverse--especially by later standards--but at the same time, it provides a ground for viewers to make a critique of society based on race, ethnicity, or economics. In her essay "White Flight," Lynn Spiegel demonstrates two strands of science fiction television in

the 1960s. Some programs, such as My Favorite Marian (1963-1966), It's About Time (1966-1967), Bewitched (1964-1972) and I Dream of Jeannie (1965-1970), feature the domestication of difference: there is no conflict in the idea that the elements of fantasy exist, but rather whether middle-class suburbia can adapt to the challenge. (Suburbia seems to do quite well on these programs.) Other science-fiction television, like The Twilight Zone (1959-1965), The Outer Limits (1963-1965), and Science Fiction Theater (1955-1957), present "cautionary tales about racism and xenophobia in suburbia" (Spigel and Curtin 60). While news and feature stories are promoting outer space as the next settlement of suburbia, Spigel claims that these shows are critical of this colonization process, demonstrating the tension between the strange and the familiar. Spiegel does not address Star Trek explicitly, but given this division, it is easy to see how it falls into the later category. Even more so, while the other shows use allegory and parody to accomplish their aims, Star Trek addresses issues of race and identity directly.

As described in the Introduction, the purpose of art in the public sphere is to provide material for discussion of topics important to the participants, but these objects must be removed from their immediate lives so that there is little consequence to the conclusions one draws about the subject matter. In order for the individuals in the public sphere to be able to converse freely, there must be art to provoke a conversation and that art must have tangential relevance to the lives of the people in the conversation so that discussion about important issues can be sustained. The sustained discussion about race and ethnicity in Star Trek would seem to indicate that the series is successful in provoking a necessary conversation.

The prolonged critique of Star Trek's involvement in race, like the prolonged critique of ideology, proves that it helps to create an important space for cultural resistance, even though the critics do not agree that the use of the theme of race in Star Trek is productive. For instance, Micheal [sic] Pounds is not alone when he credits the series for bringing issues from the Civil Rights movement to primetime television, and for including a racial and ethnically diverse actors on the series. Star Trek went above the standard network response to the management priority of integration, Pounds writes, with fully one-third of its plots centered in some way around race. That being said, Pounds also claims that Star Trek is not an effective critique of race because characters of race or ethnicity are functionaries--"just a detail to move the plot along" (173). That the television program enables a discussion about the triviality of token integration--as different races are coming to be shown on television, it is a moment when integration is accepted only when it does not get in the way of larger discourses--does not seem to have occurred to Pounds.

Similarly, David Golumbia, in honoring Samuel Delany's Triton (1976) and Ursula Le Guin's The Dispossessed (1974) for their interrogation of the utopian mindset, castigates Star Trek for its reduction of race to "pure pigment" (81), its failure to speak out about the injustices it depicts (as in "Let That Be Your Last Battlefield," when the characters do not express outrage at the way Lokai is treated), and the way in which the normative world of the Enterprise makes racial conflict seem "strange, alien, not part of 'us' and significantly not our fault" (85). Golumbia points out that the Enterprise's arrival at Cheron, just as the civilization is reduced to a smoking ruin, evoking the memory of the Watts riots. Instead of saying that the episode provides the start of a discussion among audience members and critics about racial hatred, Golumbia suggests that the show's utopian mindset forces it to be tied to the prevailing ideology and cannot

provide an adequate critique of racial politics. In the episode, there is a debate in the mess hall--a favorite trope of social science fiction--and Golumbia does not applaud the way in which the program models a performance of racial discussion and a honed oratory, prompting viewers to conduct their own discussions during the commercial breaks, at work the next day, or in their fan publications. The fact that Spock listens but does not participate in this discussion, added to Uhura's later admission that she cannot understand the hatred they are witnessing are to Golumbia evidence of an erasure of racial politics and an attempt to say that the "present-day world" (82) has transcended the conflicts witnessed by the crew.

Pounds and Golumbia could have--should have--written that it is the way in which Star Trek displays integration that allows them, and other viewers of Trek, to consider the extent to which larger corporate and industrial structures are willing to embrace integration. Pounds and Golumbia could have--should have--stated that the show demonstrates the difficulty of the bridge crew to comprehend the problems of racial difference that they witness, and it is not until the crew sees the devastation caused by racial hatred that the normative office culture of the bureaucratic bridge is breached. What these critics miss is that the bridge is portrayed no differently than other centers of power in the late 1960s. The frame story of the racial hatred is that the Enterprise is engaged in a time-critical humanitarian medical mission that Lokai and Bele disrupt; they are busy with vital routine operations that occupy their conversations--they have neither the time nor the provocation to discuss issues of race. As soon as this disruption takes place, all areas of the organization engage in the idea of racial difference, officially on the bridge and unofficially during breaks, just as happens at universities, government offices, and other places of employment that feel indifferent to matters of integration. This episode is an allegory of how media--in

its representation of the conflict of others, and through its window onto a world of devastation--engages zones of the world that are seemingly isolated from vital matters of justice and equality.

This holier-than-thou attitude toward race is evident in other areas. While critics speak of the otherized alien species on the show, a few point to Uhura as being a subjected woman of color instead of an effective role model, in spite of the character's history-making support from Martin Luther King, Jr. and breaking the taboo of the interracial kiss. Kathy Ferguson, Gilad Ashkenazi, and Wendy Schultz characterize her as "a cross between a secretary and a telephone operator (although she did occasionally repair her own communications panel)" (216). Ferguson et al. have little regard for the other female characters on board:

> Rand as chatelaine of the castle; Chapel as acolyte worshipping at the feet of mystery/Mr. Spock--none of these portrayals brings women very far out of the category of passive object or supportive subordinate, recipient of the male gaze, the looked-at rather than the one who looks and acts (217).

Ferguson et al. note that the trio of Spock, McCoy and Kirk are the "brain, heart and balls" of the Enterprise, leaving little room for women to effect agency. These identity critics deny the way in which Star Trek offers a palate of alternatives for a viewer. Feminist deconstruction, such as that presented by Hélène Cixous, reminds us that simply reversing the terms of a binary opposition is not sufficient to defeat logocentrism. As satisfying as it might be for a project to replace the idea of "man" with that of a "woman," this does not disintegrate the false gender distinctions that go behind such a project.

It is worthwhile to remember that the captain's original second-in-command was to be a black woman. Most remember Majel Barrett's appearance on the never-screened pilot of "The Cage" (which is edited into the story of "The Menagerie"). However, if one goes a little further back to the original Star Trek

treatment, one finds her described as "slim and dark in a Nile Valley way" (6). While many have suggested that Spock is a replacement for this female assistant, there is no science officer in the original treatment. Spock is listed as a supervisor, but he is more closely aligned to the half-Brazilian navigator than to his eventual role as science officer. His "promotion" to science officer does not necessarily mean he took "Number One's" place--in fact, Number One is still there, the captain's eyes and ears, at the workstation directly to the right of Spock.

While Uhura's potential as second in command is latent throughout much of the series, it does come out in the animated series. In "The Lorelei Signal," where the men are lured from the ship, the remaining women are the ones who are faced with the task of regaining mastery of the Enterprise. Uhura, the only female member of the bridge crew, takes command and deputizes Nurse Chapel to assist her in rescuing the men. Certainly the image of a black woman saving the day is a positive representation--especially for the late 1960s--and a breakthrough image in the history of gender and race television. Nevertheless, the momentary swapping of the terms of the binary is not the truly transgressive moment for Trek. For when Kirk returns to his senses, Uhura goes back to her role which, however necessary and vital to the functioning of the Enterprise, seems more like that of an interstellar receptionist than a bridge officer.

From time to time, Uhura does have her moments in the original series. In the second season, she rolls up her sleeves and reconfigures her console in "Who Mourns for Adonais" in order to thwart Apollo. She is also one half of the interracial kiss that almost happened in "Plato's Stepchildren": she and Kirk are forced into an embrace, but the cameras do not actually show their lips meet. These moments are important, and yet they help promote the fantasy that Trek

is repressed "back then" and we are much more free "today." The power of Trek's transgression is much more devious.

In "The Lorelei Signal," the plot development makes the reader wonder how Uhura is able to step out of her chair in the back and assume the captain's chair so easily? What does she know about vital ship functions, strategic thinking, and situation analysis? A receptionist of a major corporation could not step forward and do the same; her training and experience would not prepare her for such a task. The pseudomilitaristic training behind the crew of the Federation starship permits this development. Uhura is not constrained by her job; she is trained the same as others. Uhura is not sectioned off from the essential work of her employers; she is every day in the mix. Uhura is not in the back operating the switchboard; when so many missions involve communication, she is an essential member of the bridge crew and performs many roles.

These different roles point to the principle of jouissance celebrated by feminist deconstruction, marking the transgression of Trek. When Hélène Cixous seeks possibilities for culture--a plurality of meanings--she is seeking a definition of roles that goes beyond those simple definitions permitted by logocentric discourse. Uhura is the black woman in the back answering the calls of alien civilizations; she is also the advisor to the crew on interspecies protocol. Uhura is the able assistant to the white male head; she is also an able commander in her own right. This plurality of roles is central to defeating the binary oppositions of black and white, of male and female, of commander and subordinate. Jouissance is also exhibited in the plurality of male types offered by the central cast. The primary triad of Kirk, Spock, and Bones, with secondary and relief roles played by Scottie and Sulu, offer the viewer a rich palette of types. In its promotion of a variety of roles for viewers to attend to, Star Trek defies the idea of a unitary personality and suggests that all people are combinations and mélanges of types.

This jouissance is a primary function of Star Trek, and not only in the animated series. Examples of plurality can easily be found in the original series as well. Kirk is the white imperial male bent on enforcing the hegemony of the Federation at the same time that he is the emblem of virile masculinity that is unsuitable as the functionary the galactic empire demands; at the start of one episode Kirk is the enforcer of law but by the end he is the only one able to negotiate the perils of interspecies communication. More than simply creating "complex" characters, Roddenberry is following in the footsteps of social science fiction, employing the techniques of Robert Heinlein described in the previous chapter. Like his characters Thorby and Friday, the crew of the Enterprise succeeds due to their ability to walk in many discourses at once. They are not confined to one way of being; they are, in fact, adept at slipping between the various modes and immediately switching between the codes of behavior expected of the modes they inhabit.

Transgressive Trek

It is easy to overlook this slippage between the types of being due to Trek's status as a television show. In Television Culture, Fiske asks his readers to consider the polysemic nature of television content--a direct consequence of television's attempt to gain a large market share--and how polysemy provides viewers with the opportunity to create their own "texts" from the material broadcast. Television, according to Fiske, is an "open" text or "radical" text: instead of a writerly text that constrains meaning, a television program is metatextual, engages in a synergy between the represented and the real, and requires audience participation. Television "treats its viewers as members of a semiotic democracy, already equipped with the discursive competencies to make

meanings motivated by pleasure to want to participate in the process" (95). This is a power that one would want to say is unique to Star Trek, that the series offered a break from authoritative programming that is standard for the 1960s.

Indeed, serious critics-fans of Star Trek would want to observe that the original live-action series is something different from the standard television offering--that it allowed viewers a new space to challenge their worldview. In studying Star Trek, these critic-fans would want to value Star Trek as something unique, portraying the series as a radically different, tragically short-lived experiment to bring counterculture to American living rooms. Jon Wagner and Jan Lundeen, for instance, argue that Star Trek operates as a mythological universe that models a cultural critique for its viewers. As representatives of the critic-fan, Wagner and Lundeen explicate the Star Trek universe as a cultural zone for a new kind of discourse. Providing room for discussion of race, gender, and imperialism, the serious critic-fan suggests that Star Trek is a rare moment in the history of mass culture where the façade of middle-class values typically portrayed on television is ripped away, allowing a counterdiscourse to emerge. Such a stance would mesh nicely with the present study, allowing a smooth continuity between the alternative public sphere developed by the creators of the pulps and the multiauthored, communal experience of the worldwide web. Fiske, unfortunately, throws sticks in the spokes of this bicycle. It is just as easy to say that Star Trek is a place where existing norms are reinforced.

Based on the above literature of ideological and identity critique, it would be a simple matter to take a stand on one or the other of these sides: Star Trek is part of the ideological superstructure clouding the means of production, or Star Trek reveals the means of production; likewise, Star Trek could be a tool for reinscribing traditional gender and racial roles, or perhaps it is a stage where

new gender and racial roles are performed. This polarization allows an author to make a polemic, and the hyperbole reveals his or her impressions about the relationship between the mainstream and culture in the historical period. It is not, however, an either-or proposition. The multiplicity of critical opinions recorded by media experts demonstrates the representative heterogeneity of opinion about the series. Instead of offering an authoritative pronouncement about the program's nature, cultural criticism is better off demonstrating that the show is successful in engaging the audience on specific issues. Many people take many things from Star Trek; but without Star Trek, there would be no way to argue about how the bureaucratic environment is implicated in or resists prevailing ideologies or notions of race.

According to John Fiske, this is how television acts in a culture. Television is a medium that relinquishes control of the text to the readers: "Television's playfulness is a sign of its semiotic democracy, by which I mean its delegation of production of meanings and pleasures to its viewers. … [I]t offers the viewer access to the discursive practice" (236-7). Television, Fiske writes, is a communal activity of meaning-making. It does not require an odd show with an alien cast to do this cultural work; even though he includes Star Trek in his examples, it is not a central part of his argument. In fact, it seems as if Star Trek's alterity has failed to make an impression on him at all; the original series makes its way as an ancillary to his larger examples. The serious critic-fan of Star Trek should be dismayed after studying Fiske's book, since it would seem that everyday, corporate television--a single episode of Cagney and Lacey is the example that Fiske uses from the then-current television offerings--has a greater power to excite cultural resistance than the entirety of the Star Trek original series.

If the serious critic-fan wants to find the transgressive nature of Star Trek and incorporate it into the realm of social science fiction, then he or she will have to turn elsewhere. Certainly, the ideological and identity critiques presented, both positively and negatively, are part of the text that a viewer can create from Star Trek or any other television program. What then is unique about the series? There seem to be two realms from which to attack this problem. The first is in the phenomena of fan fiction. While not the only television show to generate fiction based on the universe of the show, Star Trek's fan fiction is notoriously rich and fulfills the need for creation that Elaine Scarry suggests is precursor to a just society. Second is the kind of expertise the show promotes in the viewer; like the practitioner of social science fiction, the viewer of Star Trek is poised to answer questions about the worldview that are not visible to the casual viewer. While most obviously this expertise takes the form of the Star Trek convention attendee, the Star Trek aficionado is also supremely poised to enter discussions about new media and its effect on consciousness, reflecting Katherine Hayles's pronouncement that "we have always been posthuman" (291).

Star Trek Fan Fiction

Walter Benjamin, in his canonical essay "The Work of Art in the Age of its Technical Reproducibility"[40] (1936), asserts that in the twentieth century, the distinction between the author and the reader will disintegrate, allowing for a transgressive art of the people. As demonstrated in Chapter 1, the golden age of science fiction promoted this aesthetic as authors themselves were readers of texts, engendering the collective hallucination that is at the heart of social science fiction's cultural resistance. Even so, in the early days a distinct category of "author" is sanctioned by publication in an official organ. It is with Star Trek,

however, that the idealized reader-author hybrid is more fully realized. Taking advantage of inexpensive printing technologies, including the newly distributed photocopy machine by Xerox, fans began to create their own fiction related to the Star Trek universe.

The critics cited at the beginning of the chapter (like Goulding, Lagon, and Pounds) who "write back" at the television show demonstrate the most obvious and perhaps the most acceptable ways in which individuals respond to mass culture. The critic is supposed to take a distance on the object, viewing the communication attempt in its larger cultural context, and with authority and stability, he or she is expected to explain the mass culture to an audience that is presumed to be in a lesser state of enlightenment. As is demonstrated earlier, the diversity of these critics demonstrates the efficacy of Star Trek as a collective hallucination. Fans, critics, and authors consent to enter into the imaginary world presented by Star Trek and think not only about what the worldview represents but also how other viewers might react to what they are seeing: do other people "get it," or is it "just us" who understand? Is the story an allegory of situation x in the contemporary scene, or does the story extrapolate situation y from history? That many different individuals are able to use Star Trek to make a variety of important points about the connection between culture and society helps to prove that the collective hallucination is an effective technique. The argument about what Trek means is not a violation of Trek; it is Trek's purpose. In this function, the program in its very writing builds in a critical distance for its viewers, encouraging viewers to exercise their evaluative faculties and engage in acts of cultural resistance.

And yet, it would be wrong to think that the critical response is the only or best way for an individual to create his or her own text from Star Trek;

certainly, given the discussion of fan-practitioners in Chapter 1, the critical response is only part of the way in which the mass intervenes in the distribution of mass culture. Fiske has suggested that readers make their own texts from what they see before them. He points out that it might be difficult to understand why Australian teenage girls are the biggest fans of a prison drama, since their lives seem far removed from the coercive and restrained lives of female inmates. In interviewing the girls, however, Fiske learns that they are able to use the television show as an analogue to their own lives; they use the mental framework provided by the show as a myth that explains their own world. In this way, a stern woman in charge of the teenagers can be seen, in the imaginations and the private conversations of the girls watching television, as the analogue of the warden or the corrections officers on the program. This pleasure of recasting the mass culture to suit one's personal life is, Fiske says, central to the experience of television. Star Trek fans, however, take this process one step further, going beyond their everyday conversations and imaginations and instead create their own texts--literal texts, as in printed pages that they distribute to others. Certainly the history of social science fiction had much to do with this impetus, and yet it is strange that when one reads the history of fan fiction, the originary moment is the so-called "slash" fiction of Trek, and the history of social science fiction's collective hallucination is left untold.

Elaine Scarry has suggested the importance of this activity in her meditation, On Beauty and Being Just. The object that amazes its viewer with beauty, Scarry writes, makes the viewer want to create beautiful things. In her treatise, she suggests that beauty has been lost in the humanities: it is not as if there are no longer beautiful objects, but that the discussion of what makes them beautiful and an understanding of what happens to the viewer in reaction to the beautiful. In this move from the love of the beautiful to an appreciation for

beauty, Scarry suggests that beauty does not have to be an object with an alluring façade, but includes works of philosophy in her list of things in which one might find beauty. It is this experience of beauty, she writes, that drives viewers to maintain beauty where it exists and create beauty when it is lacking. In short, it allows the viewer to see that beauty exists in the world due to effort and training, and this is the experience of the Star Trek zine writers. In experiencing an object, a ballet, or an episode of Star Trek, the viewer is "decentered" (111); the viewer is torn away from the center of a world and reoriented:

> It is not that we cease to stand at the center of the world, for we never stood there. It is that we cease to stand even at the center of our own world. We willingly cede our ground to the thing that stands before us (112).

In the case of an episode of Star Trek, to apply Scarry's model, a viewer is presented with the idea that the world that we live in--the world that we have created for ourselves--is no longer the idealized case. The Enterprise and the dream of society it represents is a much better ideal to follow than what we can achieve, since it is not bound by the same restraints on actuality.

Even before the series is cancelled, Star Trek generates fan fiction published in amateur low-circulation publications known as zines. Joan Marie Verba has documented the first twenty years of Star Trek zines, noting that the first, Spockanalia, appears in September 1967, a year after the first episode is aired. This zine includes a letter from Leonard Nimoy, information about the letter writing campaign to keep Star Trek on the air, articles, and fiction (1). Verba points out that fan clubs have published fanzines since the 1930s, so it is understandable that Star Trek fans would bring out their own publications devoted to the program. The early zines Verba documents collaborate with

Roddenberry to publish the script for the show, letters from the actors and scriptwriters, and derivative works (stories and poetry) based on Star Trek situations.

Verba does not detail much of her own interest in publishing in this fan culture nor does she document the results, other than to say that the fan publications she and other fans make are "instrumental" in facilitating their first sales as professional writers. Stephen Duncombe, however, has pointed to the counterhegemonic possibilities of zine culture. Because the world of zines is not "imaginary" but "built," the creators of zines learn lessons about culture and politics. The zine network allows authors to present information and ideas that are not presented in mainstream culture, Duncombe writes, adapting communication technology for their own purposes:

> These networks make up a distinct material infrastructure of communication that uses the technology of mass commercial society--computers, copy machines, [the] mail system--but steers the use of these toward nonprofit, communitarian ends. The network also lends itself to an ideal of social organization (178-9).

Duncombe, unfortunately, does not see this function in the history of science fiction publishing--for him, like Jenkins, fan fiction is about consumers making "demands on consumer culture" (108), suggesting that science fiction zines are used by writers to make their demands known from the producers of mass media. In general, however, Duncombe says that zines are useful counterhegemonic strategies because they are done willingly, they enable two-way communication, and they turn consumers into producers.

One of the most widely known genres of Star Trek zines and zine stories is the Kirk/Spock (K/S, or just "slash" for short) zine that postulates a sexual relationship between the two main characters. According to Verba, the first slash story seems to have appeared in the third issue of Grup in September 1974--the

story is about two men who in the context of the author's later work are Kirk and Spock--and there is a clear Kirk/Spock relationship story in the first issue of Contact in 1975. Patricia Frazer Lamb and Diana L. Veith note that the K/S genre explodes in 1976, building to about 300 anthologies and 100 K/S novels in 1984 (237). What is odd about this phenomenon, Lamb and Veith write, is that K/S zine editors, authors, and readers are primarily female--which is evinced by the fact that zine editors use female pronouns to refer to their writers (238). Lamb and Veith wonder why the zine writers do not cast roles for women in their fantasies.

Why would women exercise their fantasy in a homosexual male pairing? Their answer is that the authors want Kirk to maintain his patriarchal form of success but at the same time enter into a private relationship. In their relationship, the pair does not domesticate each other; in fact, they accompany each other into danger: "No one stays home to worry or to do the laundry," they write (253).[41] The fantasy of a different definition of gender, then, goes beyond the fantasy of control that one might associate with this genre. The female fantasy is to be a male-type in a loving relationship--an equal partner in a balanced pair. As an example, Lamb and Veith discuss the Vulcan marriage story written by Susan K. James and Carol A. Frisbie in their zine Nightvisions. The women in Star Trek, no matter how far advanced they are compared to contemporary female television characters, can never be equal to Kirk or Spock. The zine authors want a partnership of strong equals; thus, Kirk and Spock choose each other. It is the reverse of the Romeo/Juliet pair of starcrossed lovers--the ideal of Kirk and Spock that cannot exist in the domestic world, can stay together in the world of Star Trek.

This fantasy, although bizarre, should not come as a surprise to the student of Fiske, since this is what viewers do with television. Inspired by the

equality and justice exemplified in the Star Trek world, viewers take the opportunity to create texts that suit them. Like the Australian high school students Fiske suggests are the biggest fans of a prison drama, the authors of K/S zines use the tropes identified by the series to promote an alternative sexuality, thus demonstrating the cultural resistance of science fiction. Fiske is perhaps the first but not the only critic to suggest this active viewer. John Hartley's ideal of the "power viewing" (97) is a refinement of this concept--the idea that the viewer not as an individual who is passively receiving a text, but judging a text. What is more, Hartley reminds us, to receive a television signal in one's home in the 1950s and 1960s is no small task: it involves erecting an antenna, adjusting and modifying it to avoid interference and maintain a clear signal even during inclement weather. "There was nothing passive about these efforts to get into the picture in TV's early days," he writes (102). The television is an intrusion into the public spaces of the home, and television programming creates a disruption in the household schedule as well, taking household members away from their regular activities when the time for the program comes. To see the zine culture as an aberration of the Star Trek experience, an unusual case, it perhaps to misunderstand the nature of television viewing. It is appropriate to see fan fiction as a continuation of the process Hartley describes in the home--the struggle to achieve an image, the discussion among family members--instead of a fetishistic activity among fervid fans.

Henry Jenkins points out that fan fiction is not simply an imaginative function, but he does not see the activity as having its origin inside the social environment of the home; he says that zines show viewers in action, creating literal texts from the programs provided them by the networks to break free of the atomized home environment:

> Writing the romance is only the first step, however, since circulating these romances brings these female fans in contact with other women, allows them to share and talk about those concerns within a broader social context. Writing and sharing these fan romances represents a movement from domestic isolation towards community participation, often allowing for alternative sources of status as these women gain recognition for their creative output (1995, 203).

We do not have to decide if the fan is isolated or not; we can tie these impressions together with the idea that the fan lacks authority in the production of mass media. However, by engaging in surrogate acts of creation, fans initiate a process that generates actual influence in the fan community. Fan fiction, both of the variety that begins while the show is still on the air and the slash variety that fulminates in 1975, is taken increasingly seriously after the live-action and animated series are cancelled. Sondra Marshak and Myrna Culbreath collected some of the nonerotic stories in two volumes, in 1976 and 1977. In the introduction to the first, Star Trek: The New Voyages, Roddenberry applauds the efforts of the "tens of thousands" of people who make stories, paintings, sculptures, cookbooks, songs, poems, and clothing in honor of the show. "Eventually we realized that there is no more profound way in which people could express what Star Trek has meant to them than by creating their very own personal Star Trek things" (x). Such a statement gives credence to the supposition that Roddenberry understands the value of fan-practitioners from the very beginning, and views the outpouring of fan fiction as a measure of the success of the series--he has enabled a large number of viewers to experience the power felt by a community that was once limited to the engineers writing social science fiction.

The two volumes, published in mass-market paperback by Bantam Books, are strange but familiar in the age of the worldwide web. There is a commingling

of fan and professional in each volume: the show's creators and stars introduce the eight stories while fans write the stories themselves. Marshak and Culbreath, fan-authors themselves who collected the stories, retain a professional role in the first volume, arranging the texts and the talent, but in the second volume, they contribute a story. These volumes share the cultural resistance provided by social science fiction in that they are not "closed" or "fixed" in the way a traditional text is; each anticipates the next volume and each seeks to generate enthusiasm for the genre. In both volumes, the editors encourage readers to mail their stories to a post office box in Baton Rouge, Louisiana, in the same way John Campbell hails his readers as potential contributors. The comments from the "names" in the volumes, like Roddenberry, encourage the reader to continue his or her quest to create and live the dream of Star Trek. The books come into existence as an act of will, and the evidence of the author and its intention is on the surface, like a lyric poem. The editors of the anthologies, like Isaac Asimov, know that their creation is the product of a fleeting moment, and they urge the reader to participate before they vanish into the mists like Brigadoon. This evocation of the reader's responsibility to participate in the creation of the text, and the promise that what the reader writes will be incorporated into the next version of the text, is the same rhetorical situation as a home page. The New Voyages are the worldwide web on paper: they are hypertext without HTML.

The stories in the volumes, like the zine stories, offer an important insight into what it is that fans enjoy about the original series. Certainly Jay David Bolter's and Richard Grusin's concept of remediation can be applied here: "Media are continually commenting upon, reproducing and replacing each other, and this process is integral to media" (346). Transferring the show into a new medium allows the authors to articulate just what interests them about the

series and leave behind those elements of the series that may have detracted from it. In the stories, the spectacular nature of the adventures is downplayed; we are not asked to behold the strange and wondrous, even though the strange and wondrous were part of the original series. What is kept alive, however, is the sense of comic paradox: the obvious rules of the world have temporarily been suspended, and the crew must fight to understand what rules have been changed in order that they might restore themselves to "normal" space. As in the original series, the crew must collaborate, operating in multifunctional teams; moreover, in the stories, the collaboration is highlighted by increased deliberation and interaction that would be tedious on television. The stories, in short, present a refraction of the Star Trek aesthetic.

Marshak and Culbreath's story in the second volume of fan fiction, "The Procrustean Petard," is exemplary in this regard. The comic paradox strikes from the start: Kirk, McCoy, Uhura, and other members of the landing party are captured by an alien pleasure device and are transferred into the opposite gender; what's more, their qualities are transferred as well. Where the female Uhura was efficient the male becomes manly, and where she was altruistic, he becomes noble. Where the male Kirk was organizational, the female becomes intuitive, and where he was virile, she becomes demure. Marshak and Culbreath's transformation is notable in several respects. First, this is not the case of men "trapped" in women's bodies (like Heinlein's I Will Fear No Evil, for instance). The minds of the crew are intact in their bodies, but their bodies have changed gender, and with this change, they begin to think differently and have a different relationship to the world. While talking to McCoy, Kirk asserts that he/she is still capable of command, but McCoy suggests that the gender differences are too great. What about when a situation demands muscle? Kirk says he can handle it, but McCoy reminds him that his prowess derives from

years of training of a reflexive nature: "Maybe if you'd come up through the ranks as a women--even looking like that. Especially looking like that. Maybe you'd be hell on wheels in unarmed combat. You'd have to be--with exotic techniques designed for no muscle" (161, italics in original). It is not as if Kirk's training and experience are disembodied truths, information that can be stripped out of its container and transferred into another body. The series illustrates for the viewer the idea that information must be substantiated; many years before N. Catherine Hayles writes, Star Trek asserts that information cannot be abstracted. That themes of gender and sexuality are popular in fan fiction should come as no surprise, given the predilection of the series to address issues of gender and sexuality. Gender roles are frequently addressed, as is the nature of alien (and human) sexuality. What Marshak and Culbreath demonstrate, as does the series, is the constructedness of gender.

One needs to consider more than the texts of the fan fiction; they represent a wider act that creates a fan community. The author of a zine becomes an advanced fan, or a minor Star Trek creator, or both: these hybrid author-readers achieve status in the actual world. In this way, the experience of Star Trek moves from a feeling of freedom, an imaginary act of freedom, into a genuine act of freedom in the real world. Authors of zines announce themselves to be creators and producers of texts, authors who exist in the same cultural continuum as a multinational corporation employing dozens of support staff, as many actors, and countless freelance writers to produce the television program. By adapting and modifying these texts, these author-readers who lack media credentials can insert themselves into a new hierarchy, separate from the accepted hierarchy of media, to create status for themselves and become spokespeople for the same variety of positions that Star Trek does. Just as Sarah Thornton mentioned for the fans of popular music, those who participate in the

zine world accumulate more cultural capital the more they participate in the culture. We might take this idea slightly farther by stating that as popular culture fans step away from the established hierarchy of professional media, they begin to experience a zone for cultural resistance; by entering into this noncommercial world of voluntary publishing, those in the zine community have the opportunity to stand apart from established norms--regardless of whether these norms involve gender roles or the bifurcation of passive receiver and active transmitter.

This discussion reaches beyond gender and sexuality. Jenkins's study of MIT students suggests how others use the "text" of Star Trek as an exercise of power. In critiquing and applying ideas they learn in school, MIT students are able to engage in a scientific Enterprise. By understanding the Star Trek worldview to a deep extent, and developing as deep an understanding of speculative science, an MIT fan is able to be smarter than the multinational corporation is:

> These students draw upon the knowledge they acquire in their classes to spot the technical errors within the programme, while at the same time drawing on the programme as a vehicle for exploring their own shifting relationship to science and the social life of MIT (1995b, 217).

This position of the author-reader of Star Trek is not new; after all, the collaborative backstory of social science fiction requires the same initiation and immersion. The same rehearsal of research, argumentation and presentation we saw in the rocket societies (Chapter 3) is at work here: social science fiction prepares its fans for lives as iconoclastic experts, which given the developing military-industrial complex in the 1960s is much more needed in the moment of Star Trek than it was when Heinlein and Mac Lean were writing their juvenile fiction.

A naïve viewer of Star Trek in the presence of an author-reader of Star Trek is in the presence of a unique sort of expert. Star Trek is baffling to those who come to it fresh, and the naïve viewer is filled with questions: what are they doing, how do they get to the planet surface, why are they trying to reprogram the computer? The author-reader who does not become annoyed with the persistent questions then finds himself or herself in the position of guide, explaining how the action on the screen is consistent with the technologies of the Enterprise. The heteroglossic plot lines of the show--involving sociological principles, issues of gender and sexuality, dramatizations of information technology, guerilla military maneuvers, psychological drama, and so on--demand that a viewer aspiring to the status of author-reader become an expert in these fields. Since television is often a communal experience, with the viewers of Star Trek in the same room as their families who are sometimes antagonistic to the show, the author-reader is asked to be more than a participant in the creation of a text but an explainer of the text he or she is creating.

The opacity of the science in the program creates confusion in the naïve viewer, demanding that he or she seek explanation from more knowledgeable sources. The Roddenberry franchise, along with fan clubs, provide material to help this expert develop--such as the 1968 The Making of Star Trek by Stephen Whitfield (which first tells the story of McCoy's instruments being salt shakers) and William Shatner's 1993 Star Trek Memories, which is less a memoir of his experience than a collection of interviews and anecdotes surrounding the series. The how-to guides, the encyclopedias, and the biographies serve to inform the aspiring author-viewer, making him a competent practitioner of Star Trek in front of friends and family who are regularly demanding that the fan explain the show and his or her attraction to it. The culmination of this process, when a fan becomes an author, is a testament to how well Star Trek prepared its viewers for

this eventual role. (One of the best examples of this is The Physics of Star Trek by Lawrence M. Krauss, which proves that the transporter technology cannot work.) Taking a lesson from the genre of social science fiction, Roddenberry used a distributed worldview that is not always explained in the texts, building on the work of other writers, to make the setting for Star Trek.

The mesmerizing nature of the Star Trek universe initiates this process and speaks to the ultimate good of the show. Scarry writes that beauty can give us "opiated adjacency" (114), and it is the only thing that can do both: many things can knock us out of the center, and many things can make us feel pleasure. Only beauty can make us feel pleasure through the act of being knocked out of the center:

> [I]t permits us to experience extreme pleasure, thereby creating a sense that it is our own adjacency that is pleasure-bearing. ... It is clear that an ethical fairness which requires 'a symmetry of everyone's relation' will be greatly assisted by an aesthetic fairness that creates in all participants a state of delight in their own lateralness (114, emphases in original).

Viewers faced with the beauty of the well-formed setting must confront their own power to maintain beauty when they find it or to establish where it is lacking. The world they live in is not the best place to be--and they are held in a pleasurable field of a world that could be better. The beauty of the Star Trek setting is the way in which it uses sociological, psychological, and anthropological lenses to present the world. The world it presents is less interesting than the ethic of understanding through multiple perspectives--and its use of new media and navigation to provide a ground for these investigations to take place. Viewers who come down from this pleasure then seek to mix their sense of the world with this fairness and beauty.

The cultural resistance of fan fiction has wider application than the appreciation of beauty, however. The fact that an individual responds and reacts

to mass media does not necessarily mean that the media have created an effective space for cultural resistance. In fact, being caught up with media--endlessly rehashing the assumptions and paradigms embedded in the content they provide--would seem to be anything but a situation of freedom. A central concern of this dissertation is the easing of the rift in cultural studies caused by the Frankfurt School's condemnation of mass culture, and the words of Max Horkheimer and Theodor Adorno must be ringing in the ears of many of their acolytes by now.

Although it seems provocative to think that Star Trek encourages the creation of new texts, both the conceptual texts Fiskee says viewers use to interpret the world and the literal fan texts Trekies create based on the ideas presented to them by the program, Horkheimer and Adorno seem to think that this is simply a function of mass culture working properly. The fact that Star Trek did not succeed commercially simply indicates that the audience it is marketed to is not as viable of other large-audience shows; the resulting commercial culture that rises up on the outside of the mass media channels is a correction of the market. The market could not sustain a direct and obvious product for the fans of Star Trek, but it was simple enough to adapt the program to less capital-intensive forms of distribution to fulfill the dictum that "none may escape."

Perhaps the stunning characteristic of fan culture, then, cannot be the extent to which it allows fans to "talk back" to the mass culture that pervades their consciousness because this would indicate that the culture dominates them even after they are done regarding it: if this is the case, workers are dominated in the workplace, they are dominated in their entertainment, and they are dominated when they are finished being entertained, to reformulate Horkheimer and Adorno. However, it might be best to think of creation of fan culture as an

activity that takes the individual away from the market. It is true indeed that a fan must immerse himself or herself in the fictional world portrayed by mass media before he or she can creatively respond to it. However, this type of immersion is not in the sense of losing oneself as much as it is an attempt to research the rules and conventions of the art form. One is not duped in the investigation; one consciously enters into the hallucination in order to become a producer, not to download a worldview.

What happens next, however, is no longer under the constraints of the market. In creating and distributing one's own texts and in enjoying the texts of others, one turns away from the television set. This denial of mass media is the most important aspect of fan fiction. It is not that fans mimic the roles and situations provided for them by media outlets; it is that they adapt these roles and situations for their own entertainment. The many hours fans spend creating their own texts, and the enjoyment they receive when others reply with additional art, are hours the individuals are free from the domination of the workplace and mass culture. With the television off or droning on as background noise, the fan-creator inhabits a space provided by the cultural resistance of social science fiction.

The economic power of this independent production can no longer be denied. In his study Free Culture, Lawrence Lessig points out that the war over copyright at the end of the twentieth century cannot strictly be attributed to profits since less than one percent of copyrighted works have anything to do with the culture industry's profits. The effort to extend the length of copyright protection is not, Lessig suggests, to maintain the profitability of a few profitable works; he backs up this claim by pointing out that the provision of allowing works to fall out of copyright if the owner fails to reregister them was changed. The age in which all works are copyrighted automatically and for periods much

longer than was ever imagined has been occasioned by the sort of activity developed by Star Trek fans. Lessig makes a convincing case that what the culture industry fears is not losing profit, even though this is the generally asserted reason. What the culture industry is afraid of is that, should there be a wide range of copyright-free media, individuals would no longer be interested in the latest and greatest productions and will simply stay home. Consumers would be so busy repurposing old media, mixing their own shows and creating parodies of what they see, that they would forget to turn on the television. Certainly, people who make their own media cannot on one level compete with multimillion-dollar productions of the culture industry, but in what way can the culture industry compete with the free entertainment of one's friends who make socially relevant and personal media? The culture industry is motivated to press for changes in copyright legislation not by the fear of lost revenue from pirated media but by the fear of lost revenue from individuals who get together on Friday night to pop their own popcorn and entertain themselves, failing to use petroleum-powered vehicles to travel to air-conditioned rooms to pay more than one-fortieth of a week's wages. The money the culture industry will lose from ticket sales and mark-ups on candy is tremendous if the twentieth-century's media become so much stock footage for consumers.

It is not as if Star Trek fans were the first to use art to entertain themselves; after all, Jane Austen's characters entertain themselves by producing their own plays. The work of art in the age of mass culture fails to maintain the attention of consumers: in a society saturated by culture designed by experts and distributed on the mass market, individuals lose faith that they can entertain themselves. Star Trek fandom is an example of how individuals step away from mass culture and use their own creativity, albeit to a limited extent, but Star Trek was not the first to do so. Sherlock Holmes enthusiasts

form the Baker Street Irregulars in 1934 (Isaac Asimov joins in 1973). Hugo Gernsback, as pointed out in the introduction, started the Science Fiction League in 1934 that encourages fans to develop a deeper level of participation. The idea of member-sponsored clubs and fan organizations culminates in the first science-fiction convention in 1939. Although Star Trek does not invent the idea of a fan community, it is successful in returning the consumer's attention to this form of homegrown entertainment that is the true mark of cultural resistance.

Star Trek and/as New Media Ethnography

It is not enough, however, to suggest that the cultural resistance offered by Star Trek is found in its ability to generate fan fiction. Is there something exceptional about the texts a viewer makes from Star Trek as opposed to more standard television shows? One way to consider the texts produced from Star Trek as transgressive is to think of the relationship to new media they provides for their viewers. The Enterprise is a flying contradiction. It carries equipment that can transform individuals into patterns, and yet it fights to maintain the physical integrity of individuals. It carries equipment to enhance the perception and intelligence of its crew, and yet its crew is often threatened by the inappropriate use of that equipment. These contradictions serve an important function in the original Star Trek episodes, and many of the episodes focus their plots on resolving them. With the work of N. Katherine Hayles, it is possible to suggest that the reason for these contradictions is the encroachment of new media on humanistic notions of the subject, and the resolution of the contradictions serves to help the viewers find a place for themselves in a posthuman future. The best place to see these contradictions in action is while observing the crew in its ethnographic function, using the new media referencing and analyzing tools as well as the transporter technology to accomplish its

mission to supply, support, and extend the Federation's interests. The ethnographic tasks that the crew undertakes--evaluating societies, classifying life forms, and understanding phenomena--are adventures that serve as an allegory for the knowing subject at the dawn of new media. The promise of the new media revolution is examined in a series of episodes where the crew's use of the Enterprise as an ethnographic tool is dramatized for the audience.

One common complication involves the transporter system. an enabler of the ethnographic function. The crew depends upon the transporter to perform its functions quickly and to provide an escape to safety when the subjects of that ethnography become unfriendly. In this way, the Enterprise is a descendent of Norbert Wiener's theory of cybernetics. The transporter technology of the ship is predicted in Wiener's popular 1950 book on cybernetics, The Human Use of Human Beings. He suggests that human beings are nothing but patterns of information, and that information can be transmitted from point to point. This system seems to disassociate information from the matter that contains it, yet the crew's experience often is the abiding materiality of information--the necessary grounding of the self in the body.

As noted by Hayles in her book How We Became Posthuman, the fantasy that a human being is a pattern of information separate from matter was an important but abandoned premise of the first wave of cybernetics. She points to Wiener's anxiety about this observation, noting how he seeks to maintain the humanist subject with definite boundaries and an essential self even while he writes about its disintegration. The idea that a human being can be analyzed by a computer, transformed into a data stream, and then rematerialized is a fantasy Wiener promotes as part of his vision for the future of human beings--a future where the human mind is freed from everyday, repetitive tasks and only

has to occupy itself with higher-order tasks. This anxiety is worked out in Star Trek though many crises of identity.

The first season of Star Trek is filled with anxiety about the identity of characters. Early on, the crew is faced by many impersonators--creatures who take on a different outward pattern to cloak their appearance. In "Man Trap," each person who encounters the Salt Vampire sees what he or she wants to see. This creature "reads" the information about the victim's desire and incorporates it into the pattern that makes up its body. In "What Are Little Girls Made Of?", an android duplicate of Kirk attempts to take over the Enterprise. In "The Enemy Within," during a routine expedition a duplicate Kirk created in the transporter seeks to retain its own life. In "The Conscience of the King," the crew encounters a eugenicist on the lam, posing as an actor. This early anxiety about identification is similar to Wiener's worries about the power of cybernetics. In each case, the crew is faced with a challenge that they must resolve in order to identify the correct nature of a being.

What is interesting about these episodes, however, is that their plots are resolved without recourse to a notion of a singular, correct identity. The evil and good Kirks, for instance, become weak because they cannot live separately; the realization for the viewer of this episode is that the individual is a set of component parts and not a unified subject. (That this trope is important to Star Trek is testified to by the fact that it is played out consistently throughout all corners of the Trek franchise; each producer in turn has felt that this is one of the primary duties of the series.) At the end of the episode, the crew does not even consider the fact that transporter technology is a dangerous tool; instead, Kirk takes a leap of faith that the same technology that split him apart can bring his pieces back together again. In "What Are Little Girls Made Of," Kirk thinks quickly as he is being duplicated, creating false memories that reveal to Spock

that he is a facsimile. The threat of the imposter is easily neutralized, then, by proper authentication protocols. It is not that the duplication of individuals is the menace to be deplored in this plot; instead, the plot promotes the individual's responsibility to know how to authenticate his or her companions and for the companions to be ready to create means for authentication.

This is taken up later in the season with "A Taste of Armageddon," when Scottie easily uses the analytical tools of the Enterprise to determine that a voice duplicator is in fact creating orders that sound like they are coming from Kirk. It is not as if a red light starts flashing when the false voice comes through; it is Scottie's ethnographic sense of who Kirk is that causes him to consult the computer. Scottie, like other members of the crew, have become accustomed to dealing with each other on a variety of signals (transporter signatures, life sign readings, communicator and intercom conversations, and so on), and this variety of perspectives turns the knowledge of a stable entity into a collection of understandable parts. While this might seem to destroy the sovereignty of the self, it in fact replaces the illusion of the self as a unified persona with the veneration of the self as a series of systems, each with its unique and distinctive features. While the eyes might be tricked in the world of Star Trek, it is possible to verify one's conclusions because one knows how to back up one's assertions with a variety of evidence that comes from different perspectives.

Star Trek readily admits the difficulties and disadvantages of the construction of the human subject as a collection of interacting information systems. It avoids agonizing over the new state of affairs, however, unlike mass-culture science fiction. In fact, like Donna Haraway, it is most concerned with how to maintain the values that matter after the transformation to the new regime. Episodes resolve themselves with practical lessons on how individuals and organizations can protect themselves in the new state of affairs. This ethic of

survival in a technological age predicated on the collective may explain why Star Trek generates such extensive fan fiction while other shows, such as television programs by Irwin Allen (Voyage to the Bottom of the Sea in 1960 and Lost in Space from 1965 to 1968), generate none.

The second complication that appears regularly in the first season develops as the crew attempts to conduct its ethnography with the aid of adaptable recorders and transmitters. As the crew assembles information and tries to integrate it with the information that is already known, it experiences the benefit of group hypertext: the ability to join the specialties and unique experiences of individuals in a collaborative environment. This collegial atmosphere would seem to make the crew's work easier, and it does benefit the ethnographic mission. Several plots of the series, however, demonstrate that this open hypertext system has a severe flaw: it presumes the disinterested, good-faith work of all participants. As long as those involved are working in a dispassionate, professional manner, the system works perfectly. The system falls apart, however, when personal interest is thrown into the mix.

Vannevar Bush is often named as the progenitor of the modern concept of hypertext. Bush's dream of the Memex is detailed in his 1945 articles in The Atlantic and Life magazine. He notes that scientific progress is hampered by the current state of recording and distributing information:

> [P]ublication has been extended far beyond our present ability to make real use of the record. The summation of human experience is being expanded at a prodigious rate, and the means we use for threading through the consequent maze to the momentarily important item is the same as was used in the days of square-rigged ships.

Bush's Memex is a desktop computer before its time. He suggests a system of indexable microfilm be incorporated into the knowledge worker's desk. This system not only allows for the rapid access of information and the sharing

of information between individuals, but Bush also suggests that annotative "trails" need to be incorporated into the device so that a person working on a project can review the marks he or she has left in the archive.

J. C. R. Licklider brings this vision of collaborative text to a new height in the 1960s in his paper "Man-Computer Symbiosis." Licklider extends Bush's plan for group work, creating a system that sounds like the one used by the Federation fleet.

> It seems reasonable to envision, for a time 10 or 15 years hence, a "thinking center" that will incorporate the functions of present-day libraries together with anticipated advances in information storage and retrieval and the symbiotic functions suggested earlier in this paper. The picture readily enlarges itself into a network of such centers, connected to one another by wide-band communication lines and to individual users by leased-wire services.

Two years after Licklider wrote these words, President Eisenhower would hire him to head the Advanced Research Projects Agency and lead the development of ARPANET, a forerunner to the worldwide web. In 1965, immediately before the debut of Star Trek, Theodore Nelson coined the word "hypertext" to refer to information that could not be represented on paper; a combination of words, images, and other media that can only exist digitally. Since this system could not output its content to any known medium, he hypothesized a home for this material and named it Xanadu. Xanadu would link together the work of researchers around the world and bring Bush's dream of a reference, retrieval, and recording system to a reality. Nelson modifies this continuation of the work of Bush and Licklider in his evocation of the dreamland made famous by Coleridge's poem "Kubla Khan."

The Enterprise thus is born in the midst of this dream of an interconnected society where variable multimedia reference material serves as a medium for the collective debate and investigation of a team of ethnographers.

From its start in "Man Trap," Star Trek depicts a Memex-like system at the service of the crew. On the approach to M-113, the record of the outpost is reviewed on the bridge. Images, text, and voice from the Federation database are incorporated into a customized presentation for the crew. "The Conscience of the King" also is highly dependent on this information. Since Kirk in this episode has not told anyone what he suspects, Spock uses the retrieval and comparison features of the ship's computer to uncover the correlation between Karridian and Kodos before he confronts Kirk. Later, by tracing the path of the acting troupe against the deaths of the witnesses to Kodos's crimes, the crew learns of a sinister plot to save Kodos. In addition to these more spectacular examples are the mundane examples of group hypertext. Each episode is peppered by log entries, where crewmembers contribute to the group hypertext. The crew regularly consults the records left by other members of the Federation, and information that is not represented in the database--like a record of Khan's voyage--is an anomaly.

As in the case of transporter technology, Star Trek does not moralize for or against this capability of the Enterprise, preferring instead to show viewers how they can adapt to working in this new environment--and protect themselves from abuses of the system. In "Court Martial," the young captain, only five months old in the eyes of the viewers, is accused of causing the death of one of his crew. What's worse is that evidence from the ship's computer--the open hypertext--clearly shows Kirk making a mistake. Kirk denies the charge, and his hearing is as much a vindication of his character as it is a lesson in how not to be destroyed by new media. Spock proves that the records were altered, and Kirk uses the ethnographic tools of the ship to find the crewmember that was supposedly killed by amplifying his heartbeat.

Kirk, having been nearly destroyed by the Memex, does not lash out at the machine. His lawyer makes a plea for the outdated codex form, but the bound pages of the law do not prove Kirk's case in the end. Kirk devises a plan to find the missing crewmember--a plan from which his lawyer excuses himself. Kirk empties the ship of crew, leaving only the tribunal and the transporter crew aboard. Piping the ship's audio sensors to the bridge, they are able to hear the heartbeats of the crewmembers present, a cacophony of rhythm. Holding a microphone to the chest of each, the input is modified by the computer to mask out the sounds of the authorized personnel. After blocking out the heartbeats of all people known to be aboard, one heartbeat remains--that of the missing crew member.

It would have been easy to revert to a cry for a lost humanism in this episode; being betrayed by his ship, Kirk could have been excused for making an appeal to his essential self as a human. This would have been satisfying to the viewer; by denouncing the machine and reaffirming objective reality, the plot could have been constructed in a way that reinscribed the boundary between the human and the augmented interface. This catharsis is thoroughly rejected--not only is a different ending promoted where Kirk regains mastery of the system that creates him, but also the lawyer who promoted the idea of the essential nature of humanity as separate from the machine is not allowed to witness the end. Instead, the plot promotes the communion with the cybernetic ship. Kirk lashes back with his cyborg self. Recognizing that the human is not solid but a collection of porous surfaces through which information passes, Kirk simply chooses to gain mastery over the interface.

The prescience of these episodes is uncanny. It is a moment like this where N. Katherine Hayles would remind us that we have always been posthuman. Kirk, as a human, reflects the analogy Hayles promotes between the

autopoiesis in biology and the autopoietic nature of second-wave cybernetics. An autopoietic organism constructs in its imagination a representation of its interactions with the outside world. These interactions are not necessarily an objective reality imported wholesale into the mind, since organs have ranges of information they are capable of processing. The members of the crew learn that they are only as good as the information coming to them; they seek to maintain their ability to filter out inappropriate information and keep the channels of communication filled with useful knowledge. Since this project is a group responsibility, the viewer is granted a vision of how an organism--the collectivity of the Enterprise--fights to create the reality that will help it accomplish its goals and maintain the contact it needs with its environment.

At first glance, it might seem as if this ship always in the process of being made is not a positive image to purvey. Certainly, Ilsa Bick suggests as much in her essay about Star Trek that compares the series to other fantasies of adolescence. More literary forms of growing-up stories, like the Peter Pan or the Oz myths, do beneficial cultural work because they dramatize the subject in a process of maturation, Bick writes, and focus on change and the search for self. When these maturing subjects return home, it is only to find that they are no longer the same. In Star Trek, conversely, the crew returns to "Mother Enterprise" to be comforted in civilization (46); with this analysis of gender, Bick sees this situation as debilitating to the psyche of the crew; in their longing for home, they pine for a pre-Oedipal relationship to the world, a space that is free from the law of the father and contains all possibilities. The "mother" ship provides them with this space, so they never mature: they are unable to negotiate sexual relationships and are developmentally arrested; what is more, none of the crew's encounters with the unknown changes them in any way, since they have not been initiated into the realm of language.

The pre-Oedipal space described by Bick is similar to the self-perpetuating world that Hayles values. While negotiating the Oedipal complex is a central feature of psychoanalytic development, it is possible to interpret cultural resistance as an intentional failure to negotiate Oedipal strife. A first-wave cyberneticist would suggest only that cybernetic tools must be used to augment the humanity of the living subject; this is Wiener's demand that cybernetics enhance the human functions of the mind and automate the rude calculations and rote tasks that hinder the mind from expressing its full freedom. This supposition, according to Hayles, failed to maintain the essential nature of humanity, no matter how much Wiener tried. Wiener's science promoted the human as a collection of senses, a series of interfaces, with a permeable boundary through which information passes. Once this paradigm was established, it was no short work to disassemble the human into competing systems and suggest that one interface is no better and no worse than another is. It is not a question whether cybernetic devices should be used; it is a matter of mastering the cybernetic interface. Can the series be employing this pre-Oedipal setting intentionally, as a means for cultural resistance? Once invested in the world of language, the subject is under the strictures of ideology; it must follow rules and withhold its impulses. The crew, in this environment that is continually renewed, is open to all possibilities, like the child who has not yet been torn from the maternal order.

The viewers know that they are not part of this world, they know that the damage done to them or their equipment can sometimes be repaired, but there will always be scars and scrapes. The regenerative nature of the Enterprise sets it apart from the world of constraints and necessity, and in each episode--or in each fanzine story--the Enterprise is ready for whatever sociological challenge might come its way. The viewers of the series are treated to an ethic of

preparedness, of openness to difference and wonder, because the ship's environment is something they themselves help to construct. The viewers, like the crew, hold together the series with their knowledge of science and their performance of the show's conventions.

These examples show how Star Trek offers an important space for cultural resistance. While it is easy to promote a vision of the "progress of technology" causing a loss of humanity, such a path is not inevitable nor is it without human agency. As noted by Haraway, it is pointless to avoid the path to the cyborg self; such changes are likely and cannot be thwarted by individuals. The task, she writes, is to "survive in the diaspora" (170). Decades before Haraway was writing, Star Trek promotes a similar vision. The series refuses to promote a polar opposite between human and machine, between the essential self and the augmentation. Instead, it suggests that human beings are nothing but entities connected to their environment, and that when these connections are made by computer components they are no more and no less reliable than when they are made by flesh. The danger of the polar opposite is that if one believes that everything made by cybernetics is fallible, then the work of the human mind seems to carry the privilege of infallibility. In collapsing this binary, the series demonstrates how individuals can find a place for themselves as responsible citizens who can maintain their identities in the posthuman world.

Chapter 5. 2001 and the New Wave: I Have an Omniscient Narrator, so I Must Scream

The social function of science fiction in the public sphere cannot be better illustrated than a movie about the origin of human violence being screened at the United Nations headquarters at the request of the secretary general. As 2001 played on, Arthur C. Clarke, the science fiction author who is one of the authors of the screenplay, muses:

> This, I suddenly realized, is where all the trouble started---and this very building is where we are trying to stop it. Simultaneously, I was struck by the astonishing parallel between the shape of the monolith and the UN Headquarters itself; there seemed something quite uncanny about the coincidence. If it is one …" (Lost Worlds, 51, emphasis in original).

With the film, Clarke, who as a scientist had promoted the innovation of a communications network in a geostationary orbit, shows a sinister side of the same concept: an international array of nuclear weapons. When the film first travels from Earth to the space station, the inclusion of satellites along the way (which the viewer can learn from the source materials are nuclear bombs) speak to those despicable and yet definably human traits of violence and aggression.

One way in which the film opens up a space for cultural resistance is in its denial of the supremacy of the technological establishment. The story of the film, told quickly, is that tool-making humans are about to destroy themselves when signs of a greater intelligence interrupt them. An emblem of their society is the Odyssey, the spaceship they quickly assemble to go to Jupiter, which contains the murderous supercomputer HAL 9000. This computer is the height of rational

intelligence, and it kills most of the crew because it has been given faulty directions. This flawed tool brings one crew member, Bowman, to an interstellar portal. Bowman travels to another dimension that his (and the viewer's) feeble intelligence is unable to comprehend. Instead of being overly proud of its tools and machines, then, the film suggests that we should be more circumspect in our praise of our accomplishments. The rational, tool-using human may know how to destroy things and can travel great distances, but these abilities fail in the face of greater--and more interesting--problems of existence and perception.

Stanley Kubrick did not need 2001 to tell this story, however, and he certainly did not need to go through all the trouble of making it to tell that particular story in the way that he chooses to tell it. The lesson of 2001 is as much about science-fiction storytelling as it is about the story: science fiction cannot be expository images projected on the wall. The idea that art is a surrogate for experience that one can download unquestioningly into one's consciousness is a relic of another era. Kubrick, instead, creates a work of art that must be questioned and, in many cases, meaning does not come from an individual's singular experience of the film but from viewers' discussions with other viewers and interaction with a variety of source materials. In some ways, 2001 is an allegory that offers an explanation of itself, the parts of the film commenting on each other so that a viewer can, upon reflection, make parallels between the sections, debate and reconsider, and bring the parts into balance.

In other ways, the film can never explain itself, especially after Kubrick made a series of substantial cuts immediately before the film's release. Without the explanatory material that Kubrick discarded, some of the most basic elements of the film are incomprehensible; viewers come to a contingent understanding based on an agreement with his or her companions, some of whom have heard explanations from other viewers or media accounts and others

who may have read Clarke's novelization of the film or are familiar with his other work. As indicated in the Introduction, such criticisms of the genre of social science fiction are indicative of the new wave. Authors such as Harlan Ellison tired of the stoic and even enthusiastic visions of the future that did not condemn the growing military-industrial establishment's use of technology to assert its aims, and Kubrick joins the voices demanding that art be used to critique a culture of scientific positivism.

Despite its apparent allegiance to the new wave, 2001 is exemplary of social science fiction in some respects. First, in its creation it employs a group creative consciousness: the authors are involved in an act of collective hallucination that demonstrates science fiction's ability to create a space for cultural resistance and challenge accepted notions of what is accepted knowledge. Indeed, the information available about the production of the film provides ample documentation of how such a process operates. Second, the film attempts to create a change in the audience's consciousness: it is disjunctive in its presentation to the audience, attempting to hail the viewer as a rational, decision-making subject instead of a passive receptor of reality by using an unusual second-person narration from the point of view of an advanced alien consciousness. In this way, Kubrick attempts to revise the stable narration that is a hallmark of social science fiction. At first look, it seems as if social science fiction has survived the challenge of Ellison and other proponents of the new wave. Unfortunately, the overwhelming spectacle of the film destroys the important aspect of the genre: its participation. 2001 is an effective and telling critique of social science fiction, but because it is not a dialogue of equals it fails to provide for what could have been the next generation of social science fiction. In earlier examples of social science fiction, one could respond to a story by

writing another story; such a response is not possible with a spectacle as overwhelming as Kubrick's 2001.

Clarke's Vision of Science Fiction

In order to write, produce and direct the movie, filmmaker Stanley Kubrick assembles a cadre of experts--some experts in special effects, others in the contents of the film--and spends four years in the midst of this collectivity. The most obvious of these collaborators is Arthur C. Clarke. On 7 March 1964, Clarke writes to his international agent David Higham to say that a representative of Columbia Pictures has contacted him on behalf of Kubrick to say that Kubrick "is a great fan of mine." A few weeks later, Clarke writes that he has been hired at a salary of $2,000 a week to adapt six of his short stories (only one, "The Sentinel," was used) into a film that will be released at the end of 1966; the total for the job, including fees, will be $100,000. Although Clarke was living in Sri Lanka at the time, he would stay in the United States for the duration of the project and return to Sri Lanka when possible. He writes on 23 June that he has finally arranged the contracts but that he had been writing about 1,000 words a day for a month. Based on the disparity between the novelization and the final version of the film, it is interesting that Clarke reports at the start of the project that Kubrick asks Clarke to write the novel first; they would then write a screenplay based on the novel.[42]

Clarke is an interesting, if not obvious, choice for writer of the project. Science fiction by the 1960s has become an international phenomenon, to be sure, partly thanks to the efforts of the United States Information Agency to use science fiction as part of its program to disseminate American culture. The USIA would arrange for translations of works that it deemed to promote "an

understanding of American principles, achievements, policies, aspirations, and culture" by purchasing the translation rights from the owner for a "token" fee and then assisting local publishers in printing the books in the host countries (Hopman). One of the first such editions for Clarke was a translation of his nonfiction work The Exploration of Space, arranged in 1959 (Higham); editions are produced in Burmese and Polish, among other languages. Later that year, the USIA purchases the rights to Arabic, Persian, Urdu, Bengali and Indonesian rights for a portion of Clarke's The Making of a Moon, a nonfiction book about the American satellite program. In addition to translations, Clarke's work is used for "Ladder" editions, which are books published in simplified English and with a vocabulary in the back; these works aim to help speakers of other languages gain literacy in English. Clarke's nonfiction The Voice Across the Sea is published in a Ladder edition in 1961 (Korn).

Thanks to this Cold War assistance and the efforts of his London literary agency, Clarke has a well-established international presence even before Kubrick contacts him. According to the archives of the David Higham Literary Agency, in 1958 Clarke earns royalties for serial rights and book editions of his science fiction and nonfiction from Australia, Canada, China, Denmark, England, France, Germany, Ireland, Italy, the Netherlands, Norway, South Africa, and Sweden. By 1963, he had added Belgium. Sri Lanka, Czechoslovakia, Japan, New Zealand, and Poland, as well as Spanish editions for South America and French editions for Africa and Indo-China. Kubrick, clearly intending to make an international splash with the movie, looks to Clarke to help distribute the film to as many countries as possible.

Another reason to choose Clarke would be his experience in writing science fiction stories. Like John Campbell, Isaac Asimov, and Robert Heinlein, Clarke comes from a science background, and his plan for international

communications via human-made satellites is credited as one of the first. Clarke begins publishing, like the others, in the 1930s, writing a dozen-odd stories in the years leading up to World War 2. Similar to the others, his first novels, anthologies of his stories, and full-length nonfiction work begins to appear in the 1950s: his first novel, Prelude to Space, is published in 1951; he completes a trilogy in 1955 that includes Islands in the Sky (1952), Earthlight (1955), and Sands of Mars (1951). Childhood's End, still a well-known work, is published in 1953. Despite these similarities in their careers, there are some marked differences. One relates to Clarke's hobby of scuba diving; thus, his nonfiction work includes a trilogy of underwater photography books: The Coast of Coral (1956), Reefs of Taprobane (1957), and The Treasure of the Great Reef (1964) and a series of fictionalized underwater adventure novels, starting with Boy Beneath the Sea (1958). Another difference is that Clarke is one of the first science-fiction authors to excite the mainstream with his work. A Fall of Moondust (1961), Clarke's novel about a disaster that befalls a group of tourists on the Moon, seems to have been created with an eye to television or film production, with its tightly chronological plot, its use of stock characterization, and the limited scope of its setting (allowing for inexpensive sets if it should be optioned for film or television production).

Moondust becomes a Book-of-the-Month Club selection and has the honor of being the first science-fiction novel to be condensed for Reader's Digest Condensed Books. Like other works of science fiction, Clarke constructs a narrative situation that allows him to explicate to the reader the current research into the Moon. The precious cargo on the voyage--a group of tourists being guided by "old hands"--allows for information to be disseminated; the tourists and the reader share a curiosity about the conditions on the Moon.

Clarke slides in his own expertise about communications as the narrative comes to a point where the tourist ship must communicate with "Traffic Control":

> High above the surface of the Moon, from an antenna [that], curiously enough, was aimed directly at the face of the Earth, a radio pulse launched itself into space. In a sixth of a second it had flashed the fifty thousand kilometers to the relay satellite known as Lagrange II, directly in the line between the Moon and Earth. Another sixth of a second and the pulse had returned, much amplified, flooding Earthside North from pole to equator (20).

Thus, the enjoyable story with science fiction imagery includes a healthy dose of scientific information. The narrative wanders through the imaginary setting, allowing the reader to witness what the industrialized world might bring to "this strange and beautiful world" (23).

Choosing Clarke to write the novel for 2001 is a certain tradeoff. Clarke, as much as any other science fiction writer, knows how to create an engaging work of science fiction literature. In fact, his work is so engrossing that the reader is asked to surrender his or her consciousness to the experience of the novel. Unlike the fiction of Isaac Asimov or Robert Heinlein, where the reader encounters tensions within the work, the tension a reader feels in a Clarke novel is between the paucity of the reader's world and the exuberance of the world of the future. In Clarke's work, the reader is taken on a tour, much like a visitor to a museum exhibit or a World's Fair, of the excellence of a rationalized environment that employs the latest thinking from the technocratic establishment to assemble a mental playground of the future.

As the literary realists in the nineteenth century, Clarke includes research into technical fields--certainly into lunar science, physics, and communications, but also into group psychology and urban planning. In addition, Clarke's interest in diving is clear in the novel's concern with air; his description of a space suit being a "very lonely" place to die (79) and the threat of suffocation

to the tourists in the Moon buggy reflect Clarke's underwater experience and presage the heavy breathing and anxiety about life support in 2001. As in a realist novel, the research is nearly invisible; the seams between Clarke's imaginary structures of the future and the technical papers he used as background are only slightly more apparent today, where a few differences between the actual experience of Moon exploration conflict with what was hypothesized in 1961, but at the time of publication they would probably have been barely visible. A Fall of Moondust, then, is typical of mainstream science fiction in that it hails the reader as the privileged citizen of a technocratic establishment; unlike the writers of social science fiction that hail their readers as fellow writers, Clarke purveys a sense of entitlement in an inevitable future.

Clarke, unlike the writers of social science fiction, was not trying to inspire social critique, but instead instill a sense of wonder in the next generation of scientists. In his acceptance speech for the UNESCO Kalinga Award for the popularization of science at a presentation in New Delhi in September 1962, Clarke says that it is unfortunate that many scientists still look down on science fiction. He suggests that science fiction's role is "inspirational rather than educational," and points out that distinguished scientists trace their interest in the wonders of the universe to reading Verne or Welles: a survey would show "that science-fiction is a major factor in launching many youngsters on a scientific career" (Voices 162). This helps to explain that aspect of Clarke's fiction, the idea of creating imaginary worlds in which the readers can lose themselves.

Clarke also has a different sense of didacticism than the practitioners of social science fiction. Whereas a work of social science fiction seeks to initiate a process of scientific thinking in the reader by the collision of multiple consciousnesses and the dramatization of critical paradigms that fail to

comprehend the universe, Clarke's work seeks to impress upon the reader a sense of difference. In the Kalinga speech, Clarke says the power of science fiction is to encourage the "cosmic viewpoint," which is "the idea that Man may not be the highest form of life in the universe" (164). Ratcheting up a vision of the Victorian age's use of the novel to confront the reader with another person's consciousness, Clarke would like the reader of science fiction to encounter a cosmic consciousness and learn that he or she is not the center of the universe. There is no call here to expand the bounds of perception, and there is no idea that the current methods of science might be faulty. Instead the didactic attempt is to force the reader to listen to the narrator tell a story about difference.

At the end of his speech, Clarke turns his attention to the situation in India where he was speaking. In India, he says, science and suspicion are at odds, so that people will die from a snake's bite because the astrological signs did not support a cure. For Clarke, science fiction is not a mental exercise for the reader (as suggested by practitioners of social science fiction) but a cultural force, a pillar of society to oppose a primitive mindset. In making the transition from ignorance to civilization, Clarke suggests, we need a literature to help us to make the right decisions. Clarke concludes:

> Science, which after all is common sense raised to the nth degree, can tell us what to preserve and what to reject. Heed its voice--if not for your own sakes, then for the sake of the lovely, dark-eyed children of Asia and Africa, who are born in millions every year--and die in millions the next. Their only hope of a better future lies in science combined with wisdom and foresight. I shall be happy indeed if any writings of mine have helped toward this goal (166).

In the typewritten draft of the speech at the Ransom Center, Clarke capitalizes "Science," "Wisdom," and "Foresight," intending to give these ideas allegorical force. Clarke's personification of science as a voice of progress that

speaks to humanity betrays his vision of science fiction. It is this dream of science fiction as a cultural tool that will bear forward the course of civilization that helps to explain the popularity of Clarke's work with the agents of international forces. This popularity makes Clarke an obvious choice for Kubrick in trying to make a film; Clarke more than others carries an international reputation with readers of science fiction but also has an aesthetic sanctioned by international authorities. This aesthetic is found not only in his public statements, but also in the authoritative narration and unified work. Even though it may have been this aesthetic that first attracted Kubrick to Clarke, in the end, Kubrick will make a film that attempts to disrupt this aesthetic, hoping to push the genre of science fiction in a different direction that reflects the impact of the new wave on the works of social science fiction.

Collective Realism

Along with Clarke and his obvious expertise, Kubrick also hired a mime, Dan Richter. Using research and experts to inform fiction is nothing new; it is, after all, one of the practices of Realism in the novel, to conduct research and allow a variety of discourses to rise out of the chapters. Collectivity, while not common in the novel, is also not a new practice; broadcast media and film had been using collective editorial teams to produce culture for forty years. The difference here is that the collectivity is used to test a new reality; instead of trying to decide whether the creation is a plausible recollection of reality, the workers must predict a plausible course for the future. This use of the imagination allows the

workers to build on the present, like the best of science fiction: they use the imagination to extrapolate the future from existing condition.

A closer examination of this use of the imagination helps to explain how science fiction opens a space for cultural resistance and serves as a means to critique existing social conditions as well as how it increases the ability of its readers/viewers to consider alternative realities. D. W. Winnicott explains the generation of an individual's imagination as the child's imagination in Playing and Reality. In order to account for children's play, which reaches between the inner self of the mind and the world of outside spaces and toys, Winnicott asks us to consider that creativity in art or life occurs in a "potential space" (41) between fantasy and reality--a space that originates in pre-Oedipal imaginations of the mother. This area is not the "inner psychic reality," but neither is it the world of physical objects. "It is outside the individual, but it is not the external world" (51). In this "potential space," a child assembles the perceptions of physical objects and puts them to the service of an inner personal reality. In play, a child acts--but this acting is not solely fantasy (dream or daydream) because it has an outer manifestation: the child manipulates objects (a toy screwdriver) and employs limitations from objective reality: the screwdriver is a connection to the machine shop and the hot radiator is the power plant. At the same time the child manipulates the physical world, however, the child knows it is not directly engaging reality. Instead, he or she is using both the inner reality and the physical world: the rules one learns and the experiences one gains from the world of physical objects are used to guide actions of the imagination, and the toys stand in for objects that the playing child cannot necessarily hold (or do not exist). The imagination develops in this intermediate space for playing, thinking, and creating.

The "potential space" of Winnicott can be used to explain how the artist takes unconscious impulses and transforms them into an artistic object. Artistic creation from a psychoanalytic point of view does not flow directly from the recesses of the mind to the canvas or typewriter. It is tempting to view artistic creation as a waking dream, a daydream, in which the artwork is created from the dream mechanisms that create the dream. Winnicott, however, allows for a sharp distinction between the empty, dead-end fantasies of everyday life and imagination that builds to creativity. In the "potential space," art is refined in an iterative process. Objects in the world or ideas of the imagination may initiate the creative process; either way, the artwork develops in a process analogous to child's play. After the original inspiration, an artist then develops the idea, but that process is not entirely free. An artist is guided by a sense of what is appropriate: experiences of other artwork, antagonism toward the current vogue, personal memories, further development of the imagination and thought based on the work of art's theme. The potential space is where the artwork "lives," but it also contains the rules that underlie how the artist will judge the artwork and how he or she will continue to develop it. Like a child, an artist must consider whether the fledgling work of art matches up with what is reasonable. A traditional artist must think of aesthetics--does this fit in with what I am trying to promote as an artist, does this fit in with what I know about the tradition of art?--and must also consider the audience---what does this do to excite the people who will receive it?

The need for collectivity in a speculative art like science fiction is clear when one realizes that the free-floating imagination does not simply control artistic creation. Inside the creative space, two other categories of thought guide the mind: the tools one would use to realize the creation and the similar experiences one has had to the work being created. The creative space can seem

to be liberatory, since it does not seem to be tied to immediate needs and required tasks, but this freedom is not freedom from the artist's worldview and preconceived notions. Artists use different techniques to break free of the constraining momentum of creative space; one way of distinguishing genres of art is by considering the genre's method for obtaining new rules or new experiences to augment the rules and tools of the creative space. Literary realists, for instance, gorge on related material--differing disciplinary perspectives from the social sciences that help them to create a portrait of the subject matter that breaks free from accepted or conventional assumptions about human character. This serves mainly to augment the experience sector of the creative space, leaving the tools and the rules sections in place. Then, when a creator enters the mood for creation, regarding his or her work of art and testing it against his or her imagination, what seems to be "new" is inexorably tied to the present situation.

Science fiction in the wake of John Campbell's transformation of the genre from weird tales and science fantasy into social science fiction represents such a shift. Science fantasy, using established traditions of the paranormal and utopian visions of the idealized world, valorized dreamlike visions that required the artist to enter into a dreamlike state. Campbell's success lies in encouraging writers to infuse fiction with scientific realism: what are the facts about the known universe, including the new facts drawn from the social sciences that had made Realism a successful project in the nineteenth century and, in addition, the actual facts from the hard sciences? Even though Realism had lost ground to literary Naturalism at the start of the twentieth century, the moment in which Campbell invented social science fiction and the film industry adopted the conventions for depicting its version of reality share a 1930s resurgence of Realism. Kubrick, inheriting both of these traditions, will find fault with how

each has developed and will attempt to return the genres to their attempts to revolutionize human consciousness.

Although Kubrick succeeds in some ways, the legacies of 2001 might lead one to question how successfully one can use the rules of a genre to break free of the genre. Pelle Ehn has noted how difficult it can be to transcend the past when truly trying to create something new; in his description of his work for the Utopia project he noted that the users were most likely to create computer systems that resembled the existing systems. The past, accepted ways of working have a tremendous hold on the present because of Winnicott's potential space: all creative thought is filtered through the creative space. Ehn found that he must create an environment that sharply broke from the present in immediate and shocking ways: he brought the workers and the designers into a nonproprietary space where neither was at home. Asking them about the tasks they needed to do, he stripped away the work process (and the constraints of the present mindset) and stuck to the idealized needs of the job. Then, using paper models, he built up a new reality based on the shared assumptions of designers and workers. In this collective hallucination, the rules and procedures were one step away from the constraints of existing machines and processes. They could then be tested and improved, systematic, slowly taking the design away from preconceived notions. Such a process is an iteration of the Winnicottian imagination. The creation is designed to manipulate the rules and tools available in the creative space, not the experience sector. By adapting the rules and the tools, new work is finally able to break forth.

Dan Richter, whom Kubrick hired to organize the apes for the Dawn of Man sequence, tells of a similar process in his story of working with Kubrick, Moonwatcher's Memoir. Richter recounts Kubrick's failures before Kubrick arrives at the project in 1966: he has earlier tried the typical ape stand-ins:

actors, stunt actors, dancers, and the less obvious choice of black teenagers. These having failed to meet Kubrick's vision, he turns to Richter because he is a mime: a person trained to develop character and act through movement. Under Kubrick's tutelage, Richter first enters into a typical Realist project to inform the experience sector of his creative space and to catch up with what Kubrick had already done. Richter goes to museum lectures, reads the work of naturalists, and views films like the National Geographic titles by Jane Goodall. With Clarke, he visits apes at the zoo.

It is at this time that Richter learns the scientific foundation of 2001 is in the work of naturalists: pointing to African Genesis (1961) by Robert Ardrey, Richter reminds his readers of the popular idea that the human race began when it found a place for violence and aggression. According to this theory, apes became human when they learned to kill. The Dawn of Man sequence, opening 2001 without language or narration, would have to demonstrate that two of the most despised human characteristics are at the same time the founding premises of the race. The generally accepted rule is that humans differ from apes due to their language or cognitive ability. The genesis of this ability is thought to be genetic, a part of evolution that led to an accident of intelligence, a capacity for speech and abstract reasoning. The idea that it is the discovery--or learning--of violence that generates the human race is a much more contentious hypothesis. The question becomes, then, how can this hypothesis be made real for an audience based on what the audience assumes it knows about apes and what a viewer expects to see when he or she sees an ape?

As the time for the shoot approaches, the team spends more and more time together, witnessing previous artwork together and beginning to form a collective hallucination. They read the outline of primate society and culture by George Schaller (The Year of the Gorilla) and Jane Goodall (used for structure of

society) and view more film, this time by Alan Root, a wildlife photographer who shoots the gorillas, about which George Schaller writes:

> Alan Root's film is in grainy color, but watching it there in the dark projection room with Stanley [Kubrick] I get an eerie feeling of closeness with the gorillas. Having read Schaller carefully I can put a lot of what I see into context (Richter 55).

The transformation is coming, as the collective creative space gathers the rules and experiences it needs to build up a play space for the new hypothesis. They decide to hire untrained men to play the apes and place a classified ad for "thin jockeys & thin males." After nearly ten months of work, the shooting begins in August 1967.

As has been seen, it is not that science fiction "breaks" from accepted reality; as demonstrated by Ehn, it is notoriously difficult to do so. What science fiction does do, however, is bend the creative reality slightly--in other words, engage in cultural resistance to create a cultural space where the artist can adjust the rules of the potential space to what the artist has in mind. For Winnicott, the power to generate illusion is key to this formulation, and this power develops directly from an infant's physical needs and its attempt to apprehend reality. Fantasy, then, is not a free play of hopes and desires, but it is an attempt to understand or predict reality. The primary scene for this generation is the pre-Oedipal mother-child dynamic that ends the child's feeling of omnipotence and establishes the infant's understanding of reality.

According to Winnicott, the infant's first fantasy is that it can create the breast used to feed it: "the infant perceives the breast only in so far as a breast could be created just there and then" (12). When it is hungry, the infant imagines the breast feeding it. The mother, anticipating the infant's needs, feeds the baby when it is feeling hungry, thus causing an omnipotent fantasy in the

infant: the infant imagined the breast feeding it, and it was fed by the breast. At first, the infant believes that its own imagination caused the breast to feed it. This hypothesis however is tested in the forthcoming months. The mother, having things to do, or desiring to establish a regular eating pattern, frustrates the feeling of omnipotence as she gradually fails to fulfill the infant's imagination of the breast. It is here that Winnicott suggests that the child forms a sense of identity: it learns the difference between itself and the rest of the world, and develops an understanding of reality as it learns that the mind does not control the things outside of the body. These are the rules of reality, which the child learns, but the child also learns that experience can help to uncover these rules, and that the imagination can be helpful in trying to predict objective reality.[43]

Clarke has documented this messy process of creation; in 1972, he publishes The Lost Worlds of 2001, which contains "The Sentinel," the short story Kubrick chooses from the original six as the basis for the screenplay, some of the treatments he wrote at the start of the film and the chapters that were abandoned or rewritten during the production of the film. This collection suggests how indebted Kubrick is to the collective use of the creative consciousness. Clarke's story, a first-person account of a scientist who finds a heavily guarded, non-natural object on the moon and destroys it, signaling to whoever left it that the inhabitants of Earth had reached a certain stage of development, was the kernel that Kubrick and Clarke pass around in their collective creative space. The Lost Worlds of 2001 documents some of the false turns that the work takes; for instance, originally the aliens appear in order to instruct the apes, instead of receiving instruction from the monolith. Even though both Clarke and Kubrick thought originally that this was the best way to proceed, after viewing the effort---importing the creation back into the creative

space as a text and thinking about how it would work---they decided that it no longer met their needs.

The ultimate version of Kubrick's disjointed film contrasts so radically with the carefully narrated vision of the comprehendible universe generally promulgated by Clarke that one must liken Kubrick's difficulty in producing the film to the difficulties medieval astronomers had in explaining the motion of the planets while maintaining a model of the universe with the Earth at the center. Certainly the model works relatively well, but the longer one scrutinizes it, the more refinements and exceptions one finds. Eventually, as described by Thomas Kuhn, the modifications to the model overwhelm the model's ability to explain the phenomena and the model crumbles, allowing a more effective paradigm to take hold. The analogy to the Earth-centered model of the universe is the omniscient narrator; the longer that Kubrick attempts to realize the revolutionary aspects of the documentary style and the disruptive potential of social science fiction, the more unstable the omniscient narrator becomes. Kubrick's Copernican revolution is the radical editing he engages in after reviewing the finished product and realizing that the work he made does not fit in with his vision of art.

Documentary from/of the Future

Judith Merril, in her autobiography, tells the story of seeing 2001 in the theater on April 1, 1968 in New York City. There are a lot of science fiction luminaries in the audience, since so many are living in New York. One of the complaints is that Kubrick has ruined Clarke's story. Many people "escaped" during the intermission, and people are anxious to leave during the final sequences; Merril

reports that she had to stand on her seat so that she could see the "star child" at the end.

> That movie taught the audience two things. It showed irrevocably that life on a space station was boring. And it changed the viewer's entire perspective about what is down and what is up (163).

2001's disruption of viewer expectations has been documented well in several areas: the counterpoint of music and the banal routine of space travel; the trivial effort at communication; the fact that the HAL 9000, a computer, is the only well developed character in the film. The accounts of audience members being disgruntled by the film are also well documented, and the critical response has been for critics to try to explain the deeper meaning that lies behind the surface of the movie. The reasons that the movie would provoke such a discussion, or why Kubrick would orchestrate a film that would require such a discussion, has been less studied. The best way to understand the film's disruption of the narrative conventions is to recognize how Kubrick both activates and denies the documentary conventions of film, think of what is "wrong" with typical narration, and finally consider the alternative to documentary narration that Kubrick presents in his use of an alien consciousness as a second-person narrator of the film.

The best place to start with understanding 2001's speculative potential is to consider the changes made to the film in the final edit. It is useful to think that Kubrick made these changes in order to disrupt the conventions of the filmed narrator in order to restore the film's speculative potential. After the film was made, he famously returned to the editing room and cut out many of the things that would have helped the film to "make sense." Most notably, he deleted the voiceover narration in the anthropological Moonwatcher sequence that opens

the film and the explanatory dialogues during the film that help viewers understand the background and science of the story (these are notably present in the form of narrations by Heywood Floyd in the sequel 2010 (1984), which did not involve Kubrick).

In so doing, Kubrick added pauses into the film. Something about typical narrative conventions seemed to irk Kubrick's impressions as a viewer of the film. Certainly, the film was building to a sequence that was supposed to transcend the limits of knowability; the metaphorical translation into images that the supposedly limited consciousness can comprehend when Bowman passes through the Monolith cannot by their very nature be negotiated by a human narrator. If the narrator were human, he or she would be hindered by the same limitations as the reader/viewer who needed the metaphoric explanation in the first place. It is a problem then of narrative unity: parts one, two, and three of the film cannot be narrated by a different entity than the fourth. This problem becomes clear at the very end of the production process, leaving Kubrick with no alternative but to transform the typical narrator of the documentary science fiction film into an outside narrator from a worldview that is outside the experience of both the characters in the film and the viewers of the film.

Traditionally speaking, the narrator is that persona who presents the characters of a drama and arranges the events into a plot to achieve catharsis. The function of a narrator thus is rhetorical: a narrator is the entity that negotiates the space between the viewer of a drama and the imaginary space where the drama unfolds.[44] The narrator is the consciousness that hails the viewer as a subject. The narrator is the "other person" that a reader encounters and learns to judge his or her perceptions and evaluations against: a difference in perception or evaluation signals the need to change worldview, a similarity in perception or worldview confirms the assumptions of a worldview. This other

person usually seeks to hail the viewer in friendly terms in order to remain unobtrusive. The narrator understands where the differences lie between the characters of the film and the viewers of the film; such a person then is in a doubly knowledgeable position: he or she is fully familiar with the worldviews of the characters and the readers.

The process of negotiating the difference in understanding is sometimes assisted by the presentation of characters who are neophytes. This is frequently the case in science fiction: Matt Dodson in Heinlein's Space Cadet and the other cadets learn the ropes and are a helpful in explaining the world to the reader. The narrator in this case will use the questions and misapprehensions of the "new guy" to help inform the readers. Even when this technique is not used, however, the narrator is still responsible for negotiating the difference. This function is evident in language or images that do not advance the plot but instead explain the processes, assumptions, or prejudices of the world the reader witnesses.

No matter how friendly this hailing is, however, it does have an unfortunate side effect: the promotion of a world that is capable of being represented by the conventions or assumptions about human environments. When a narrator hails a film viewer as a neophyte, which is often the case in science fiction, the viewer is expected to accept the transmission of an entire environment. The hailing function, the narrator, is a human with a higher position of understanding. It is this kind of narration that is the default in Clarke's novels. Clarke's narrator in The City and the Stars (1956), for instance, knows everything about Diaspar and helpfully explains to the reader what the reader needs to know as Alvin makes his progress to the edges of this universe. While this is somewhat understandable, when Alvin travels to Lys, the society outside the city that no one in the city has ever heard of, the narrator does not

stumble. Alvin may be confused or bewildered at developments in the narrative, but the narrator remains certain, explaining exactly what is happening to the reader.

This narrative privilege is carried over into the world of film. It requires that certain processes have taken place before the creation of the film: the world being represented in the film must have been previously apprehended. Its rules must have been derived, its unknowns made explicit, and its spaces mapped. In order for this form of the function to work, the narrator must break up the world into representative parts, parts that it can pass through the medium of the film and present to the reader. Because of the narrative function of film, only those things that can be transmitted are placed before the viewer. This is a curious difficulty for a science fiction film, since this genre is supposed to be about the unfolding of rules before rationality, the contemplation of the unknown (and the acceptance of the unknowable), and the uncertainty that arises when one leaves mapped, previously traveled space and branches out to map New Worlds.

Cinematic conventions of narration present an epistemological problem: the filmic narrator has no difficulty penetrating space. This problem of narrative is not new to cinema; there is a similar assumption behind a novelistic narrator. Narrators go wherever the action is. There is never a space that cannot be known. All spaces fall open to the film. This is particularly egregious in a science fiction film: such an assertion of the infallibility of consciousness is something that irks the writers of the new wave. The social science fiction after World War 2 is supposed to work on the principle of "what if." According to practitioners like Clarke, John Campbell, Isaac Asimov, and Robert Heinlein, the technique of science fiction should be akin to speculation. The presentation of a definite and knowable space as a representation of a hypothetical future does not create room for speculation. If the future is set, then speculation cannot happen. Science

fiction films other than 2001 use the tropes of realism, which leave the viewer with a sense of prediction. The presentation of a definitive filmic future paves a definite path from the present to the future.

It is not the supposed coercive nature of the hailing function then that is unsuitable; viewers are required to accept or reject the hail. The hailing works only when it remains unobtrusive and thus only reinforces preexisting beliefs, not enforcing new or undesirable beliefs. The difficulty with the hailing function of traditional narration--science fiction or otherwise--is that the differential between the viewer and narrator motivates the viewers to seek equilibrium with the narrator. Viewers aspire to become the narrator. If the narrator is the purveyor of finished, found fact--of a world that has already been comprehended--the viewers then want to be the possessors of this digested, segmented, and transmittable knowledge. This has not lead to the creation of a questioning audience; it does not provide for cultural resistance. Science fiction that depends on a rational, friendly narrator fails to promote an important virtue: the contemplation of the unknown.

The convention of the hailing narrator derives from the documentary explosion of the 1930s--coincidentally, the origin point of science fiction. John Grierson invents the term "documentary film" in 1926 (MacDougal 227). William Stott points to the use of the "objective outsider" in his explanation of the difference between the "statistical" method and the "life-study method" of social science in this period (153). Documentary told viewers the story through one of two narrative devices: the implicated insider--"I am here and I know the story that disrupts your worldview"--or the objective outsider--"Here are events that should disturb us as humans." The documentary mode in film or prose makes an overture to objectivity, but behind-the-scenes it edits and arranges visions of reality in order to communicate not just the subject matter, but also a point of

view. Customs, events, gestures, and artifacts are selected and shown to suit an overall didactic purpose. In a typical documentary, the narrator presents the space where the action is taking place as knowable, even when cultures cannot be entered: David MacDougal points out how the typical voiceover narration (he uses Margaret Mead as an example) is "didactic" (223), where Mead's voice is a constant guide that tells the viewer what to look at and what to make of the visual evidence; "by asking viewers to find what they are told they will find," MacDougal writes, "[the narration] may also indicate an intellectual predisposition of the research itself" (224). The narrator probes all spaces without difficulty and all misunderstanding dissolves before the narrator's explanation of what is captured by the camera's omnivorous eye.

In the documentary mode--in film and in naturalistic fiction--the author tends to hide the background work. The author's study of background material and his or her attempt to establish the characteristics of the test case--the subjects and averages that tell the narrator what are the appropriate subjects for the life study--are missing from the typical documentary. The process of selecting the proper subjects, and discarding the elements that seem to be inappropriate, is missing from the finished documentary. Instead of presenting a process of quantification and evaluation, most documentaries present the life study subject as the unquestionable "best case" or "representative sample" and do not allow for a reverse analysis to take place; a viewer is not given the means to study the narrator's assumptions and evaluations. Although there are exceptions for autobiographical or personal voices, by the 1930s the documentary tends to present finished and complete forms in a definitive Cartesian space.

Documentary expression is coincidentally the aesthetic behind early science fiction. The science part of science fiction can be seen as an analogy to the statistical social scientist: the volumes of scientific knowledge that lie behind the

surface of a science fiction film from this period. The reams of calculations and layered speculations behind a space station or a moon launch, long before anything had been attempted in real life, would not serve to excite the popular imagination. For this reason, the life-study method found a home in the science fiction film. In a science fiction novel the content is not much different than the documentary that Stott describes: an author selects customs, events, gestures, and artifacts that will allow the viewer to consider how a different life will be lived; the main difference is that in science fiction, the subject is not in a different geographical location but in a different time. Using the typical example at the center of a sociological investigation, the science fiction film in the golden age of science fiction focused on representative, "average" individuals who brought together the science into a usable spectacle. In Destination Moon and Forbidden Planet, the viewer shares the customs of the characters. Through the presentation of the neophyte, the nuclear family, and the ordinary citizen suddenly thrust into space, the documentary mode presents a generalized, ideal case that is rounded and fully formed.

The typical science fiction narrator must be adept at negotiating the difference between the world of the story and the world of the viewer. Because the science fiction narrator is trying to document the future, the difference between what the viewer knows and what the characters know is great. Thus in a typical science fiction narration, there are often extended and frequent passages that explicate the new environment for the benefit of the viewer. Especially in the early portions of a narrative, the narrator must select and explain the equipment that the characters will use to achieve the climax in the plot and the characteristics of the world that will help the reader to understand the limitations on the characters' actions. (I am thinking here of Manny's exposition of his prosthetic arm in the contemporaneous Heinlein novel The

Moon is a Harsh Mistress, a device that serves to explain his intimacy with machines throughout the novel, and Ripley's use of the robot loader in the opening sequences of Aliens that returns when she uses it to defeat the Alien queen in the climax of the plot.) Despite the genre's pretension to speculation, these passages are not speculative: they present the future as definite and decided, as needing a tour guide but needing individuals who will act.

A typical documentary-style narration is unsuitable for the purposes of speculation, regardless of the fact it is so prevalent in the social sciences and social science fiction. The viewer is held rigid in front of the spectacle, unable to penetrate its depths without the aid of the mediating consciousness in the form of the narrator. The viewer is asked to behold fully formed and representative images and decode their meaning in the same way that the narrator does; it is difficult to "get around" the narrator and view something new, since the narrator has preselected, edited, and arranged the source material in order to serve a didactic purpose. The narrator of 2001 is not presented as an advanced equal, a narrator who hails the viewer with knowledge that the viewer should receive. Instead, Kubrick creates a narration that puzzles the viewer with a series of enigmas that are based in the social conditions of the race. The conventions of documentary narration that Kubrick disrupts thus are twofold. First, he seems to take exception to the certainty expressed in the rhetorical conventions of the documentary narrator. 2001 does not present a fully formed, knowable and definite subject matter in the way a documentary should. His narrator is not a tour guide of the future. Secondly, his narrator is neither like the viewers nor like the characters. In fact, Kubrick deleted the helpful negotiator that is so much a part of the documentary and science fiction tradition.

The Moonwatcher sequence at the start of the film most clearly activates some of the conventions of documentary but also most clearly fails to fulfill those

expectations. Critics who deal with this scene tend to investigate the theme or special effects used to create it. Certainly both were important to Kubrick--both a tremendous amount of research and technological innovation were required to achieve it--but what is obvious is the issue that no one seems to address. Why does Kubrick work so hard to evoke the conventions of an ethnographic film if only to deny the viewer the ultimate effect of this most expert of film genres?

Kubrick clearly could have left the voiceover narration in the film. That he was anxious about this feature--a feature that after all is ubiquitous in both film and written science fiction--provides an insight into what he hoped to accomplish with 2001. By destroying the psychological narration inherited from documentary expression, Kubrick allows the film to return to what Jonathan Crary says is the viewer's fascination with the stereoscope. It is not just the fantastic or unexpected image that holds the viewer: it the tromp de cinema where the viewer's eye oscillates between a perception of reality and the awareness of the illusion. Tom Gunning, building on this work, suggests that the enjoyment of the "cinema of attractions" is not being involved in "narrative action" or "empathy with character psychology"; these literary concerns are quite obviously absent in the early film of an on-coming train. "[T]he cinema of attractions solicits a highly conscious awareness of the film image engaging the viewer's curiosity." The viewer is not immersed in the world of the film, "but remains aware of the act of looking" (121). In its return to the predocumentary cinema of attractions, 2001 creates a sense of dissonance for the viewer and allows the true potential of science fiction to excite the hypothetical and speculative mind to emerge.

Annette Michelson suggests a similar idea in a contemporary review for ArtForum:

> Seeing Kubrick's Space Odyssey [sic], we sense, we know, that its ontogeny recapitulates a phylogeny. Its production involved the scale of enterprise, the dedicated resolution and intellectual flexibility, the proud marshalling of vast resources brought to bear upon the most sophisticated and ambitious ventures of our culture (196).

It is here, perhaps, that we can see a form of cultural resistance in Kubrick's work. The science fiction writers whom Kubrick sought for his script may inspire it.

Tom Gunning's look at the early cinema helps to understand how Kubrick undoes the documentary narrator. What Gunning calls the "view" films in the 1890-1920s period are notable for their extended and self-conscious gaze. In his essay "Before Documentary," Gunning suggests how film operated:

> The voyeurism implicit in the tourist, the colonialist, the filmmaker and the spectator is laid bare in these films, without the naturalization of dramatic structure or political argument. These 'views' stage for us the impulse towards 'just looking' so important to our modern era (24).

2001 is filled with such languid, uninterrupted views. They certainly disrupt the viewer's expectations since they do not contain representative moments that are arranged by a psychologically coherent narrator. The early landscapes presented by the film and the focus on the pride of apes recall an anthropological investigation, a genre so heavily indebted to the documentary film. Without the friendly narrator, however, viewers are left to founder for an interpretation. The viewers who have not read Clarke's book, especially, are confronted with many questions: what is the timeframe and location of the action, where does the Monolith come from, what is its relationship to the behavior of the apes? If one can return to the position of a naïve viewer of this film, one might realize that there are many different interpretations during the first thirty minutes of the film: perhaps the narrator is located in a different solar system, presenting to the viewer a parallel story of primate evolution;

perhaps the Monolith has telepathic powers that program the idea of using tools and committing acts of violence (an interpretation presented by Clarke's novel) or perhaps these are simply reactions to an object with manufactured and nonorganic precision.

While a viewer has a sense that the scenes have been selected and edited, the viewer does not have a clear sense as to why. Certainly, the film wants the viewer to think about the Monolith, violence, and society. What exactly the narrator wants the viewer to think is possible only as a hypothetical project of retrospective reconstruction after the film is done. In this way, Kubrick denies the subject positions generally ascribed to the filmic narrator: the narrator is neither a participant-observer, Jane Goodall type who has understood the position of the apes and is willing to communicate their mindset to the armchair anthropologist, nor is the narrator the intelligent but uninformed documenter who helps the viewer to understand the meaning of the sequences. The viewer's struggle for an interpretation in this early part of the film is indicative that the narrator is not "one of us" nor "one of them": rather, the narrator is an outside party. The events are selected in order to explain what happened to the apes, how the gift of the use of the tools has the unfortunate consequence of the curse of interspecies (even intergroup) violence, but the narrator lacks a connection to the viewer that helps this interpretation to come across. The alien narrator, who does not share language, customs, or even cosmology with the viewer, cannot succeed in getting his, her, or its point across.

It is not as if it is impossible for the viewer to make sense of the naturalist scenes. Nevertheless, in order to make sense of them, the viewer must relax the typical search for narrative clues--and it helps if the viewer reads a little about what other people think of this sequence or perhaps just talks to a friend. What seems like a block between the viewer and the film can be tackled by the curious

viewer; while some leave the theater, others spend the time to figure out what is happening. In other words, Kubrick seeks to disrupt the normative effect of the typical narrator of a film or a novel. Certainly, science fiction's use of a setting that obeys consistent rules based on a separate set of assumptions would seem to require a different form of narration

. As was discussed in Chapter 1, in John W. Campbell's effort to decenter the solar system from the Earth in his nonfiction about the planets, he imagined the point of view of life on other worlds, but this was accomplished by the same objective certainty of the science-fiction narrator. There is no trouble in these stories; the alien consciousness can easily be imagined.

Noel Carroll has discussed the normative aspects of film narration in Mystifying Movies. Sometimes it seems as if film is seeing the landscape on behalf of the readers; this leads to the impression that the viewers of a film are chained to their seats like the strange prisoners of Plato's cave. However, Carroll writes, the privilege of the filmic narrator is that it sees from a position that no viewer can ever inhabit: the camera has an "optimal station place" from which it records and presents the universe (134). It is not as if the film does the thinking for the viewers, but rather that film promotes the idea that the film is narrated by no one; it seems to "efface all marks of enunciation." It is as if the author, director, producer, and crew are invisible, and the viewer is led to believe that "reality is narrating itself" (152).

2001, alternatively, demonstrates difficulty in its narration. Film and fiction are typically narrated from the first-person or third-person point of view. In the first-person narrative situation, the person telling the story announces himself or herself and usually has a place in the story. When characters speak in a first-person narration, it is in conversation with the narrator. In a third-person narration, the narrator is typically an outside observer of the action. Characters

speak to each other, seemingly unaffected by the narrator's presence. Sometimes, clever artists play with combinations of first- and third-person: the third person with limited knowledge, the first-person who is not in the story. The problem in 2001 is somewhat different: no one speaks for a long time, and when the characters speak, the speech is banal. Mark Rose likens this to the humans becoming like machines: the "mechanically hearty" conversation Dr. Floyd has with his daughter and Bowman "vacantly listening" to his parents' birthday greetings suggest to Rose that the characters have become like the machines (146-7).

In the next sequence of the film, the trip to the Moon, the shots of long duration demonstrate the difficulty the narrator has in maintaining its position as a stable entity. In order to deal with the sequences in outer space, the narrator must shift positions. The idea of the camera's tripod being firmly planted on the ground, mediating the sense of down between the actors in the film and the viewers of the film, does not hold in 2001. This is most easily seen in the famous scene of the space steward's use of the centrifuge. Kubrick capitalizes on the environment of outer space to disrupt the privileged place of the filmic narrator. The docking sequences present different bodies with multiple "zero" points---the viewer is aware that each seems stationary in its own frame of reference, but seems to move in relationship to other objects. There is no one location where the filmic narrator may focus; the depiction of multiple frames of reference in zero gravity suits Kubrick's mission to call attention to the narrative function. The narrator does not share our conventions of what is up or down; the narrator does not know how to present reality in a way that suits the viewers.

The second-person approach to narration is apparent here. Instead of an insider, first-person type narration and the outsider, third-person narration, the film's narrator seeks to show viewers what is happening to their species: first

you learned to use tools, then you learned to travel in space, and now you are headed to an experience that will change your impression of the world. The narrator in the Earth-to-the-Moon section seems to focus on the most uninteresting aspects of the mission on the moon: the food, the off moments of the characters. The narrator does not seem to know what is important here, giving the impression of the humdrum, routine aspects of commercialized space travel. The narrator is an outsider, but not in the typical third-person sense: the narrator is not an outsider connected to the larger reading public that can negotiate the strange scenes before us. The narrator is a true outsider, an entity outside of the circuit of cultural production, attempting to communicate to beings with limited ability to understand.

Critics have commented on the banality of the Pan-American commercial flight to the moon base. Kubrick's antispectacular depiction of space travel that has become routine contrasts nicely with the advance in human achievement, the trip to Jupiter, in the third portion of the film. What is consistent in both sequences is the disruption of the film's grounding in a documentary narrator. Kubrick also presents a disruption to the documentary narrator of the sequences in the trip to the moon base and the depiction of everyday life aboard the Discovery during the trip to Jupiter.

Although science fiction had clearly been dependent on the narrative position of a "documentary of the future," Kubrick's aesthetic disrupts this tradition. In the trip to Jupiter, Kubrick maintains his use of the life-study method. He does not want to challenge the content displayed by the documentary method; simply making a documentary about a nonstandard subject would not be sufficient. What Kubrick challenges in these sequences is the idea of a stabilized narrator. This steady narrator needs to be challenged, in the aesthetic of the new wave, since the idea of a narrator that can tell a story with certainty

and can reliably communicate the unknown is an act of hubris. By undercutting this steady narrator, Kubrick offers a space for cultural resistance: the viewers realize that the narrator is not targeting them in any kind of normal manner. Michelson, without using the phrase "cultural resistance," speaks to this sense of freedom: it illustrates a problem between the pleasure of liberation and the difficulty of making purposeful activity. The camera's "radical restructuring"--in point of view, but also in light, scale, and pace--change the experience of film. "Viewing becomes," she writes, "[…] the discovery, through the acknowledgement of disorientation, of what it is to see, to learn, to know, and of what it is to be, seeing" (200). Kubrick works to disrupt the self-satisfied consumer of images, the customer who paid the fee and thus feels entitled to a privileged position as he or she takes a seat. But the film is patient, and moves slowly, not confronting the viewer head-on with statements about the viewer's unsuitability for the work; the film is a patient guide to the future, apologizing to the viewers for having brought them here for a science fiction extravaganza but instead having exposed them to a treatise on the human species and the limits of its perception.

The film repeatedly confronts the viewer with the sense that there is no longer any sure way to know that one way is down. In the centrifuge scene, Kubrick evokes the uncanny through his evocation of normalcy while there are in fact three different senses of down. It is strange enough that different characters have different senses of down, but this is explained by the physical layout of the ship. Kubrick announces a different sense of strangeness, however, by a triple discordance: the sense of down for the viewer (as represented by the picture plane), the sense of down for the character, and the sense of down from the point of view of the narrator are all on separate axes. In a typical film, all three are in line; there is only one down. In some experimental film, viewers are

confronted by a situation where the down for the characters is different than down for the viewers. In this case, however, the camera's sense of down is tied to either the down for the character or down for the viewer. In 2001, the narrator's point of view is separated from both the character and the viewer. The narrator seems to be cut loose from both, experimenting with different points of view.

The narrator's difficulty in finding solid ground on which to capture and represent the life studies in the mission to Jupiter section represents a later problem of the film: the moment when Bowman is transported through space into an alternate reality. Although the viewer is presented with recognizable forms and images, including the consistency provided by the character of Bowman, the elements do not cohere into a stable story. The viewer is impressed by the fact that something is happening that is beyond his or her comprehension. This coincides with the climax of the film: the transformation of humanity into a higher state of being, the next stage of evolution. Of course, being transformed into a higher state of being will result in a difficulty in communication.

In beholding the final sequences of the film, there is a heightened sensation of being addressed by the film: it is not as if the film is mimicking or capturing reality. In fact, the viewer is confronted with the fact that reality cannot be captured. The artifice of the film, then, is suddenly real; it is a self-conscious visual metaphor for an unrepresentable reality, an attempt of an entity with a different means of understanding reality to communicate to the "standard viewer." This climax is carefully provided for by the narrator's selection of events, even though that narrator is not able to present them in a readily digestible manner to the viewer. Even so, without the disciplining comments from friends, professionals, and critics, the film is still open to many explanations and hypotheses. Did the entity create violence, or was it an

unintended side effect of using tools? Is the entity helpful and beneficent, or imperialist, in its attempt to reshape humanity?

2010: The Sequel

One way to consider the efficacy of 2001 is to analyze the sequel. Many of the major suppositions of 2001 are immediately and absolutely overturned by 2010 (1984). The sequel, written by Clarke with no involvement from Kubrick, begins with a three-minute textual summary of the previous film, explaining what is in the novel but removed by Kubrick in his final editing. After the viewer finally knows what has happened in the last film, the new movie begins with a complication: both the Russians and the Americans are in a race to return to Jupiter, but neither party can succeed in a mission there without the other. This complication is detailed by a conversation between Dr. Heywood Floyd (the passenger from the Earth to the Moon base in 2001 who becomes a main character of 2010) and Dimitri Moisevitch, a Russian scientist, in a radio telescope field. Their conversation elucidates any questions the viewer might have about the sequel. Floyd's character is a romanticized scientist, working at a university, married to a marine biologist. In 2010, the charming son Chris with whom he has a healthy relationship contrasts strikingly with Floyd's daughter from a previous marriage in 2001, with whom he seems to have only a tangential relationship. The pivotal moments of the film are discussed in control rooms and around briefing tables, helping to keep the viewer informed, and the international crew's difficulties in understanding each other further provide the opportunity for explanatory dialogue. What is more, the film employs reputed

voiceovers from Floyd, as if he is narrating to his son, helping to fill in any gaps in the viewer's understanding.

Both 2001 and 2010 are similar in that they create images of the future; they successfully create a feeling for the viewer that he or she is a witness to the future, after which that a viewer can reasonably fantasize about being a part of the scientific establishment. The two movies share a common story, as well: they are properly sequential in that the events of the first provide a framework for the second. The difference between the two, however, is so striking that it seems odd that the producers of 2010 would have thought to make a sequel in the first place. The sequel employs a reassuring voiceover narration that accompanies the viewer through the film, anticipating and answering the questions he or she might have. The sequel goes beyond scientific realism into being a teaching tool by incorporating didactic passages about science; for instance, the description of the slingshot around Jupiter is a familiar staple of speculative astrogation, and the discussion on the bridge about the possibility of life seems to have been told many times before. Perhaps most tellingly, at this late stage of the genre the function of art has been restored. No longer does this work of science and fiction look forward to speculate about the possibilities of the future; the sequel, instead, comments on culture, as one supposes Art should do. The "what if" presented by the sequel is not a cause-and-effect story of what will happen to the future if we make certain changes now, but instead, it is a question of what would happen today if a certain change would occur.

The conclusion of the film, in which the alien intelligence warns the warring Cold War superpowers to resolve their differences and work together in peace, is much more in line with what one would expect from Clarke. The idea that the human race did not spring forth untrammeled from nature is a favorite

theme of John W. Campbell, more prominently seen in Dianetics and the later incarnation as the Church of Scientology, a cause he championed from its beginnings in Astounding by publishing and promoting stories by L. Ron Hubbard in the 1950s. While one can see the speculative potential of these works that derives from their genesis in social science fiction, in the sequel to 2010 the narrator reduces the experience to moralizing. The narrator at the end of the film deliberately uses metaphor that the audience can understand. This is no visual experience that transcends language at the end of 2001. Quite to the contrary, the narrator carries across the idea of an alien intelligence by making a comparison to what the audience already is familiar with: international politics. The narrator explains the Monolith to the viewer by calling it "an embassy of intelligence beyond ours" and admonishes the reader, "We are only tenants of this world."

The viewer is left with a strong sense of responsibility--certainly one must be careful with a world that is provided by this powerful but benevolent alien force--and at the same time the viewer is absolved of any duty to make sure that the world is used peacefully. The events of the sequel that build to the climax are strongly ascribed to scientists who have to work around the increasing stupidity of bureaucratic government officials--but this is no organizational thriller written by Heinlein. The overtures of the Russian and American scientists are charmingly ineffective as the plot reaches each stage of the conflict. Their difficulties are resolved by the intercession of an interstellar machina: the alien intelligence that commandeers HAL and begins sending text messages (in human language, no less) creates an unhealthy catharsis. The viewer sits back satisfied, with a sense of relief, as the international conflict abates and the alien intelligence admonishes the bad, bad leaders of government. If catharsis is a sense of dodging a bullet, the viewer certainly feels as if he or she dodged one

here, perhaps thinking: "Thankfully I am not a government official, but a peace-loving adherent to science." The viewer may safely now leave the movie theater knowing that his or her peace-loving, international-cooperation-desiring self was right all along, and that other people need to stop their evil activities. The sequel refuses to hail the viewer as a competent investigator who needs to be aware of the limitations of his or her senses but also the prison house of his or her fables, substituting instead a reassurance that his or her presupposition is correct.

The Legacy of 2001

It is telling that so much of the criticism of 2001 seeks to inform the reader about the film's theme or to explain the mechanics behind the magic. Critics have sought to "explain" the film, determining its meaning, explicating the background myths and unspoken drama that make up the film. This is also the effect of reading Clarke's novelization of the film, where the narrator is a much more friendly and conventional source. Another popular response is to explain the technical requirements of the special effects. These critics are caught in the same paradox described by Crary and Gunning: they oscillate between being captured by the illusion of the film and gazing at the surface of the film, wondering how it was accomplished. These print sources, confronted by the alien second-person narrator, seem to find it necessary to fill in for the missing traditional narrator--they answer the questions "how" and "why" the events are happening. It is more appropriate to ask, however, why Kubrick created a film that demanded these questions to be answered. It is not necessarily the contents of the film that interested Kubrick the most, since he paid so much attention to the manner in which it is presented.

Reporters and reviewers initially panned 2001. The review in The New York Times, indicative of the first round of criticism, suggests that the film's aesthetic was informed by the idealized child of the fifties: "chess games, body-building exercises, … birthday phone calls" and the monolith in orbit around Jupiter "begins to resemble a fifties candy bar." The dialogue with HAL to manipulate the craft, the reviewer continues, is like a World War 2 movie: "When they want to be let out of the craft they say, 'Pod bay doors open,' as one might say 'Bomb bay doors open' in every movie out of World War 2." In short, the reviewer writes, "The movie is so completely absorbed in its own problems, its use of color and space, its fanatical devotion to science-fiction detail, that it is somewhere between hypnotic and immensely boring" (Adler 58). As the press continued to review the film and read other reviews of the film, and it became clear that the movie-going public was interested in the film, the reviews began to change. In reviews and interviews with Kubrick, several journalists addressed issues that were closer to the film's themes instead of critiquing the film's imagery.

For instance, an interview in the September 1968 issue of Playboy begins by giving Kubrick a chance to explain the film's nonverbal aesthetic: "I tried to create a visual experience, one that bypasses verbalized pigeonholing and directly penetrates the subconscious" (Phillips 47; emphasis in original). Kubrick goes on to explain that the film should penetrate the consciousness, echoing Nietzsche's demand in The Birth of Tragedy for music that transcends explanation. A visual experience, Kubrick insists, should be beyond explanation: "To 'explain' a Beethoven symphony would be to emasculate it by erecting an artificial barrier between conception and appreciation" (47). In addition to giving Kubrick the opportunity to explain the visual experience of the film, the interviewer allows Kubrick to address many other issues and, in fact, seems

interested in why they appear in the film and how Kubrick himself feels about them. Although it is possible to watch the film and not make a connection between the Dawn of Man and the Beyond Jupiter sections of the film, Kubrick notes that the film is successful in reaching a "wide spectrum of people who would not often have given a thought to man's destiny" (48). In addition, the interviewer engages Kubrick in lengthy conversations about other intelligence in the universe, the potential of science, and (not surprisingly) the sexuality of the future. He also speaks about HAL, coining the word "mechanarchy" to describe the trajectory of the human fascination with machinery: "Eventually," the interviewer quotes him, "we will have to share this planet with machines whose intelligence and abilities far surpass our own" (71).

Kubrick's effort to give the impression that the narrator of this film is not the documentary narrator that is usually co-opted by science fiction practitioners is informative. It is not the use of the life study in itself that that Kubrick objects to; rather, it is the stability of the narrator that the life-study method assumes. By dislocating the narrator, by drawing attention to the narrator's effort to find a position from which to narrate, Kubrick opens up a speculative space for the viewer. By giving the viewer shots of long duration to consider without an authoritative narrator's voice, the viewer is asked to consider the episodes as possibilities rather than documented fact. In this way, Kubrick not only creates a science fiction film that can live up to the speculative potential of literature, but also proves a path for the new wave in science fiction, which will similarly question the tradition of a stable and grounded narrator.

From a critical standpoint it is a satisfying fantasy to believe one may assert what Kubrick really intended with 2001, but the critical eye sometimes brings more to a work of art that what can be effectively communicated in context. Even if the film is a finely-tuned machine to bring about a revolution in

the viewer's consciousness, the work of art still filters through the reader's consciousness in the mechanism of the intermediate space. Kubrick's images and the ideas of the narrator will be subject to the viewer's experience of other works of art and the viewer's understanding of the genre's rules. One way of considering the legacy of 2001, then, is to consider the fate of the film in the creative space; having filtered through this consciousness and transformed itself into one of the experiences in the creative space and, as well, having been distilled into rules of the genre, what do others do as a consequence? There are two ready examples of how 2001 serves as a crucible for more creation: the use (or nonuse) of 2001 in scientific literature and the 1984 sequel to the film (written by Clarke but not directed by Kubrick).

The Scientific Press

It is disappointing although not surprising that one can search the annals of professional journals in the social sciences and retrieve nothing that relates to 2001. It is as if the film, despite its engagement in themes from anthropology and social psychology, has made no impact on the ideas of these disciplines. References to the film do appear frequently in the professional journals of computer science. Based on the film's equation of the use of tools and killing, and the film's correlation between the increasing power of human tools and the decreasing mental activities of humans, one might expect that the film would provoke a conversation about instrumental reason. Unfortunately, the discussion of the film by computer scientists is confined to the Jupiter sequence. The critics seem to take it at face value that HAL the malevolent computer is the most memorable character of the film, instead of wondering if HAL should be the most memorable character of the film or asking why HAL is the most memorable

character of the film. Although this oversight is unfortunate, it is instructive. The legacy of 2001 reflects the legacy of social science fiction in general, and it demonstrates the difficulty that arises when one uses formalist methodologies to evaluate or understand a work of social science fiction.

The organization that makes most mention of the film is the Institute of Electrical and Electronics Engineers, Inc. (the IEEE). It was founded in 1963 by the merger of smaller (and much older) organizations concerned with electrical engineering and wireless technologies. It is a professional organization with an international membership of engineers in computers, aerospace, and communications, and one of its primary functions is to serve as a publisher of a wide variety of journals and reference materials that cover a multitude of topics; at the time of this writing, it publishes 132 titles (IEEE). One of the first mentions of the film is in a 1978 article from the Proceedings of the IEEE about computer systems that are tolerant of disruptions of their programming: as the author notes, most computer systems need the intervention of a specialist when something disrupts the assumptions of the programmer or a computer receives unexpected input (Avižienis). The only mention of the film, however, is in the special issue's title: "Special Issue on Fault-Tolerant Digital Systems: Is HAL Going to Join Us before 2001?" Similarly, an author in IEEE Software in 1994 remarks that he left the theater thinking "Who was going to write all that cool software?" (Booch, 33) and suggests that the value of the film is scientific boosterism: "It is the dream of such things that causes us to reach beyond what our current technology offers" (41).

Another author, in 1990, makes a connection between Kubrick's Monolith and the experiments of IBM in the 1960s to make monolithic computer chips; looking at the IBM Dictionary of Computing, the author reports that a

"monolithic integrated circuit" is a type of silicon-based integrated circuit developed by IBM and the University of Illinois at Urbana (Midbon 8). In spite of this spectacular connection, the author concludes, however, that the film would like its audiences to remain steadfast in its pursuit of scientific knowledge: "From beginning to end the movie stresses the importance of computers and implies a standard of conduct for those of us who work with the machines … and acknowledges our common humanity with those who belong to different bands and have different leaders" (Midbon 11). A noble sentiment, to be sure, and one worthy of having, but not a sentiment for which one needs to see the untoward juxtapositions of 2001.

Toward the end of the century as the year 2001 approached, computer scientists increasingly wonder what has become of the dream of the 1960s: in 1997, when according to the novelization of 2001 HAL went online, an author is dismayed that despite advances in computing power, "a computer such as they [Clarke and Kubrick] conceived of in their science fiction future, at this point in time and at least for some time to come, looks next to impossible" (Smith 29). Shane Greenstein, also writing in 1997, comes the closest to using 2001 as art that can critique culture, explaining that neither IBM nor Urbana would be the creators of HAL, given that the industry has shifted to Silicon Valley and works in collaboration with mass marketing. He suggests that if HAL were actually invented in 1997, he would certainly have more bugs, but he would be more fun: "Today's computer industry, particularly the PC industry, is in love with the culture of irreverence and adolescent behaviors" (5). In this way, Greenstein makes a critique of the social and cultural milieu that made HAL possible in the 1960s but would make him unlikely in the 1990s.

Greenstein's all-to-brief insight into the culture of computing, however, is rare. In 1999 and beyond, authors usually write about HAL as a motivating force

for new development (Vendy & Nofz; Buttazzo; Lai), give thanks to Kubrick for creating an evil example so that they can be more careful when making new designs (Morton), or express dismay that the dream of the future has yet to be realized (Lucky; Fitzpatrick & Croakrken; Theunissen, Rademaker, & Etherington). These authors seem to fail in their understanding of what to do with social science fiction; they do not seem to know how to read it properly. They treat the creations of the science fiction world as found objects, as literal examples of the power of computers. Aside from Greenstein, they do not seem to consider the fact HAL is a contingent creation, established in a certain culture with a certain worldview (though even Greenstein seems to miss that the culture is based on a definition of tools and not just the automatic extension of the organizational structure and economic considerations of the institution that creates the artifact).

One might be tempted to blame some readers for their failure to read properly. In these cases, the scientists treat HAL as a stock character--the malevolent computer--a type that is established early in the years of science fiction (notably with Raymond F. Jones's 1950 novella "The Cybernetic Brains" published in Startling Stories and extended into a novel in 1962). They cannot be faulted for viewing HAL this way, since 2001 for all of its transgression does not provide one crucial affordance found in other social science fiction: social science fiction should present itself as the product of a community, not as an achieved work. The veneration of Kubrick as a genius and press reports from industry insiders that can explain the film to the neophyte viewer go a long way to reduce the speculative potential of the work. There is no friendly introduction from Asimov, there are no how-to digressions from Heinlein.

Instead, the viewer of 2001 is dazzled by spectacle that he or she cannot make at home. In trying to disrupt the worldview provided by a stable and

knowable scientific establishment, Kubrick spent a lot of money from that establishment (money unavailable to other science fiction industries) and assembled the resources of the large players in that establishment. The average writer of science fiction--and certainly the average fan of science fiction--cannot hope to accomplish what Kubrick accomplished, because they do not have access to the resources Kubrick was able to muster. Certainly one could aspire to be a filmmaker and study the work of Kubrick and others and be the best filmmaker one could be, hoping one day to become great. However, the value of social science fiction was that it provides a medium for experts in different fields to communicate. One did not have to abandon one's career to be a practitioner of social science fiction; one might have to hide from one's career in order not to be ridiculed, but one could always do it on the side. Kubrick set the stakes quite high for his film--building on what the practitioners had established, he created a noble critique of the positivist mindset so prevalent at the time--but in setting the stakes so high, he made it impossible for others to participate.

As much as the film hails the viewer as a thinking subject, it does not hail the viewer as a potential co-conspirator. One unrecognized and underappreciated facet of social science fiction is much more clear after viewing this film: the ability of social science fiction to generate more works of social science fiction. An essential characteristic of the genre is that its works, in their promotion of a common ground for the collective hallucination, also provide a space where all are welcomed. As discussed in Chapter 2, this common ground establishes a public sphere where many may participate as much as it establishes an intermediary space for collective hallucination.

Epilogue

It is not, as one might suspect, the pressure of the new wave that causes the decline of social science fiction's power to speculate about alternative social arrangements. The marketing by new wave authors that theirs is a genre that finally addresses social and political concerns will seem dishonest to the reader of this study, since the writers of social science fiction were doing the same thing for decades before the new wave. However, it would not be accurate to say that the new wave steals the best components of social science fiction and leaves the genre with only the power to illustrate the possibilities of the military-industrial establishment.

The original television series Star Trek is informed both by Campbellian imperatives about science fiction and the new wave, so that it seems more accurate to say that the new wave picks up the mantle of speculation championed by the practitioners of social science fiction. Social science fiction makes the transition from modernism to postmodernism nicely, and in Star Trek one can easily see a distrust of metanarratives and the instability of narrative positions that shares Kubrick's concerns with the social science fiction aesthetic. However, the essential techniques of social science fiction and the use of the genre to provoke speculation survive. Social science fiction and the new wave are not opposing genres, no matter what practitioners of the new wave would ask us to believe, and one has to look elsewhere to find the cause of the genre's decline.

At the dawn of the 1970s, social science fiction was poised to take a wider role. Four textbooks appear on the market, suitable for social science college

courses. Richard Ofshe edits an anthology The Sociology of the Possible in 1970. Ofshe, on the faculty of the University of California, Berkeley, says in his introduction that undergraduate pedagogy is under a "painful orthodoxy." He is not interested in the real interaction or real-world study being promoted in academic circles, but he is similarly dismayed that students are not asked to think "in any creative or serious fashion about the subject." The book seeks to "provoke" its readers to think about sociology in a new way: how things could be, as well as how they are. (xi). Sociologists, Ofshe writes, have never had the political power to implement their findings; unlike other fields, sociology cannot implement and test its ideas (xi-xii). If a sociologist wants to find new solutions, one cannot "study only existing forms of social organization."

For his anthology, Ofshe puts together materials that deal with the "possible," distancing him from science fiction that is predictions of the future. He says he could not condense the Foundation Trilogy, Stranger in a Strange Land, Jack Vance's To Live Forever and The Languages of Po, Kurt Vonnegut's Player Piano, John Christopher's No Blade of Grass, but would have included them if he could. The survey he does include stretches from Plato and More to Bellamy and Blish, and includes authors from the pulps. These are intended to be used for sociological analysis and illustrate what "intelligent and creative men have thought" (xii). The goal is to help students explore the consequences of social changes--"a context in which a student may think about the principles and possible applications of sociology in a creative fashion" (xiii).

Willis Everett McNelly and Leon E. Stover make a similar attempt with their 1972 Above the Human Landscape: A Social Science Fiction Anthology. In their afterword, the say that science fiction is a development from the "research revolution": "Anything can be researched and developed, from a well-ordered society to trouble-free sex relations." Some writers have optimism in Ellul's

"technique"--others are not so enamored of industrialized science and call for caution (359). Science fiction looks to the present and past and "extends its social awareness from the communities in which we live, from the systems which we serve or which serve us, from the technology which enslaves us or frees us, to the men and women of today who create the realities in which they live" (374). Such a sentiment, this long after the pulp public sphere, nicely captures the ethic of cultural resistance promoted by social science fiction.

The third textbook, Worlds of the Future: Exercises in the Sociological Imagination by Bernard S. Phillips, is also published in 1972. His introduction is telling, and is worth quoting at length:

> I find myself now, located in the present, conscious of several alternative futures. In one of these, man's problems continue to increase until man himself becomes his own victim. […] In another future, man learns to gain control over those forces which presently are shaping his existence. I believe that the development of this future depends on man's consciousness of his ability to construct the future.
>
> We all construct the future by everything we think, feel, and do, but we tend to do it unconsciously and with a limited special and temporal vision. We are futurist without knowing it, and we tend to extrapolate the limited present into the future. I invite the reader to become another kind of futurist, one who is conscious of the ways in which he is creating the future, and one who creates a future more conducive to his own development than the present is (x).

Phillips has learned the lesson of social science well; the textbook alternates nonfiction articles about sociological principles with science fiction stories that he himself authors to illustrate the point. For further reading, Phillips suggests his readers find Radical Man by Hampden-Turner and World of Null-A by Van Vogt, works associated with the pulp era.

The final textbook is published in 1974: Introductory Psychology through Science Fiction, edited by Harvey A. Katz, Patricia Warrick, and Martin Henry Greenberg. They reprint stories from the pulps and science fiction magazines

that they find "imaginative, fascinating, and absorbing" (10). They divide the stories into units, such as "The Learning Process," "Sensation and Perception," and "Personality" so that students can apply their knowledge of psychological concepts, engaging in critical thinking by applying one reading assignment to another. Furthermore, since the reading assignments are science fiction, the editors hope that the collection will "energize" the learning process (10). These editors, like the others, are not concerned about the supposed technophilia of the authors, and do not worry that they may be enforcing a totalitarian worldview by asking students to read them. Instead, they see in social science fiction an opportunity to make apparent the need for imagination in the social sciences.

Perhaps the most stunning legacy of this movement is not a textbook but a pamphlet written by Kenneth M. Roemer in 1981, Build Your Own Utopia: An Interdisciplinary Course in Utopian Speculation. Without Heinlein, no doubt, "speculation" would not have been in the pamphlet's title. Based on his own experience, Roemer suggests that a college course be organized around the production of a utopian world. By reading utopian works--he uses More and Le Guin as endpoints--and doing research on his own, Roemer hopes to activate the utopian mindset described by C. S. Ferns in Chapter 3. Then, students do research into planning and sociology to create their own versions of utopia. In so doing, Roemer hopes to "help students to clarify and evaluate their ideals" (ix). Perhaps unconsciously, but to good effect, Roemer has turned the classroom into a pulp public sphere, where students learn by inquiry and respond to each other's texts as part of the classroom experience.

These explorations, however, are the end of the genre. The tension between 2001 and the sequel 2010 indicates the downward slide of social science fiction, exemplifying the unfavorable version of science fiction that perpetuates in the wake of the new wave. When John Campbell dies in 1971, Ben Bova, a

scientist and author, takes the reins of Astounding. The aesthetic of the sequel to 2001--a scientific drama based on the latest facts and presenting a vision of the future with verisimilitude--is the same aesthetic of Clarke's exploration novels and the novels of Bova, such as his 1992 novel Mars.

Speculation about what the future "could" or "should" be is replaced by speculation about what the future "probably will be" or even what an expert can say that it "will be." These authors see their duty to create a simulation of the future and encourage participation in the world of science and technology, and they are quite good at it. This duty, however, is only one thread of the social science fiction genre: Campbell does demand scientific accuracy, and these authors carry on that request. However, Campbell also requires that his authors consider issues of worldview and speculation about how societies could be alternatively configured, and this aspect increasingly is lost in favor of the sense of wonder promoted by the new wave.

It is perhaps for this reason Donna Haraway includes science fiction in her list of the "Informatics of Domination." She writes that the "comfortable old hierarchical dominations" of representation, perfection or eugenics are being replaced by "scary new networks" of simulation, optimization and population control, respectively (161). Science fiction, interestingly, makes an appearance on the list of new networks, replacing the bourgeois novel as a mode of domination. What could she mean when she says that the bourgeois novel is coercive?

In his diatribe against the Aristotelian form of tragedy, Augusto Boal demonstrates the way that plot and character can be combined to form a socially repressive art: the audience establishes a rapport with the hero, discovers his or her flaw, and watches as that flaw causes the hero's destruction. The audience feels a catharsis, terrified by the hero's downfall, and is purified of pride. This system is a very powerful method of maintaining the status quo:

> Let there be no doubt: Aristotle formulated a very powerful purgative system, the objective of which is to eliminate all that is not commonly accepted, including the revolution, before it takes place. His system appears in disguised form on television, in the movies, in the circus, in the theaters. It appears in many and varied shapes and media. But its essence does not change: it is designed to bridle the individual, to adjust him to what pre-exists (47).

Boal says that this system is good if we want to keep people in their own place, but a different kind of art will be necessary "if we want to stimulate the spectator to transform his [sic] society" (47). Boal, in his image theater, suggests a way in which theater may be used to open the spectator's mind to new ideas and to make art a true reflection of his or her life: the spectator must become an actor. What would normally be called directors and actors are transformed into facilitators who assist the audience, helping it to use the conventions of theater to become the subjects of the drama. The conventional novel, science fiction or otherwise, can be read along the lines of the coercive media that Boal suggests: the spectator sits back and watches difference being purged, secretly hoping that his or her own difference will not be discovered. The form of art that the audience experiences but cannot leave its mark on is the old, hierarchical method of domination.

Forgetting the forgoing chapters for a moment, how could science fiction be the latest version of domination? Consider the legacy of Robert Heinlein's Starship Troopers for a moment. Paul Verhoeven's film version, discussed in Chapter 3, is an example of a self-satisfied version of the novel: the sometimes amusing and sometimes dark images of fascism, interpolated with 1950s-style television commercials and movie reel voiceovers, keeps the threat of totalitarianism safely far from the viewer. The threat is located, on one level, in the past--the enthusiastic militaristic science fiction of the 1950s--and, on another level, in an imagined future, where different circumstances have

required exigent means for survival. This science fiction is a part of the informatics of domination because it exonerates the viewer from any thoughts of the present moment.

The Verhoeven film is not the only legacy, however. On the 1971 Yes album The Yes Album, Yes includes a short trilogy named "Starship Trooper." The band readily admits they were interested in Heinlein's novel, but at first glance the song seems to have little to do with it:

> Speak to me of summer, long winters longer than time can remember,
> Setting up of other roads, travel on in old accustomed ways.
> I still remember the talks by the water, the proud sons and daughters that,
> In the knowledge of the land, spoke to me in sweet accustomed ways.

The title of the song, "Starship Trooper" in the singular, does seem to imply one particular member of the Mobile Infantry. The lyric, if it is the first-person thoughts of a particular soldier, suggests his longing for words "in old accustomed ways"; the futuristic member of the armed services explains his need for the conventional and misses the familiar mode of life that has been lost to him since he has joined an interstellar platoon. In this way, the song calls to mind an image of Johnny Rico with his face to a portal, gazing back longingly at his home star before a drop. The listener of the song can imagine how new technologies and exigencies have cut him or her off, using an analogy to the events of the novel to think about how a simple life once seemed to be the best life. This activation of the imagination, however, is very different from the social criticism of Heinlein. And certainly, the actions that a Heinlein novel requests of its readers (read books, argue with coevals, be awake to dissonance) are absent here.

Yes is not the only performers to be inspired by the novel. In 1978, Sarah Brightman releases her song "I Lost My Heart to a Starship Trooper," an upbeat disco tune. The lyrics of the song are a mélange of tropes from Dr. Strangelove, Star Trek, Starship Troopers, Flash Gordon, and Star Wars. The melody includes snips of theme songs from the available movie versions of the allusions in the lyric. The chorus runs:

> I lost my heart to a starship trooper
> Flashing lights in hyperspace
> Fighting for the Federation
> Hand in hand we'll conquer space.

Brightman, in a recording with the dance group Hot Gossip available on YouTube, presents a sexy discoland vision of the future; the dancing involves lines of performers in robotic movements that would make Theodor Adorno say "I told you so." The exuberance of the future, which the new wave suggests we be skeptical of, is evident here, but the song adds an element of play. By dancing and pretending to be a robot, one can obtain a thrill by flirting with the danger of a mechanized future, but in three minutes, the song is over and the threat vanishes. The song provides an important space for cultural resistance--it helps the listener to be oppressed by a fear of the future--but at the same time, the freedom it provides is not an actionable freedom. After the dance is done, there is no suggestion of further action.

While this use of the future to cloud the reason of the audience seems to be a valid basis for Haraway's condemnation of science fiction. Haraway's call for a cyborg imaginary seeks to validate the hybrid nature of the self, and she claims that only the cyborg will be able to survive the transformation of what she calls the homework revolution (the dissolution of public spaces of work that the

"diaspora" of work back to the private home space). One methodology she embraces for developing these resistant cyborgs is writing:

> Cyborg writing must not be about the Fall, the imagination of a once-upon-a-time wholeness before language, before writing, before Man. Cyborg writing is about the power to survive, not on the basis of original innocence, but on the basis of seizing the tools to mark the world that marked them as other (175).

Haraway would seem to want the ethic of collective hallucination that the writers of social science fiction promote, but this ethic is hidden from history due to the unfavorable impression that arises in the wake of the new wave. The critique of the new wave is what is picked up in the mainstream. Harper's Magazine proclaims in 1985: "Science fiction has become a dead zone useful for dumping space travel, extraterrestrials, weird inventions, time warps, extrasensory perception […] and anything else that would be of genuine scientific interest if it were not fictional" (Sante 67). The idea that it can be something else, a public sphere enabled by mass media, seems to be forgotten.

1. Few mention the Hellenistic epic the Argonautica of Apollonius of Rhodes from the third century BCE, nor the Metamorphoses (also known as "The Golden Ass") of Lucius Apuleius, a fantastic Roman travel story from the second century CE. Both of these are, however, useful antecedents to science fiction. The focus on using works as antecedents that portray the future or works that involve travel to the moon, while creating a useful theme, fails to expand on science fiction's desire to consider the social implications of technology and portray cultural difference, as displayed in Apollonius and Lucius, respectively.

2. The first pulps arise in response to the depression of 1893: at that time, the reading public is divided into the readers of the slicks (like McClures at fifteen cents a copy) and the dime novels (costing five or ten cents each). Due to the recession, McClures lowers its price by five cents and other slicks follow suit. Frank Munsey is inspired by this new audience and transforms his magazine Argosy by printing it on untrimmed wood-pulp pages and including only adventure fiction (Goodstone ix, xii).

3. In a declamation, for instance, the student of rhetoric might be asked to make a presentation to a deliberative body on a proposed law or to settle a dispute between two parties. Other times, he would be asked to personalize an event from history or the age of myth. These situations, however, are more than simple speechmaking exercises.

4. Frederick Karl makes a similar point as regards to the first Bollingen Prize in 1949 for the Cantos: "What the Prize did was convey an accolade upon poetry that advocated ideas we had just fought a war to destroy" (392).

5. Groff Conklin, The Best of Science Fiction (1946); Raymond Healy and Francis McComas, Adventures in Time and Space (1946); J. O. Bailey, Pilgrims through Space and Time (1947); Llyod Eshbach, Of Worlds Beyond: The Science of Science Fiction Writing (1947); August Derleth, Beyond Time and Space (1950); L. Sprague de Camp, Science Fiction Handbook: The Writing of Imaginative Fiction (1953); Reginald Bretnor, Modern Science Fiction, Its Meaning and Its Future (1953); Basil Davenport, An Inquiry into Science Fiction (1955).

6. It has been said that Merril coined the phrase "new wave" in her book review column, but Merril claims, "I never even used the term" (163). G. K. Wolfe in Critical Terms for Science Fiction and Fantasy says that Merril used it in her January 1966 column; but while the column extols the virtues of Ballard and other British writers associated with the new wave, she does not use the phrase here. Harlan Ellison in a 1974 essay points his readers to Merril's August 1966 column, but here Merril speaks about the "new thing" in science fiction, again pointing to Ballard as an exemplar. It seems as she first uses the term in her anthology England Swings SF (1968), but while the term appears in the

anthology, it is in the promotional material after the flyleaf and not in her introduction. Ironically, however, the Oxford English Dictionary says this is the second use of "new wave" and ascribes the first use to a 1961 edition of Astounding.

7. After the violent police treatment of the demonstrators at the Chicago Democratic convention of 1968, Merril says, "the taste of America was sour in all our mouths" (Merril and Pohl-Weary 169).

8. Kingsley Amis, New Maps of Hell (1960); I. F. Clarke, The Tale of the Future: From the Beginning to the Present Day (1961); Robert Plank, The Emotional Significance of Imaginary Beings: A Study of the Interaction between Psychopathology, Literature, and Reality in the Modern World (1968); Robert Silverberg, ed. The Mirror of Infinity: A Critics' Anthology of Science Fiction (1970); Thomas Clareson, SF: The Other Side of Realism (1971); Robert Scholes, Structural Fabulation: An Essay on Fiction of the Future (1975); Brian W. Aldiss and Harry Harrison, eds., Hell's Cartographers: Some Personal Histories of Science Fiction Writers (1975); Brian Ash, Who's Who in Science Fiction (1976); Thomas Disch, "The Embarrassments of Science Fiction" (1976); Alexei and Cory Panshin, SF in Dimension: A Book of Explorations (1976); Robert Scholes and Eric S. Rabkin, Science Fiction: History, Science, Vision (1977); Darko Suvin, Metamorphoses of Science Fiction: On the Poetics and History of a Literary Genre (1979); Marshall B. Tymn, The Science Fiction Reference Book (1981); James Gunn, Isaac Asimov: The Foundations of Science Fiction (1982); Karl Siegfried Guthke, The Last Frontier: Imagining Other Worlds, from the Copernican Revolution to Modern Science Fiction (1983); Nachman Ben-Yehuda, Deviance and Moral Boundaries: Witchcraft, the Occult, Science Fiction, Deviant Sciences and Scientists (1985); Brian Wilson Aldiss, Trillion Year Spree: The History of Science Fiction (1986); William Sims Bainbridge, Dimensions of Science Fiction (1986); Brian M. Stableford, The Sociology of Science Fiction (1987).

9. Donald A. Wollheim, The Universe Makers (1971); Brian Ash, Faces of the Future: The Lessons of Science Fiction (1975); Sam Moskowitz, Strange Horizons: The Spectrum of Science Fiction (1976); Samuel R. Delany, The Jewel-Hinged Jaw: Notes on the Language of Science Fiction (1977), Lester Del Rey, The World of Science Fiction (1979).

10. Carl Darryl Malmgren, Worlds Apart: Narratology of Science Fiction (1991); Edward James, Science Fiction in the Twentieth Century (1994); David J. Skal, Screams of Reason: Mad Science and Modern Culture (1998); Veronica Hollinger and Joan Gordon, eds., Edging into the Future: Science Fiction and Contemporary Cultural Transformation (2002), Adam Roberts, The History of Science Fiction (2006).

11. A similar blurring is seen in what might be called elite fiction, where the role of author and critic is blurred--such as in the middle novels of Samuel Delany--or where the line between the author of fiction and the scholar is blurred, such as the work of Assia Djebar.

12. The chronology here is somewhat disputed. It is clear that Campbell was working as assistant editor by the fall of 1937 and shared editorial duties with Tremaine. Many people, Stableford included, say that Campbell was promoted to editor in May 1938, but several credible sources suggest that Campbell was directly involved with editorial matters much earlier, such as Del Rey (91) and Asimov (I Asimov 73), including the decision to change the name of the publication. This occurred in the issue with the cover date of March 1938. However, before Tremaine was promoted he had made editorial agreements with authors for the March and April issues. The date of May 1938, then, is actually the cover date of the first issue over which Campbell had full editorial control.

13. It is only Heinlein of the early science fiction writers who can survive the charges of the new wave with his ethnic protagonists in the so-called juvenile novels (of the protagonists, Rod Walker is black, Johnny Rico is Filipino), not to mention the relentlessly multicultural novel The Moon is a Harsh Mistress (1966).

14. Jared M. Diamond's Guns, Germs, and Steel: The Fates of Human Societies (1997) will be one of the first attempts not based on race to account for these differences in civilizations--and still today, Diamond's argument cannot escape the suspicion of being somehow racist.

15. Campbell does not invent this style; it is present in Welles's narration.

16. Henry James, certainly, creates a narrator who in part represents the point of view of a psychologist, illustrating how characters form personality by mimicking the models around them and how mental frameworks that one has previously established limit perception. Gertrude Stein, with a similar intention but a different aesthetic, considers how individuals come to exhibit an identity and the possibilities that identity provides for them. William Faulkner experiments with the form of literature itself, asking how a vantage point depends on a sense of privilege and presenting his stories through narrators who lack this preformatted ability to tell stories.

17. These forms involve new means of narrating stories: the fictional autobiography requires the creation of an appropriate persona to tell the story of how social structures are inadequate, such as in Mike Gold's Jews Without Money. The proletarian bildungsroman rewrites the novel of apprenticeship for social aims: it maintains familiar features (the naïve protagonist, the mentorship, the growing abilities) to explain how one wakens to understand one's social conditions. The proletarian social novel, such as John Steinbeck's In

Dubious Battle (1936), that tells the story of multiple characters who come together to accomplish a change or an event in the social fabric; in this case, it is migrant workers who fight against the land owners. The collective novel like John Dos Passos's U.S.A. (1930, 1932, and 1936; published as a trilogy in 1938) also uses the superior vantage point of multiple characters to decenter the idea of a protagonist as a barely countable number of characters strive to find a life of their own.

18. Interestingly, Malcolm Cowley makes a similar criticism of Welles. Regardless of his humble background, Cowley writes, his rise to wealth ha done nothing but put him into a position to dream of "millionaires and technicians that would take over the world and run it intelligently"; a dream that is "botched and unconvincing" (247). Young writers who seek to follow in his path, Cowley writes, will find their way blocked to the plight of the working classes, to the fear that can be used to attack rulers, and the violence that permeates modern life. Welles's wealth and popularity and Campbell's working for a wage and declining popularity is a provocative difference.

19. Some critics, such as Nancy Fraser, have found this patrician ideal to be distasteful and bristle at the suggestion that a sexually exclusive and class-stratified group should be cast as the foundations of modern freedom, but it is important not to lose sight of Habermas's overall argument.

20. When one can pay for a ticket, all have access; the freedom here might be limited to those who can pay but this freedom does not depend upon who is paying because all pay the same price.

21. The cocoa shop works well for this function: anyone with money to spend may buy cocoa and sit down at a table; entry is permitted to all private people and there is no decision ahead of time who will be admitted.

22. Imagine a painting in the cocoa shop: all individuals who want to could join in the conversation, and they can debate societal values by addressing aesthetic concerns ("the painting is good because it supplies the feelings of - - - - - ," or "the painting is bad because it does not - - - - - "). The people at the table can offer opinions about the painting, or even about the criteria by which it will be judged. Individuals who can be identified no longer propose arguments; positions are abstracted from a private person and have the disembodied nature of a pronouncement of the state. A press release cannot change its mind; a scientifically crafted public persona, designed to achieve a specific effect, is not something one can change if one changes one's mind. Publicity destroys the conditions required to maintain the public sphere. Imagine the fate of this painting in the age of expertly crafted, synthetic persona: the opinions about the painting are not those of a private person, so one cannot address the source of the opinion and seek justifications or further information, and the public

relations machine brings a great deal of information to the discussion, making it difficult for the individuals in the conversation to set their own agenda.

23. Bailey's uncomplicated self is simply an adept detective; he disentangles the conflicting ways of life with rationality like his robot companion. Similarly, the plot is not complicated. Certainly, there are twists and surprises, but the basic plot is that of solving a mystery: the complication is that there is a murder, the events rising nicely to finding the murderer. The plot is satisfying; it reinforces the reader's faith in the knowable universe. Form and language, the building blocks of style, are not used imaginatively, unless one considers Asimov's genteel prose to be a form of art (more of that in the last section). In looking at characterization, plot, and style, there is little here that the new wave would consider art.

24. This formula writing, according to Berger, is an application of the scientific method to fiction writing: the author/experimenter is supposed to investigate the result when he or she changes of one controlled variable (30).

25. Abelard Schuman published Asimov's first collection of essays as Only a Trillion.

26. In a letter to a female fan who asks a question about experimental psychology on 8 December 1960, Asimov writes that he is "delighted to see" that she has ignored the title. "I have, myself, a personal preference for intelligent women every time."

27. As with Asimov, the fact that the work of social science fiction is designed with multiple threads does not mean we are dealing with a sandbox in which a reader can play any game imaginable. This issue will be taken up more fully in the next chapter on Star Trek, but it is worthwhile to mention here that it easy to fall into the trap of thinking that the reader can do whatever the reader wants with fiction. This bowdlerized version of reader-response theory is akin to the argument about a person holding a gun: it is all too easy to say that the gun is not good or bad, and the outcome depends on the person holding it. Tools are not quite so simple. Choosing to hold a gun brings with it certain consequences, and holding a gun constrains the field of possibility by eliminating certain actions and encouraging others. While it is incorrect to interpret these stories as promoting a single, fascistically charged vision of society, it is not as if these works do not promote a single and unified vision.

28. In what follows, it is important to remember that these interpretations of Heinlein's novels and social science fiction generally do not fit in with what many believe to be the truth of the science fiction of this period. In part due to the new wave's promotion of itself as the freedom-loving alternative to the repressive early days of science fiction, it is common to think that social science fiction is implicated in an imperialist, totalitarian worldview. Even though the new wave

claims to break ground in engaging ideas about consciousness that cause the reader to reexamine fundamental aspects of his or her worldview, an examination of Heinlein's fiction makes it clear that he and other authors of social science fiction were offering a similar challenge two decades earlier.

29. As noted by Thomas Hine, the New Deal was crucial in creating the modern idea of the teenager, as public policy sought to keep teenagers out of the workforce and then--having created problems by forcing teenagers into idleness--the New Deal created special programs for teens, further separating them from the mainstream (204). The "youth problem" becomes a matter for art; witness the Garland-Rooney musicals like Babes in Arms and Sidney Kingsley's Broadway play Dead End (1937) where misunderstood teenagers cannot exercise their talents in a positive fashion; the Bowery Boy's roughness is a façade that hides a scared teenager in need of guidance. Increasingly, society is charged with providing this guidance.

30. Such anthropological thinking was an inspiration to American liberalism: human personality is not predetermined by biology or society, but can change. Malcolm Cowley, reviewing Mead's Sex and Temperament in Three Primitive Societies (1935), proclaims that after thirty years of anthropological investigation, it has been established that there is little connection between sex and temperament--and goes on to say that "most of the traits connected to social classes are also non-hereditary, are roles invented as if by a dramatist and imposed as if by a dictator" (97). It is hard to imagine how scientists such as Mead helped to give power to liberal ideals and support to progressive causes unless one remembers the power of such social scientists like Herbert Spencer to maintain conservative values of biologically based theories of character.

31. Such a vision of language is often promoted as a triumph in the science fiction of mid-century. Hal Clement's 1954 novel, Mission of Gravity, describes the geometrical problems space explorers face when a ship crash-lands on a planet with an irregular surface. In order to perform a rescue, the human crew must communicate with the native inhabitants who do not speak English. Clement, a World War 2 fighter pilot, is fascinated by the communication problem, but to him it is a matter of functionality. Speaking the common language of engineering, the two groups are able to communicate in a rudimentary fashion and rescue the fallen crew. This vision of language, like Ogden's, is about carrying out orders and coordinating efforts about preplanned activities. It is seen as a victory in overcoming the void between two language groups, and yet no understanding has come forward. This language of efficiency and activity is all that speakers of language need; the language of questioning and debate has no purpose in this world.

32. The use of English as a weapon was an overt component of American Cold War foreign policy. An example of the prevalence of this program can be seen when one considers that more than forty companies were established after 1945

to export books. Furthermore, In 1960s, President Kennedy calls education and culture the fourth part of his foreign policy, combining with economic, political, and military efforts to secure American dominance. American university increase enrollment of foreign students, and Fulbright and other foreign exchange programs become more prevalent, even becoming part of foreign aid as Fulbright positions are used as part of foreign assistance programs.

33. According to critic Joan Rockwell, the spy thriller had a better time in England than in America, where the notion of the "gentleman-spy" fit in with the imperial situation. Novels such as Kipling's Kim (1901) and Maugham's Ashenden, or The British Agent (1928) were written in an environment from which American authors could draw no parallel at the time. The spy as a British protagonist, Rockwell suggests, is easily constructed around "patriotism and gentlemanly, sporting instincts" (326). American protagonists, she notes, are infrequently drawn from this social caste, and the differing literary tradition--and perhaps a different governmental situation--causes a curious phenomenon: American readers before World War II love spy novels, but they stick to British authors who wrote with British characters.

34. This is not such a bad lesson; Kip from Have Space Suit Will Travel, for instance, is a good model of how diligent attention to one's position in life can pay off if one is put to the test. And yet there is something slightly off-putting to this type of narrative: the protagonist is simply dropped into a series of bubbling cauldrons from which readers know he or she will escape. Clearly, sitting back to watch an adept agent is not an unproblematic aesthetic mode. As pointedly satirized by James Thurber in his story "The Secret Life of Walter Mitty," adventure literature does not expand the minds of its readers. Rather, readers use the espionage thriller as a form of escape.

35. A bureaucratic society creates individuals that are suited for one purpose only because it needs workers with specialized skills. Thus individuals are limited by the way they are perceived by the bureaucracy. If the bureaucracy sees them as tax collectors, then they are trained in the ways of tax collection; if the bureaucracy sees them as teachers, then they are trained as teachers. This is an efficient way of organizing a society, but it severely limits the capacity of individual.

36. Reading Thomas More's Utopia as a prescription is surely a mistake, for who would want to live in a city of uniform buildings where the citizens all dress in grey? And yet, More is often read as if he wanted England to follow the lead of King Utopus; there is something satisfying in thinking that More's consciousness is embedded in his characterization and setting instead of the narrative situation, which clearly promotes standing about in a public space considering how society ought to be organized.

37. This technique is well used by Heinlein himself in Glory Road--we meet the Hero Gordon on the beach, and he progresses through a series of challenges. When he realizes that Star could have simply transported them to the location of the Egg, he wonders why she put him through so much difficulty. She explains that she had to; it was necessary for the hero to learn the skills he needed for the successful completion of his quest and to develop the emotions that would make him want to accomplish it.

38. Even an article by Larry Kreitzer, which documents the use of allusion in Star Trek, derides the series. At first it seems as if he is neutral or perhaps laudatory about the use of classical, Shakespearean, and pop culture allusion, saying that the world of Star Trek is a "well-read one" (1). But by the end, it is clear that he does not mean the "veneer" of his title positively, suggesting that allusion functions to trick the viewer into accepting the ideology of the series as natural.

39. It would be nice to say that science fiction invented fan fiction, but this does not seem to be accurate either. The character Sherlock Holmes, created by Arthur Conan Doyle for serial fiction beginning in 1887, inspired others to use this character in their own fiction. The Harry Dickson series of pulp novels exist in the Sherlock Holmes universe, and authors begin to pit their own characters against Holmes in their own fiction even while the Doyle stories are being serialized: Maurice Leblanc does so in 1905 and Arnould Galopin in 1910.

40. Sometimes the title is translated as "The Work of Art in the Age of Mechanical Reproduction."

41. Think here of Fiske's explanation of the appeal of the Madonna look, music, and videos: "[T]he pleasure that they give is not the pleasure of what they say, but of their assertion of the right and the power of a severely subordinated subculture to make their own statements, their own meanings" (233). Like the Madonna look, Star Trek shines a light into a cultural space where meaning can be created that suits the readers.

42. In the letter of 23 June 1964, Clarke reports that Kubrick would write the screenplay. However, it appears that this arrangement changed quickly. Clarke reports on 27 July 1964 that he is working on both the novel and the script.

43. In attempting to account for reality, in other words, it is not as if the child brings forth multiple independent ideas of reality; each vision is tempered by the last, and one set of rules can be used as the starting point for an attempt to understand a new reality. Instead of making random predictions about the universe, the child uses mistaken hypotheses that fail to account for reality as the stepping-stones to a better model for the world. What the child wants, and what the child experiences, come together in the creative space, where the differing rules collide and new rules are developed and prepared for evaluation.

44. The narrator is usually in one of two different positions. Sometimes this narrator is a character inside the story that explains the inner working of the drama; such a narrator is identified with the characters and shares their perspective. This is often a first-person narrator, a self-conscious entity whose rhetorical burden is to explain to strangers (the readers) what the people on the inside are feeling and doing. Other times, the narrator is outside of the story and watches the drama from the periphery, on the same side as the reader; such a narrator is presumed to be of a similar caste as the reader and the strangers are the characters in the dramatic space.

Bibliography

2001: A Space Odyssey; Twenty-Fifth Anniversary Edition. Dir. Stanley Kubrick. MGM Home Video, 1994.

2010: The Year We Make Contact. Dir. Peter Hyams. Warner Home Video, 2001.

Adler, Renata. "The Screen: 2001 Is Up, Up and Away." New York Times, 4 April 1968, p. 58.

Atheling, William, Jr. (James Blish). The Issue at Hand: Studies in Contemporary Magazine Science Fiction. Chicago: Ace, 1964.

Akin, William E. Technocracy and the American Dream: The Technocrat Movement, 1900-1941. Berkeley: U of California P, 1977.

Aldiss, Brian Wilson, and Harry Harrison, eds. Hell's Cartographers: Some Personal Histories of Science Fiction Writers. New York: Harper & Row, 1975.

Aldiss, Brian Wilson. Trillion Year Spree: The History of Science Fiction. New York: Atheneum, 1986.

Amis, Kingsley. New Maps of Hell. New York: Harcourt, Brace, 1960.

Ash, Brian. Faces of the Future: The Lessons of Science Fiction. New York: Taplinger, 1975.

- - - - - - - - - - -. Who's Who in Science Fiction. New York: Taplinger, 1976.

Asimov, Isaac. Asimov on Science Fiction. New York: Avon Books, 1981.

- - - - - - - - - - -. Before the Golden Age, Volume 1. New York: Orbit, 1974.

- - - - - - - - - - -. The Caves of Steel. New York: Fawcett, 1981.

- - - - - - - - - - -. The Foundation Trilogy: Three Classics of Science Fiction. Garden City, New York: Doubleday, 1955.

- - - - - - - - - - -. I, Asimov: A Memoir. New York: Doubleday, 1994.

- - - - - - - - - - -. In Joy Still Felt: The Autobiography of Isaac Asimov, 1954-1978. New York: Doubleday, 1980.

- - - - - - - - - -. In Memory yet Green: The Autobiography of Isaac Asimov, 1920-1954. New York: Avon, 1980.

- - - - - - - - - -. Letter to A. H. McLeod. 2 December 1960. From the Isaac Asimov Collection in The Howard Gotlieb Archival Research Center, Boston University. Box 18, folder b.

- - - - - - - - - -. Letter to E. J. Carnell. 15 July 1957. From the Isaac Asimov Collection in The Howard Gotlieb Archival Research Center, Boston University. Box 13, folder b.

- - - - - - - - - -. Letter to Frederik Pohl. 14 Jan. 1952. From the Isaac Asimov Collection in The Howard Gotlieb Archival Research Center, Boston University. Box 38, folder a.

- - - - - - - - - -. Letter to Joan Novak. From the Isaac Asimov Collection in The Howard Gotlieb Archival Research Center, Boston University.

- - - - - - - - - -. Letter to Michael Bodden. From the Isaac Asimov Collection in The Howard Gotlieb Archival Research Center, Boston University.

- - - - - - - - - -. Letter to Mrs. Cox. 9 June 1955. From the Isaac Asimov Collection in The Howard Gotlieb Archival Research Center, Boston University. Box 1, folder 1.

- - - - - - - - - -. Letter to Mrs. John Lorenz. From the Isaac Asimov Collection in The Howard Gotlieb Archival Research Center, Boston University.

- - - - - - - - - -. Letter to The Saturday Evening Post. 28 December 1960. From the Isaac Asimov Collection in The Howard Gotlieb Archival Research Center, Boston University. Box 10, folder g.

- - - - - - - - - -. Letter. 14 February 1964. From the Isaac Asimov Collection in The Howard Gotlieb Archival Research Center, Boston University.

- - - - - - - - - -. The New Intelligent Man's Guide to Science. New York: Basic Books, 1965.

- - - - - - - - - -. Prelude to Foundation. Spectra, 1988.

- - - - - - - - - -. "Social Science Fiction." In Modern Science Fiction, Its Meaning and Its Future. Reginald Bretnor, ed. New York: Coward-McCann, 1953.

Asimov, Isaac, ed. Great Science Fiction Stories by the World's Great Scientists. New York: Fine Books, 1985.

- - - - - - - - - -. Nine Prize-Winning Science Fiction Stories. New York: Avon, 1962.

Asimov, Stanley, ed. Yours, Isaac Asimov: A Lifetime of Letters. New York: Doubleday, 1995.

Avižienis, Algirdas. "Scanning the Issue." Special Issue on Fault-Tolerant Digital Systems: Is HAL Going to Join Us before 2001? Proceedings of the IEEE 66.10 (October 1978): 1107-8.

Bagdikian, Ben H. The New Media Monopoly (1993). Boston: Beacon Press, 2004.

Bailey, J. O. Pilgrims through Space and Time: Trends and Patterns in Scientific and Utopian Fiction. New York: Argus, 1947.

Bainbridge, William Sims. Dimensions of Science Fiction. Cambridge, MA: Harvard UP, 1986.

- - - - - - - - - - -. The Spaceflight Revolution: A Sociological Study. New York: Wiley-Interscience, 1976.

Banks, Michael A. "Hugo Gernsback: The Man Who Invented the Future. Part 1. The Early Days." 3 September 2004. The Citizen Scientist. Accessed online from http://www.sas.org/tcs on 10 March 2007.

- - - - - - - - - - -. "Hugo Gernsback: The Man Who Invented the Future. Part 2. Writing, Publishing and Inventing." 10 September 2004. The Citizen Scientist. Accessed online from http://www.sas.org/tcs on 10 March 2007.

- - - - - - - - - - -. "Hugo Gernsback: The Man Who Invented the Future. Part 3. Merging Science Fiction into Science Fact." 1 October 2004. The Citizen Scientist. Accessed online from http://www.sas.org/tcs on 10 March 2007.

Barthes, Roland. S/Z, An Essay. Trans. Richard Miller. New York: Hill and Wang, 1974.

Barzun, Jacques. "Meditations on the Literature of Spying." American Scholar (Spring 1965): 167-78.

Benedict, Ruth. Patterns of Culture (1934). Boston: Houghton Mifflin, 1989.

Ben-Tov, Sharona. The Artificial Paradise: Science Fiction and American Reality. Ann Arbor: U of Michigan P, 1995.

Ben-Yehuda, Nachman. Deviance and Moral Boundaries: Witchcraft, the Occult, Science Fiction, deviant Sciences and Scientists. Chicago: University of Chicago Press, 1985.

Berger, Albert I. The Magic That Works: John W. Campbell and the American Response to Technology. San Bernardino, CA: Borgo Press, 1993.

- - - - - - - - - -. "Theories of History and Social Order in Astounding Science Fiction, 1934-55." Science-Fiction Studies 15 (1988): 12-33.

Bernardi, Daniel, "Star Trek in the 1960s: Liberal-Humanism and the Production of Race." Science Fiction Studies 24 (1997): 209-25.

Berthoff, Warner. The Ferment of Realism: American Literature, 1884-1919. New York: Free Press, 1966.

Bick, Ilsa J. "Boys in Space: 'Star Trek,' Latency, and the Neverending Story." Cinema Journal 35.2 (Winter 1996): 43-60.

Biggle, Lloyd. Nebula Award Stories Seven. New York: Harper and Row, 1973.

Bleiler, Everett Franklin. "John W. Campbell, Jr.: 1910-1971." In Science Fiction Writers: Critical Studies of the Major Authors from the Early Nineteenth Century to the Present Day. Ed. E. F. Bleiler. New York: Charles Scribner's Sons, 1982. 151-9.

- - - - - - - - - -. Science-Fiction: The Gernsback Years: A Complete Coverage of the Genre Magazines Amazing, Astounding, Wonder and Others from 1926 through 1936. Kent, OH: Kent State UP, 1998.

Boal, Augusto. Theatre of the Oppressed. New York : Urizen Books, 1979.

Bolton, Frederick Elmer. Adolescent Education. New York: Macmillan, 1931.

Booch, Grady. "Coming of Age in an Object-Oriented World." IEEE Software 11.6 (Nov. 1994): 33-41.

Bretnor, Reginald. Modern Science Fiction, Its Meaning and Its Future. New York: Coward-McCann, 1953.

Brians, Paul. Nuclear Holocausts: Atomic War in Fiction, 1895-1984. Kent, OH: Kent State UP, 1987.

Bush, Vannevar. "As We May Think" (1945). Accessed online from <http://www.theatlantic.com/doc/194507/bush> 12 January 2006.

Buttazzo, Giorgio. "Artificial Consciousness: Utopia or Real Possibility?" IEEE Computer Magazine 34: 24–30.

Campbell, John W. "Colonialism." Analog Science Fact and Fiction. April 1961: 4-7, 175-7.

- - - - - - - - - -. "Democracy." Astounding April 1938: 125.

- - - - - - - - - - -. "Five Years!" Astounding, September 1938: 57.

- - - - - - - - - - -. "Future Tense." Astounding, June 1939: 6.

- - - - - - - - - - -. Islands of Space. New York: Ace Books, 1956.

- - - - - - - - - - -. The Mightiest Machine. New York: Ace Books, 1947.

- - - - - - - - - - -. A New Dawn: The Complete Don. A Stuart Stories. James A. Mann, ed. Framingham, MA: NESFA P, 2003.

- - - - - - - - - - -. "On the Selective Breeding of Human Beings." Analog Science Fact and Fiction. February 1961: 4-7, 176-8.

- - - - - - - - - - -. "Other Eyes Watching." Ed. Isaac Asimov. Before the Golden Age, Book 3: 12 Science Fiction Classics of the Thirties. Greenwich, CT: Fawcett, 1974.

- - - - - - - - - - -. "Race Riots." Analog Science Fact and Fiction. January 1965. 7, 94-5.

- - - - - - - - - - -. "Science-Fiction." Astounding, March 1938: 37.

- - - - - - - - - - -. "We Must Study Psi." Astounding, January 1959: 4-7, 159-62.

Carroll, Noel. Mystifying Movies: Fads and Fallacies in Contemporary Film Theory. New York: Columbia UP, 1988.

Carter, Paul Allen. Creation of Tomorrow: Fifty Years of Magazine Science Fiction. New York: Columbia UP, 1977.

Cawelti, John G. and Bruce A. Rosenberg. The Spy Story. Chicago: Chicago UP, 1987.

Cioffi, Frank. Formula Fiction? An Anatomy of American Science Fiction, 1930-1940. Westport, CT: Greenwood, 1982.

Cixous, Hélène. The Newly Born Woman. Trans. Betsy Wing. Minneapolis, MN: U Minnesota P, 1986.

Clareson, Thomas D. Understanding Contemporary American Science Fiction: The Formative Period (1926-1970). Columbia, S.C.: U of South Carolina P, 1990.

- - - - - - - - - - -. SF: The Other Side of Realism. Bowling Green, OH: Bowling Green U Popular Pohl, 1971.

Clarke, Arthur C. Childhood's End. New York: Ballantine Books, 1953.

- - - - - - - - - - . Earthlight. New York: Ballantine Books, 1955.

- - - - - - - - - - . A Fall of Moondust. New York: Harcourt, Brace & World, 1961.

- - - - - - - - - - . Islands in the Sky (1952). New York: Penguin, 1972.

- - - - - - - - - - . "Kalinga Prize Speech." Voices from the Sky. New York: Harper, 1965.

- - - - - - - - - - Letter to David Higham. 22 May 1964. From the Higham Literary Collection of the Harry Ransom Humanities Research Center, The University of Texas at Austin. Box 717.

- - - - - - - - - - . Letter to David Higham. 23 June 1964. From the Higham Literary Collection of the Harry Ransom Humanities Research Center, The University of Texas at Austin. Box 717.

- - - - - - - - - - . Letter to David Higham. 7 March1964. From the Higham Literary Collection of the Harry Ransom Humanities Research Center, The University of Texas at Austin. Box 717.

- - - - - - - - - - . Prelude to Space (1951). New York: Ballantine Books, 1991.

- - - - - - - - - - . Sands of Mars. New York: Gnome Press, 1952.

- - - - - - - - - - . The City and the Stars. New York: Harcourt, Brace, 1956.

- - - - - - - - - - . The Exploration of Space. New York: Harper, 1959.

- - - - - - - - - - . The Lost Worlds of 2001. New York: New American Library, 1972; reprinted Boston: Gregg, 1979.

- - - - - - - - - - . The Making of a Moon: The Story of the Earth Satellite Program. New York: Harper, 1957.

- - - - - - - - - - . The Voice Across the Sea. Revised. New York: Harper and Row, 1974.

- - - - - - - - - - . Voices from the Sky: Previews of the Coming Space Age. New York: Harper and Row, 1965.

Clarke, Arthur C. and Mike Wilson. Boy Beneath the Sea. New York: Harper, 1958.

- - - - - - - - - - . Coast of Coral. New York: Harper, 1956.

- - - - - - - - - - . Reefs of Taprobane. New York: Harper, 1957

- - - - - - - - - -. The Treasure of the Great Reef. New York: Harper and Row, 1964.

Clarke, I. F. The Tale of the Future: From the Beginning to the Present Day (1961). 3rd ed. London: The Library Association, 1978.

Cowley, Malcolm. Think Back on Us … A Contemporary Chronicle of the 1930's by Malcolm Cowley. Ed. Henry Dan Piper. Carbondale, IL: Southern Illinois UP, 1967.

Crary, Jonathan. Techniques of the Observer: On Vision and Modernity in the Nineteenth Century. Cambridge, MA: MIT P, 1990.

Damon Knight. In Search of Wonder. Chicago: Advent, 1956. Enlarged in 1967.

Davenport, Basil. An Inquiry into Science Fiction. New York: Longmans, Green, 1955.

de Camp, L. Sprague. Science Fiction Handbook, Revised: A Guide to Writing Imaginative Literature. New York: McGraw-Hill, 1975.

- - - - - - - - - -. Science Fiction Handbook: The Writing of Imaginative Fiction. New York: Hermitage House, 1953.

De Kooning, Elaine. High Man. 1954.

Del Rey, Lester. The World of Science Fiction, 1926-1976: The History of a Subculture. New York: Ballantine, 1979.

Delany, Samuel R. The Jewel-Hinged Jaw: Notes on the Language of Science Fiction. Elizabethtown, NY: Dragon P, 1977.

Deleuze, Gilles and Felix Guattari. A Thousand Plateaus: Capitalism and Schizophrenia. Minneapolis, MN: U of Minnesota P, 1987.

Denning, Michael. Cover Stories: Narrative and Ideology in the British Spy Thriller. New York: Routledge, 1987.

Denning, Michael. Culture in the Age of Three Worlds. New York: Verso, 2004.

Derleth, August. Beyond Time and Space. New York: Pellegrini & Company, 1950.

Diamond, Jared. Guns, Germs, and Steel: The Fates of Human Societies. New York: Norton, 1999.

Disch, Thomas M. The Dreams Our Stuff Is Made Of: How Science Fiction Conquered the World. New York: Free Press, 1998.

- - - - - - - - - - -. "The Embarrassments of Science Fiction" in Science Fiction at Large, ed. Peter M. Nicholls. New York: Harper & Row, 1976.

Duchamp, Marcel. Nude Descending a Staircase, No. 2. 1912. Philadelphia Museum of Art.

Duncombe, Stephen. Notes from Underground: Zines and the Politics of Alternative Culture. New York: Verso, 1997.

Eco, Umberto. The Role of the Reader: Explorations in the Semiotics of Texts. Bloomington, Indiana: Indiana UP, 1979.

Ehn, Pelle. Work-Oriented Design of Computer Artifacts. Stockholm: Arbetslivscentrum, 1989.

Elkins, Charles L. "Asimov's Foundation Novels: Historical Materialism Distorted into Cyclical Psychohistory." Ed. Joseph D. Olander and Martin Harry Greenberg. Isaac Asimov. New York: Taplinger, 1977. 97-110.

Ellison, Harlan, ed. Dangerous Visions: The 35th Anniversary Edition. I Books, 2002.

Ellul, Jacques. The Technological Society (1954, trans. 1964). Trans. John Wilkinson. New York: Knopf, 1970.

Elsner, Ján. "Cultural Resistance and the Visual Image: The Case of Dura Europos." Classical Philology, 96.3 (July 2001): 269-304.

Elsner, Henry. The Technocrats: Prophets of Automation. Syracuse, NY: Syracuse UP, 1967.

Eshbach, Lloyd A., ed. Of Worlds Beyond: The Science of Science Fiction Writing. (1947). Reprint. Chicago: Advent, 1964.

Ferguson, Kathy E., Gilad Ashkenazi, and Wendy Schultz. "Gender Identity in Star Trek." In Hassler and Wilcox, Political Science Fiction.

Ferns, C. S. Narrating Utopia: Ideology, Gender, Form in Utopian Literature. Liverpool: Liverpool UP, 1999.

Fiske, John. Television Culture. New York: Methuen, 1987.

Fitzpatrick, Anne and Mary Croarken. "Events and Sightings." IEEE Annals of the History of Computing 23.1 (2001): 57-61.

Foucault, Michel. The Foucault Reader. Ed. Paul Rabinow. New York: Pantheon Books, 1984.

Franklin, H. Bruce. "Star Trek in the Vietnam Era." Science-Fiction Studies 21 (1994): 24-34.

Fraser, Nancy. "Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy," in Habermas and the Public Sphere. Ed. Craig Calhoun. Cambridge, Mass: MIT Press, 1991. 109-142.

Friend, Christy. "Pirates, Seducers, Wronged Heirs, Poison Cups, Cruel Husbands, and Other Calamities: The Roman School Declamations and Critical Pedagogy." Rhetoric Review 17.2: 300-20.

Gernsback, Hugo. Evolution of Modern Science Fiction. N.p.: New York, 1952.

Gibbon, Edward. The History of the Decline and Fall of the Roman Empire. Ed. J. B. Bury. London: Methuen, 1909. Reprint. AMS Press, New York, 1974.

Godard, Jean-Luc. Alphaville (1965). Criterion, 1998.

Golumbia, David. "Black and White World: Race, Ideology, and Utopia in 'Triton' and 'Star Trek'." Cultural Critique 32 (Winter, 1995-1996); 75-95.

Gomel, Elana. "Aliens Among Us: Fascism and Narrativity." JNT: Journal of Narrative Theory 30.1: 127-62.

Goodstone, Tony, ed. The Pulps: Fifty Years of American Pop Culture. New York: Chelsea House, 1970.

Goulart, Ron. Cheap Thrills: An Informal History of the Pulp Magazines. New Rochelle, NY: Arlington House, 1972.

Goulding, Jay. Empire, Aliens, and Conquest: A Critique of American Ideology in Star Trek and Other Science Fiction Adventures. Toronto: Sisyphus, 1985.

Gramsci, Antonio. Selections from the Prison Notebooks. Trans. Quintin Hoare and Geoffrey Nowell Smith. New York: International Publishers, 1973.

Greenland, Colin. The Entropy Exhibition: Michael Moorcock and the British "New Wave" in Science Fiction. Boston: Routledge & Kegan Paul, 1983.

Greenstein, Shane. "It Has Bugs, but the Games Are Out of This World." IEEE Micro 17.2 (March/April 1997): 5-6.

Gunn, James. Isaac Asimov: The Foundations of Science Fiction. New York: Oxford UP, 1982.

Gunning, Tom. "An Aesthetic of Astonishment: Early Film and the (In)Credulous Spectator," Viewing Positions: Ways of Seeing Film. Linda Williams, ed. New Jersey: Rutgers UP, 1995.

- - - - - - - - - - -. "Before Documentary: Early Nonfiction Films and the 'View' Aesthetic." Ed. Daan Hertog and Nico de Klerk. Nonfiction in the Teens, Amsterdam: Nederlands Filmmuseum, 1994.

Guthke, Karl Siegfried. The Last Frontier: Imagining Other Worlds, from the Copernican Revolution to Modern Science Fiction (1983). Trans. Helen Atkins. Ithaca, NY: Cornell UP, 1990.

Habermas, Jürgen. The Structural Transformation of the Public Sphere An Inquiry into a Category of Bourgeois Society. Cambridge, MA: MIT P, 1991.

Hall, G. S. Adolescence: Its Psychology and Its Relations to Physiology, Anthropology, Sociology, Sex, Crime, Religion and Education. New York: D. Appleton, 1904.

Haraway, Donna. Simians, Cyborgs, and Women: The Reinvention of Nature. New York: Routledge, 1991.

Harrison, Harry, ed. Astounding: John W. Campbell Memorial Anthology. New York: Random House, 1973.

Hartley, John. The Politics of Pictures: The Creation of the Public in the Age of Popular Media. New York: Routledge, 1992.

Hassler, Donald M. and Clyde Wilcox, eds. Political Science Fiction. Columbia, S.C.: U South Carolina P, 1997.

Hayles, N. Catherine. How We Became Posthuman. New York: W.W. Norton, 2002.

Healy, Raymond J. and J. Francis McComas, Adventures in Time and Space. New York: Random House, 1946.

Hein, Thomas. The Rise and Fall of the American Teenager. New York: Harper Perennial, 2000.

Heinlein, Robert A. Citizen of the Galaxy. New York: Ballantine, 1957.

- - - - - - - - - - -. Friday. New York: Ballantine, 1982.

- - - - - - - - - - -. Glory Road. New York: Putnam, 1963.

- - - - - - - - - - -. Have Space Suit--Will Travel (1958). New York: Ballantine, 1990.

- - - - - - - - - - -. The Moon is a Harsh Mistress (1966). New York: Tor, 1996.

- - - - - - - - - - -. "Ray Guns and Rocket Ships." Library Journal 78 (July 1953): 1188-90.

- - - - - - - - - - -. Revolt in 2100. New York: Signet, 1955.

- - - - - - - - - - -. "The Roads Must Roll." In The Man Who Sold the Moon (1950). Signet, 1970.

- - - - - - - - - - -. Sixth Column (1949). New York: Baen, 1999.

- - - - - - - - - - -. Space Cadet (1948). New York: Ballantine, 1992.

- - - - - - - - - - -. Starship Troopers. New York: Putnam, 1959.

Higham, David. Letter to Donald Cameron. 25 November 1959. From the Higham Literary Collection of the Harry Ransom Humanities Research Center, The University of Texas at Austin. Box 507.

Hollinger, Veronica and Joan Gordon, ed. Edging into the Future: Science Fiction and Contemporary Cultural Transformation. Philadelphia: U of Pennsylvania P, 2002.

Hopman, Abraham N. Letter to Arthur C. Clarke, United States Information Agency. From the Higham Literary Collection of the Harry Ransom Humanities Research Center, The University of Texas at Austin. Box 412.6.

Horkheimer, Max and Theodor W. Adorno. Dialectic of Enlightenment (1944). New York: Continuum, 2002.

Huntington, John. "'Not Earth's Feeble Stars': Thoughts on John W. Campbell Jr.'s Editorship." Science Fiction and Market Realities. Ed Gary Westfahl, George Slusser, and Eric S. Rabkin. Athens, GA: U Georgia P, 1996.

- - - - - - - - - - -. Rationalizing Genius: Ideological Strategies in the Classic American Science Fiction Story. New Brunswick, NJ: Rutgers UP, 1989.

IEEE. "History of the IEEE." <www.ieee.org>. Accessed 16 March 2007.

Jacobs, Jane. Death and Life of Great American Cities (1961). New York: Vintage, 1992.

James, Edward. Science Fiction in the Twentieth Century. New York: Oxford UP, 1994.

Jameson, Fredric. Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions. New York: Verso, 2005.

- - - - - - - - - - -. "Reification and Utopia in Mass Culture." Social Text 1 (1979): 130-48.

Jenkins, Henry. "'At Other Times, Like Females:' Gender and Star Trek Fan Fiction." Tulloch and Jenkins, 196-212.

- - - - - - - - - -. Textual Poachers: Television Fans and Participatory Culture. New York: Routledge, 1992.

Jenkins, Henry and Greg Dancer. "'How Many Starfleet Officers Does It Take to Change a Lightbulb?' Star Trek at MIT." Tulloch and Jenkins, pp. 213-236

Jones, Raymond. The Cybernetic Brains. New York: Avalon, 1962.

Kant, Immanuel. "What Is Enlightenment." Retrieved 22 February 2007 from <http://www.fordham.edu/halsall/mod/kant-whatis.html>.

Karl, Frederick Robert. Modern and Modernism: The Sovereignty of the Artist, 1885-1925. New York: Atheneum, 1985.

Katz, Harvey A. Introductory Psychology through Science Fiction. Chicago: Rand McNally, 1974.

Kennan, George. "The Sources of Soviet Conduct" (1947). Reprinted by Steven Kreis in The History Guide. Accessed online on 10 December 2004 from <http://www.historyguide.org/europe/kennan.html>.

Ketterer, David. New Worlds for Old. Garden City, NY: Doubleday, 1974.

Kilgore, De Witt Douglas. Astrofuturism: Science, Race, and Visions of Utopia in Space. Philadelphia: U of Pennsylvania P, 2003.

Knight, Damon Francis. The Futurians. New York: John Day, 1977.

- - - - - - - - - -. In Search of Wonder: Essays on Modern Science Fiction. Chicago: Advent, 1967.

Korn, Jacqueline. Letter to Scott Meredith. 28 March 1961. From the Higham Literary Collection of the Harry Ransom Humanities Research Center, The University of Texas at Austin. Box 507.

Krauss, Lawrence M. The Physics of Star Trek. New York: Harper, 1996

Kreitzer, Larry. "The Cultural Veneer of Star Trek." The Journal of Popular Culture 30.2: 1-28.

Kuhn, Thomas. The Structure of Scientific Revolutions. Chicago: U Chicago P, 1970.

Lagon, Mark P. "'We Owe It to Them to Interfere': Star Trek and U.S. Statecraft in the 1960s and the 1990s. In Hassler and Wilcox, Political Science Fiction.

Lai, Jennifer C. "When Computers Speak, Hear, and Understand." Communications of the ACM 44.3: 66-67.

Lamb, Patricia Frazer and Diana L. Veith. "Romantic Myth, Transcendence, and Star Trek Zines. Ed. Donald Palumbo. Erotic Universe: Sexuality and Fantastic Literature. New York: Greenwood Press, 1986.

Landon, Brooks. Science fiction after 1900: From the Steam Man to the Stars. New York: Twayne, 1997.

Landy, Marcia. "Culture and Politics in the Work of Antonio Gramsci." boundary 2 14.3 (Spring, 1986): 49-70.

Lears, T. J. Jackson. "The Concept of Cultural Hegemony: Problems and Possibilities." American Historical Review 90.3 (Jun. 1985), 567-93.

Leja, Michael. Reframing Abstract Expressionism: Subjectivity and Painting in the 1940s. New Haven, CT: Yale UP, 1993.

Lessig, Lawrence. Free Culture: The Nature and Future of Creativity. New York: Penguin, 2004.

Licklider, J. C. R. "Man-Computer Symbiosis" IRE Transactions on Human Factors in Electronics, Volume HFE-1 (March 1960) 4-11.

Lucky, Robert W. "2001: Technology and the Movie." IEEE Spectrum March 2001: 102.

Lundwall, Sam J. Science Fiction: What It's All About. New York: Ace Books, 1971.

Lynd, Robert S. and Helen Merrell Lynd. Middletown: A Study in Modern American Culture. New York: Harcourt, Brace, Jovanovich, 1956.

Lyotard, Jean-François. The Postmodern Condition a Report on Knowledge. Minneapolis: U of Minnesota P, 1984.

MacDougall, David. The Corporeal Image: Film, Ethnography, and the Senses. Princeton, NJ: Princeton UP, 2006.

McLuhan, Marshall. Understanding Media: The Extensions of Man (1964). Gingko, 2003.

Malmgren, Carl Darryl. Worlds Apart: Narratology of Science Fiction. Bloomington: Indiana UP, 1991.

Malzberg, Barry N. The Engines of the Night: Science Fiction in the Eighties. Garden City, NY: Doubleday, 1982.

Manlove, C. N. Science Fiction: Ten Explorations. Kent, OH: Kent State UP, 1986.

Manovich, Lev. The Language of New Media. Cambridge, MA: MIT P, 2001.

Marcuse, Herbert. One Dimensional Man (1964). Boston: Beacon, 1966.

Martinez, Theresa A. "Popular Culture as Oppositional Culture: Rap as Resistance." Sociological Perspectives 40.2 (1997): 265-86.

Massie, Keith and Stephen D. Perry. "Hugo Gernsback and Radio Magazines: An Influential Intersection in Broadcast History." Journal of Radio Studies 9.2 (2002): 264-81.

McNelly, Willis E., ed. Science Fiction: The Academic Awakening. Supplement to the CEA Critic 37.1 (Nov. 1974).

McNelly, Willis Everett and Leon E. Stover. Above the Human Landscape: A Social Science Fiction Anthology. Pacific Palisades, CA: Goodyear, 1972.

Mead, Margaret. And Keep Your Powder Dry: An Anthropologist Looks at America. Revised. New York: William Morrow, 1965.

- - - - - - - - - - -. Coming of Age in Samoa (1928). New York: Dell, 1961.

Melley, Timothy. Empire of Conspiracy: The Culture of Paranoia in Postwar America. Ithaca, NY: Cornell UP, 2000.

Merril, Judith. England Swings SF: Stories of Speculative Fiction. New York: Ace Books, 1968.

- - - - - - - - - - -. "Books." Magazine of Fantasy and Science Fiction 28 (May 1965): 70-5.

- - - - - - - - - - -. "Books." Magazine of Fantasy and Science Fiction 28 (April 1965): 68-74.

- - - - - - - - - - -. "Books." Magazine of Fantasy and Science Fiction 31.6 (December 1966).

- - - - - - - - - - -. "Books." Magazine of Fantasy and Science Fiction 33.5 (November 1967): 28-36.

- - - - - - - - - -. "Books." Magazine of Fantasy and Science Fiction 35.2 (September 1968): 42-9.

Merril, Judith and Emily Pohl-Weary. Better to Have Loved: The Life of Judith Merril. Toronto: Between the Lines, 2002.

Meynaud, Jean. Technocracy (1964). Trans. Paul Barnes. London: Faber and Faber, 1968.

Michelson, Annette. "Bodies in Space: Film as Carnal Knowledge." The Making of 2001: A Space Odyssey. Ed. Stephanie Schwam. New York: Modern Library, 2000.

Midbon, Mark. "Creation Machines: Stanley Kubrick's View of Computers in 2001." Computers and Society 20.4 (Dec. 1990): 7-12.

Moorcock, Michael. "Starship Stormtroopers" (1977). Reprinted in The Opium General and Other Stories. London: Harrap, 1984.

Morris, Meaghan. "Banality in Cultural Studies." Block 14, 1988. <http://www.haussite.net/haus.0/SCRIPT/txt1999/11/Morrise.HTML> 2 November 2006.

Morton, Dave. "The Electrical Century." Proceedings of the IEEE 87.2 (February 1999): 390-3.

Moskowitz, Sam. The Immortal Storm: A History of Science Fiction Fandom (1954). Westport, CT: Hyperion, 1974.

- - - - - - - - - -. Strange Horizons: The Spectrum of Science Fiction. New York: Charles Scribners, 1976.

Nelson, Theodor H. Literary Machines (1982). Mindful Press, 1993.

Ofshe, Richard, ed. The Sociology of the Possible. Englewood Cliffs, NJ: Prentice-Hall, 1970.

Ogden, Charles K., Basic English: A General Introduction with Rules and Grammar. London: K. Paul, Trench, Trubner, 1930.

Orth, Michael. "Reefs on the Right: Fascist Politics in Contemporary American Libertarian Utopias." Extrapolation 31 (Winter 1990): 293-316.

Orwell, George. 1984. New York: Harcourt Brace Jovanovich, 1949.

Pacey, Arnold. Technology in World Civilization: A Thousand-Year History. Cambridge, MA: MIT P, 1990.

Panshin, Alexei and Cory. SF in Dimension: A Book of Explorations (1976). Chicago: Advent, 1980

Partridge, E. DeAlton. Social Psychology of Adolescence. New York: Prentice-Hall, 1938.

Patterson, William H. Jr. and Andrew Thornton. The Martian Named Smith: Critical Perspectives on Robert A. Heinlein's Stranger in a Strange Land. Sacramento, CA: Nitrosyncretic P, 2001.

Patterson, William. Private correspondence.

Phillips, Bernard S. Worlds of the Future: Exercises in the Sociological Imagination. Columbus OH: Charles E. Merrill Publishing Company, 1972.

Phillips, Gene D., ed. Stanley Kubrick Interviews. Jackson: UP of Mississippi, 2001.

Pilkington, Ace G. "Star Trek: American Dream, Myth, and Reality." Encyclia: The Journal of the Utah Academy of Sciences, Arts, and Letters 69: 65-76.

Plank, Robert. The Emotional Significance of Imaginary Beings: A Study of the Interaction between Psychopathology, Literature, and Reality in the Modern World. Springfield, IL: Thomas, 1968.

Platt, Charles. Dream Makers: Science Fiction and Fantasy Writers at Work (1980). New York: Ungar, 1987.

Pohl, Frederik. The Way the Future Was: A Memoir. New York: Ballantine Books, 1978.

Postman, Neil. Technopoly: The Surrender of Culture to Technology. New York: Vintage, 1992.

Pounds, Micheal C. Race in Space: The Representation of Ethnicity in Star Trek and Star Trek: The Next Generation. Lanham, MD: Scarecrow P, 1999.

Rabkin, Eric S. "Eric Rabkin's Home Page." 7 March 2007. Retrieved from http://www-personal.umich.edu/~esrabkin/ on 24 March 2007.

Raley, Rita. "Machine Translation and Global English." Yale J of Criticism 16.2 (2001): 291-313.

Raymond, Allen. What Is Technocracy? New York: McGraw-Hill, 1933.

Reid-Jeffery, Donna. "Star Trek: The Last Frontier in Modern American Myth." Folklore and Mythology Studies 6 (1982): 34-41.

Richter, Dan. Moonwatcher's Memoir: A Diary of 2001: A Space Odyssey. New York: Carroll & Graf, 2002.

Robert Silverberg, ed. The Mirror of Infinity: A Critics' Anthology of Science Fiction. New York: Harper and Row, 1970.

Roberts, Adam. The History of Science Fiction. New York: Palgrave Macmillan, 2006.

Rockwell, Carey. Tom Corbett, Space Cadet: Danger in Deep Space. New York: Grosset & Dunlap, 1953.

- - - - - - - - - -. Tom Corbett, Space Cadet: Stand By for Mars. New York: Grosset & Dunlap, 1952.

Rockwell, Joan. "Normative Attitudes of Spies in Fiction." Ed. Bernard Rosenberg and David Manning White. Mass Culture Revisited. New York: Van Nostrand Reinhold, 1971.

Roddenberry, Gene. "Star Trek: First Draft, March 11, 1964." Retrieved online from <http://www.ydg.com/trek5/trek_pitch.pdf> 11 February 2006.

Rogers, Alva, ed. A Requiem for Astounding. Chicago: Advent, 1964.

Rose, Lois. The Shattered Ring: Science Fiction and the Quest for Meaning. Richmond, VA: John Knox, 1970.

Rose, Mark. Alien Encounters: Anatomy of Science Fiction. Cambridge, MA: Harvard UP, 1981.

Roszak, Theodore. The Making of a Counter Culture: Reflections on the Technocratic Society and its Youthful Opposition. Garden City, NY: Doubleday, 1969.

Russell, D. A. Greek Declamation. Cambridge, MA: Cambridge UP, 1983.

Sante, Luc. "The Temple of Boredom: Science Fiction, No Future." Harper's Magazine, October 1985: 66-71.

Scarry, Elaine. On Beauty and Being Just. Princeton, NJ: Princeton UP, 1999.

Scholes, Robert. Structural Fabulation: An Essay on Fiction of the Future. Notre Dame, IN: U of Notre Dame P, 1975.

Scholes, Robert and Eric S. Rabkin. Science Fiction: History, Science, Vision. New York: Oxford UP, 1977.

Seed, David. American Science Fiction and the Cold War: Literature and Film. Chicago: Fitzroy Dearborn, 1999.

Shatner, William. Star Trek Memories. New York: HarperCollins, 1993.

Skal, David J. Screams of Reason: Mad Science and Modern Culture. New York: W. W. Norton, 1998.

Slusser, George E. and Eric S. Rabkin, eds. Hard Science Fiction. Carbondale: Southern Illinois UP, 1986.

Smith, J. C. "The Use of Lexicons in Information Retrieval in Legal Databases." ICAIL 1997, 29-38. Accessed online from <www.acm.org>, 6 July 2006.

Spigel, Lynn and Michael Curtin. The Revolution Wasn't Televised: Sixties Television and Social Conflict. New York: Routledge, 1996.

Spinrad, Norman. Science Fiction in the Real World. Carbondale: Southern Illinois UP, 1990.

Stableford, Brian M. The Sociology of Science Fiction. San Bernardino, CA: Borgo, 1987.

- - - - - - - - - - -. "Creators of Science Fiction, 11: John W. Campbell." Interzone 133 (July 1998): 46-9.

Stott, William. Documentary Expression and Thirties America. New York: Oxford UP, 1973.

Suvin, Darko. Metamorphoses of Science Fiction: On the Poetics and History of a Literary Genre. New Haven: Yale UP, 1979.

Taylor, Angus. "Asimov, Popper and the Fate of the Galaxy." Foundation: The Review of Science Fiction, 42 (1988 Spring), pp. 59-64.

Theunissen, E., R. M. Rademaker and T. J. Etherington. "Synthetic Vision: A Prototype Display Concept for Commercial Aircraft." IEEE Aerospace and Electronics Systems Magazine 17:10 (2002), 13-18.

Thom, Douglas A. Normal Youth and Its Everyday Problems. New York: Appleton, 1932.

Thornton, Sarah. Club Cultures: Music, Media and Subcultural Capital. Middletown, CT: Wesleyan UP, 1996.

Tom Corbett, Space Cadet (Vol. 1): The Mercurian Invasion. Tapeworm, 2000.

Tulloch, John and Henry Jenkins, eds. Science Fiction Audiences: Watching Doctor Who and Star Trek. New York: Routledge, 1995.

Tymn, Marshall B. The Science Fiction Reference Book. Mercer Island, WA: Starmont House, 1981.

Vendy, Phil and Michael Nofz. "Hal's Long, Long Run: Computers and Social Performance in Stanley Kubrick's 2001." Computers and Society, December 1999: 8-10.

Verba, Joan Marie. Boldly Writing: A Trekker Fan and Zine History, 1967-1987. Minnetonka, MN: FTL Publications, 1996.

Wagner, Jon and Jan Lundeen. Deep Space and Sacred Time: Star Trek in the American Mythos. Westport, CT: Praeger, 1998.

Warner, Harry. All Our Yesterdays: An Informal History of Science Fiction Fandom in the Forties. Chicago: Advent, 1969.

Warrick, Patricia S. The Cybernetic Imagination in Science Fiction. Cambridge, MA: MIT P, 1980.

Westfahl, Gary. "'A Convenient Analog System': John W. Campbell, Jr.'s Theory of Science Fiction." Foundation: The Review of Science Fiction 54 (1992): 52-70.

- - - - - - - - - -. "'Dictatorial, Authoritarian, Uncooperative': The Case against John W. Campbell, Jr." Foundation: The Review of Science Fiction 56 (1992): 36-61.

- - - - - - - - - -. The Mechanics of Wonder: The Creation of the Idea of Science Fiction. Liverpool: Liverpool UP, 1998.

Whitfield, Stephen and Gene Roddenberry. The Making of Star Trek. New York: Ballantine Books, 1968.

Wiener, Norbert. The Human Use of Human Beings: Cybernetics and Society (Second Edition). Garden City, NY: Doubleday Anchor, 1954.

Wilson, Brian. "The Canadian Rave Scene and Five Theses on Youth Resistance." Canadian Journal of Sociology 27.3: 373-412.

Winnicott, D. W. Playing and Reality. New York: Routledge, 1971.

Wollheim, Donald A. The Universe Makers: Science Fiction Today. New York: Harper & Row, 1971.

Index