To the Graduate Council:

I am submitting herewith a dissertation written by Phillip H. Owenby entitled "Robert A. Heinlein: Popular Adult Educator and Philospher of Education." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.

Ralph G. Brockett, Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:

Associate Vice Chancellor
and Dean of the Graduate School

ROBERT A. HEINLEIN:
POPULAR ADULT EDUCATOR AND PHILOSOPHER OF EDUCATION

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Phillip H. Owenby

August, 1996

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DEDICATION

This dissertation is dedicated to the memory of

Robert Anson Heinlein (1907-1988)

whose imagination inspired much of my educational journey

and

to his beloved wife

Virginia Doris Gerstenfeld Heinlein

who inspired much of her husband's imagination

in grateful appreciation.

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ABSTRACT

This qualitative study examines science fiction writer Robert A. Heinlein and his writings in order to explore the ways in which they served as didactic vehicles for educating his reading audience. In addition, the study examines Heinlein's ideas about education for the purpose of relating them to taxonomies of educational ideologies and philosophies of adult education. The study also explores Heinlein's metaphysical, epistemological, and axiological perspectives. Primary data sources used were Heinlein's published writings and correspondence, interviews with Virginia Heinlein, and unpublished documents provided by Virginia Heinlein. The data were analyzed using item content analysis and thematic coding.

Robert Heinlein was a lifelong learner who was in many respects an example of the learning characteristics he wished to promote in others. He promoted a fictional curriculum of freedom, openness to experience, the scientific method, space travel, ethics, politics, history, social relations, mathematics, languages, and General Semantics. His direct methods of teaching his readers included lectures, mentoring, and vicarious problem-solving. He promoted the use of distance, technology-assisted, accelerated, and nontraditional learning, including accelerated degree programs. Heinlein depicted characters who are confident and competent, self-directed, lifelong learners.

Heinlein's educational effectiveness resulted from the following: a passion for his subjects, experience of people and persuasive skill developed out of his early political activism, wide-ranging knowledge, respect for his audience, and storytelling approach. Heinlein's shortcomings as an educator include his propensity for evoking feelings of inferiority and resentment in his readers through strongly worded beliefs regarding the intellectual value of particular subjects, his statements of contempt for people who did not live up to his ideals, and his propensity for alarming readers by advocating unusual social and sexual practices. A recommendation for research is to expand the use of imaginative literature for performing historical, sociological, philosophical, transformative learning, and "futuring" studies in adult and continuing education, and in adult education teaching.

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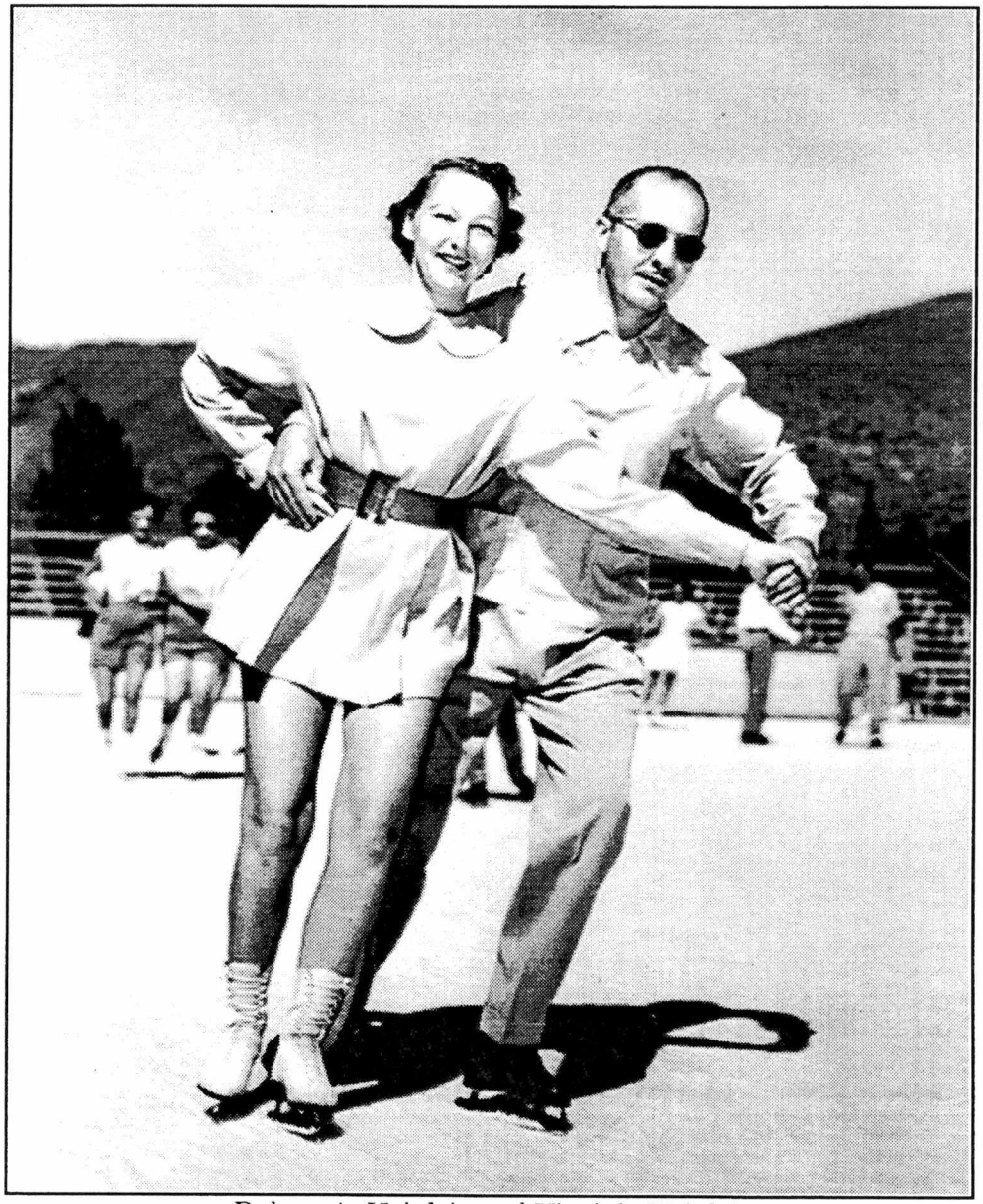
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Robert A. Heinlein

(Photograph courtesy of Virginia Heinlein)

This photograph was taken in the 1930s after Robert had left the Navy, but prior to his becoming a science fiction writer. He was probably about 30 years old when he posed for this shot.



Robert A. Heinlein and Virginia Heinlein

(Photograph courtesy of Virginia Heinlein)

This photograph was taken in the mid 1950s during the Heinleins' vacation trip to Sun Valley in Utah. Both enjoyed the sport of ice-dancing.

CHAPTER I

INTRODUCTION TO THE STUDY

"Above all Heinlein is better educated, more widely read and traveled than anyone I have ever heard of, and has consistently shared the Good Parts with us."
--Spider Robinson, "Rah! Rah! R. A. H." 1980/1981, pp. 96-97.

Adult education has often been a forward-thinking field of practice and study. Certainly from the early years of this century adult education's major figures envisioned a future of social progress, looking to the possibilities that science--both physical and social--offered in realizing that vision (Stubblefield, 1988). Many of these early figures appeared to be intensely interested in harnessing the power--seemingly ready to be conferred by science--to eliminate the poverty, disease, ignorance, and other social ills that existed side by side with the industrial civilization of early Twentieth Century North America. The new breed of thinkers and social scientists such as Beard, Croly, and Veblen were particularly interested in applying scientific thinking to the study of social problems (Stubblefield, 1988).

Just as they were busy thinking about the usefulness of scientific thinking in dealing with social problems, these early social scientists were also moving away from old, elitist notions that education was only for the aristocracy. They rather were moving towards a conception of adult and popular education that recognized the needs of adults, including working-class and middle-class men and women. Contemporary with the growth of popular adult education was the steady growth of American popular culture. This popular culture expressed itself in sport, music, cinema, and literature. One manifestation of popular culture in literature was science fiction.

From its 1926 beginnings in the pulp magazine Amazing Stories of Hugo Gernsback, science fiction in America has been associated with the twin themes of entertainment and instruction (del Rey, 1979). But the early years of pulp science fiction seemed too often to sacrifice scientific instruction to overly didactic and poorly written entertainment. Those early stories provided either tedious explanations of scientific principles and technology on the one hand or, on the other hand, "space operas" whose

plots were little more sophisticated than pirate and cowboy stories. But in the late 1930s, beginning with such writers as L. Sprague de Camp, Isaac Asimov, and Robert A. Heinlein, American science fiction began finally to live up to its early aspirations (del Rey, 1979).

To see a major science fiction writer as an educator of adults is to see a potential link between adult education's historical foundations and its future directions, between its roots in human knowledge and its possibilities in human imagination. Among the crop of new writers that emerged in the late 1930s, Robert A. Heinlein, the "dean" of science fiction's so-called Golden Age, became the standard for a new kind of science fiction that was at once entertaining, scientifically accurate, sophisticated, and educational. And when Heinlein gave his first speech to the science fiction community in 1941, he alluded both to his interest in adult and continuing education and to his conviction that science fiction had an educational role to perform for its readers ("Guest of Honor Speech at the Third World Science Fiction Convention--Denver, 1941," 1941/1992). In speaking of science fiction writers such as H. G. Wells, Heinlein attributed to them the role of encyclopedic learning and reporting:

> Encyclopedists, or interpreter-synthesists, I like to call them.... who make it their business to find out what it is the specialists have learned, and then [give it] to the rest of us in consolidated form so that we can have, if not the details of the picture, at least the broad outlines of the enormous... mass of data that the human race has gathered. (p. 163)

Although in his speech Heinlein modestly declined to mention himself in such a role, his work has consistently demonstrated the educating role of the science fiction writer. In his own speech before a science fiction convention, science fiction writer Spider Robinson (1980/1981) attested to the educational power of Heinlein's writings:

> Above all Heinlein is better educated, more widely read and traveled than anyone I have ever heard of, and has consistently shared the Good Parts with us. He has learned prodigiously, and passed on the most interesting things he's learned to us, and in the process passed on some of his love of learning to us. Surely that is a mighty gift... to teach me to love learning, and to be skeptical about what I was

> taught, and he did the same for a great many of us, directly or indirectly. (pp. 96-97)

But Heinlein was interested in continuous learning not just for its own sake, but as a way of promoting scientific thinking in the population at large. Heinlein had a strong conviction--just as did many early pioneers of adult education in this century (Stubblefield, 1988)--that science and its fruits needed to be turned to the advantage of society as a whole through whatever men and women were willing and able to receive it and use it. In Heinlein's 1941 speech ("Guest of honor speech at the Third World Science Fiction Convention--Denver, 1941," 1941/1992), he spoke about the scientific method and its pertinence to the thinking of everyday men and women:

> The scientific method... instead of taking other people's opinions, [is] reserving your own judgments until you have enough data on which to form a judgment... [it] can be of real use to you.... But I wish to make plain that the use of the scientific method does not depend on any formal education in science. It is an attitude and point of view and not a body of information. You need have no formal education at all to use the scientific method in your everyday life. (pp. 161-162)

Following this line of thought, I take the position that science fiction was viewed by Heinlein as a medium through which adults could be directly educated and through which scientific ideas and thinking could be injected into the population at large for the ultimate improvement of human society. Perhaps just as important is science fiction's power to stimulate thinking about basic human questions and concerns. In regard to the latter, science fiction has been thought by some to be the ideal platform for serious ideas. As science fiction writer Ray Bradbury is reported to have said,

> There are few literary fields... that deal so strikingly with that which concerns us all today; there are few more exciting genres, there are none fresher or so full of continually renewed and renewable concepts. It is, after all, the fiction of ideas, the fiction where philosophy can be tinkered with, torn apart, and put back together again, it is the fiction of sociology and psychology and history compounded and squared by time. It is the fiction where you may set up and knock down your own political and religious and moral states... It has resulted in some of the greatest

> writing in our past, from Plato and Lucian to Sir Thomas More and Francois Rabelais and on down through Jonathan Swift and Johannes Kepler to Poe and Edward Bellamy and George Orwell. (Tremor, 1974, p. 152)

I maintain that Heinlein is an appropriate choice for investigating the relationship between science fiction and adult popular education. In a poll of science fiction fans and writers conducted the year prior to his death, Heinlein was voted the all time greatest science fiction writer ("Best all-time awards," 1987). Heinlein easily outdistanced such famous writers as Jules Verne, H. G. Wells, Robert Louis Stevenson, Isaac Asimov, and Arthur Clarke.

Because the American science fiction community has called him the greatest American science fiction writer of the twentieth century, as well as for other reasons that I have mentioned, I feel safe in regarding Robert A. Heinlein as an obvious choice for exploring certain aspects of the relationships between science fiction and education. These aspects involve connecting Heinlein's science fiction to the concepts of adult and continuing education, popular education, self-directed learning, lifelong learning, teaching and learning methodologies and technologies, curricula, and philosophy of education.

Statement of the Problem

As I pointed out earlier in citing Robinson (1980/1981), a case can be made for viewing Heinlein as a fictional adult educator—a case that Heinlein himself has also made on his own behalf ("Guest of Honor Speech at the Third World Science Fiction Convention--Denver, 1941," 1941/1992). But I would also say that an equal--if not greater--case can be made for Heinlein as a philosopher whose philosophy influenced his attitude and approach as a fictional adult educator. This case can be made on the sheer volume of material in Heinlein's works that touch upon philosophical issues such as metaphysics, epistemology, and especially axiology. This case for Heinlein as a adult educator who was also a philosopher is also supported by his wife Virginia's own assessment of her husband's role as a philosopher. She told me plainly in a 1994 interview, "Really, Robert <u>was</u> a philosopher [emphasis mine]" (Owenby, 1994c).

My task, then, is to investigate some of the particular features of Heinlein's role as a fictional adult educator-cum-philosopher and to provide evidence in support of that role. Specifically, my task is to examine the life and works of Robert A. Heinlein for the purpose of highlighting personal and biographical information that sheds light on Heinlein's interest in, and commitment to, lifelong learning. My second task is to examine how his writings promoted a particular science fiction curriculum to his popular—primarily adult—audience. My third task is to examine how his writings explored and promoted teaching and learning methodologies. My fourth task is to examine how his writings exemplified and promoted self-directed and lifelong learning. Finally, my fifth task is to examine the ideas expressed in his life and writings that reveal his philosophy of adult and general education. These tasks imply the nature of the research questions that I now present.

Research Questions

In line with the tasks I set myself in the previous section, my research questions have to do with exploring the particular ways that Heinlein's writings demonstrated his role as a fictional adult and popular educator. I will largely organize this study around the following specific questions:

1) Who was Robert A. Heinlein?—that is, what does Heinlein's background and personal life reveal about his attitude, beliefs, and practices about education and learning in general?

2) What did he teach?—that is, what are the specific areas of knowledge—the curriculum—that Heinlein promoted in his writings?

3) How did he teach?—that is, what teaching and learning methodologies did Heinlein use and promote in his writings? A subset of this question is: what do the images of his educated adult characters reveal about the characteriological aspects of teaching and learning—that is, what do these images teach the reader about what it means to be a lifelong learner?

4) What did he believe about education?—that is, what are the main features of Heinlein's philosophy of education, including his philosophy of adult education?

These questions will be approached through the theoretical framework discussed in the following section.

Theoretical Framework

I approach this study chiefly from the theoretical perspective of the interpretive paradigm. The interpretive paradigm can be defined as a perspective toward inquiry that is qualitative, naturalistic, and subjective whose aim is to interpret human experience rather than to predict and control phenomena. This paradigm is nourished by and often associated with phenomenology and the hermeneutic approach to research. Mezirow (1996) describes this paradigm with its focus on hermeneutics (the study of the meaning of texts) as a "significant methodological alternative to the rational tradition's empirical-analytical studies of external reality... [that focuses] on discourse and the development of interpretive understanding" (p. 160). This is a distinctly qualitative, not quantitative, approach to inquiry.

As is generally the case with all qualitative approaches to knowing, the interpretive approach is inductive, asking questions and building conclusions from the data rather than testing hypotheses in an experimental design (Taylor and Bogdan, 1984). It is holistic and contextual, looking for patterns arising from whole experiences. The interpretive approach emphasizes understanding people from their own frames of reference. It acknowledges that "making a distinction between the experiencing agent and the object of experience is misleading" and that "to understand others, one must gain access to their lived experience so as to clarify and elucidate the way they interpret it" (Mezirow, 1996, p. 160).

It is humanistic, focusing on the inner life of people--their moral, emotional, and intellectual struggles and experiences. The interpretive approach finds uniqueness and value in that which often seems mundane and trivial. In addition, the interpretive approach deals with research tasks more from the perspective of a craft rather than from the perspective of a determinate science. Essentially this approach seeks to "replace the scientific notions of explanation, prediction, and control with the interpretive notions of understanding, meaning, and action" (Carr and Kemmis, 1986, p. 83).

A qualitative study such as this one seeks to interpret phenomena--in this case, literary and biographical phenomena. As Sherman and Webb (1988/1990) explain, the function of such an inquiry is to "describe the essential qualities of phenomena; to interpret the meanings and relationships among those qualities; and to give a reasoned

judgment about the significance and value of those things" (p. 8). The central idea of qualitative research is the interpretive act, which moves beyond the explanatory act that is characteristic of traditional science.

The interpretive approach to research gives greater stature to literature and narrative, or as Rorty (1982) says, "If we get rid of traditional notions of 'objectivity' and 'scientific method' we shall be able to see the social sciences as continuous with literature--as interpreting other people to us, and thus enlarging and deepening our sense of community" (p. 203).

In the case of this study of Heinlein and his writings, the interpretive approach involves the description, interpretation, and appraisal of units of meaning found in narratives and images. My particular application of the interpretive approach is using adult education-related concepts and philosophical issues as hermeneutical devices for understanding these narratives and images. Because science fiction (and fictional literature in general) has such power for imaginatively presenting human knowledge and experience, the interpretive paradigm is clearly an appropriate way to approach a research task dealing with the body of work of a science fiction writer.

Indeed, this paradigm has been used many times before in explicating various education-related issues in fictional literature. In an example from educational sociology, Christian-Smith (1990), examined women's romance literature to analyze ways that women use romance novels to develop self-concepts. She pointed out in that study that women often use romance novels to develop a sense of self but often at the cost of accepting the role of sex-objects.

Another example from the world of higher education is Hill's (1989) article entitled "Literary Research and the Study of Reentry Women." Hill not only demonstrates the efficacy of fiction for understanding the experiences of women reentering higher education, she masterfully contrasts the one-dimensional quality of traditional empirical research with the multi-dimensional richness of the interpretive use of fiction. Similarly, Pittman (1992) used fictional characterizations of night school students to examine two different stereotypes. He found that evening students were seen negatively as either "losers" who were unable to function in regular academic settings or positively as hardworking, bright, and goal oriented. His study highlighted

the ability of imaginative literature to create powerful images of educational settings that can influence how students see themselves.

The interpretive paradigm has also been used to explore various adult education-related issues. For example, Ilsley (1982) performed a phenomenological analysis of images of the future found in certain nonfiction works of adult education. Ilsley concluded that images of the future are products of the imagination and that these images influence behavior in profound ways. Two of the images of the future that Ilsley found to be influential are that of the learning society and self-directed learning. Although he focused on nonfiction works dealing with adult education, his methodology was firmly within the interpretive framework of education research.

More recently, Quigley (1990) analyzed images of resistance to schooling in several works of fiction. His interpretation of these images indicate that resistance occurs when values of the dominant culture conflict with the values of those outside the culture. For Quigley, the adult educator can find much in fiction to inform her or his practice in literacy education and adult basic education (ABE). Quigley's work illustrates a type of scholarly attitude that credits imagination as a source of understanding and insight for understanding how some adults construct their views of the world. Although fictional views are not always factually correct, they often provide a sense of the emotional and existential ambiance of those whom adult educators seek to serve.

Earlier, Ohliger (1988, 1989) studied various fictional works for the purpose of analyzing and interpreting alternative images of the future as a means of informing the evolving goals of adult education. He found that fiction, including science fiction, provides alternative images of the future that can be used as prophetic devices in guiding our vision of adult education. Ohliger's work is, in fact, an example of the practice of futuring (extrapolating future developments and issues from current trends) in adult education research. Ohliger's work illustrates an important advantage of science fiction in educational future studies. That is, science fiction provides ready-made scenarios for analyzing a wide range of possible technological and sociological futures in connection with exploring possibilities for the future of adult and continuing education.

However, Tremor (1974), in his seminal work that connected the fields of adult education and science fiction, provided an inventory of ideas from science fiction that

specifically relate to the theory and practice of adult education. Tremor's study is the first scholarly work that I am aware of in the field of adult and continuing education that began to take science fiction seriously as a worthy avenue for research. Tremor undertook a wide-ranging review of the most popular works of science fiction available to him at the time in order to ferret out ideas and images that suggested future adult education needs, goals, and practices. Among other conclusions presented in his study, Tremor suggested that one of the most important uses adult educators can make of the ideas presented in future fiction is that of supplying anticipatory adult education. In other words, Tremor suggests, along with Toffler (1970), that future fiction can help adult educators develop a curriculum of the future.

In addition, I myself have recommended using science fiction stories as educational case studies for providing phenomenological perspectives to learners (Owenby, 1992b). I have also suggested ways of providing phenomenological perspectives (1992a) in technical training by fictionalizing typical workplace problems, issues, and events. I pointed out that using fictional approaches to education and training helps provide learners with what I call workplace ambiance. That is, an enhanced sense of what it is like to experience the social and personal context of a job or task in tandem with learning the procedural and technical content.

I am also guided by the perspective of approaching biography as a species of phenomenological inquiry, the end of which is "penetrating or getting inside others' lives" (Campbell, 1988/1990, p. 59). I acknowledge the biography of J. R. R. Tolkien by Carpenter (1977) as a specific influential example of an approach to intellectual history that achieves an "inside others' lives" flavor of phenomenological inquiry. Finally, I acknowledge the specific example of Merriam's Themes of Adulthood in Literature (1983) which illuminates the "several reasons why fictional literature offers an exciting medium for understanding.... adult learning and development" (pp. 4, 5).

For the specific purpose of interpreting the philosophical aspects of Heinlein's writings, I am guided in part by the classic mainstream education-centered philosophic taxonomy of Morris (1961), the adult education-centered philosophic taxonomy of Elias and Merriam (1995), the taxonomy offered by Hiemstra (1988), and finally O'Neill's (1981) taxonomy of educational ideologies. These taxonomies are hermeneutically useful for explicating Heinlein's expressions of educational philosophy. I will discuss

these specific taxonomies as well as others not mentioned here in more detail later in Chapter V.

In summary, the interpretive approach is particularly appropriate to the study of science fiction. It uniquely matches this potentially powerful medium for educating adults. The interpretive approach respects science fiction's ability to engage the imagination as well as its ability to provide knowledge of empirical reality (particularly in the case of stories written by scientifically-trained writers such as Heinlein). But as the next section will discuss, the interpretive paradigm also provides a unique way to demonstrate the significance of Heinlein as a popular educator of adults.

Significance of the Study

I believe this study of Heinlein is significant for the study of adult and popular education for several reasons. Obviously, it can contribute to the scholarly literature that focuses on imaginative literature's value for informing adult education. Although Merriam (1983) has pointed out the value of imaginative literature for adult educators in illuminating general themes of adult development, it was Tremor (1974) who first undertook to legitimize the use of science fiction for adult education research when he undertook a broad-ranging survey of the genre for the purpose of inventorying ideas of potential importance to adult education.

While the work of Merriam contributes to furthering the use of imaginative literature for adult education research, I am particularly interested in encouraging the use of science fiction by adult education researchers. I am also interested in highlighting the value of science fiction as an medium for directly educating adults. As already indicated, from the words of Heinlein as well as from the words of other science fiction writers, science fiction can both teach and entertain. This study can benefit other adult educators by introducing them to science fiction as an educational resource.

In addition, this study can illuminate how Heinlein's science fiction in particular has value for both promoting and facilitating the understanding of self-directed and lifelong learning. For example, many of Heinlein's characters are placed into situations in which they must deliberately and consciously set about to learn in order to cope with their predicaments. Heinlein's accounts of these predicaments provide windows for understanding many different facets of self-directed learning. In addition, Heinlein's life

story also provides insight into self-directed and lifelong learning as aspects of his personal life world. I discuss these matters in more detail in Chapter II, in which I provide a biographical perspective of Heinlein, and in Chapter IV, in which I explore images of teaching and learning in Heinlein's fiction.

Although not a part of my central discussion of Heinlein as a popular adult educator through his fiction, I want to point out that philosophical issues constitute a significant portion of his writing. As Dewey (1939) said, "If we are willing to conceive education as the process of forming fundamental dispositions, intellectual and emotional, toward nature and fellow men, philosophy may be defined as the general theory of education [emphasis is Dewey's]" (p. 259). Agreeing with the general tenor of Dewey's words that, since all philosophical propositions are also implicitly educational propositions as well, Heinlein's works provide ways of imaginatively exploring the educational implications of philosophical propositions. Because I believe that some readers may find Heinlein's philosophical ideas useful for providing a perspective from which to view his educational ideas, I include an extensive discussion of his philosophical views as supplementary material.

In contrast to Heinlein's general philosophical views, the main body of my study addresses Heinlein's explicit philosophy of education—including public as well as higher and adult education. I believe this part of the dissertation is significant in three ways. First, relating Heinlein's explicit philosophy of education to existing theories, taxonomies, and frameworks of general and adult educational philosophy provides insights regarding the internal coherence of these differing approaches. (It also suggests difficulties involved in harmonizing the various educational philosophies with each other.) Second, like Pittman's (1992) study of images and stereotypes of evening students, the images implicit in Heinlein's views of the educational establishment can offer insights regarding ways of building on positive educational stereotypes as well as ways of meeting the challenges of negative educational stereotypes.

In summary, this study is potentially significant for adult education in regard to its research methodology, the genre of its subject matter, its exploration of imaginative depictions of self-directed and lifelong learning, and its exploration of the implications of philosophy for both adult and general education. Naturally, in addition to asserting

specific claims of significance, I also wish to limit them. In the following section, I will specify the boundaries of this study.

Assumptions and Limitations

My assumptions flow from my philosophical bias toward imaginative and interpretive approaches to knowledge. I conceive my bias as combining, in addition to the interpretive approach to research discussed above, elements of German Idealism, English Romanticism, American Transcendentalism, and American Pragmatism. This bias can be articulated as a belief that "reality" is experienced imaginatively and that cognizing through the imagination can bring otherwise hidden aspects of reality into conscious awareness. In addition, this bias combines an empiricist approach to knowledge with a nonmaterialist, nonpositivist metaphysics. According to my bias, imaginative knowledge can enhance that which we learn through traditional empirico-rational methods. Such an enhancement can be valuable because it can lead to ways of combining the rigor of observation with the vigor of imagination, and because it points to ways of communicating experience from one person's imagination to that of another.

In regard to scope, this study is constrained in at least four ways:

First, this study is not intended to synthesize existing scholarship about Heinlein. There are two reasons for this: (1) the existing literature about Heinlein has little explicit connection to adult education; (2) my interest is in studying Heinlein as a phenomenon of adult and popular education--something that the literature reveals as not having been done.

Second, even though I am augmenting the study with information obtained from interviews and ongoing dialogue with Virginia Heinlein (Robert Heinlein's widow), this study is primarily literature based--an examination of Heinlein's published fiction and nonfiction writings which are found in over 50 book-length works. There is a fundamental reliance on Heinlein's writings even though I make occasional use of other sources of information, formal and informal, scholarly as well as popular.

Third, I do not approach this study as literary criticism, but rather as an educational and philosophical exegesis of the work of a science fiction writer. As such I do not presume to make literary judgments of merit. However, I do refer to the

judgments of literary critics concerning Heinlein's works whenever such referrals seem justified in informing my exegesis.

Fourth, my purpose is an educational exploration of Heinlein's life and works from the perspective of popular adult education and the interpretive paradigm. I make no effort to invoke or include all current issues or trends prominent in the adult education literature. For example, although I take note in Chapter V of critical thinking as a theme in Heinlein's works and mention connections between Heinlein and the issues of transformative learning and perspective transformation, I take no great pains to elaborate those connections in detail. This is partly because, as Mezirow (1996) himself points out, transformative learning and perspective transformation are connected to a different paradigm of learning (and research) than the interpretive paradigm that guides this study. But it is also because my study simply cannot address and connect to every issue in adult education. But nor do I commit to exclude any issues or trends that I feel useful as hermeneutical devices for explaining that which my intuition tells me is educationally significant in Heinlein's writing.

Finally, I do not pretend to apply the interpretive approach in a purist way, but rather allow my intuition considerable latitude As a reminder, the interpretive approach is essentially a personal and intersubjective attempt at meaning-making. It is not simply adapting the positivist, rational-empirical approach to biography and fiction. But nor is it a rigid paradigm suitable only for serving the research needs of phenomenologists.

Procedures

My approach to this study involved four stages. In stage one, I set out to examine the available body of Heinlein's novels, stories, and essays published between the years 1939-1992. Fortunately, Mrs. Virginia Heinlein had prepared and presented a thorough bibliography of her husband's works in her edited collection of his correspondence (Grumbles from the Grave, 1989). Using that bibliography, I was able to assure myself that I had managed to read all Heinlein's published fictional works and nonfictional essays that he regarded as important enough to be reprinted. Appendix A provides a list and synopses of the works that I consulted in support of this study.

In stage two, I used content analysis to identify and mark all passages in Heinlein's writings whose subject matter appeared to treat those issues of concern to

my research questions. For ease of retrieval, I also coded each passage in an electronic file by subject matter, title, page number, and multiple keywords. These keywords included such terms as adult education, adult development, adulthood, education, axiology, aesthetics, epistemology, metaphysics, ontology, teleology, philosophy of education, philosophy of adult education, social policy, curriculum, educational methodology, self-directed learning, lifelong learning, biography, government, and politics. Using this electronic file, I was able to quickly locate any and all passages that dealt with my research questions and include them as supporting examples throughout.

In stage three, I augmented my reading of Heinlein's chief works through information collected from other sources. This included a personal interview with Mrs. Robert A. Heinlein in 1994. Unfortunately, Robert Heinlein died several years before it was possible to interview him personally. It was therefore necessary to rely upon the perspectives of his widow Mrs. Virginia Heinlein, who graciously allowed me to interview her as a guest in her home. In preparation for that visit, an interview guide was developed outlining 60 questions or areas of inquiry (see Appendix C).

Mrs. Heinlein was supplied with the interview guide several weeks prior to participating in the interview. I conducted the interview over the four day period that I was her house guest. The interview itself was electronically recorded on 12 one-hour audiocassettes which were later transcribed into about 290 double-spaced pages. Mrs. Heinlein later reviewed the transcript and supplemented it with handwritten notes. I have maintained the resulting annotated interview transcript in an electronic format that has allowed me to easily perform text searches by keywords. I was thus able to draw upon many interview passages to augment the results of my textual studies.

In addition, while I was a guest in her home, Mrs. Heinlein was kind enough to permit me to leisurely peruse books, photographs, and other materials belonging to her husband. She also made me a gift of a copy of her husband's original notes for his most famous and controversial novel Stranger in a Strange Land (1961/1987). Mrs. Heinlein has continued to answer follow-up questions by telephone since the original interview.

An additional source of information has come from several previous trips to Heinlein "locales" which I used for "soaking up" biographical, historical, and geographical background on Heinlein's life. This includes a 1988 trip to Los Angeles, Heinlein's home from the time of his retirement from the Navy until the beginning of

America's entry into World War II. My trips also includes a 1990 visit to Colorado Springs, the Heinleins' home for 16 years of their married life, and a 1990 trip to Butler and Kansas City, Missouri—Heinlein's birthplace and boyhood hometown respectively. In 1995, I was able to return to Kansas City to gather additional historical and geographical background information. This biographical, historical, and geographical background has been used to supplement my biographical sketch of Heinlein in Chapter II as well as the chronology of Heinlein's life found in Appendix B.

Finally, in stage four I drew upon the results of the previous stages to identify and explicate themes in Heinlein's life and writings that provided answers to my research questions. I developed these themes inductively. That is, I allowed them to emerge from recurring patterns across Heinlein's many writings as well as in those information sources I found outside his writings. I used these themes to organize the answers to my research questions in the form of the chapters that comprise this study.

On a concluding procedural note, I have continued to test, refine, and supplement the information I have gathered and the conclusions I have drawn with ongoing discussions with other Heinlein researchers and aficionados. These discussions have taken place via telephone, paper mail, electronic mail, and especially via internet discussion group postings.

Definitions of Terms Used in this Study

Some of the terms used throughout this study (including material provided in the appendices) that may require defining include the following:

Agapastic Evolution: (Peirce, 1955, see pp. 363-374) believed in regard to cosmic evolution that cosmic mind is evolving and that this cosmic mind is evolving through individual minds who merge their "individuality in sympathy with [their] neighbors" (p. 364). He termed this cosmic evolution "agapastic."

Analytical: One of the six philosophies of adult education described by Elias and Merriam (1995) that can be characterized as an application of linguistic philosophy to adult education.

Authorial Character: One of the several characters throughout Heinlein's works through which he spoke his authentic thoughts and beliefs. According to Virginia

Heinlein (Personal communication; July 10, 1995), these characters include Jubal Harshaw, Jacques DuBois, Hugh Farnham, Bernardo de la Paz, Rufo, Lazarus Long, Kettle Belly Baldwin, and Maureen Smith. I have used the utterances of Heinlein's authorial characters to anchor and validate the utterances of his other characters, particularly his protagonists. I have chosen to indicate throughout the text whenever I quote from an authorial character in order to remind the reader that the passage is being used to indicate Heinlein's own views.

Axiology: Subdiscipline of philosophy dealing primarily with questions of ethical, political, and aesthetic values.

Behaviorist: One of the six philosophies of adult education described by Elias and Merriam (1995) that can be characterized as a radically empirical and operationalist approach to adult education. Hiemstra's (1988) expression of this philosophical position is approximately equal.

Bildungsroman: Literally "educational romance." German term for a novel whose purpose is to trace the unfolding intellectual or character development of its protagonist.

Educational Existentialism: An educational philosophy based on philosophical existentialism that sees the purpose of education as cultivating freedom, the responsibility of choice, and authenticity in human relationships.

Educational Fundamentalism, Educational Intellectualism, and Educational Conservatism: In O'Neill's (1981) taxonomy, these three conservative educational ideologies roughly correspond to the essentialist-perennialist philosophies of Morris (1961) but are arranged on a continuum of political conservatism with educational fundamentalism being the most conservative and educational conservatism being the least conservative.

Educational Liberalism, Educational Liberationism, and Educational Anarchism: In O'Neill's (1981) taxonomy, these three liberal educational ideologies roughly correspond to the progressivist-reconstructionist-existentialist philosophies of Morris (1961) but are arranged on a continuum of political liberalism with educational liberalism being the least liberal and educational anarchism being the most liberal.

Epistemology: Subdiscipline of philosophy dealing with questions of knowing and knowledge.

Essentialism: An educational philosophy based on philosophical idealism that sees the purpose of education as conserving and transmitting essential truths.

Golden Age (of science fiction): A period, usually considered to be from 1938 to 1949, in which American science fiction became an important genre (del Rey, 1979). It is characterized by stories of imagination, sophisticated themes, and relatively skillful writing. Its most famous writers were associated with John W. Campbell, Jr. , editor of Astounding Science Fiction magazine from 1938 until 1971, by which time the magazine had undergone a change in name.

Humanist: One of the six philosophies of adult education described by Elias and Merriam (1995) that can be characterized as an adaptation of Morris's educational existentialism to adult education. Hiemstra's (1988) expression of this philosophical position is approximately equal.

Idealism: In Hiemstra's (1988) taxonomy of philosophies of adult education, this philosophical position can be characterized as a combination of Morris's (1961) essentialism and Elias and Merriam's (1980/1984) liberalism.

Liberal: One of the six philosophies of adult education described by Elias and Merriam (1980) that can be characterized as a combination of Morris's (1961) essentialism and perennialism.

Liberalism: In Hiemstra's (1988) taxonomy of philosophies of adult education, this philosophical position can be characterized as a combination of Morris's (1961) perennialism and (more loosely with) Elias and Merriam's (1980/1984) liberalism.

Materialism: The metaphysical doctrine that nothing exists but matter and its physical counterpart energy.

Metaphysics: A subdiscipline of philosophy dealing with questions about the fundamental nature of reality, including spirit, mind, and matter.

Mysticism: In general, a spiritual and non-discursive approach to the union of the self with God or the transcendental reality of the universe. Mystical belief includes the doctrine that subjective experience and intuition can reveal dimensions of reality that are inaccessible to rationalist or empiricist methods.

Ontology: A subdiscipline of metaphysics concerned with the nature of being.

Operationalism: An epistemological doctrine which holds that the definition or meaning of a concept consists in understanding the working out of the operations inherent in its implementation (see Pragmatism and Scientific Method).

Panpsychism: A metaphysical philosophy which holds that all the constituents of the universe participate in one cosmic Mind (see Pantheism).

Pantheism: A metaphysical philosophy which holds that all the constituents of reality comprise collectively something that can be called "God" (see Panpsychism).

Perennialism: An educational philosophy based on philosophical realism that sees the purpose of education as equipping students with the perennially useful tools of the mind expressed in language, mathematics, science, and philosophy.

Phenomenology: Subdiscipline of philosophy dealing with how reality is personally experienced and communicated.

Postmodernism: A loosely associated collection of philosophical attitudes that can perhaps be characterized by an attitude of doubt towards any claim that asserts epistemological efficacy over any other claim.

Pragmatism: A practical, epistemologically-based philosophy whose main outlines were worked out by American philosophers Charles Sanders Peirce, William James, and John Dewey. Generally, pragmatism is understood to mean that the truth and meaning of an idea is to be found in the working out of its practical consequences (see Operationalism). .

Progressivism: An educational philosophy based on philosophical Pragmatism that sees the purpose of education as developing practical intelligence and experience for fitting students to become citizens in a democratic society. It is also one of the six philosophies of adult education described by Elias and Merriam (1995). Hiemstra's (1988) expression of this philosophical position is approximately equal.

Protagonist: A literary term for the central character(s) in a drama, novel, or story.

Radical: One of the six philosophies of adult education described by Elias and Merriam (1995) that can be characterized as an adaptation of Morris's reconstructionism to adult education. Hiemstra's (1988) expression of this philosophical position is approximately equal.

Realism: In Hiemstra's (1988) taxonomy of philosophies of adult education, this philosophical position can be characterized as an application of radical philosophical realism to adult education.

Reconstructionism: An educational philosophy based generally on philosophical experimentalism, Dewey's (1939) variant of progressivism, which sees the purpose of education as preparing students to transform society to make it more democratic and just for all its citizens--in other words, education as a tool for achieving social justice.

Science Fiction: Genre of imaginative literature which typically explores fictional possibilities of new developments in the sciences and the technologies that spring from them, including the social sciences. Heinlein (1977) would call this genre speculative fiction and enumerates five criteria for successful stories in this genre: 1) conditions are different from the here and now, 2) the new conditions are an essential part of the story, 3) the problem--the plot itself--must be a human problem, 4) the human problem must be created by--or indispensably affected by-- the new conditions, and 5) no established facts are violated. Obviously Heinlein's criteria would exclude from consideration much so-called science fiction.

Scientific Method: An epistemological doctrine which holds that trustworthy knowledge comes only from the process of observing phenomena, constructing explanatory hypotheses, testing hypotheses via controlled experiments involving rigorous observation and recording of results, and replicating results using similar methods. The test of any scientific claim is its ability to predict the future behavior of phenomena under specified conditions.

Self Directed Learning: As used in this study, the quality in adult learners of planning, directing, and executing their own learning projects, whether or not such learning is facilitated by or in concert with others or is autodidactic in nature; accepting personal responsibility for learning.

Solipsism: In metaphysics, a concept having to do with the notion that reality is comprised of the contents of one's own mind.

Teleology: In metaphysics, a concept having to do with the design, purpose, or ultimate ends of that which is under consideration.

Tychistic Universe: Charles Sanders Peirce's (1955) term for the contingent, indeterminate, pluralism which he supposed to be the existing state of affairs in the universe.

Organization of the Study

I have organized this study chiefly around the research questions posed earlier in this chapter. Chapter I has been devoted to introductory material. Chapter II, the directly biographical portion of my study, is devoted to an account of my visit with Mrs. Virginia Heinlein, a biosketch of Robert Heinlein, a discussion of his personal approach to learning, and an account of a typical day in his life. The purpose of the chapter is to give a biographical perspective of Heinlein's role as a fictional educator of adult readers of science fiction. The chapter will indicate that education, adult education, and lifelong learning are perennial themes in Heinlein's life and several careers.

Subsequent chapters are devoted to an exposition of explicit teaching and learning themes in Heinlein's writings. In Chapter III, I will provide an exposition of how Heinlein's writings worked to directly educate his readers in particular subjects--his science fictional curriculum, in other words. The chapter will describe those subjects that Heinlein was most interested in teaching his readers.

Chapter IV describes how Heinlein utilized and promoted different ways of teaching and learning. The chapter will show the different teaching techniques that Heinlein used to teach his readers. It will also highlight the different technologies and strategies for teaching and learning that Heinlein enthusiastically described in his books. Also in Chapter IV, I will assemble and describe images of self-directed learners taken from Heinlein's writings. In addition, Chapter IV will present images of educated adults by way of depicting the kinds of personal results that Heinlein believed resulted from the attitude and practice of lifelong learning.

I proceed to a discussion of Heinlein's philosophy of education in Chapter V. There I attempt to relate Heinlein's philosophy of education and philosophy of adult education to contemporary expressions of educational philosophy and ideology as well as to the philosophical ideas in the previous chapters. Finally, Chapter VI recapitulates the research questions that I posed for this study earlier. There I offer summary findings and conclusions based on the discussions within the previous chapters. I also

offer personal impressions as well as implications of my study for adult education research and practice.

Because of the sheer volume of Heinlein's writings, the scope of those writings, and the unfamilarity of those writings to adult educators, I have attempted to provide generous and informative supplementary material. This material is organized into nine appendices. Appendix A provides synopses of all of Robert Heinlein's major works that were used in my study. It gives the original dates of publication, titles, publication types, and short descriptions of each work. Appendix B provides a chronology of the life of Heinlein, which I hope will be useful to the reader for sorting out the chronological relationships between his major life events and his books and stories. In Appendix C, I provide a list of the 60 questions that guided my interview with Virginia Heinlein. I include this list as a way of helping the reader understand the perspective that guided my discussions with her about educational and philosophical themes in her and Robert's life together. The next six appendices comprise my treatment of Heinlein's philosophy.

I wish to point out that in these appendices I do not discuss Heinlein's philosophy in the rigorous technical manner of a professional philosopher. Rather, my purpose is to be clear and accessible to the reader interested in adult education while maintaining a reasonable fidelity to commonly understood philosophical concepts. That is, while I do attempt to relate Heinlein's ideas to the standard philosophical definitions and classifications, I make no pretense to a thoroughgoing philosophical analysis. In fact, my philosophical approach to Heinlein will bear a closer resemblance to intellectual biography than to philosophical analysis.

I treat Heinlein's views of metaphysics and epistemology in Appendices D and E respectively. I wish to point out ahead of time that, for a very good reason, my treatment of Heinlein's axiology--Heinlein's ethics, aesthetics, and values--comprises three appendices. The chief reason for my lengthier treatment of this area of his philosophy is that it is the subject in which Virginia indicated that he was interested more than any other (Owenby, 1994c). Interestingly, it is also the branch of general philosophy that has the most explicit connection with philosophy of education. I treat Heinlein's axiological foundations in Appendix F, his views regarding public ethics, political philosophy, and social policy in Appendix G, and his aesthetic perspectives in

Appendix H. In Appendix I, I attempt to harmonize Heinlein's metaphysics, epistemology, and axiology in a concluding synthesis.

Conclusion

The purpose of this introductory chapter was to outline my rationale for choosing Robert Heinlein as a subject for exploring some of the ways that science fiction acts as a medium for educating adults. I stated that this role had already been acknowledged for science fiction in general and Robert Heinlein in particular. Therefore, I proposed that my task would primarily involve explicating the how and what of Heinlein's role as a fictional adult educator and posed six general research questions as approaches to fulfilling my task. I stated that the theoretical framework I would use in guiding my approach was the interpretive paradigm and mentioned the qualitative, hermeneutic, phenomenological, and narrative features of this particular approach to research.

I maintained that the significance of this study hinged on several issues. These include its potential to function as an example of how science fiction—as a species of imaginative literature—can explicate and clarify issues important to adult education. I outlined the limitations and assumptions of this study; I especially pointed out that I did not approach this study as a literary critic. I explained my four stage procedure for conducting this study, including my methodologies for selecting information sources, gathering data, coding and analyzing data, and reporting results thematically. I explained special terminology that I will employ later in this study. And finally I outlined the organizational scheme in which my study is presented. The following chapter introduces the next step in my study of Heinlein by providing background and biographical perspectives through which the remainder of this study should be viewed.

CHAPTER II

A BIOGRAPHICAL PERSPECTIVE

"He was a man; take him for all in all."
—Shakespeare, Hamlet, Act I, Scene ii

In the introductory chapter I outlined my rationale for choosing Robert Heinlein as a subject for exploring some of the ways that science fiction acts as a medium for educating adults. In this chapter I will provide a biographical perspective for understanding Heinlein's role as a fictional educator of adult readers of science fiction. This chapter will show how education, adult education--especially popular adult education, and lifelong learning are perennial themes in Heinlein's life and work.

As I will show in this chapter, these perennial themes are evident in Heinlein's background, personal learning projects, varied careers, and storytelling. He combined a background of formal education in engineering and the physical sciences with a lifetime of self-directed learning in topics ranging from semantics to economics, from anthropology to Chinese history, from psychology to sexual ethics. And Heinlein's formal and informal education was overlaid on a lively imagination and zestful curiosity about life itself. His career included active naval service, politics, silver-mining, real estate, motion picture consulting, health lobbying, regular travel, and constant writing. Robert's writing career lasted from 1939 (the year he sold his first story) to 1988 (the year he died and the year after he published his last book). It was through his writing that it became evident that Heinlein's real strength as an educator of adults was his ability to impart his immense knowledge and experience to his readers in imaginative and entertaining ways.

Heinlein's science fiction writing was about both things and people, both science and society. That is, Heinlein was far from being interested only in "ray guns and rocket ships" (a title of one of his essays in Expanded Universe, 1980). Rather he was as much interested in the lives of human beings as he was interested in the sophisticated science and technology developed by those same human beings. So many of Heinlein's stories were concerned with how people are affected by (as well as how they deal with) the changes wrought by increasing knowledge and technology. For that reason, Heinlein's

stories are in essence case studies in adult education--they depict people struggling to learn to cope with the challenges of rapid change. As we shall see, this biographical perspective will show that Heinlein's concern for helping others to understand the personal and social effects of change came out of his own experience in growing to adulthood in this century of rapid change.

I will proceed by first providing an overview of the approach I used in constructing this biographical perspective of Heinlein. Next I will describe my four-day visit with Mrs. Heinlein with whom I conducted a structured interview about educational and philosophical issues in both her and her husband's lives. Following that I will provide a brief biography of Heinlein's life from birth to death. Next will come a portrait of Heinlein as a self-directed, lifelong learner. I will then provide an imaginative sketch of a typical day in the life of Heinlein during his prime as a science fiction writer. Finally, I will conclude with a thematic retrospective that ties the sections of this chapter together in an overall biographical perspective.

Biographical Approach

I constructed much of this biographical perspective of Heinlein in the spirit of the structured life history approach to biographical interviewing. This approach to educational research has been described by Taylor and Bogdan (1984) as an attempt to capture the salient experiences in a person's life using that person's own definitions of those experiences. Using this approach, the researcher actively solicits the person's experiences and viewpoints as a means of constructing a biographical perspective. Such an approach better "enables us to know people intimately, to see the world through their eyes, and to enter into their experiences vicariously" (Taylor and Bogdan, 1984, p. 81). Of necessity, my most important source of biographical information came from a structured interview with Heinlein's widow, Mrs. Virginia Heinlein. Of course, the biographical experiences with which this study is concerned have to do with education, particularly popular adult education. As I pointed out in the previous chapter, this approach to biography is fundamentally grounded in the interpretive mode of inquiry.

Agreeing with Stanage (1987) that "meaningfulness is always cast in personal and intersubjective terms" (p. 30), this inquiry into the life and background of Heinlein has helped me in my personal search for the meaning of adult education. That is, it has

helped me to see concretely how education and learning flow out of one's overall approach to life. Stanage goes on to link firmly the concept of person with adult education as "the enactment of, and systematic investigation of, the phenomena constituting the adult education of person, specifically of persons' free and deliberate motives for acting" (p. 37). While the actual information obtained from the interview with Mrs. Heinlein has been most helpful in informing and discussing many aspects of the answers to the research questions posed by this study, a description of the interview experience itself is also presented as a way of providing, phenomenologically, some aspects of the personal and intersubjective meaningfulness that Stanage points to above. However, I wish to make clear that the description of my visit with Mrs. Heinlein is in no way a report of a phenomenological investigation in the full methodological rigor described by Stanage.

I have been continually impressed by how much biography aids in understanding the educational enterprise. The use of biography in adult education research has been acknowledged by both Moreland and Goldenstein (1985) and Houle (1992). In addition, Stubblefield (1988) built much of his historical inquiry around the influences and contributions of key individuals in the development of the adult education establishment in the United States earlier this century. His study can in that sense be termed a sort of collective biography. In addition, Brockett and Hiemstra (1991) point to biography's utility in the context of self-directed learning as "a tool for critical reflection and thinking because it provides insights into the lives of other individuals" (p. 136). In fact, the authors go so far as to maintain that biography, even if ostensibly unconnected with adult education, can be inspirational in supporting the projects of individual adult educators (pp. 136-137). It is in that spirit that I approach this biographical perspective of Heinlein.

A slightly different perspective of biography, connected with fostering critical reflection leading to perspective transformation, has been enthusiastically pointed out by Dominicé (1990). This view "challenges the normative, organized world of education and leads to a dialectic between the 'real' world and the 'disorder' of subjective human experience" (p. 200). Dominicé declares, "it is what we do with our education that gives education its meaning" (p. 207). Acknowledging this connection, it is what Heinlein has done with his education that contributes to an understanding of his approach to

education in general, as well as to his own learning. From the perspective of using biography for helping us to understand how adults have constructed themselves educationally, Candy (1991) has mentioned that biographies are often "an intriguing source of information about the life events that shaped their personal development and learning, or even their self-education" (p. 171).

In a certain sense, it is not just this chapter that is biographical. Rather this entire study has biographical qualities in that much of it is concerned with helping its readers to see the world, especially that which is concerned with popular adult education, through Heinlein's frame of reference. As I pointed out in Chapter I, this study in many ways could be called an intellectual biography of Robert Heinlein. Speaking of such a perspective of educational biography, Campbell (1988) tells us:

> Penetrating or getting inside other lives is no longer the fancy of the [professional] biographer or the prerogative of the novelist's omniscient perspectives. It has become the reality which must be sought for explaining and predicting human behavior [and, I would add, in interpreting the educational act]. (pp. 59-60)

As a phenomenological supplement to the short biography that follows, an imaginary (yet not fictional) perspective of a day in the work life of Robert Heinlein is also offered. This description, conveying an impression of daily life (subsequently confirmed by Virginia Heinlein), is constructed of biographical details gathered from several sources. This imaginative reconstruction of the felt experiences of Robert Heinlein is suggested by Stanage's (1987) foundation of inquiry. This foundation is taken from Stanage's definition of adult education as including the investigation of "persons' free and deliberate motives for acting" (p. 37). A further building on that foundation comes from Schutz (as cited in Collins, 1983/1984) who points out the value of inquiring into a person's lebenswelt or life-world: "the life-world... is the whole sphere of everyday experiences, orientations, and actions through which individuals pursue their interests and affairs by manipulating objects, dealing with people, conceiving plans and carrying them out" (p. 182).

With regard to constructing an admittedly imaginary yet factually typical day-in-the-life of Robert Heinlein, it is possible to understand this approach in terms of Collin's

(1984) discussion of typicality. That is, "events are not merely experienced in their uniqueness" (p. 184), rather they provide us with instances of that which is common, characteristic, and typical in the life-world of the subject of our interest. As with all of us, Heinlein's life-world is comprised of both clear and vague experiences which are intermingled in such a way as to present typical modes of living those experiences. In the following description of my experience of interviewing Mrs. Virginia Heinlein, elements of Heinlein's life world will begin to emerge. The subsequent sections of this chapter will build up an increasingly fuller impression of that life-world.

A Visit With Virginia Heinlein

Slightly before her husband's death in May of 1988, Mrs. Virginia Gerstenfeld Heinlein sold their Pacific coast home in "Bonny Doon" where she and Robert had lived for 25 years in the Redwood country of northern California. She then moved to the Atlantic coastline of northern Florida to live. On a sunny but chilly day in March, 1994 I find myself on Interstate 95 driving south towards Jacksonville, Florida to keep my appointed meeting with Virginia.

The sun has set by the time I enter the expressway maze of greater Jacksonville. It is after eight o'clock and very dark when I finally make my way into the retirement community where Mrs. Heinlein makes her home. The security guard at the entrance kiosk checks my name on his list and allows me to drive through. I find her house, park my car in her short driveway, walk up and ring her doorbell. When nobody answers the door, I check the house number again and ring the doorbell a second time. Still nobody answers the door. I know that she expected me to arrive earlier and I hope she has not already gone to bed.

Chiding myself for getting lost and arriving late, I drive back to the security guard station and ask him to ring Mrs. Heinlein to find out whether she is at home. I am delighted when she answers the guard's telephone call and confirms that she is at home and expecting me. When I drive back to her house, she is waiting outside her door. As I emerge from my car, she greets me warmly, smiling indulgently as I race to explain why I am late. She is a pleasant, white-haired woman of medium height dressed in slacks and a blouse. She smiles readily, speaks in a deliberate way--neither too slow nor too

fast. I notice a slight limp and she tells me that pain in her left knee has made her "a little gimpy" and that she may soon have to have surgery.

I enter her house, passing through a foyer with bookshelves on both sides, creating the impression of a tunnel constructed of books. Stepping through the foyer, I enter a greatroom. There are bookshelves, plaques, certificates, and artwork on the walls all around. Immediately in front of me is a baby grand piano, beyond is a furniture grouping in front of a fireplace. Above the fireplace mantel, surrounded on both sides by Hugos and other science fiction awards, is a painting of Rhysling, the character from Heinlein's story "The Green Hills of Earth" (1947/1967). Below, on the hearth, is a small brass cannon mounted on a nautical style wooden carriage. In the middle of the greatroom runs a wooden, cabinet-like room divider that separates the dining area from the living room area. The top of the room divider is about four feet high. On it are globes of the Earth, Mars, the Moon, and a celestial globe of the stars.

Mrs. Heinlein points out the guest room to me and I quickly stow my travel bag. When I emerge from the guest room, Mrs. Heinlein introduces me to her cat, a beautiful pure-white animal whom she calls "Snowy." She offers me refreshments and then we sit and talk. As we talk, she teases Snowy with a feather tied to the end of a string suspended from a short stick. I thank her for allowing me to interview her in her home and for her hospitality. She responds to my remarks about her husband's several awards, relating some anecdotes about the circumstances in which the books were written. She has obvious pride in her husband's accomplishments and seems pleased to talk about them. I answer some of her questions about my dissertation, about how I came to be interested in her husband's writings, and about my wife and children. Because of the late hour, we talk only a short while before she shows me to the guest bedroom and bathroom.

Later, after she has gone to bed, I find a hardback copy of Philip Wylie's book Generation of Vipers in the bookshelves in the guest room. I notice from some handwriting I find inside the book that it was purchased by Robert in Philadelphia in 1943. I recall that Heinlein was working as a civilian engineer at the Philadelphia Navy Yard in 1943--about a year before he first met Navy Lieutenant (j.g.) Virginia Gerstenfeld. I take down and examine others of Mr. Heinlein's books. As I expected, most of these are on scientific and mathematical topics, but many are of a social,

economic, and political nature. In an Annapolis yearbook for the academic year 1928-1929, I find a photograph of 21 year old Midshipman Robert Heinlein in uniform. In the photograph he looks much too young to be a naval officer.

I awake about eight o'clock the next morning, shower, dress, and go forth to meet Mrs. Heinlein. I find her at her kitchen breakfast table reading and smoking a cigarette. She offers me breakfast and quickly goes about preparing waffles, juice, toast, and coffee. Sitting down to eat at her dining room table, I remark that she is not eating and am told that she had gotten up "at the crack of dawn" and had already eaten breakfast much earlier. We chat while I eat her waffles.

When I am finished eating, I ask if she is ready to begin the interview. She makes herself ready, laying out a list of the sixty questions I had prepared for her prior to the interview (see Appendix C). I notice that she has made many handwritten notes on the list. She also brings out a legal pad on which she has written many notes. I pull out my portable, battery powered, voice-activated audiocassette recorder and insert a fresh cassette. I announce into the recorder "This is tape number one of an interview with Mrs. Virginia Heinlein at her home on March 11, 1994" and I begin asking her the prepared questions. During the interview, she often reads from her notes verbatim as she relates her prepared answers. But she often launches into unplanned anecdotes and "philosophizing" when one of my many follow-up questions strikes her interest. She laughs often and deeply as she gives her answers. As she talks she fills her ashtray with the remains of many cigarettes. Occasionally, a question will prompt her to rise and go back into her office and search for a letter or other document.

When we finally break for lunch, I notice that we have used up three cassettes. I drive her in my car to a restaurant a few blocks away from her home and we have lunch, both of us choosing sandwiches from the menu. When we finish, she insists on paying the check. Returning to her home, we fall to interviewing again. By the time we break for dinner, three more cassettes have been exhausted.

The next morning I am again treated to waffles. We get to work right away and complete three more cassettes before we drive to lunch. During lunch she informs me that she is taking me to dinner with a couple of her literary friends that evening and I silently congratulate myself for having brought along tie and blazer in my luggage.

Returning to her home, I manage to cover the remainder of my questions, using three more cassettes. It is past five o'clock in the afternoon when we conclude the interview.

I go to my room to dress for dinner. When I emerge, I find that Mrs. Heinlein is also dressed for dinner. Her friends, a middle-aged couple, arrive to visit for a few minutes before going on to meet us at the restaurant. They are pleasant, engaging, and considerate toward Mrs. Heinlein. They seem interested in my research, agreeing with my thesis that Robert Heinlein was an able teacher through his writings. I discover they are Libertarians, rather more so in fact than Mrs. Heinlein seems to approve of, for they announce that they no longer vote in elections. She voices her disagreement saying, "How can you influence the society you have to live in if you don't vote?"

It is cold, windy, and overcast when we leave her house. I drive her to the waterfront restaurant, park the car, help her in, and seat her at the table. Her friends arrived before and have secured a table against the windows facing the water. The wind is blowing hard, whipping up the water against the sandy beach outside as we four, warm and comfortable, drink and eat inside. After the meal, we say good-bye to her friends and I drive Mrs. Heinlein home.

At home sitting on her living room sofa, Mrs. Heinlein asks me if I want to hear the recording of her husband's famous 1973 Forestal Lecture to the brigade of midshipmen of the U.S. Naval Academy. I'm eager to hear the tape and she instructs me how to operate her stereo equipment. I am shocked when I hear the voice of Robert lecturing to the midshipmen for it is nothing like the clipped military voice I had expected. Mrs. Heinlein had told me during the interview that her husband had a "tall corn" accent, but to my ears he positively has a farmer's drawl.

During the playing of the tape, Mrs. Heinlein rises to go back into her office, emerging a few minutes later with a small box about the size of a shoe box. When the tape ends, she asks whether I "want to see Robert's things." I go over and sit on the carpeted floor near her in front of the sofa as she takes photographs and keepsakes from the box and passes them to me. Here is Robert's 1929 Navy fencing champion medal. Here are Robert's exemplary report cards from Central High School of Kansas City, Missouri. Here are those items that Robert kept over his working desk: the cap that Virginia wore as a baby; a photograph of Virginia as a little girl; a photograph of Virginia in uniform, but hatless, at her officer candidate school at Holyoke during

World War II; Virginia's certificate of satisfactory service from the Navy Department; a photograph and letter from a teenaged girl writing to Robert about his juvenile novel Podkayne of Mars (1963).

After looking carefully at each item, I thank her for showing me the keepsakes and give them back to her. She puts the box away. She speaks for quite a long time tearfully recounting the last days of her husband's life in their house at Carmel in California and the subsequent events of his cremation and dispersal of his ashes at sea from a naval vessel with full military honors. Again I thank her for sharing her memories with me.

In the morning I rise, shower, pack my overnight bag, and tidy the guest room. I find Mrs. Heinlein waiting to prepare me breakfast one last time. At the dining table, I remember that I have brought along copies of books that she has published since her husband's death and I ask her to autograph them. Along with her signature, she inscribes each one with the words, "Thank you for your tact"—a reference, she explains, to the manner in which I asked questions during the interview. (Note: I refrained from pressing personal questions if I noticed they made her uncomfortable.)

As I carry my dishes to the kitchen sink, she suddenly asks if my wife keeps house plants. Yes, I say, she does. Would my wife like a cutting from her jade plant? "I brought the plant with me from our home at Bonny Doon," she explains. By all means, we would be delighted to have a cutting. She puts several cuttings in a plastic container along with wet tissue paper to keep them moist. I listen closely as she gives instructions for making the cuttings grow. As I carry my bags to the car, she invites me to bring my wife and daughters to see her "the next time you take them to Disneyworld." I thank her for her hospitality and shake her hand. I say good-bye and drive away to begin my 500 mile journey home.

With the interview and the other information I collected from this visit, I am now ready to begin constructing a biographical perspective of Robert Heinlein. His life-world is becoming clearer.

Robert Heinlein: A Short Biography

In early September of 1990, I am in Kansas City, Missouri on business when I find that I have a few hours of afternoon left for personal use. When I look at my rental car map, immediately I begin to see landmarks familiar to me from reading Robert

Heinlein's books. I notice Swope Park indicated on the map and imagine Sunday afternoon outings for the large Heinlein family. I also think of the hobo who was killed trying to help a young man rescue his fiancé from the railroad tracks in which she had caught her foot—a story Heinlein told in his 1973 Forrestal Lecture at the Naval Academy ("The Pragmatics of Patriotism," 1980). I notice Parkhurst College, a small Jesuit college that figures prominently in the education of Robert's protagonist in To Sail Beyond the Sunset (1987). Looking south of Kansas City I notice the Osage River, and think of old D.D. Harriman, the "man who sold the moon" trying to bribe a physician to let him ride in a sport rocket at a state fair. In the story ("Requiem," 1940/1967) the rocket is crashed in the Osage River.

Looking farther south I see the town of Butler, about an hour's drive from Kansas City, birthplace in 1907 of Robert Anson Heinlein. Heinlein's father moved his family from Butler shortly after his son's birth in order to work as a bookkeeper for the Midland Manufacturing Company, a maker of agricultural implements which was subsequently absorbed by the International Harvester Company (Franklin, 1980). I drive southward towards Butler on a modern divided four-lane highway. Noticing the exit sign for Butler, I make a right turn off the highway and drive about a mile on a county road through flat farming country of corn and soybeans until I reach the town. Butler reminds me of the small farming towns common in my boyhood growing up in Tennessee. In the center of the town I see a sign telling me that Butler is the home of Robert A. Heinlein and directing me toward the house once occupied by the Heinleins. It is an old-fashioned, two-story frame house with a front porch, looking very much like the Edwardian era houses common on the streets of the small town where I grew up. I drive around for an hour looking at the town and the surrounding countryside while I think about the Heinlein family's early circumstances.

Family Background

Prior to their marriage and the subsequent births of Robert Heinlein and his brothers and sisters, Rex Ivar Heinlein and Bam Lyle had the good fortune to attend a private two-year country academy renowned for the quality of education it bestowed upon its students. This was Butler Academy, a day school "that offered a liberal arts

course acceptable at [the University of Missouri at] Columbia or [the University of Kansas] at Lawrence in lieu of lower division" (To Sail Beyond the Sunset, 1987, p. 88).

There, Heinlein's father studied "Latin, Greek, physics (natural philosophy), French, geometry, algebra, calculus, bookkeeping, American history, World history, chemistry, geology" (Expanded Universe, 1980, p. 521). All the members of the Heinlein household, including his maternal grandfather—a country doctor who lived with his daughter's family—learned to speak French. "Father and mother had studied French, and made a habit of shifting to French when they wanted to talk privately in front of us.... I started on French before I could take it in school; I did not like words talked in front of me that I did not understand" (To Sail Beyond the Sunset, p. 56).

According to Virginia, there were other impressive educational qualifications in her husband's family, "He had an aunt on his mother's side who was a college professor and she could read a page at a glance" (Owenby, 1994c). This was aunt Anna, a professor of history, whose talent for eidetic memory Heinlein was to make so much of in Beyond this Horizon (1942/1948) and Starman Jones (1953/1975). Heinlein's maternal grandfather, Dr. Alva E. Lyle, a physician, took a liking for the young boy, teaching him to play chess at age four, and taking him on his rounds in a horse and buggy to see patients in rural southern Missouri. Grandfather Lyle was a lifelong student of his profession who kept apace of new developments in medical practice. Dr. Lyle also infected his two daughters, Bam and Anna--as well as young Robert—with his love of learning:

> His grandfather was a country doctor, who incidentally went back to school. He had graduated from medical school, he had two daughters, and after he had heard of Pasteur's germ theory, he went back to school in Chicago and learned about this germ theory. And Robert's mother spent the year that they were there going to the Columbian Exposition [1893]. (Owenby, 1994c)

Even after the Heinleins moved to Kansas City, Robert and the other children would return to spend holidays and parts of each summer with their Lyle grandparents. In this way, Heinlein grew up with firsthand knowledge of both rural and big city life. This experience with rural life supplied Heinlein with a rich store of experiences to draw upon for fleshing out his stories in later life. For example, Heinlein would later recall an

experience he had with a young pig during a summer in Butler, a shote named Abner that had got himself stuck in a fence (Starman Jones, 1953/1975). Robert would also nostalgically mention "well water and farm breakfasts" ("The Year of the Jackpot," 1952/1959, p. 11).

The Heinlein Children

By the time Robert Heinlein was born on July 7, 1907, there were already two older brothers, Lawrence and Rex, both of whom helped Robert learn to read before he went to school (Owenby, 1994c). There were eventually to be seven children in all: Lawrence Lyle, Rex Ivar Jr., Robert Anson, Louise, Jesse Clare, Rose Betty, and Mary Jean. Only six lived to adulthood for Rose Betty would be killed in an automobile accident in 1926 not long after Robert entered the Naval Academy. He and his brother Rex, who was also a midshipman, traveled from Annapolis to Missouri by train to attend the funeral. Robert would always remember the death of Rose Betty, apparently his favorite sister, and would resurrect her memory in The Door into Summer (1957):

> Little Frederica reminded me of my own sister at that age, and besides, she liked Pete and treated him properly. I think she liked me because I never talked down (I had resented that myself as a child) and took her... activities seriously. (p. 24)

Rex, Robert's next older brother, was the "spoiled kid" of the family, his mother's favorite, "pampered as much as they could pamper somebody" (Owenby, 1994c). But the elder Heinleins apparently provided a warm environment for all their children. Robert would later remember his father's affection, "when I was very young, two or three years old... my father would sometimes pick me up after supper and hold me until I fell asleep" (Job: A Comedy of Justice, 1984/1985, p. 424). Heinlein's father would kiss his sons until they were well up into their teens (I Will Fear No Evil, 1970/1987, p. 169).

The Heinleins expected their children to do well educationally and were quick to take notice when they did not. One such incident occurred when Heinlein's younger brother brought home a less than perfect mark.

> There was a time when his brother Clare [Robert's youngest brother who later became a professor and head of the Department of Political Science at the

> University of Cincinnati] brought home a "C"— I think it was in Spanish— and Robert overheard a conversation between his father and mother saying, "Do you suppose we have a stupid child?" Because obviously the Heinleins always stood at the head of their classes. (Owenby, 1994c)

Other Heinlein children did remarkably well. Lawrence, the oldest son, would work his way up from an army private to the rank of major general during World War II without any college education at all. Rex, the next oldest, would win a competitive appointment to the Naval Academy and eventually become a professor of electrical engineering at West Point. Louise, Robert's immediately younger sister—in an age and area of the country where it was not common for women to do so—would become a university graduate.

Young Robert always did well in school, both at the Greenwood Grammar School in Kansas City (which he attended with Sally Rand who later became famous as a fan dancer at the Chicago World's Fair in 1933, and who was also a lifelong learner), and high school. In 1924 Robert graduated from Kansas City Central High School with highest honors just prior to his 17th birthday. He next attended the local branch of the University of Missouri for a year (at that time called Kansas City Junior College). He attended college until he reached the age of 18 and could become eligible to compete for an appointment to the U.S. Naval Academy.

Robert's Boyhood Jobs, Hobbies, and Interests

Certainly, learning was a value for all the Heinlein family, but learning about science, particularly astronomy, was of special value for young Robert. Until he was about 13, he had regularly assigned chores at home which prevented him from always having the leisure to indulge his interests (Job: A Comedy of Justice, 1984/1985).

> My mother had a severe dirt phobia and, because of my placement in a larger family, I washed or wiped dishes under her eye from age seven through thirteen (at which time I graduated through taking on a newspaper route that left me no time for dishwashing). (p. 127)

Robert worked at different jobs to earn the money to indulge his scientific hobbies, which included the building of a telescope that he used from the roof of his parents' house. But coming from a "poor country family" (Grumbles from the Grave, 1989; p. 244), his interest in money was also quite practical. "In those days," said Virginia Heinlein, "not every housewife had a vacuum. He and a friend rented a vacuum. They went around to various houses and offered to vacuum carpets for a fee. That was one way in which he made money. From the time he was about six or seven he earned money for the purpose of buying himself clothing" (Owenby, 1994c).

Another way that he earned money was by selling the Saturday Evening Post, a common job for young boys in those days. But young Heinlein had other, more commonplace boyhood experiences as well. For example, he would indulge in Tom Sawyer-like activities such as playing at Tarzan in the woods close by the city, "When I was a boy I was a city kid but I could walk in less than an hour to green fields and uncut woods. . . woods so private I could play Tarzan in my skin" (I Will Fear No Evil, 1970/1987, p. 284). He also enjoyed sneaking out at night to take walks in bare skin when the hot Missouri summers would make sleeping impossible inside his family's oven-hot house:

> When I was a boy, ages and ages ago, it got unbearably hot in July and August where we lived--the sidewalks used to burn my bare feet. Houses were bake ovens even at night--no air conditioning. An electric fan was a luxury most people did not have. Nights when I couldn't sleep because of heat I used to sneak quiet as a mouse and bare as a frog out the back door, being oh so careful not to let my parents hear, and walked naked in the dark, with grass cool on my feet and the soft night breeze velvet on my skin. Heavenly! (pp. 250-251)

Besides science, young Robert liked stage magic and fencing. His parents were members of the Methodist Episcopal Church and practiced their faith according to the Methodist Discipline of 1904. Among other things, their strict Methodist faith prohibited drinking, dancing, card playing, and other "evils." But young Robert's parents did permit him to have a deck of playing cards with which to practice his magic card tricks. Robert was allowed to see the Great Thurston when the famous magician conducted his magic show in front of huge audiences in Kansas City. As for fencing,

"Robert saw Tales of Hoffman performed on the stage in Kansas City when he was maybe fifteen or sixteen. He loved the fencing so he decided he would do it and he must have persuaded someone else to be his opponent" (Owenby, 1994c).

Young Robert loved science fiction of course, which in his day consisted mostly of the "scientific romances" of Jules Verne and H.G. Wells. He also read the Tom Swift books, so-called dime novels about new inventions. He would later joke about the Tom Swift books, in one instance referring to "Tom Smith and his electric grandmother" (Owenby, 1994c). Robert was also a Boy Scout who methodically accumulated merit badges in his areas of interest. One of these interests was mountain climbing, and at age 16 he journeyed alone by train to mountain-climb in Colorado. "He had a little money left over on the return trip. So when he boarded the train, instead of buying something to eat, he bought a science fiction magazine to read" (Owenby, 1994c). With the few pennies left over, he bought doughnuts--his only food during the long return trip across the prairies of eastern Colorado and Kansas toward his Missouri home.

Besides science fiction, Robert also liked the Oz books of L. Frank Baum, Rudyard Kipling's poems and stories, and the novels of Edgar Rice Burroughs. Besides which, there were the frequent lecture tours, Chautauquas, and other vehicles of popular education so characteristic of the late 19th and early 20th centuries, of which young Robert and his family made frequent use (Stubblefield and Keane, 1994; Heinlein, To Sail Beyond the Sunset, 1987).

Young Robert had started his own independent intellectual journey before age 16 when he had read three years earlier Darwin's Origin of Species and The Descent of Man. The next year he was taken by his father to hear Will Durant's popular lectures on philosophy at Kansas City's Grand Avenue Temple during the philosopher's 1921 lecture tour. This initiated Robert's life-long interest in philosophy (To Sail Beyond the Sunset, 1987; p. 259). Besides reading Darwin, Robert had begun reading the essays of Thomas Huxley and Robert Ingersoll, with the result that he stopped believing in the Methodist faith, a fact which he kept to himself while he lived under his parents' roof. He described the experience this way, "when I was fourteen.... I became an aggressive atheist--except at home--and scorned to believe in anything I could not bite" (I Will Fear No Evil, 1970/1987, p. 226). He later retreated from atheism, regarding it as just as fanatical and narrow-minded as fundamentalism. Robert's Bible-Belt boyhood left him

with a lifelong legacy of interest in sacred writings, sociology of religion, and comparative religion. He would later boldly discuss a wide variety of religious issues in his stories. His familiarity with the Bible would evidence itself in his frequent use of Biblical verses and literary allusions.

As I have previously mentioned, Robert was a voracious and omnivorous reader as a young boy who used the library cards belonging to other members of his family, as well as his own, in order to satisfy his appetite for reading. When he became a page for the Kansas City Public Library and gained the freedom of the library stacks, his joy was complete. He read every book on astronomy that could be found, and because no course in astronomy was available in his high school he undertook to lecture on the subject to all who would listen. This may have been Robert's first realization that teaching could also be a way of learning. In fact, his interest in astronomy was the factor that led him into attending the Naval Academy once he learned that the Navy operated an observatory of its own (and after discovering that he would likely be unable to support himself as an astronomer elsewhere).

But it was not just astronomy that influenced his aspirations to attend the Naval Academy; he was genuinely interested in military service for its own sake. He had the examples of his oldest brother Lawrence who enlisted as a private in World War One and his brother Rex who had won an appointment to the Naval Academy before him. In fact, in the year before he went to the Academy himself young Robert joined a regiment of the Missouri Army National Guard, attending all meetings and drills faithfully and eventually gaining the rank of sergeant. He was so successful as a drill instructor for his regiment that he was awarded a silver loving cup for being the best drill sergeant--all this in a year's time and while attending the University of Missouri.

Because his brother Rex had already been awarded an appointment to a service academy, he knew that he would have to work extra hard to gain an appointment. He went to every businessman he knew and all of them agreed to write letters of recommendation to Senator James Reed on behalf of young Robert. When Senator Reed examined all the letters of recommendation sent to him on behalf of the various applicants, he found exactly 100 letters--one each for 50 other applicants, and 50 for young Robert. He won the appointment and entered the academy in the autumn of 1925.

After Robert left Kansas City for the Navy in 1925, he would return for brief visits but he would never live there again.

The Navy Years

In 1925, freshmen midshipmen at the Naval Academy, called "plebes," were at the mercy of the upperclassmen who often severely hazed them. Heinlein was not spared this experience, being especially singled out and tormented by a sadistic upperclassman.

> He required Robert to learn a certain number of five-place log tables and... recite them back every day. Robert said that was a great help in learning mathematics and years later he could drill them off still. Also, he made Robert learn... Kipling's The Mary Gloucester, a very long narrative poem--it runs maybe six or eight pages--and... recite it standing on his head in the shower. Which is why Robert referred to him as a sadist. (Owenby, 1994c)

Heinlein was only required to learn the first 600 logarithm figures, but he kept at the task and learned the first thousand, which gave him the first 10,000 by interpolation, and made him essentially free of having to consult the tables again. One of the other tricks that Midshipman Heinlein had to learn in order to avoid punishment from his tormentor was how to calculate the number of seconds until graduation from whatever date it happened to be. He developed methods for adjusting precalculated figures each day and successfully answered the question any time it was put to him. This in turn won him a reputation for being a "smart ass" (Time Enough for Love, 1973/1987; p. 58) which often got him punished anyway.

Heinlein went out for fencing as his sport, partly because he enjoyed it, partly in order to avoid really dangerous sports such as football. His prowess at fencing won him the 1929 medal for Navy Fencing Champion while at the Academy. Other than the hazing he was forced to endure, he found the course of studies at the academy not very challenging, having already mastered the really difficult subjects of mathematics and physics prior to his appointment.

Besides academic studies, for training purposes an academy midshipman is expected to spend one summer serving aboard an operating naval vessel. During his

assigned summer midshipman cruise, Heinlein was posted to the battleship U.S.S. Oklahoma where he served as temporary gun turret captain of the 16-inch guns in the number two turret (Grumbles from the Grave, 1989). During that assignment, he was also given the task of augmenting his naval engineering knowledge of the battleship by sketching the fuel lines "down in her bilges" (p. 35). But not every summer was taken up with official duties. Robert, his brother Rex, "Buddy" Scoles, and two other midshipmen spent at least part of one summer nursing a jalopy cross-country from Maryland to Missouri (I Will Fear No Evil, 1970/1987):

> [It was] a fifth-hand Model-T Ford that [me] and four other young cake-eaters had bought for seventy dollars in Baltimore and had driven half across the continent--no lights, no brakes (the reverse had to serve), no driving licenses (unheard of), no instruments, no nothing. But the tough and ugly little touring car had chugged along on three cylinders (not always the same three) at an (estimated) top speed of twenty-five miles an hour. They had stopped now and then to throw water on the spokes to keep them from falling out.
>
> Somewhere on a dirt road in Missouri it had coughed and quit, and smell had traced the trouble to the wiring. Yonny had fixed it--wrapped the burned insulation with toilet paper, tied it with string. . . cranked the heap and it had started at once and chugged along as before. (p. 111)

Heinlein was graduated from the Academy in 1929 with a rank of 20 in a class of 243 and commissioned as an ensign. He would later say, "I stood quite high at the Naval Academy and would have stood much higher save for a tendency to collect 'Black N's'--major offenses against military discipline" (The Past through Tomorrow, 1967, p. 12). When his academy experience was combined with his previous inculcation of the values of science, education, self-improvement, and self-reliance it would form an overall world view within him that would influence the remainder of his life. Much of Robert's world view would surface in the philosophy of professional education that he would later articulate in Space Cadet (1948), one of his most famous so-called juvenile novels. He would later characterize the profound effect his academy experience had upon him as follows (Grumbles from the Grave, 1989):

> Take a young boy, before he has been out in the business world. Put him into the naval academy. Tell him year after year that his most valuable possession and practically his only one is his personal honor. Let him see classmates cashiered for telling a small and casual lie. Let him see another classmate cashiered for stealing a pair of white silk socks. Tell him he will never be rich but that he stands a chance of having his name inscribed in Memorial Hall. Entrust him with secrets. Indoctrinate him so that he will consider himself locked up and unable to move simply because his sword has been taken away from him. Feed him on tales of heroism. Line the corridors of his recitation halls with captured flags.... That will produce a naval officer, a man you can depend on to be utterly courageous in the face of personal danger regardless of the sick feeling in his stomach.... A naval officer is much more than a man with a certain body of technical information. He is a man trained to respond in a certain behavior pattern in which "honor" and "service" have been substituted for economic motivation. (p. 33)

His brother Rex had been graduated the previous year but was found to be ineligible to receive a commission as a naval officer because of poor eyesight. He was, however, allowed to accept a commission as an Army officer. Following graduation, the first ship Robert served on was the U.S.S. Lexington. The Lexington was the Navy's first modern aircraft carrier, on which Robert served as both gunnery and radio officer. Heinlein was home-ported at San Pedro in southern California, near Los Angeles where he met and married his first wife Leslyn MacDonald in March, 1932. The marriage seemed to be quite happy for the first few years. Speaking of his first wife through his authorial character Hugh Farnham 32 years later, we learn that "her people were what is known as 'good family'.... whenever I was home she was bright and cheerful and uncomplaining" (Farnham's Freehold, 1964/1971, pp. 89-91).

All during his naval service, he was constantly involved in reading and self study, mostly in professional preparation for the examinations required for promotion. While on sea duty in 1931, he had been detached to compete in the Fleet Pistol and Rifle Matches at Fort Clayton in the U.S. Canal Zone in Panama, where he may have been exposed to tuberculosis. In 1933, he was reassigned from the Lexington against both his own and his commanding officer's wishes to the U.S.S. Roper, a destroyer. Destroyers were notorious for their rolling movement on rough seas and Heinlein was

constantly seasick. Unable to eat and exhausted from the constant watchstanding aboard the Roper, he succumbed to tuberculosis and suffered a physical collapse in December of 1933.

He spent most of the next year in treatment, first at the Fitzsimmons Army Hospital at Denver, and later in California. During his stay at Fitzsimmons he had to endure not only the hospital tedium but the dangers of the primitive treatments used against tuberculosis at that time. In a story written years later, he described how a fellow patient died of the so-called lung immobilization technique ("No Bands Playing, No Flags Flying--," 1973/1980). He finally took matters into his own hands to complete his cure:

> He went out to California to [see] Dr. Pottenger, whose clinic he had heard of and had the tuberculin cure. He didn't care for the way they treated the tuberculosis patients at Fitzsimmons where he had been sent, so he got permission to go out and seek treatment on his own. Most of the [cure], aside from the tuberculin, was a rest cure. He was supposed to rest most of the time... he had to go [back] to Fitzsimmons to be discharged or taken off the active duty list, retired. (Owenby, 1994c)

Heinlein later showed his gratitude to Dr. Pottenger by naming a medical school after him in the fictional "Western University" of his story "Lost Legacy" (1940/1953). But even though Heinlein had been cured of tuberculosis, his life would never be the same from that point on.

Disability Retirement and Frustrated Careers

Heinlein was medically retired late in 1934 on a disability pension equal to three-quarters of his active duty pay as a lieutenant junior-grade (j.g.), a stipend of $121.00 per month. While still in Colorado, he got involved in a deal to buy two silver mines, the Shively Lode and the Sophie Lode, but had to back out when his financial backer from Kansas City was machine-gunned to death. Recalling his early dreams of becoming an astronomer, he journeyed back to Los Angeles and entered the graduate school of the University of California, where he studied more physics and mathematics. It was

also in the back of his mind to qualify himself to work as a professional engineer or architect.

Unfortunately, Robert began to suffer high fevers every afternoon, a signal of a relapse into tuberculosis, and he had to drop out of UCLA graduate school to be cured again. "The next thing he did was try to sell real estate. But during the depression nothing was moving so that was a false start" (Owenby, 1994c). Always interested in political and social reform, and casting about for something worth doing during the late 1930s, Heinlein became involved in grass-roots political activism on behalf of the many poor and disenfranchised newcomers to southern California. He eventually aligned himself with social reformer Upton Sinclair's EPIC (End Poverty in California) campaign. In favor of Franklin Delano Roosevelt's New Deal and an enthusiastic proponent of Keynsian economics, Robert became increasingly active in politics. In November, 1938 Robert ran in the Democratic primary for the California State Assembly seat of the 59th District.

Virginia described her husband's early interest in politics this way: "[Robert] became active in politics. In the service you're not allowed to. So, he moved up the scale by being very active and he ran for assemblyman in the California Assembly and he lost by one vote per precinct. Maybe that was his lucky day" (Owenby, 1994c). Heinlein's friend L. Sprague de Camp, in a posthumous tribute, recounted Robert's days as a political worker for the Democratic Party (Requiem, 1992), "His political orientation then was quite different from the emphatic conservatism that he later embraced" (p. 226).

Much of Robert's political energy was devoted to unseating the politicians "owned" by the political machine that ran Los Angeles county. Heinlein's experience in battling local political machines is described in at least two of his short stories: "Our Fair City" (1949/1961) and "A Bathroom of Her Own" (1980). In 1946, he would write a manual of practical politics for promoting grass-roots democracy (posthumously published as Take Back Your Government, 1992). Looking back on his political experiences from 1946, he revealed in that manual the massive extent to which he committed himself to state and local politics in the late 1930s.

Heinlein had previously managed to save enough money from his Navy active duty pay and disability stipend to enable him to buy a small house in the Laurel Canyon

area of Hollywood. But after his political losses he found himself with a heavily mortgaged house and badly in need of money. Heinlein would later recall the tight times of the late 1930s as the period of "trying to keep house on scraped icebox and boiled dishrag soup" (I Will Fear No Evil, 1970/1987, p. 433). For about six months in 1938-1939, he was so broke that he had to accept financial help from friends. When Heinlein later became prosperous, he often "paid forward" to others who were also down on their luck as an acknowledgment of the help that he received when he had needed it. The change in Heinlein's fortunes that allowed him to achieve his prosperity was to come from the world of pulp science fiction.

The Dean of the Golden Years of Science Fiction

It was in March, 1939 that Heinlein noticed an advertisement in a science fiction pulp magazine offering a prize of $50.00 for the best new story from an amateur writer. He wrote a story in just a few days. After one or two disappointing tries with popular magazines, he eventually sent the story to the pulp magazine, Astounding Science Fiction. Astounding's editor, John W. Campbell, Jr., was remaking the field of science fiction and he paid the very best rates to writers. These writers included the most famous names—Isaac Asimov, L. Sprague de Camp, and A.E. van Vogt—from the so-called Golden Age of science fiction of the late 1930s and 1940s. Heinlein sold his story to Campbell for $70.00 and promptly began writing and selling new stories regularly, mostly to Campbell but to other editors as well. But his best stories were written for Campbell and he wrote so many that he began using pseudonyms to conceal the fact that in some issues up to half the material was written by Heinlein.

Heinlein soon became the most popular of all John Campbell's writers. Robert quickly earned enough money to pay off his mortgage, to travel across the country in 1940, and to buy a new automobile. It was during this period of writing for Campbell that Heinlein began his didactic style of science fiction writing, in which he put the fruits of his own learning to use in educating his readers. Heinlein had always monitored newspapers and journals for both sociological and technological developments and had begun establishing labeled file folders for collecting clippings about specific trends. He would use these trend files to predict, often with remarkable accuracy, the developments that he wrote about in his science fiction stories.

While Robert was writing for Campbell, he continued studying his favorite subjects. He attended seminars in General Semantics offered by Count Korzybski in Los Angeles, Chicago, and Denver. He studied economics. He read every new announcement about atomic physics. He kept up with developments within the American Rocket Society. He read widely in philosophy--especially ethics and epistemology. All these found their way into Heinlein's stories, and science fiction readers responded with enthusiasm, inviting him to be the Guest of Honor for the World Science Fiction Convention in Denver in 1941. But with the onset of World War II, Robert's life was soon to undergo a detour from the world of science fiction.

The Philadelphia Experiments

Following the Japanese attack on Pearl Harbor in December, 1941 Heinlein attempted to return to active duty as a naval officer. His hopes were dashed when the Navy pronounced him medically unfit for active duty. However, he was recruited in early 1942 by Captain Albert "Buddy" Scoles--an old Navy buddy--for work as a civilian research and development (R&D) engineer in the Navy Air Experimental Laboratory. The laboratory was located at Mustin Field near the Naval aircraft factory at the Navy Yard in Philadelphia.

At Heinlein's suggestion Scoles also recruited two other science fiction writers to work at the Lab, L. Sprague de Camp and Isaac Asimov. Both had the technical qualifications to work in R&D; de Camp had been trained as a mechanical engineer and Asimov was a chemist. Two of the projects that Heinlein worked on during the war were Plexiglas canopies for aircraft and pressure suits for withstanding stratospheric conditions; the latter was the direct ancestor of the NASA space suit. Leslyn meanwhile took a job in the personnel office at the Naval Aircraft Factory. Robert and Leslyn frequently lunched together with de Camp, Asimov, and other Lab personnel at the plant cafeteria. The food was often dreadful with such fare as "tripe soup" a common menu item (Owenby, 1994c).

In 1944, WAVE officer Lieutenant (j.g.) Virginia Gerstenfeld was assigned to the Lab to work as a chemist and aviation test engineer. She was introduced to Robert on the day she reported.

> I was brought into the section in Philadelphia by [either] John Kean or John Hardecker... and introduced to him. Robert was the only person there at the time and everybody else was down in the labs or something like that. Robert took me all around and showed me the labs and then I went to lunch with the whole group at his behest... he gave me a ride downtown in the evening and we went to dinner that night. I was staying at the [YWCA] in Philadelphia, not realizing it was in a bad section. It had been recommended to me as a place to "park" temporarily. So, he took me back there and then he even got me an apartment, which was a major miracle in those days.... Philadelphia during the war was just not a pleasant place to live. Robert hated it. (Owenby, 1994c)

And Robert left Philadelphia just as soon as he heard the news about the atomic bomb being dropped on Hiroshima. "Immediately, when he heard of it. He said, 'That's the end.' He was right, there was another one dropped, but--actually, one time we got to talking abut uranium and it's possibilities and he said, 'We can't talk about this.' So we never mentioned the subject again until the war was over" (Owenby, 1994c). Virginia was not to see Robert again for almost a year.

Back to Los Angeles

In August, 1945 Robert drove back to California with his wife Leslyn. They stopped at the site of the Trinity explosion in New Mexico long enough to acquire a piece of green glass fused from the desert sand by the heat of the atomic blast. Back in Los Angeles, the Heinleins had some trouble evicting renters from their house in Laurel Canyon. In the meantime, Robert tried to learn all he could about the awesome implications of the emerging nuclear age.

After Heinlein acquired a copy of the War Department's Smythe Report (an early version of what the Atomic Energy Commission would later publish as the Effects of Nuclear Weapons), he set about urgently to educate the reading public about the dangerous combination of atomic weapons and military rockets. Robert wanted a supra-national authority to take control of all atomic weapons to prevent them being used in warfare (he later changed his mind when the U.S.S.R. refused to accept United Nations control of their newly acquired atomic bombs). He wrote several articles on atomic

warfare in 1945 and 1946 but none was accepted for publication. Frustrated, he continued writing science fiction, but this time he targeted the prestige magazines of Saturday Evening Post, Argosy, and Colliers for his science fiction stories. Robert succeeded beyond his hopes. In 1946, he wrote his first "juvenile" science fiction novel, Rocket Ship Galileo. The novel was published the following year by Scribner's, the first of many juveniles. Ostensibly written for teenaged boys, these juveniles appealed to adult science fiction readers as well.

Meanwhile, his marriage to Leslyn was failing. Little is known of Leslyn for the reason that Heinlein generally refused to discuss her with others. She had been born in California in 1904, making her about three years older than Robert. Leslyn had earned a masters degree in psychology prior to having met Robert in 1931. She has been described as an intelligent, free-thinking, striking-looking, slender brunette with connections to the left-leaning artist and intellectual community in Hollywood. She probably formed some of these connections while working in the music department of the old Goldwyn Studio. Indeed, it may well have been through Leslyn's connections that Robert became involved with Upton Sinclair and various other socialist causes in the 1930s. It has also been suggested that Heinlein used Leslyn as the basis of his character Cynthia Randall in the novella "The Unpleasant Profession of Jonathan Hoag" (1942/1961). Another Heinlein character who was likely based on Leslyn is that of Joan Freeman in the novella "Lost Legacy" (1941/1953). These women characters are quite similar. All the above information on Leslyn has come basically from only two sources, Virginia Heinlein and Michael Cassutt, Hollywood screenwriter and historian of space flight (Owenby, 1994c; Personal communication with Michael Cassutt; November 27, 1995).

Science fiction writer Jack Williamson described Leslyn as a warm and gracious host when he attended Saturday night meetings of the pre-war Mañana Literary Society at Robert's and Leslyn's Laurel Canyon home (Williamson, 1992). Heinlein's wartime colleague Isaac Asimov described Leslyn as being extremely liberal in her politics (Asimov, 1994). He also described her as an argumentative chain-smoker who would extinguish her cigarettes in the uneaten food on her plate—a habit that particularly irked Asimov (Asimov, 1979). The failure of Robert's and Leslyn's marriage has generally been attributed to Leslyn's worsening alcoholism after the end of World War II

(Owenby, 1994c). It has also been suggested that both were of similar dominant personality types and that this caused their relationship to become increasingly contentious (Electronic newsgroup communication from Aristotle Jones; October 17, 1995).

At any rate Robert found that his marriage difficulties were severely affecting his ability to write. In addition, he felt helpless to manage his wife's alcoholic bouts. Because writing was his livelihood, he felt that he had no choice but to separate from Leslyn and seek a divorce. In a letter to his agent dated April 20, 1947 he said, "Like the hired man said, 'We've had a lot of trouble around here,' but you may expect regular copy for some time hence" (Grumbles from the Grave, 1989, p. 91). After clearing his papers from the house, he left for the desert in Ojai near Ventura, California, to catch up on his writing. In 1948 he was successful at obtaining a divorce decree. In the divorce settlement he lost the Laurel Canyon home paid for by the science fiction stories written for John Campbell's pulp magazines. He kept only the pre-war vintage Chevrolet that he had purchased in 1940 on the advice of E. E. "Doc" Smith. Until her death a few years afterwards, Leslyn would continue to harass her former husband.

In the meantime, Virginia Gerstenfeld had left the Navy in March 1946 and seeking a graduate degree in biochemistry, had begun attending UCLA. Virginia had been born and brought up in Brooklyn, New York. Her father, a dentist, and her mother, a housewife, sent Virginia to public school through the eighth grade. But when Virginia was ready for high school, she became a day student at Packer, a college preparatory school. By the time Virginia was ready for college, the Depression had severely reduced the Gerstenfelds' means and Virginia enrolled at New York University rather than at a prestigious women's school or Ivy League college. At NYU, Virginia prepared herself for a career in science by majoring in chemistry. Virginia also earned varsity letters in swimming, diving, basketball, and field hockey. Later she took up competitive figure skating after seeing champion figure skater Sonja Henning perform in New York. After graduation, Virginia went to work as a chemist in the quality control laboratory of a large baking firm where she remained until entering the Navy in 1942.

When Robert and Leslyn separated in early 1947, he reestablished regular contact with Virginia. After Heinlein's divorce from Leslyn was finally granted, Virginia

accepted his proposal of marriage. She left graduate school and followed Robert to Raton, New Mexico where they were married on October 21, 1948. The new couple then took an apartment in Colorado Springs, Colorado, where they lived until their departure for Hollywood the following June.

Destination Moon and the Scribner's Juveniles

Having reestablished peace and "domestic tranquillity" in his life, Heinlein could get down to serious work again. He found this work in the juvenile science fiction novels he was beginning to write for Charles Scribner's Sons publishing house. Heinlein wanted his juveniles to do the job of teaching his audience the same perspectives and values that he had been unsuccessful in teaching through his postwar "worldsaving" articles. In a letter to his agent dated February 19, 1946 (Grumbles from the Grave, 1989), Heinlein said, "[Two friends] convinced me that my own propaganda purposes will be served best by writing a series of boys' books in addition to the adult items previously described" (p. 41). As for the term "juvenile," Heinlein believed that any book that was not interesting to an adult would not be very interesting to teenagers either. Therefore, in a certain sense, all Heinlein's juvenile novels are adult novels as well.

Heinlein had already sold Rocket Ship Galileo (1947), his first juvenile, to Scribner's in early 1947. Working furiously after his separation from Leslyn, he completed his second juvenile, Space Cadet (1948), in late 1947. It was published by Scribner's the following year. Prior to his divorce and remarriage, Robert had spent part of 1948 in Hollywood with screenwriter Rip Van Ronkel writing a movie script based loosely on Rocket Ship Galileo. This script was immediately purchased by George Pal, who also invited Heinlein to be the technical director for the film. During the winter of 1948-1949, Heinlein wrote his third juvenile, Red Planet (1949). This novel had to be revised in spots to accommodate the sensitivities of his Scribner's editor, Alice Dalgliesh. Alice had objected to Heinlein's description of Martian sexual reproduction. She also disliked Heinlein's positive depiction of gun ownership among the human colonists on Mars (Grumbles from the Grave, 1989).

After writing Red Planet Robert wrote the outline for what would 12 years later become Stranger in a Strange Land (1961/1987). In June of 1949, the Heinleins drove

to Hollywood so that Robert could begin the technical direction of Destination Moon. That film has since been called the first scientifically accurate motion picture about space travel (Grumbles from the Grave, 1989). During the autumn of 1949, he wrote his fourth juvenile (Farmer in the Sky, 1950) while he was waiting in Hollywood for film production to begin. By this time, he had worked out the essential structure for his juveniles: they were to be primarily bildungsroman—stories about the educational development of their protagonists (Owenby, 1994c). Educational aspects of these bildungsroman novels will be discussed more fully in Chapters III and IV.

After completing the shooting of Destination Moon, the Heinleins moved back to Colorado Springs in early 1950. They immediately began building a house which was completed enough to enable them to move into it on Labor Day that same year. Heinlein quickly wrote an adult science fiction novel (The Puppet Masters, 1951) followed soon by his fifth juvenile for Scribner's (Between Planets, 1951). Thereafter, he was to produce one juvenile per year for Scribner's through 1958.

While living in Colorado Springs, the Heinleins made their first round-the-world trip together (1953-1954). This trip was later described in the posthumous travelogue Tramp Royale (1992). An interesting snapshot of Heinlein from the 1955 edition of Current Biography provides a description of the author in his 48th year:

> Robert Heinlein has brown eyes, brown hair, weighs 172 lbs and stands six feet tall. He is a member of the Democratic Party and attends the Methodist Church. He holds membership in the American Association for the Advancement of Science, Author's League of America, American Society of Mechanical Engineers, American Rocket Society, and the United States Figure Skating Association. His hobbies are astronomy, semantics, figure skating, cats, fiscal theory, politics, civil liberties, talking and traveling. He is an expert rifleman and can fire the pistol with great accuracy using either hand. (Electronic newsgroup communication from Matt Hickman; September 9, 1995)

The following year Heinlein won his first Hugo Award for an adult science fiction novel (Double Star, 1956/1957). In 1959, Scribner's rejected Starship Troopers (1959/1968), which was then sold to and published by Putnam. It immediately won Heinlein another Hugo.

Also in 1959, after having been idle from political activism since 1946, Heinlein became involved with his wife Virginia in a grass-roots political campaign. According to Virginia, Lester del Rey (a science fiction writer and publisher, now deceased) described Heinlein's political journey this way, "Robert stayed where he was and the country moved to the left. That's what he said. But I do think that Robert became more conservative with time" (Owenby, 1994c). Sprague de Camp believes this change took place as a result of the Heinlein's 1960 tour of the Soviet Union. But Virginia reports that it began earlier as a result of her husband reading an article in U.S. News and World Report about political complicity in the 1941 attack on Pearl Harbor.

Virginia later became involved in political activities around nuclear testing, a cause that she managed to get her husband interested in as well. "We had quite a number of liberal friends when we first lived in Colorado Springs, but when we published 'Who Are the Heirs of Patrick Henry?' that was the end of that" (Owenby, 1994c). The publication referred to was a newspaper advertisement the Heinleins wrote urging President Eisenhower not to unilaterally cease nuclear testing. But aside from voting, Robert really did not resume involvement in election politics until he and Virginia became active in the "Gold for Goldwater" campaign in 1964.

In regard to his science fiction, Robert wrote one more juvenile in 1963 for Putnam, this time centered around a female protagonist, but the juvenile years had essentially ended in 1958. In the future, Heinlein would use his time to write increasingly controversial adult science fiction novels.

Stranger and Beyond

Heinlein's first adult novel of the 1960s was to prove to be controversial indeed. Stranger in a Strange Land (1962) was the book that brought the name of Robert A. Heinlein into the mainstream consciousness of young Americans in the 1960s. It won him a Hugo as well. It was also the first science fiction book to make the New York Times best-seller list. Like J.R.R. Tolkien's The Lord of the Rings, the other famous "sleeper" bestseller of the 1960s, Stranger sold very slowly at first then gradually became famous through word of mouth. It finally became so famous that some believed that it had as much to do with the sexual revolution of the 1960s as did rock-and-roll music (Owenby, 1994c). As a result of this book, as well as the mounting sales of

Heinlein's other books, the Heinleins found it increasingly difficult to maintain their privacy.

Robert also found himself an increasingly frequent target of hostile criticism from both within and without the science fiction community. Heinlein's ideas defied easy categorization; he was socially liberal but politically conservative, which meant that both the left and right found him easy to attack. This was partly because of his increasing distrust of the Soviet Union--especially after the Heinleins' visit to the U.S.S.R. in 1960--combined with his political libertarianism. Heinlein's politics had gradually changed from his New Deal liberalism of the 1930s into a more complex set of beliefs that combined liberal social views about racism, sexism, and individual liberty with conservative perspectives on military preparedness and the economy. He had become increasingly distrustful of large government while remaining committed to grass-roots democracy, citizen action, and community self-help organizations. His evolving political ideas were articulated in his 1966 Hugo-winning novel The Moon is a Harsh Mistress, a book about a future libertarian political revolution on the Moon.

On July 20, 1969, Heinlein--along with Isaac Asimov and Arthur C. Clarke--was a guest of honor of Walter Cronkite during the Apollo 11 live coverage of the first humans to land on the Moon. This event was a culmination of a life-long dream for which Robert had constantly propagandized in his science fiction. The entire science fiction community recognized the co-writer and technical director of Destination Moon as a right choice for this event.

Throughout the 1960s and 1970s, both Heinleins were to experience health problems. Robert especially began to have more frequent and severe bouts of illness, one of which in 1970 led him to afterwards campaign for blood drives. Earlier in 1964, the Heinleins realized they would have to leave their home in Colorado Springs because of Virginia's altitude sickness—a cumulative condition brought on by her inability to adjust to the thinner air of their mountainous environment. On October 21, 1965--their 17th wedding anniversary—they left Colorado Springs and the house they had designed and built 15 years before. The Heinleins subsequently relocated to northern California. There they built a new house in the Bonny Doon area of Santa Cruz county. They lived at Bonny Doon until 1987 when because of Robert's worsening health they had to move closer to medical services.

Meanwhile, the Heinleins continued their world travels. Robert also continued writing books, most of which made the best-seller lists. Although he would not be awarded a Hugo after 1966, he did receive the first Grand Master Nebula Award in 1974, awarded by the Science Fiction Writers of America for lifetime achievement in the field of science fiction. In July of 1987, he published To Sail Beyond the Sunset, his last novel--a book full of autobiographical details

Robert A. Heinlein died peacefully in his sleep in the Heinlein's condominium at Carmel, California on Sunday morning, May 8, 1988. He would have been 81 years old in July. He had 44 of his 54 books in print when he died, with over 40 million copies sold--a record unmatched at that time by any other writer in or out of science fiction. According to Locus, the magazine of the science fiction field (Robert A. Heinlein Dies, 1988, June):

> Heinlein's impact on the world... extended far beyond that of an entertaining novelist. He was fascinated by how things worked and delighted in teaching others. As a result, his early novels and stories were didactic works in which he explained the intricacies of space travel, genetics, ballistics, and a dozen other sciences to a captivated readership. It was this ability to entertain and teach that made Heinlein a formidable propagandist for space travel.

This Locus excerpt constitutes a fitting acknowledgment of Heinlein as both a writer and an adult popular educator. It sums up Heinlein's interests, abilities, and accomplishments. In the next section, I will focus on Heinlein's personal orientation to learning.

Heinlein the Learner

Adler (1986) calls the learner who is constantly teaching herself or himself--perhaps especially in order to remedy the defects of one's formal education--an autodidact. Robert Heinlein was a lifelong learner who built upon his formal education with self-directed learning projects throughout his life. While Heinlein did in fact believe that his formal education was in many respects superior to what youngsters are given today, he was also deeply conscious of the superiorities of his parents' educations

to his own ("The Happy Days Ahead," 1980). (I discuss Heinlein's perceived decline of education since his parents' day more thoroughly in Chapter V). More importantly, Heinlein was always conscious that there was so much more to learn.

My point is that Heinlein's devotion to self-directed, lifelong learning justifies calling him an autodidact. I admit that I use the term "autodidact" more in the spirit of adding to or remediating one's existing education. Using the term as I do, I diverge from Candy's (1991) view "that autodidaxy does not exhibit the characteristics that would allow it to be treated as education" (p. 406) because it does not constitute "organized communication designed to bring about learning" (p. 405). Whatever the relationship of autodidaxy to education, Heinlein was devoted to continuous self-directed, lifelong learning.

Robert's Early Love of Learning

According to Virginia, Robert was always hungry for knowledge (Owenby, 1994c). He read constantly, on the way to school, on the way home, walking the sidewalks. I have already mentioned that as a teenager, Heinlein worked in the Kansas City Public Library as a page. This gave him two kinds of freedom: freedom from the restrictions on the number of books he could read, and the freedom of the stacks. This early love of libraries continued throughout his early and middle years, certainly until he and his wife Virginia were to assemble their own 10,000 volume home library (Stover, 1987). In this connection it is hard not to regard as autobiographical the feeling expressed by his protagonist in Farnham's Freehold (1964/1971), "Books had always been his best friends. In a hundred public libraries they had taught him. From a thousand newsstands they had warmed his loneliness" (pp. 83-84).

Heinlein found that another way to augment his learning was by teaching others. As Virginia was later to relate,

> Robert always had things to be interested in. As a youngster, he was interested in astronomy and he studied it on his own because it wasn't offered in high school. And at age fifteen, he was going around lecturing to local clubs and groups... on the subject of astronomy, which is pretty remarkable. (Owenby, 1994c)

Heinlein was to continue his fascination with astronomy throughout his life, even briefly returning to graduate school at UCLA in his late twenties in order to pursue his old dream of becoming an astronomer. Later, after finding that his health would not permit him to pursue his dream vocation, Robert came to find a new way of making his living that involved teaching by writing rather than teaching by lecturing. His lifelong interest in astronomy would provide the background for much of his fiction. But whatever he was later to write about, it almost always would be related to some personal learning interest and a consequent self-directed learning project.

Lifelong Learning in the Sciences

Closely related to Heinlein's interest in the heavenly bodies was his even greater interest in the means to travel to them. The words of his protagonist in the story "Requiem" (1940/1967) are biographical in this regard:

> When I was a kid practically nobody believed that men would ever reach the moon... When I was a boy, they laughed at the idea. But I believed--I believed. I read Verne, and Wells, and Smith, and I believed that we could do it--that we would do it... I used to go without my lunches to pay my dues in the American Rocket Society, because I wanted to believe that I was helping to bring the day nearer when we would reach the moon [pp. 249-250] .... There were lots of boys like me--radio hams, they were, and telescope builders, and airplane amateurs. We had science clubs, and basement laboratories, and science-fiction leagues--the kind of boys who thought there was more romance in one issue of the Electrical Experimenter than in all the books Dumas ever wrote. We didn't want to be Horatio Alger's Get-Rich heroes either; we wanted to build space ships. (pp. 255-256)

Heinlein maintained his interest in rocketry and his membership in the American Rocket Society. When the American Rocket Society was later absorbed into the American Society of Mechanical Engineers (ASME), Heinlein became--and remained--an ASME member for the rest of his life. He never missed an opportunity to indulge his interest in the real advances in rocketry that were going on around him. This interest

extended to traveling to White Sands, New Mexico in 1952 with Virginia to see one of the last of the German V-2 rockets launched into near space. Actually, that particular V-2 exploded in the air shortly after launch—a spectacular sight albeit nonetheless disappointing for the Heinleins (Owenby, 1994c). But the greatest consummation of Heinlein's interest in rocketry occurred, as I have already mentioned, when he was Walter Cronkite's guest commentator during the CBS coverage of the Apollo 11 moon landing on July 20, 1969.

Heinlein's interest in rocketry and space travel came through in story after story in his science-fiction. This was especially evident in the painstaking care with which he provided accurate scientific and technical detail in his stories of space flight. One example of this involves a description of a rocket trajectory in Space Cadet (1948). Robert and Virginia performed calculations for two days on butcher paper in order to ensure the description was impeccably accurate ("The Happy Days Ahead," 1980).

Heinlein was also interested in blood, especially rare bloods. "Part of the reason he got so interested in blood," said Virginia, "... was he had had blood transfusions in 1970... and then he had more in 1978 and again in 1987" (Owenby, 1994c). But even in 1969, says Virginia, he "got interested in rare bloods when he was working on I Will Fear No Evil (1970/1987). In that novel, Heinlein grappled with some of the medical challenges of transplanting an organ from one body into another, including the compatibility of blood types between host and donor. But when he underwent surgery in 1970 for a perforated diverticulum and had to receive blood transfusions, his interest in blood moved from being academic to being personal and vital.

As a result of his personal encounters with the need for blood transfusions, Heinlein undertook several blood drives over the following decade, both inside and outside the science fiction community. He was at first interested in so-called rare blood types, although according to his wife "When it got right down to it... Robert finally figured that any type is rare if you don't have it. So, he just decided he would hold blood drives and he actually recruited many, many donors, at least five thousand" (Owenby, 1994c).

The success of these blood drives are attested to in part by the plaques and certificates awarded to him by various blood bank organizations, which still adorn the walls of Virginia's home. Heinlein's interest in rare blood types never went away. "He

dug more deeply into it, and he was talked into doing the article... for the Compton Yearbook and he took two years off at that time" (Owenby, 1994c). The 1976 article entitled "Are You A Rare Blood?" was commissioned by Encyclopaedia Britannica for their Compton Encyclopedia division's annual yearbook.

Heinlein later spent part of two years in studying contemporary developments in the biological sciences, including rare bloods and the genetic research that helps explain the transmission of blood types from parents to offspring. This is a remarkable self-directed learning project for a chronically sick man in his late seventies.

Lifelong Learning in Human Affairs

Robert was an autodidact in areas other than astronomy, rocketry, space travel, rare bloods, and the biological sciences. As I will discuss more fully in Chapter III, Heinlein was passionately interested in ethics, economics, politics, and social relations--those subjects that I loosely term as "human affairs." It also was his interest in social relations that lay at the foundation of his interest in anthropology. Virginia Heinlein's short list of people who were most admired by her husband as sources of knowledge and understanding include Margaret Mead and Ruth Benedict, both anthropologists (Owenby, 1994c). In fact, Heinlein's admiration of Margaret Mead was so great that he created an anthropologist character named Margaret Mader who was based on Mead in his juvenile novel Citizen of the Galaxy (1957). His interest in anthropology led Heinlein to discuss the subject in many of his other books as well. I treat Heinlein's interests in politics, government, sex, race, gender, and social policy in far greater detail in Appendices F through H.

Heinlein also showed interests in a number of related subjects, including social psychology ("If this goes on--," 1940/1967; "Coventry," 1940/1967; "Blowups Happen," 1940/1967; Methuselah's Children, 1941/1967), religion and theology ("If this goes on--," 1940/1967; Stranger in a Strange Land, 1961/1987; Job: A Comedy of Justice, 1984/1985; To Sail Beyond the Sunset, 1987), and magic and mysticism (Waldo, 1941/1970; Magic, Inc., 1942/1970; Glory Road, 1963/1970; Job: A Comedy of Justice, 1984/1985). Robert's interests in religion, theology, mysticism, and other metaphysical aspects of his philosophy are discussed more thoroughly in Appendix D.

Lifelong Interest in Education and Learning

Besides his interests in the physical sciences and human affairs, Heinlein was interested in the educational process itself. He read about education, collected clippings, and constantly inquired about the educational experiences of those he knew. Asked why her husband was interested in education, Virginia offered the observation that "Robert... came from a long line of, he used to phrase it, 'teachers and preachers' " (Owenby, 1994c). If Heinlein had a hereditary predisposition towards teaching and education, it may help to explain why it shows up in his stories so often. Almost all Heinlein's so-called juvenile stories make reference to education--both for youth and adults. For example, Space Cadet (1948) is a book about, among other things, the proper education for an officer of a future UN-like global and interplanetary peace-keeping organization. This aspect of Heinlein is discussed in greater detail in Chapters III and IV.

That Heinlein was interested in education also shows up in the incredible detail with which he describes curriculum, mentoring, teaching machines, and accelerated learning techniques (see Chapters III and IV). Heinlein was always interested in any technique or practice that could enhance learning and often described them in his stories. Virginia explained that the reason was, "Because there's always so much more to learn" (Owenby, 1994c).

Heinlein was interested in educational philosophy as well (this subject is discussed in depth in Chapter V). For example, the first part of the novel Have Space Suit--Will Travel (1958) details how the protagonist and his father set about remedying a defective public high school education. This novel clearly shows Heinlein's distaste for the progressive education movement of that time, " 'Twaddle! Beetle tracking! Occupational therapy for morons' " (p. 9). Heinlein also acquired a contempt for the professional education establishment, including schools of education (Chapter V). Virginia explained that she and her husband were always interested in what young people were studying.

> [We] followed along with youngsters who [were] in school. [We] had a young girl who was helping [us] in the house.... She was about to finish college and she had majored in philosophy. And so [we] said, "Do you mind if [we] ask you some

> questions about general information?" She said no. So [we] asked her how many days there were in a year and she didn't know. She didn't know how many weeks there were in a year. She didn't have any general information at all that you would expect of a person who was at that level to have. (Owenby, 1994c)

Here are two more examples of Heinlein's interests in education. In a prophetic essay entitled "The Happy Days Ahead" (1980), Heinlein discusses the proper role and content of public education for holding civilization together. In his last book (To Sail Beyond the Sunset, 1987), a fictional autobiography of the mother of his most famous protagonist, much of the story centers on the educational experiences of a woman from girlhood through late middle age. In the story, Heinlein discusses mentoring, self-directed learning, adult and continuing education, and nontraditional degree programs (the teaching and learning themes in this novel are discussed more thoroughly in Chapter IV).

Polymathism, the Limits of Self-Direction, and Adult Development

In reviewing Robert Heinlein's breadth of interests, it would be easy to call him a polymath for his interests were truly encyclopedic. In fact, in a letter to John W. Campbell, Jr. dated December 21, 1941 (Grumbles From the Grave, 1989) Heinlein identifies himself with the protagonist in his novel Beyond this Horizon (1942/1948) whose desire to become a synthesist is frustrated by inadequate ability (Heinlein's "synthesist" can be defined as a person with encyclopedic interests who is also endowed with unusually good memory):

> I would like to become a synthesist, but I am acutely aware that many of my characteristics are second-rate.... I am not depressed about it, but I know my own shortcomings.... I have not the health, ambition, nor years remaining to me to accomplish what I would like to accomplish.... and I am not much interested in second prize. In the meantime, I expect to have quite a lot of fun and do somewhat less constructive work than I might, if I tried as hard as I could. (Grumbles From the Grave, pp. 28-29)

Besides telling us something about Heinlein's encyclopedic approach to education, the above passage also reveals his awareness of his personal limits in regard to self-directed lifelong learning. As I will discuss more thoroughly in Chapter V, Robert believed that learning is both an instrumental and a teleological value. That is, learning is useful not only because of its utility in helping us to do more but also because it helps us to be more. Nevertheless, his awareness of the physical limitations of this temporary, earthly life always hung like a shadow over Heinlein's genuine love of learning.

But also interesting is the attitude with which Heinlein accepts the limitations of health and life in the passage above. In terms of adult development, Heinlein's attitude in the letter to Campbell cited above appears to support Erikson's (1950) model of adult development. For purposes of understanding Heinlein, Erikson's chief value is his perspective that life-span development comprises a series of essentially moral tasks involving the choosing of values. Peters (1989) explains in his extraction of common features of various theories of adult development (including Erikson), "the developing adult makes choices about actions to be taken in response to externally-generated life task demands or internally-generated needs and wants" (p. 85). In Erikson's model, of course, the outcome of a moral task is developmental readiness to engage the next moral task.

I believe that Erikson's model is applicable to a wide range of issues in how Heinlein engaged his world, but particularly in how Robert dealt with existential dilemmas in matters over which he had no control. I could say that Erikson characterized such an existential dilemma in terms of his Stage VIII moral task involving the choice of "ego integrity versus despair." Erikson explains this stage in the following way (Erikson, Erikson, and Kivnick, 1986):

> Burdened by physical limitations and confronting a personal future that may seem more inescapably finite than ever before, [some]... may find themselves struggling to accept the inalterability of the past and the unknowability of the future, to acknowledge possible mistakes and omissions, and to balance consequential despair with the sense of overall integrity that is essential to carrying on. (p. 56)

Certainly, Heinlein's attitude of accepting his eventual decline and mortality while yet maintaining his love of lifelong, encyclopedic learning can be characterized as a successful outcome of Erikson's integrity-versus-despair developmental stage.

A Summary Perspective of Heinlein the Learner

Perhaps it is fitting to end this section of the chapter with a passage from a Heinlein novel that is full of autobiographical allusions (To Sail Beyond the Sunset, 1987) in which Heinlein's protagonist tells us:

> Sally [Rand] and I shared one oddity; both of us went to school as often as we could manage it.... By the time she died... she had far more collegiate hours than most professors. She was a polymath; everything interested Sally and she studied in depth.... her one weakness was big, thick textbooks. (p. 361)

Because Heinlein had attended Greenwood Grammar School at Kansas City with Sally Rand, the famous stripper, and had remained friends with her all his life, this passage can be trusted to inform us of both Ms. Rand's and Heinlein's attitude toward self-directed and life-long learning.

In this section, I have attempted to show that Heinlein's orientation toward autodidaxy, educational involvement, and polymathism reveal him to be a strong personal example of self-directed and lifelong learning. I have also suggested that Heinlein's attitude toward the limitations of self-direction can be connected to Stage VIII of Erikson's (1950) model of adult development. As a way of bringing closure to this chapter, I will attempt to provide a glimpse of a typical day in Heinlein's most productive years as a writer and fictional educator.

A Day In The Life Of Robert A. Heinlein

What was it like to go through a typical day with Robert Heinlein during the prime of his life? Before that question can be answered, it seems necessary to identify what is meant by the "prime of his life." I believe that Heinlein's life as a writer can be fairly easily divided into the following periods: Period One (1939-1942), in which Heinlein established his early reputation as a science fiction writer while living in Los

Angeles; Period Two (1945-1948), in which he established himself in the prestige market of "slick" magazines after his return to Los Angeles following the war years spent in Philadelphia; Period Three (1949-1964), in which he wrote the famous juvenile and adult novels that made him famous both within and without the science fiction community, and during which he lived in Colorado Springs; and Period Four (1965-1988), in which he wrote most of the novels that contemporary readers remember him for, and during which he lived in northern California until his death in May of 1988.

Period Three has much to recommend it as Heinlein's prime: first, because Heinlein's health was relatively good; second, because much of his production occurred during this period; third, because three of his four Hugo Awards were won during this period. The following account, taken from Heinlein's published material as well as unpublished interview material obtained from Virginia Heinlein, represents a typical day during the Heinleins' life in that period. The events described are typical for that period but the account is fictionalized from various events that took place over several years.

It is an autumn morning. The Heinleins are living at 1776 Mesa Avenue in the Broadmoor section of Colorado Springs. Their home, described by Arthur C. Clarke (1992) from a 1952 visit as a "self-planned, high-tech.... mile-high house" (pp. 261-262) has been neatly landscaped in its hillside setting of pine trees. Virginia has already been awake for hours when her husband finally awakes late in the morning from working into the wee hours to complete a chapter of a novel the previous night (he calls this "rolling"). But the novel is nearly finished and Robert feels a great satisfaction, although the job of reviewing and cutting is still to come. As their tomcat Pixie buzzes and brushes their legs, Virginia prepares a breakfast of eggs, bacon, and toast for her husband.

Robert sits at the breakfast table that is next to a window to eat his breakfast. Munching his toast, he looks up to notice Oscar, the neighbor's friendly dog, staring at him from just outside the window. The dog is obviously interested in Robert's food. Unable to enjoy his meal in the face of a hungry dog, Robert asks Virginia to "find something for Oscar to eat."

Just as he is finishing his meal, the doorbell rings. Virginia answers the doorbell; it is a fan who has driven from Amarillo, Texas hoping to meet his favorite author. Telling the young man that "Mr. Heinlein can only give you a very few minutes," she

ushers him in to her husband and offers him coffee. Heinlein talks with the fan and in a few minutes walks with him to the door, thanking him for his interest in his novels. As the young man walks away from the house, Robert makes a silent expression of relief that this visit was pleasant– not all of them are.

Noticing that it is a particularly fine Colorado morning outside, Heinlein takes a stroll around the yard. He takes note of some stonework that he finished only a month ago before he began writing his current novel. Rubbing his finger over the mortar between the stones, he allows himself to feel pleased with his handiwork. Walking back around to the front of the house, he is hailed from the street by a young boy on a bicycle. The boy is well known to Heinlein and they exchange greetings. The boy pulls an object from his pocket and excitedly shows it to Heinlein. The boy wants to sell it to Robert. They agree on a price and money is exchanged. Back inside the house, Robert shows the object to Virginia–a matchbox with a tiny dead frog inside. "I bought it for 50 cents," he chuckled. He stores the matchbox and its contents on a shelf in case the boy decides to buy it back.

Sitting down to read and answer his fan mail, Robert is at once interrupted by a long-distance call from Lurton Blassingame, his agent in New York. He passes along to Heinlein a request from a librarian association that wants him to give a speech about science fiction to their annual meeting. Heinlein usually turns down speaking engagements because of their drain on his time, but he makes it a policy to accommodate librarians because they usually speak well of his books. Lurton also passes along a request from Heinlein's editor at Scribner's Sons (the publishing house for his juvenile science fiction novels) to make changes to the ending of his latest manuscript. As Robert learns the nature of the changes, he makes an angry remark about the editor's judgment, finally asking Lurton to tell the editor to write directly to him and specify precisely what changes are to be made. The conversation passes on to small talk and Heinlein concludes the conversation by inviting Lurton to come try the fishing in Colorado. Heinlein neither fishes nor hunts but knows that Lurton enjoys both.

Returning to the mail, Heinlein begins browsing a thick stack of technical journals and magazines. Besides his genuine interest in current research and development, he knows he must stay on top of new information for a practical reason--to keep the science in his science fiction fresh and up to date. He marks a passage in a publication of the

American Society of Mechanical Engineers (ASME) that relates to instrumentation and controls for an automatic machine. Thinking that he may be able to use the idea in his novel, Robert carries the magazine back to his work desk. Briefly reviewing the chapter he had finished the night before, he inserts fresh sheets and carbons in his typewriter and begins to type.

Virginia, meanwhile, is stacking Russian language records on the record changer in the den. Already knowledgeable of six languages, she is determined to make Russian her seventh. As she takes the vinyl disks from their dust jackets, she notices that the tapping from her husband's typewriter is rather slow. She goes about tending her plants outside, listening to the Russian lesson through their outside speakers. An hour later she returns to flip the records on the changer and notices that the tapping of her husband's typewriter has increased to machine gun speed.

By the middle of the afternoon, Robert has produced several pages of new copy. He is still "rolling" when he hears the telephone ring. After the third ring, he decides that Virginia is unable to hear the ringing and he gets up to answer the call. It is an old Annapolis classmate still on active duty with the Navy Department in Washington. He is in town to speak as a guest lecturer at the Air Force Academy nearby and wanted to give Heinlein a call. As they talk, Virginia comes in with an armload of groceries, and her husband tells her who is on the phone. Before Virginia can invite him over, the classmate invites them for dinner and drinks at the officers' club that evening. They accept and agree to meet two hours later at six o'clock.

Ninety minutes later Virginia is dressed and ready to go, but her husband is still fiddling with his blazer and tie. Finally he is ready and they rush across town to the Air Force reservation. Over gin and tonic and thick steaks, the classmate happens to mention a classified subject. Heinlein courteously but firmly informs his friend that for his writing's sake, he simply cannot afford to discuss classified matters, even when the details are not disclosed. He simply must have the freedom to write about anything and cannot take the chance of seeming to have a knowledge of classified subjects. Changing the subject, they talk about their academy days and Heinlein learns that the sadistic upperclassman who tormented him during his plebe year at Annapolis is now working for a defense contractor.

Returning home after dinner, Heinlein mentions to Virginia his desire to drive up to Denver next week for the state fair and rodeo. Virginia indulges her husband's sentimental interest in "punkin doings" (his term for agricultural fairs and expositions) and so she smilingly agrees. As they talk, Virginia says something about their cat Pixie going from door to door that gives him an idea for a new novel. He writes it down, but is too tired to return to his typewriter tonight. Instead he finds a copy of Mark Twain's Pudd'nhead Wilson. Knowing her husband's love for Mark Twain, Virginia has been diligently acquiring a complete set of Twain. Reading in bed, he chuckles over the absurd humor in the epilogue of the book. Finally, sleep begins to overpower him and he turns out the reading lamp over his bed side. Maybe he will finish his novel tomorrow.

Conclusion: A Thematic Retrospective

Even this relatively short biographical sketch suggests several themes that appear to be important in understanding Heinlein's life. These themes can be conceived as combining historical, socioeconomic, educational, and political characteristics. First, as far as the historical theme is concerned, it is probably fair to say that Heinlein's life-world was very much a product of, or at least influenced by, the social-scientific and scientific-industrial trends, developments, and ideas that were transforming American life at the turn of the century. Stubblefield (1988) points out that adult education in the earlier years of the century saw industrialization as both a problem and a benefit; a problem in that it had created appalling urban conditions as workers concentrated in cities; a benefit in that industrialization had the potential to provide increased leisure of which adult education would be needed to make good use.

At the same time, the ideas and fruits of science were beginning to influence other spheres of thought, including social relations, politics, economics, education, and literature-- especially the emerging literature of science fiction. Previously I have argued that both adult education and science fiction in early 20th century American life drew their respective ideological fuel from the same historical impulses indicated above: industrialization and science (Owenby, 1994a). I argued that both were nourished by the same desire: to apply scientific thinking in both the physical and social realms in order to achieve the goal of a utopian society that was at once scientifically advanced and

socially just. Ohliger (1987, 1988, 1989) suggested that science fiction images provide both prophecy and indirect wisdom for informing adult education. It is arguable that in reading the works of Wells, London, Burroughs, and other writers of "scientific romances" the young Heinlein was assimilating in imaginative form contemporary images of industrialization and science that would provide a "curriculum" for guiding his future (see Chapter III for a more thorough discussion of Heinlein's curriculum).

A socioeconomic theme is clearly evident in Heinlein's life when we look at the class and social matrix in which he acquired key values. Heinlein grew up in a "poor country family" that nevertheless had strong middle-class aspirations for upward mobility. That family included educated parents, grandparents, and aunts-- indeed, even a physician and history professor. Heinlein was thus early inculcated with the values of education, self-improvement, and hard work. These values were reinforced by the schoolbooks in use in the public schools that young Robert attended, which still included McGuffy's Reader and Weem's Life of George Washington (Owenby, 1994c). Along with education, Heinlein learned to value patriotism, including the willingness to serve in the armed forces. These would continue to be the values that Heinlein, throughout his life as a writer, would project into the educational and developmental experiences of the characters in his science fiction.

Another theme is that Heinlein was clearly a beneficiary of the adult and popular education movements of the early 20th century. He benefited in that he was exposed to the values of self-culture, liberal education, and the popularization of knowledge. These values had driven much of the early adult education movement in the United States from the beginnings of the Lyceum movement in 1826 to the demise of the traveling Chautauquas in 1930 (Stubblefield and Keane, 1994). Robert's parents had eagerly attended the traveling Chautauquas and lecture series that visited Kansas City during his boyhood and often took their children along as well. In Robert's later life, he would remember attending lectures in philosophy and science during his boyhood, lectures that helped form his life-long interests.

He also benefited from another movement within the adult education tradition in the United States, the public library (Stubblefield and Keane, 1994; Brockett and Hiemstra, 1991; Chobot, 1989). It can also be said that Heinlein benefited from professional and learned societies. Throughout his life, Heinlein maintained membership

in societies that promoted the advancement of science, astronomy, rocketry, engineering, and semantics. Many of these societies had their origins in the 19th century movement for the establishment of societies for improvement, trades, and the diffusion of knowledge. But if Heinlein benefited from the adult and popular education movements of this country, he also gave back to and benefited others in his efforts to teach his beliefs and to diffuse knowledge through his writings.

A final theme that emerges from this brief biographical sketch is political. Heinlein early became and remained throughout his life interested in politics. Franklin (1980) has speculated that Heinlein's youthful memories of the business troubles experienced by his father and uncle due to the monopolistic power of large industrial corporations may have contributed to the background of some of his early stories. These stories, such as "Life-Line" (1939/1967), "Blow-ups Happen" (1940/1967), and "Let There be Light" (1940/1951) reveal Heinlein's distrust for corporations that get too powerful. But Robert also had acquired an early distaste for entrenched and corrupt political machines while growing up under the Boss Pendergast organization in Kansas City. When he became a resident of Los Angeles in the 1930s, he not unexpectedly fought against the local machine that dominated southern California politics.

Another contribution to his political activism likely came from the grass-roots and community activism traditions that sprang up in the middle-western farming states in the late 19th century. Heinlein grew up in Butler farming circles and Kansas City community circles hearing conversations about farmers cooperatives, agricultural and mechanical alliances, and the Grange movement. Still another contribution was the still-fresh tradition of Teddy Roosevelt's progressive politics, the Fair Deal, and trust-busting. All these influences fueled Heinlein's early commitment to liberalism, progressivism, community self-help, and grass-roots democracy.

But the latter experiences of Heinlein's life created a complex set of counter-influences to those of his early life. People often change their political orientations as economic changes in their lives change the interests they feel obliged to protect. Heinlein may have experienced a genuine change in class consciousness as he grew increasingly more prosperous from the sales of his books. It has also been suggested that Virginia Heinlein led her husband to change his politics after their marriage

(Asimov, 1994). Indeed, Virginia told me directly that she had partly influenced her husband into changing his political views:

> I never had any ambitions to particularly be a big wig in local politics. But when a campaign came along that I was very much interested in I would get out and campaign for the candidate. And I was pretty choosy about my candidates. Then Robert would gradually get interested and he would drop everything and get out and campaign too. Certainly, they weren't the sort of candidates—the ones I chose to work for—weren't the sort of candidates he would have chosen back in the 30s and 40s to work for at all. (Owenby, 1994c).

However, I believe it likely that other forces exercised an equal or greater influence upon his political consciousness. The massive collective impact of the Great Depression, the rise of Fascism and Communism, World War II, the Cold War, and the social upheavals of the 1960s seemed to combine to transform Heinlein's earlier political views into a generalized distrust of government combined with a pessimistic and impatient view towards his fellow citizens' commitment to making democracy work.

Whatever caused Heinlein's political views to change, they did not change his lifelong commitment to education, learning, and teaching. In the next two chapters, I shall discuss Heinlein's passion for these activities in more detail. Chapter III is a discussion of the underlying "curriculum" of Heinlein's fiction. Chapter IV explains Heinlein's use of various methods of teaching and learning as well as a sampling of images of self-directed learners and educated adults found throughout Heinlein's writings.

CHAPTER III

HEINLEIN'S FICTIONAL CURRICULUM

"[Mike] got a better feeling for human life from stories
than he had been able to garner from facts; fiction gave him
a gestalt of life.... he got ideas from [fiction]."
--Stranger in a Strange Land, 1961/1987, p. 109.

In Chapter I, I referenced Robinson's (1980/1981) and Stover's (1987) claims that Heinlein was a popular educator who employed science fiction as his teaching platform. If those claims are true, as I believe them to be, then the question arises, "What was Heinlein trying to teach?" Even a superficial reading of his fiction would show that Heinlein was interested in far more than "ray guns and rocketships." In fact, in an essay bearing that title (1952/1980), Heinlein made the case for labeling his writing as speculative fiction--not science fiction. He preferred that label possibly because it gave him more freedom regarding the subjects about which he chose to speculate--as well as the freedom to bring to bear his impressive breadth of knowledge and interests.

As I reported in Chapter II, Heinlein had deliberately chosen the path of science fiction to get his messages across to the public after his so-called worldsaving articles had failed in the two years following World War II. But even before World War II, Heinlein was trying, without success, to get John W. Campbell, Jr. to allow him to teach semantics and economics via nonfiction articles in Campbell's Astounding Science Fiction magazine (Grumbles from the Grave, 1989). After Robert's success in breaking out of pulp science fiction in the postwar years, Heinlein gradually became able to write what he wanted.

My contention is that from first to last, Heinlein's science fiction contained an implicit curriculum which had the effect of guiding his new efforts at popular education--an effort that he directed at adults. In this chapter I will attempt to make clear what I believe to be the elements of Heinlein's science fiction curriculum. This curriculum includes open-mindedness, the scientific method, human freedom, astronomy, space travel, ethics, economics, politics, social relations, mathematics, semantics, and epistemological rigor in general. I will discuss these curriculum elements in turn.

Following those discussions, I will explore connections between Heinlein's curricular approach and three grand movements in American adult education.

Open-Mindedness, The Scientific Method, and Freedom

I group these terms together because it is evident that Heinlein thought of open-mindedness as the indispensable attitude for scientific inquiry--and thus, as a logical corollary, the indispensable attitude for true and open learning. He also thought of freedom, both personal and intellectual, as the indispensable condition for both open-mindedness and the scientific method. I will first explore the interrelationship of both open-mindedness and the scientific method in conjunction with human freedom. Following that, I will explore some of the ways in which Heinlein felt that intellectual and personal freedom were threatened. As we shall see, these topics may be the most significant elements in Heinlein's curriculum.

Personal Freedom and Freedom of the Mind

In his "Guest of honor speech at the Third World Science Fiction Convention--Denver, 1941" (1941/1992), Heinlein took pains to make clear his view that the scientific method should be the preferred approach to life for all men and women, not just for the educated and not just for scientists. Using this approach would, in Heinlein's view, not only advance human good but would serve to prevent much human evil. Speaking in the knowledge of terrible news from Germany about Hitler's persecution of the Jews, he said that

> There's something we can do to protect ourselves, something that would protect the rest of the human race from the sort of things that are happening to them, and are going to happen to them. It's very simple and it's right down our alley: the use of the scientific method.... I mean a comparatively simple thing by the scientific method: the ability to look at what goes on around you. Listen to what you hear, observe, note facts, delay your judgment, and make your own predictions. That's all there is, really, to the scientific method: to be able to distinguish facts from non-facts.... And any movement, institution, and theory,

> which does not make a clear and decided distinction between fact and non-fact, cannot by any stretch of the imagination be called a scientific movement. No matter how complicated their terminology may be, or how much they may use the argot of science.... For example, a man who use the scientific method cannot possibly be anti-Semitic. I have made that an illustration because it has caused a lot of trouble in the world lately. Why can't he be anti-Semitic? For a very simple reason: he doesn't have enough data, consequently he hasn't formed an opinion. No matter how long he lives he can't hate all Jews, and unless he knows all Jews, he can't hate all Jews, because he doesn't form an opinion unless he has data. It is possible for him to hate an individual Jew as it's possible for him to hate an individual Irishman or Rotarian or man or woman.... By the same reasoning, it's very difficult for him to hate at all; and if you can just manage to keep hate out of your life... you can keep out of a lot of difficulties and take care of yourself in a better fashion.... And because he is never entirely certain of his own opinions on any subject, a man using the scientific method stays out of arguments... (pp. 159-160)

This topic is clearly a global theme throughout his writings. Indeed, in his very first published story, "Life-line" (1939/1967), Heinlein was concerned to show how new knowledge is almost always attacked by the close-minded--often by the so-called intelligentsia themselves. Through Dr. Hugo Pinero, the protagonist of this famous first story, Heinlein described the opposing mindsets of those who use the scientific method versus those who oppose it:

> There are but two ways of forming an opinion... One is the scientific method; the other, the scholastic. One can judge from experiment, or one can blindly accept authority. To the scientific mind, experimental proof is all important and theory is merely a convenience in description, to be junked when it no longer fits. To the academic mind, authority is everything and facts are junked when they do not fit theory laid down by authority. It is this point of view--academic minds clinging like oysters to disproved theories--that has blocked every advance of knowledge in history. (p. 27)

In Heinlein's early story, "If this goes on--" (1940/1967), he examines the consequences of an entire society abandoning the scientific method and lapsing into a new intellectual dark age. In this story of a future United States under a stifling religious dictatorship, the young protagonist must unlearn the errors taught him by established authority and relearn the use of the scientific method in order to free himself and the society in which he lives from religious tyranny. After reading Thomas Paine and Thomas Jefferson, he comes to an important conclusion:

> For the first time in my life I was reading things which had not been approved by the Prophet's censors, and the impact on my mind was devastating. Sometimes I would glance over my shoulder to see who was watching me, frightened in spite of myself. I began to sense faintly that secrecy is the keystone of all tyranny. Not force, but secrecy. . . censorship. When any government, or any church for that matter, undertakes to say to its subjects, "This you may not read, this you must not see, this you are forbidden to know," the end result is tyranny and oppression, no matter how holy the motives. Mighty little force is needed to control a man whose mind has been hoodwinked; contrariwise, no amount of force can control a free man, a man whose mind is free. No, not the rack, not fission bombs, not anything--you can't conquer a free man; the most you can do is kill him. (p. 499)

In the above passage, Heinlein gave the reader another reason for learning the scientific method. That is, the scientific method makes one's mind free; and if one's mind is free, then one is immune to control and oppression. In other words, "And ye shall know the truth, and the truth shall make you free" (John VIII: 32)--a Bible verse quoted by Heinlein's character Dr. Ira Johnson to his straightlaced wife to prevent her from interfering with their daughter's education. This passage is autobiographical of Heinlein's own experiences with his grandfather, Dr. Alva Lyle (To Sail Beyond the Sunset, 1987).

> Two ground-floor rooms in our house were Father's clinic and surgery; I spent a lot of my free time there as I was fascinated by his books. Mother did not think I should read them, medical books being filled with things that ladies simply should not delve into. Unladylike. Immodest.

> Father said to her, "Mrs. Johnson, the few errors in those books I will point out to Maureen. As for the far more numerous and much more important truths, I am pleased that Maureen wants to learn them. 'Ye shall know the truth and the truth shall make you free.' John eight, verse thirty-two."
>
> Mother set her mouth in a grim line and did not answer. For her the Bible was the last word. . . whereas Father was a freethinker, a fact he did not admit even to me at that time. (p. 29)

The above passage from Heinlein's very last book reinforces the point that Heinlein remained committed to his "syllabus" of open-mindedness all his life. Indeed, he was so committed to freedom—of the mind as well as of personal liberty—that he especially hated any attempt to deny human beings their natural liberty. This point is brought out perhaps most forcefully in Citizen of the Galaxy (1957). This novel tells of Baslim the Cripple, an undercover agent who masquerades as a beggar on a slaveholding planet. He does so in order to spy on the slave trade, and while so engaged in espionage he rescues a boy named Thorby from chattel slavery by purchasing him in a slave auction. Baslim brings the near-feral boy up as his son, tutoring him in many subjects; but his greatest pedagogical task is to teach Thorby to be free. In a passage in which Baslim is attempting to safeguard Thorby's future by sending him off-planet, he learns that the only shackles he cannot free the boy from are those that encumber his mind; Thorby must do that for himself.

> "...you've been the best. . . master. . . I've ever had."
>
> "I'm not your master!"
>
> "Paper says you are. Matches the number on my leg."
>
> "Don't talk that way! Don't ever talk that way."
>
> "A slave had better talk that way, or else keep his mouth shut." (pp. 34-35)

Foreseeing his own capture and death, Baslim nevertheless prepares Thorby for freedom by educating him in the sciences and mathematics and by working to prevent him from acquiring prejudice and superstition. Following an arduous journey back to Earth encompassing two different "careers"--one as an adopted member of a trader family and the other as an enlisted crewmember aboard a warship--Thorby's identity is

discovered and he is returned to his rightful family and possessions. The book ends with Thorby realizing that a free human being must seek freedom for others as the price of keeping freedom for oneself.

Threats to Freedom

In many of his stories Heinlein explored the motivations of those who did not value freedom of thought and action. In an unpublished manuscript written in 1949, he outlines the background, assumptions, and theses on which he would later base his novel Stranger in a Strange Land (1961/1987). In the manuscript, he described three types of men and women: "Makers, Takers, and Fakers." Makers are those who actually produce the economic, technological, and social goods and services that all people need or want. Takers are those who prey upon others to get what they want rather than by producing and exchanging. Fakers are those who pretend to be Makers; instead of producing real goods and services they deceive others into accepting phony ones.

> Makers, Takers, and Fakers—both the Takers and the Fakers disliked and distrusted the Makers. The Takers knew damn well they couldn't get along without the Makers but felt that they really should be a slave class (under a more palatable name, of course) and neither the indentures of earlier centuries nor the yellow-dog contracts of the XXth had been given up in spirit; the Takers were continually devising new legal ways in which to keep the Makers "in their place" under the catchwords of security, stability, and welfare. The Fakers hated the Makers for another age-old reason; each faker pretends to be a maker—and hates and despises and resents that which he does not understand.

Heinlein showed us examples of both the Takers and the Fakers at work in the stories discussed above. But Heinlein also was concerned to show us a particular type of hater of freedom that combines the worst traits of both Takers and Fakers. This type is represented in Heinlein's fiction as characters with inferiority complexes, those who become misdeveloped as a result of a need to fake competence in a field requiring real ability to succeed. They spitefully persecute and take from those with genuine ability. Such a character is portrayed in the novel Red Planet (1949) in Headmaster Mark

Howe, the sadistic principal of the high school operated by the Mars Company for the children of the colonists. Heinlein had his young character Frank Kelly describe Howe in a way that makes clear the inferiority complex that induced the Headmaster's sadism:

> "You know what? I think Howe is nuts, I mean really nuts. I'll bet he was a coward when he was a kid and it's twisted him inside."
>
> Howe turned white. Frank's arm-chair psychoanalyzing had hit dead center. He raised his hand as if to strike, then dropped it again, uncertain what to strike. (p. 54)

Heinlein described another example of the faker-taker with an inferiority complex in the novel Starman Jones (1953/1975). In this story, a young man named Maxmillian Jones, because of his native abilities as a mathematician, is given a chance to seek the office of junior astrogation officer aboard a passenger starship liner. But Max gains an enemy in the character of Randolph Simes, the reigning junior astrogator with second-rate abilities, who resents Max as an upstart and a threat. One night while on liberty, Mr. Simes gets drunk and encounters Max and Max's friend Sam in a bar:

> "Well, what do you know? The Smart Boy wants me to sit with him.... Smart Boy, do you know why I'm sitting with you?"
>
> "No, sir."
>
> "To put a flea in your ear, that's why. Since you pulled that hanky-panky with the computer, you've been Kelly's... fair-haired boy... That gets you nowhere with me. Get this straight: you go sucking around the Astrogator the way that Kelly does and I'll run you right out of the control room. Understand me?"
>
> Max felt himself losing his temper. "What do you mean by 'hanky-panky,' Mr. Simes?"
>
> "You know. Probably memorized the last half-dozen transitions—now you've got Kelly and the Professor thinking you've memorized the book. A genius in our midst! You know what that is? That's a lot of. . ." (pp. 106-107)

Later, Max is confronted by Mr. Simes just after Max has been promoted to apprentice astrogation officer:

Simes looked at the cap on his head and laughed. "Take that thing off before you wear out your ears."

Max did not do so. He said, "You wanted me, sir."

"Yes. Just long enough, Smart Boy, to give you a word of advice."

"Yes?"

Simes tapped himself on the chest. "Just this. There is only one assistant astrogator in this ship—and I'm it. Remember that. I'll still be it long after you've been busted back to sweeping up after cows..." (p. 124)

But Mr. Simes clearly feels threatened because of his own sense of inferiority, for when the ship is being prepared to undergo a critical maneuver, it is Simes and not Max who is pushed aside because of inability to perform:

When, during the last twenty-four hours, the Worry Gang went on continuous watch, Max thought that Dr. Hendrix would push him aside. But he did not. Simes was pushed aside, yes, but Max took the worry seat, with Hendrix bending over him and watching everything he did, but not interfering. (p. 133)

In the novel Double Star (1956/1957), Heinlein presented us with Bill Corpsman, still another character with an inferiority complex. Like Heinlein's other second-raters, Bill Corpsman tries to dominate the protagonist. When Bill is rebuked and retires sulking, the protagonist learns something of his background:

"You see, Chief, as we all know, there has been a certain amount of bad blood between you and Bill. Now I'm not blaming you: it's been Bill's fault. But there are always two sides. What you may not have realized is that Bill has been carrying around a tremendous inferiority feeling; it gives him a chip on the shoulder. This will fix it up."

"So?"

"Yes, it is what he's always wanted. You see, the rest of us all have official status, we're members of the G. A. [the General Assembly], I mean.... Bill feels it. I've heard him say, after the third drink, that he was just a hired man. He's bitter about it." (p. 112)

In the story "Lost Legacy" (1941/1953), Heinlein pointed out that the desire to feel important as a way of compensating for a sense of inferiority may be the deadliest enemy to the freedom of the human race. In this story, three people are introduced to ancient records, hundreds of thousands of years old, that tell the tale of a once-glorious humanity that fell into decline and barbarism. The records describe a time when all humans lived peacefully in freedom from want and tyranny. But they lost their freedom after a faction of young and ambitious men rejected the wisdom of the elders and decided to rule over the less able rather than help them. These ambitious aristocrats, the archetypes of the old pagan pantheons, entreated the elders to cooperate with them in return for glory and homage, but Jove, understanding their deeper motives, refused their offer:

> "You demand that the greater shall rule the lesser.... What dominion do you desire other than over yourself? Do you wish to tell your brother when to sleep and when to eat? If so, to what purpose?"
>
> Vulcan broke in while the old man was still speaking. Huxley felt a stir of shocked repugnance go through the council at this open disregard of good manners.
>
> "Enough of this playing with words.... We are sick of this sheeplike existence. We are tired of this sham equality... We are the strong and the able, the natural leaders of mankind. The rest shall follow and serve us, as is the natural order of things."
>
> Jove's eyes rested thoughtfully on Vulcan's crooked leg. "You should let me heal that twisted limb, my son."
>
> "No one can heal my limb."
>
> "No. No one but yourself. And until you heal the twist in your mind, you cannot heal the twist in your limb." (pp. 132-133)

Heinlein's allegorical story clearly shows his belief that a desire to rule over others stems from a dissatisfaction with oneself. He demonstrates this belief in his description of an attempted fascist revolution in a future society described in his novella Beyond this Horizon (1942/1948). A group of ambitious men (it is a male-only organization) that style themselves as "The Survivor's Club" plot to take power over a

free society of the future. Heinlein's protagonist Hamilton Felix joins the club by accident, finds that he cannot safely resign, and so decides to stay in order to spy on the group's activities. The group has little pity for the weak and plans to eliminate them when they take power; at the same time, the group intends to impose compulsory eugenics on the remainder of the population.

But like the members of the National Socialist German Workers Party of the 1920s, the group is made up of second-rate men who substitute their grandiose political plans for their lack of personal accomplishment in the real world. When the group attempts a takeover, they are defeated after a short but bloody fight. Reflecting later on why the Survivor's Club putsch had been unsuccessful, Hamilton and his friend Mordan discuss the group's collective inferiority complex:

> "We will find that the rebels were... men who had never been outstandingly successful at anything. Their only prominence was among themselves."
>
> Hamilton thought this over to himself. He had noticed something of the sort. They had seemed like thwarted men.... inside the club, they were swollen with self-importance, planning this, deciding that, talking about what they would do when they "took over." Pipsqueaks, the lot of 'em. (Beyond this Horizon, 1942/1948, p. 104)

In one of his later books (Friday, 1982/1983), Heinlein said that misguided pragmatism, ignorant self-righteousness, and zealous-but-inept-good-intentions were equal in danger to inferiority feelings as threats to the freedom of other human beings. In a future world that has increasingly become irrationally self-destructive, a coordinated wave of assassinations, riots, and terrorist attacks are carried out against the world's political and economic leaders in a single day. Nobody knows who is responsible for the attacks but three different groups claim credit. The first group calls itself the Council of Survival. It claims to be the "guardian of morals, the public conscience of the powerful." They would allow the remaining rulers to survive "only by doing justice"—a point that leads to the question of just what the group means by justice. They also threaten to kill any rulers who attempt to resign their offices:

> There's no question but what that list names most of the really powerful people in the country. Suppose you're on that hit list and are so scared silly that you are willing to do anything not to risk being killed. What do you do? What is justice? ... If the horse can't jump the hurdle, shoot the horse.... This is the sort of plausible pseudologic that most people bring to political affairs. It causes one to wonder if mankind is capable of being well governed by any system of government. (Friday, 1982/1983, p. 97)

The second group claiming responsibility for the wave of terror are reactionary religious fundamentalists calling themselves the "Angels of the Lord." Their program amounts to a policy of pogroms against "sinners" combined with a return to a prescientific theocracy. The third group, calling itself the "Stimulators," announces a program of enforced economic equality in a collectivist state. The danger posed by all three groups is described by one of Heinlein's characters in the following way:

> There you have it, my dears. Pick one. A theocracy ruled by witchburners. Or a fascist socialism designed by retarded schoolboys. Or a crowd of hard-boiled pragmatists who favor shooting the horse that misses the hurdle. Step right up! Only one to a customer. (Friday, 1982/1983, p. 105)

Heinlein depicts these three groups as equal threats to human freedom. They represent respectively the impulse towards regression to a prescientific mode of thinking, the impulse towards misguided egalitarianism, and finally the impulse towards right-wing functionalism. All are wedded to the idea of compulsion as a means for achieving their respective notions of a just society. In Heinlein's view, their ideological differences were far less important than their essential sameness in respect to their espoused means of realizing their ideologies.

Reviewing Heinlein's Curriculum of Freedom

In Heinlein's view, threats to human freedom arise from different motivations. They include the desire to uphold a religion or ideology, the desire to feel important, resentments driven by a sense of inferiority, or misguided attempts at social justice. As the many examples I've presented from Heinlein's work indicate, the issue of human

freedom is inextricably linked to Heinlein's epistemological virtues of open-mindedness and the scientific method. That is, human freedom is not possible in a society that does not value or allow open and free inquiry. Without free and open inquiry, human beings become enslaved by ideologies that enthrone prejudice, tyranny, and oppression.

The different ways in which human beings oppress one another point to Heinlein's overall conclusion about freedom in human society: there are really only two types of people in the world, those who want to control other people and those who do not. Heinlein's desire was to use his fiction to teach his readers to become the latter type. He sought to do this by teaching them to value freedom as a teleological value. He also sought to teach his readers that open-mindedness and the scientific method were instrumental values for achieving and maintaining freedom. (Incidentally, for readers with a greater interest in Heinlein's philosophical views, I discuss Heinlein's epistemology in Appendix E and his ethics and values in Appendices F, G, and H. In Appendix I, I link Heinlein's epistemology, ethics, and values together into a comprehensive framework.)

Although I have referenced only a few of Heinlein's stories in this section, it should be clear that the themes of open-mindedness, the scientific method, and human freedom are perennial topics in his fiction. I have been personally struck by the number of Heinlein fans who have embraced libertarian political philosophies as a result of reading Heinlein novels. For example, the Libertarian political party has adopted the TANSTAAFL slogan ("There ain't no such thing as a free lunch") that Heinlein made popular in his novel The Moon is a Harsh Mistress (1966/1968). It should be pointed out that Robert claimed the slogan was not original to him but borrowed from a socialist slogan of the 1930s (Owenby, 1994c).

But freedom is not the only part of Heinlein's science fiction curriculum. In the next section, I take up that part of his curriculum that was intended to motivate his audience to reach for the stars.

Space Travel

In Chapter II, I explained that Heinlein was passionately interested in astronomy from his youth and that this passion was naturally related to his desire to promote an interest in space travel among his readers. I discussed a passage from Heinlein's fiction

demonstrating his interest in astronomy and space travel ("Requiem," 1940/1967). That passage offers a strong clue about what Heinlein was trying to teach his readers in regard to space and space travel. First, that space travel was an important and exciting endeavor for human beings to pursue; second, that space travel was possible-- "that we would do it" (p. 249). All Heinlein's juveniles from 1947 to 1958 promoted the first idea--that space travel was an important and exciting endeavor for human beings to pursue. I will take both ideas up in order.

Space Travel is Important

Space travel was a constant theme in Heinlein's writing. For example, the first juvenile novel, Rocket Ship Galileo (1947), describes how a physicist takes three young men as his crewmembers on a rocketship journey to the moon. The cover for the Ace paperback edition of this novel claims the book was "The classic moon-flight novel that inspired modern astronautics." This is very likely considering that the novel led to Heinlein being invited by movie-maker George Pal to write the screenplay for Destination Moon. That film is considered by many to be the first scientifically accurate cinematic description of space travel. But more to the point, Heinlein wanted the readers of Rocket Ship Galileo to catch the enthusiasm of space travel:

> "All my life I've wanted to see the day when men would conquer space and explore the planets--and I wanted to take part in it. I don't have to tell you how that feels." He waved a hand at the bookshelves. "Those books show me that you understand it; you've got the madness yourselves. . Besides that... you aren't satisfied just to dream about it and read about it--you want to do something about it. Right?"
>
> "Right!" It was a chorus. (p. 28)

Heinlein carried through on the theme of the excitement of space travel in Space Cadet (1948). The novel describes the adventures of four young men who aspire to become officers in the Interplanetary Patrol, a multinational organization dedicated to keeping the peace throughout the solar system through an absolute monopoly of mass destruction weapons. But whereas Heinlein's first juvenile detailed the exciting newness

of space travel, the second novel took another approach to promoting space travel by describing it in matter-of-fact terms. That is, the first novel appealed to the pioneering adventurism of space travel; the second novel described space travel as an already existing feature of society and appealed to the desire of readers to make that vision a reality. Red Planet (1949) with its subtitle A Colonial Boy on Mars described the exotic possibilities that space travel would make possible and appealed to the reader's desire to see and explore new worlds.

But even in the excitement of living on Mars, Heinlein reminded the reader that there are more frontiers to conquer. He therefore depicted one of his characters aspiring to become a rocket pilot in order to pursue the ever onward-and-upward dream of space travel. In his fourth juvenile, Farmer in the Sky (1950), Heinlein described how a family emigrates from Earth to live on Ganymede, the largest of the Jovian moons. A particular feature of this novel is that Heinlein used it to expound his theory that space travel is necessary to the ultimate survival of the human race. That is, if humans do not emigrate off the planet, there is a very great danger that population increase on the Earth will bring about universal warfare and, consequently, universal genocide.

In his fifth juvenile, Between Planets (1951), Heinlein depicted his protagonist as actually having been born in space. The character comes to regard space as his only real home after he is forced to flee one planet to defend another in the warfare that Heinlein had promised would come in his previous juvenile. A more upbeat novel is The Rolling Stones (1952), in which a family sets out upon an odyssey through the solar system. The story is meant to convey the restless desire of the human race to spread out through space:

> The blast cut off her words; the Stone trembled and threw herself outward bound, toward Saturn. In her train followed... hundreds of thousands of thousands of restless rolling Stones. . . to Saturn. . . to Uranus, to Pluto. . . rolling on out to the stars. . . outward bound to the ends of the Universe. (p. 276)

While the first five juveniles were concerned with space travel within the confines of our own solar system, the sixth, Starman Jones (1953/1975), shows the protagonist eagerly seeking a way to travel as a crewmember on a starship passenger liner. In this

novel, Heinlein explained another reason why people will want to leave Earth other than war. That reason is the diminution of economic opportunity in a world where the pie is getting smaller. The seventh juvenile, The Star Beast (1954) like The Rolling Stones is more upbeat. Again the focus is the desire to travel in space. In this novel, the protagonist must defy his mother's overprotectiveness in order to pursue his dream of continuing in the tradition of his forebears by exploring new planets in distant star systems.

The eighth novel, Tunnel in the Sky (1955), also has some upbeat aspects in that Heinlein depicts a world in which technology has solved the problem of offloading Earth's excess population onto distant planets. In this story, space travel is accomplished through direct "gates" to other planets. The protagonist is eagerly seeking to achieve an academic degree in "outland arts" so that he may qualify to lead colonists to new frontiers on virgin planets. In Time for the Stars (1956), Heinlein placed the novel at the time when interstellar travel is first being attempted. The novel tells the story of two twins competing for the privilege of being a crewmember aboard an interstellar exploration vessel.

A darker theme appears in Citizen of the Galaxy (1957) in which Heinlein discussed some of the human rights abuses that seem always to occur at the edges of civilization--in this case, human slavery. Nevertheless, space travel offers hope for deliverance from an oppressive society as well as economic opportunity to the young protagonist. Perhaps the best of the juveniles for promoting a love for space travel is Have Space Suit--Will Travel (1958), the last of the Scribner's juveniles. Heinlein's protagonist in this novel is so enamored of going to the Moon that he explores every means available to him for realizing his dream--including a soap contest whose first prize is a trip to the moon. In one passage, Heinlein described the desire for space travel that he was hoping to inculcate in young boys:

> Of the boys in our school half admitted that they wanted to space, half pretended not to care, knowing how feeble the chances were--plus a handful of creeps who wouldn't leave Earth for any reason. But we talked about it and some of us were determined to go. I didn't break into a rash until American Express and Thos. Cook & Son announced tourist excursions. (p. 5)

Needless to say, Heinlein's character eventually does find a way to travel into space--where he meets a younger girl who has exactly the same kind of interest in space travel. Having discussed Heinlein's idea that space travel is important, I now turn to his views regarding its feasibility.

Space Travel is Possible

The second idea about space travel that Heinlein wished to promote was that it was possible-- "that we would do it." This idea was promoted through the matter-of-fact discussions in Heinlein's stories about the technology of space travel. In Rocket Ship Galileo (1947), his three young protagonists are first encountered while they are hard at work test-firing a small liquid-fueled rocket motor on a homemade test stand. When a famous physicist--uncle to one of the boys--happens to visit them, he is invited to look over their rocket experiment:

> He was impressed. It is common enough in the United States for boys to build and take apart anything mechanical, from alarm clocks to hiked-up jalopies. It is not so common for them to understand the sort of controlled and recorded experimentation on which science is based. Their equipment was crude and their facilities limited, but the approach was correct and the scientist recognized it. (p. 19)

Here, in Heinlein's first juvenile, he made the point that rockets are both interesting and accessible to youngsters. He further made the point that scientific training--the necessary foundation for a career in space travel--is accessible as well. But he was also concerned to show youngsters the right academic path for preparing for a career in space exploration. His character, Dr. Cargreaves, provides a personal example of such preparation:

> "You aren't satisfied just to dream about it and read about it--you want to do something. Right?"
>
> "Right!" It was a chorus.
>
> Cargreaves nodded. "I felt the same way. I took my first degree in mechanical engineering with the notion that rockets were mechanical engineering

> and that I would need the training. I worked as an engineer... until I had saved enough to go back to school. I took my doctor's degree in atomic physics, because I had a hunch... that atomic power was needed for practical space ships." (p. 28)

Heinlein continues throughout the juveniles to proclaim his thesis that rocketry and/or nuclear energy provide the keys to space travel. In Space Cadet (1948), the reader is exposed first to chemical rockets and then later to nuclear-powered rockets. In Farmer in the Sky (1950), the reader is shown the different elements of a full-blown space transportation system comprising atmospheric winged rockets for transportation from Earth's surface to Earth orbit; deep-space nonatmospheric globe-shaped "torchships"--nuclear fusion-powered vessels capable of constant acceleration; and finally, rocket shuttles for transshipping passengers and cargo from deep space transports to the surface of colonized planets. Heinlein provided details of these different technologies needed for the various demands of space exploration partly because of his passion for technical completeness and accuracy. However, I am convinced that the chief reason was his desire to plant the seeds of familarity--to create a shared technological vision--in the mind of his reader.

The Rolling Stones (1952) is the most thorough attempt at making the reader familiar with rocketry, nuclear-powered engines, and ballistic calculations of space trajectories. It does so through its depiction of a family odyssey from the Earth's moon first to Mars and later to the asteroid belt. In 1953, Heinlein published Starman Jones, which not only promoted the love of space travel, but seriously discussed how interstellar travel might be accomplished via space anomalies while still respecting Einstein's theories of relativity. Tunnel in the Sky (1955) explores an alternative to vehicular space travel in the form of the "Ramsbotham Gate," a device for directly linking distant locations for instantaneous travel.

Heinlein takes us back to his torchships in Time for the Stars (1956), showing how even ships traveling slower than the speed of light could still be used for interstellar travel. Have Space Suit--Will Travel (1958), locates the feasibility of space travel in the protagonist's own abilities and resources rather than in institutional space travel. In this novel about a young man who refurbishes a government surplus space suit, Heinlein showed that the feasibility of space travel rests as much on individual

education and preparation as it does on rockets and nuclear energy. In the following section, I conclude my discussion of Heinlein's curriculum of astronomy and space travel with a discussion of the success of that curriculum.

How Successful Was Heinlein's Curriculum of Space Travel ?

How successful was Robert Heinlein in promoting his curriculum of space travel to the stars? Dr. Jerry Pournelle, science fiction writer and sometime professor of political science (with other degrees in physics and psychology), evaluated Heinlein's success in a memorial tribute (Pournelle, 1992):

> Most of JPL's [the Jet Propulsion Laboratory at the California Institute of Technology in Pasadena] scientists and engineers...would never have been there if [Heinlein's] stories had not called them to study and learn so that they could make his dreams a reality. His stories have caused more young people to choose careers in science and engineering than all the formal recruitment pitches ever tried.... He changed our lives in many ways. His dreams prepared the way for space flight. (p. 228)

I have said that Heinlein desired to teach astronomy and space travel. But the two subjects really were one for Heinlein. They are related in the same way that geography is related to navigation. Robert sought to teach two ideas in regard to space exploration: first, that it was important; second, that it was possible. There is clear evidence that Heinlein was successful in regard to the second idea--both as a teacher and a prophet. Whether he was successful with regard to the first idea must be viewed in a different light. Certainly, those youngsters that watched Destination Moon and read the Scribner's juveniles and that later went on to careers in the space program were convinced of the importance of space travel. But many readers of science fiction are not space enthusiasts. Of those that are, it could be argued that scientists and engineers are not the political power brokers in our society. And as long as the space program is driven by government spending rather than private investment, Heinlein's readers may never succeed in realizing their dreams. Still, all in all, human beings have walked on the moon, satellites fill the sky, and shuttle flights continue on scheduled missions. None of

those things had happened when Heinlein started writing his stories. All of them had happened by the time he died in May of 1988.

Just as Heinlein promoted curricula in human freedom and space travel, he also was interested in teaching his readers about human beings. In the next part of this chapter, I discuss Robert's curriculum in the affairs of human beings.

Human Affairs

I pointed out in Chapter II that Robert Heinlein had a lifelong interest in human affairs. Naturally, it is not unexpected to find that human affairs is yet another important area of his science fiction curriculum. By "human affairs" I refer to several areas of knowledge that deal with how human beings interact, both privately and publicly. Heinlein recognized that human affairs are problematic at the best of times. There is a special set of problems that ensue when human beings must deal with each other as free agents. Indeed, in Heinlein's view, the challenges of human affairs in a free society were perhaps more daunting than those in authoritarian societies. Robert also recognized that these challenges would remain perennial features of human affairs whether humanity remained upon the Earth or, as he hoped, reached for the stars.

These perennial challenges of human affairs can be summarized into three broad areas in Heinlein's curriculum: ethics, economics, and politics. (For those readers interested in Heinlein's philosophical views relating to these subjects, I deal with them in considerably more detail in Appendices F, G, and H.) I will begin with the subject of ethics.

Ethics

Ethics was the foremost part of Heinlein's concern with human affairs. Said Virginia Heinlein, "Well, you know, I think, broadly speaking, everything Robert wrote would be a treatise on ethics one way or another. I suppose you could say that was what interested him most of all" (Owenby, 1994c). Although this statement might be surprising to anyone of casual acquaintance with Heinlein's science-fiction, it is not surprising to his long-time readers and critics. While almost all Heinlein's stories deal with ethical issues in some "way or another" several of his stories are particularly

concerned with the subject. Notable among these are "Coventry" (1940/1967) which deals with the ethical conflict between individual rights and society's right to civil peace. "If this goes on--" (1940/1967) examines the ethical conflict between religion and individual rights. Starship Troopers (1959/1968) explores the ethical conflicts between personal security and the security of the community. Stranger in a Strange Land (1961/1987) describes how a man from Mars makes sense out of humanity's conflicting ethical systems. And The Moon is a Harsh Mistress (1966/1968) explores the ethics of political revolution.

Perhaps one of Heinlein's most controversial areas of interest in this field was sexual ethics. I call Heinlein's sexual ethics controversial because of the many aspects of the topic that he felt emboldened to discuss before it was common in popular literature. These include the notions that sexual relations are a private matter outside the purview of society or government ("If this goes on--," 1940/1967; Stranger in a Strange Land, 1961/1987; The Moon is a Harsh Mistress, 1966/1968); that other marriage customs are conceivable or workable than what were acceptable in western society 50 years ago (Beyond this Horizon, 1942/1948; The Puppet Masters, 1951; Stranger in a Strange Land, 1961/1987; The Moon is a Harsh Mistress, 1966/1968); that the human body is not ugly or evil ("They Do it with Mirrors," 1947/1980; The Door into Summer, 1956/1957; Stranger in a Strange Land, 1961/1987); that unmarried persons have the right to have sex but that marriage is nevertheless the only ethical arrangement for a long-term sexual relationship in which children are involved (Beyond this Horizon, 1942/1948); that marriage is a practical arrangement that did not necessarily last forever ("Methuselah's Children," 1940/1967; To Sail Beyond the Sunset, 1987); that homosexuality and group sex, like other sexual relations, is a private matter outside the purview of society or government (I Will Fear No Evil, 1970/1987; Time Enough for Love, 1973/1987; The Cat Who Walks Through Walls, 1985/1986; To Sail Beyond the Sunset, 1987); and finally--most controversial of all--that incest is mostly a matter of genetics rather than ethics (Time Enough for Love, 1973/1987; Job: A Comedy of Justice, 1984/1985; The Cat Who Walks Through Walls, 1985/1986; To Sail Beyond the Sunset, 1987.

Heinlein's sexual ethics can be analyzed and critiqued on a number of grounds, but that is not my point here. I wish merely to point out that he did not shy away from

sexual ethics as part of his overall curriculum of ethics. As mentioned earlier, I will discuss Heinlein's ethics more thoroughly in Appendices F and G. Chapter V also discusses ethics in the context of philosophy of education.

Economics

Although of lesser importance than ethics in his science fiction curriculum, Heinlein was also interested in economics and included the topic in many of his stories. "He always read widely and economics was a major interest of his.... We were both always interested in politics and economics and those found their way into his books quite regularly," said Virginia Heinlein (Owenby, 1994c). This assertion is also supported in the words of Heinlein's protagonist Lorenzo Smythe (Double Star, 1956/1957), "I discovered that both politics and economics could make engrossing reading" (pp. 104-105).

The first book in which economics is given deliberate attention appears to be Beyond this Horizon (1942/1948). The story is set on Earth centuries in the future in a society that has solved the problems of economic contraction and expansion by using the Law of Stable Money, "In a stable economy, debt-free new currency must be equated to the net reinvestment" (p. 8). Beyond this Horizon, begun just six years after the publication of John Maynard Keynes's General Theory of Employment, Interest, and Money, seems to be Heinlein's own elaboration of the ideas of Keynes as applied from an investment rather than a consumption point of view.

According to Virginia Heinlein, her husband's lifelong learning interest in economics included the ideas of Henry George, a proponent of the single tax on rents (Owenby, 1994c). These ideas of Henry George are found nowhere in Heinlein's books save for a fleeting reference to "single-taxers" in The Moon is a Harsh Mistress (1966/1968, p. 64). That same book is also interesting in that Heinlein used it to expound on other economic issues ranging from free enterprise capitalism to bimetallism to banking and credit.

Heinlein had earlier discussed at some length the economics of colonialism in "Logic of Empire," (1940/1967). The story discusses the threats to human liberty that arise from economic systems that are inadequate to the demands of expanding frontier societies. Heinlein continued to write his economic interests into more recent novels,

including Friday (1982/1983) in which he explores, among other issues, the economic consequences of increased corporate multinationalism combined with increased political fragmentation. But Heinlein also knew that economics could not be adequately discussed without connecting it to the field of politics.

Politics

Politics was certainly a perennial theme in Heinlein's fiction. This is partly attributable to its basic connection to the field of ethics. But another reason is that Heinlein believed that political issues grew out of economic issues. Early in his works, for example, Robert linked the problem of war to population pressure (Farmer in the Sky, 1950). He also discussed various other political issues, including how business pressures influence state and local politics ("Magic, Inc.," 1941/1970); how economic imperialism leads to political alienation ("Logic of Empire," 1941/1967; Red Planet, 1949; Between Planets, 1951; The Moon is a Harsh Mistress, 1966/1968); and how governments become oppressive when they become too successful (Between Planets, 1951; Stranger in a Strange Land, 1961/1987).

But Robert also discussed positive aspects of government, often in the same books in which he discussed the negative ones, including the basic decency and soundness of American democracy ("Magic, Inc.," 1941/1970; "Lost Legacy," 1941/1953; The Puppet Masters, 1951; Farnham's Freehold, 1964/1971); the possibilities of rational and humane government ("Misfit," 1939/1967; "Coventry," 1940/1967; "Methuselah's Children," 1941/1967; Beyond this Horizon, 1942/1948; Space Cadet, 1948; The Star Beast, 1954; Double Star, 1956/1957; Have Space Suit--Will Travel, 1958); and the legitimate functions of law enforcement and military defense ("If this goes on--," 1940/1967; "Coventry," 1940/1967; Space Cadet, 1948; The Star Beast, 1954; Double Star, 1956/1957; Citizen of the Galaxy, 1957; Have Space Suit--Will Travel, 1958).

Robert had also written a book on practical politics later published as Take Back Your Government (1992). The book was originally written in April, 1946, but could not be published then. In the introduction, Heinlein described his "I-learned-this-business-the-hard-way" background in politics:

> I have been a precinct worker, punching doorbells for my ticket. I have organized political clubs, managed campaigns, run for office, been a county committeeman, attended conventions including national conventions, been a county organizer, published political newspapers, made speeches, posted signs, raised campaign funds, licked stamps, dispensed patronage, run headquarters, cluttered up "smoke-filled rooms," and have had my telephone tapped. I suppose that makes me a politician. (p. 2)

It could be said on the available evidence that Heinlein made politics one of his most intensive self-directed learning projects. For that reason, when Heinlein presented political issues in his fiction, one gets the distinct feeling that one is reading from real experience.

In any event, he was able to turn the fruits of his political knowledge and experience to good use when he wrote frequently and convincingly of politics in his many stories. Heinlein's political background made him well suited to provide readers with a political education. This is true whether one agrees with his political views or not, for much of Heinlein's teaching about the subject was on the practical side. And the practical side of politics is valuable to those of all political persuasions. I will discuss Heinlein's politics in relation to his other value positions more thoroughly in Appendix G. I will now conclude my discussion of Heinlein's curriculum in human affairs by discussing its relative success.

How Successful Was Heinlein's Human Affairs Curriculum?

Evaluating the success of this part of Heinlein's curriculum is the most problematic of all. Certainly the criticism of Heinlein's stories is usually concerned with his human affairs perspectives. Critics such as Slusser (1977a, 1977b), Smith (1978), Franklin (1980), and Asimov (1992) all center their critiques of Heinlein on his ethical, economic, and political ideas (see Appendices F, G, and H for a more detailed discussion of these issues). Another aspect of Heinlein's human affairs curriculum that differs from other parts of his curriculum is that his human affairs perspectives have been the most changeable of all. That is, his beliefs concerning open-mindedness, the scientific method, human freedom, and space exploration (and as we shall see, mathematics, General

Semantics, and epistemological rigor) remained constant and relatively unchanging from first to last. Not so with his ideas of human affairs. As Virginia quoted her husband as saying in this area, "I learned better" (Owenby, 1994c).

Nevertheless, Heinlein did achieve some success in his human affairs curriculum if we consider the libertarian community's embracing of his later views (see my remarks earlier in the chapter concerning the success of Heinlein's curriculum regarding human freedom). In addition, many readers of Heinlein's earlier stories likewise embraced his original, more optimistic views of human affairs. Thus, I must conclude that Heinlein had mixed results with this part of his curriculum. In the next part, I will take up still another important element in the Heinlein curriculum, one that centers on epistemology.

Mathematics, General Semantics, and Epistemological Rigor

In discussing Heinlein's science fiction curriculum to this point, I have explored Robert's concern for human freedom and the open-minded use of the scientific method. I have also discussed what Heinlein believed that human beings should be doing with their freedom; that is, they should be traveling off this planet and exploring the heavens. And I have discussed the perennial importance of human affairs in Heinlein's curriculum. But in this part of the chapter I am going to explore those methods and disciplines that allow human beings to coordinate and apply their collective knowledge in order to solve their problems and achieve their goals. Heinlein believed those methods and disciplines to be mathematics and semantics—and the techniques of epistemological rigor in general. (See Appendix E for a more thorough discussion of Heinlein's epistemology.)

Mathematics is, among other things, a methodology for manipulating the relationships among alphanumeric symbols. It is also a convenient method of mapping quantitative relationships in the realms of matter and energy. The importance of mathematics to understanding the physical sciences is naturally quite obvious.

Semantics for Heinlein was Korzybski's General Semantics, which for Heinlein meant the creation and use of a word-and-symbol system that was structurally congruent with the world of experience. For Heinlein—as he learned from Korzybski—General Semantics was the science of how humans map words to their referents.

Just as mathematics can be used on one level as a means for exploring symbolic relationships and on another level as a means for exploring quantitative relationships of "real" phenomena, so too can words. In Heinlein's view, General Semantics helped humans to distinguish between, on one hand, using words to refer to words and, and on the other, using words to refer to "real phenomena." Epistemological rigor, for Heinlein, was the general consequence of skilled use and precision in both mathematics and semantics. It was the attitude of the human being who has been educated and trained in their uses.

I intend first to discuss Heinlein's curriculum of mathematics and then follow it with a discussion of his curriculum of General Semantics and epistemological rigor. As I have already alluded in this and previous chapters, both mathematics and General Semantics were bound up together in Heinlein's fascination with the ideas of Count Alfred Korzybski. I discuss these and other aspects of Heinlein's epistemology in more detail in Appendix E.

Mathematics

Mathematics was a constant theme throughout Heinlein's books. For example, in The Rolling Stones (1952), Heinlein inserted a scene in which his character Roger Stone, the father of his two twins Castor and Pollux, shows a chart of the various fields of mathematics to his young sons:

> The twins blinked at it. In the upper left-hand corner of the chart they spotted the names of subjects they had studied; the rest of the array was unknown territory; in most cases they did not even recognize the names of the subjects.... it had never occurred to them that they had not yet really penetrated the enormous and magnificent field of mathematics.
>
> "Dad," asked Pollux in a small voice, "what's a 'hyper-ideal'?"
>
> "Time you found out."
>
> Castor looked quickly at his father. "How many of these things have you studied, Dad?"
>
> "Not enough. Not nearly enough. But my sons should know more than I do." (pp. 60-61)

With that passage, Heinlein was teaching readers that they should pay attention to mathematics. Here, he argued that mathematics is a wide and wonderful field of knowledge, but full of unfamiliar territory. He therefore proposed to provide labels and signposts to that territory. Nor was Heinlein presuming upon his own knowledge of mathematics; he simply wanted his readers to "know more than I do."

From the very beginning of his juvenile series of novels, Heinlein was pointing his readers to mathematical ideas. For example, in the novel Rocket Ship Galileo (1947), Heinlein described his character Dr. Cargreaves testing the knowledge of basic mathematical concepts possessed by the three young men whom he has chosen to help him in his journey to the Moon:

> "Do you savvy the postulational notion in math?"
>
> "Why, I think so."
>
> "Tell me."
>
> Morrie took a deep breath. "No mathematics has any reality of its own, not even common arithmetic. All mathematics is purely an invention of the mind, with no connection with the world around us, except that we find some mathematics convenient in describing things." (pp. 25-26)

Heinlein sought to teach his readers that mathematics, despite its being without "any reality of its own," was the key to both useful knowledge and clear thinking. This concern had obvious beginnings in his own interests in physics, astronomy, and engineering. Almost all Robert's books promoted the study of mathematics to his readers--not as a field of study or career—but as an essential tool for understanding in whatever vocation one entered. There is evidence that after he became acquainted with the General Semantics of Alfred Korzybski, Robert came to believe that mathematical thinking was the key to mastering most other disciplines as well. In fact, a case can be made that Heinlein wanted to promote the mathematicization of all fields of knowledge.

Part of this motivation can no doubt be traced to Heinlein's enthusiastic acceptance of Korzybski's idea promoted in Science and Sanity (1941) that mathematics was the only language structurally congruent with phenomenal reality and the human nervous system. But this did not mean that Heinlein—nor Korzybski for that matter--endorsed much of the statistical button counting and sorting that both believed went on

under the name of quantitative or empirical research. Rather, it is clear that both were enthusiastic about the possibilities of applying mathematical language to solving problems in the different disciplines.

Korzybski made much of the possibility of applying the mathematical logic of Frege, Russell, Quine and other mathematical philosophers to solving social problems as well as scientific and engineering ones. For example, Korzybski states the following regarding the efficacy of mathematics (Science and Sanity, 1941):

> From the point of view of general semantics, mathematics, having symbols and propositions, must be considered as a language.... investigation by the pioneers Frege, Peano, Whitehead, Russell, Keyser, and others has revealed that 'number' can be expressed in 'logical terms'—a quite important discovery, provided we have a valid 'logic' and structurally correct non-el [non-elementalistic] terms. Traditionally, too, since Aristotle... mathematics is considered as uniquely connected with quantity and measurement. Such a view is only partial, because there are many important and fundamental branches of mathematics which have nothing to do with quantity and measurement--as for instance, the theory of groups, analysis situs, projective geometry, the theory of numbers, the algebra of 'logic'.... It seems that mathematicians... have never gone so far as to appreciate fully that they are willy-nilly producing an ideal human relational language of structure similar to that of the world and to that of the human nervous system. (pp. 251-252, 259)

Heinlein apparently was persuaded by Korzybski's approach to mathematics for he earnestly began to promote a mathematical approach to all the major organizations of human knowledge and inquiry. We see the first instance of this in the early story "If this goes on--" (1940/1967). In that story Robert described how a military propaganda officer uses a mathematical approach to social psychology in order to make predictive estimates of the efficacy of propaganda for changing public opinion:

> "I know with mathematical certainty we are not ready for revolution...."
> "Can you state the trend.... what does the first derivative show?"

> "You have to figure the second derivative... the rate is accelerating.... on extrapolation, it will be three years and eight months before we can risk striking." (pp. 554-555)

With his references to first and second "derivatives" it is clear that Heinlein was suggesting that a kind of calculus of social psychology was possible. In fact, his story "Blowups Happen" (1940/1967) depicts a future in which nuclear physics, astronomy, and psychiatry are all equally accessible to those who have mathematically trained minds. For example, the story presents a scene in which Dr. Lentz, a psychiatrist, converses with Dr. King, the superintendent of a nuclear power station, about the mathematics of quantum mechanics:

> "It was Destry's mechanics of infinitesimals that showed a way out of the dilemma," King went on, "His equations appeared to predict that... neutron loss... would dampen the progression of the atomic explosion... before complete explosion could be reached...."
>
> Lentz nodded.... "But about this fellow Destry, I've never liked his mathematics; he postulates too much."
>
> King looked up in quick surprise, then recalled that this was the man who had refined and given rigor to the calculus of statement.... "I can't help but be surprised that one man should attain eminence in two such widely differing fields as psychology and mathematics. And right now I'm perfectly convinced of your ability to pass yourself off as a physicist." (pp. 88-89)

But Heinlein was not finished with the amazing Dr. Lentz, for several pages later we see the character applying mathematical logic toward the solution of the complex scientific, social, and economic problems of commercial nuclear power:

> King studied the paper. Lentz had assigned symbols to a great number of factors, some social, some psychological, some physical, some economic. He had thrown them together in a structural relationship, using the symbols of calculus of statement. King understood the paramathematical operations indicated by the symbols, but he was not as used to them as he was the symbols and operations of mathematical physics. He plowed through the equations.... and completed the

> solution. It required several more lines, a few more equations, before they canceled out, or rearranged themselves, into a definite answer. (pp. 110-111)

What has become increasingly clear about Heinlein's stories of mathematicized fields of knowledge--particularly in the stories he wrote in the early 1940s--is that he was essentially carrying forth the ideas of Korzybski (1941). For it was Korzybski who first promoted the idea that the mathematically trained person could find his or her way around any discipline or vocation. In an early article entitled "Where To?" (1950/1980), Heinlein waxed enthusiastic about the possibilities of mathematics in making a better future:

> [There will be] New tools of mathematics and logic, such as calculus of statement, Boolean logic, morphological analysis, generalized symbology, newly invented mathematics of every sort—there is not space even to name these enormous fields, but they offer us hope in every field—medicine, social relations, biology, economics, anything.... When chemistry becomes a discipline, mathematical chemists will design new materials, predict their properties, and tell engineers how to make them--without ever entering a laboratory. (p. 348)

Heinlein later stopped referring to Korzybski in his stories, presumably after he had begun to suspect the limitations of the Korzybskian program of applying mathematics to everything. As Virginia Heinlein said, "You can't apply it to biology--not that I have been able to see, anyway" (Personal communication; July, 1995), although she did admit, as a trained chemist, that there was a possibility of giving rigor to chemistry through a mathematical approach.

Of course, Heinlein's waning references to Korzybski did not mean that he disregarded other useful aspects of mathematics, such as the exact measurements that mathematics makes possible. In fact, he would later make the point that the capacity for quantification was a touchstone for determining the reliability of certain kinds of knowledge. For example, in Time Enough for Love (1973/1987), he would speak through his character Lazurus Long to say, "If it can't be expressed in figures, it is not science; it is opinion.... what are the facts, and to how many decimal points?" (pp. 240, 246). But Heinlein had even stronger statements to make about mathematics. For

example, he would say to his readers, "Anyone who cannot cope with mathematics is not fully human. At best he is a tolerable subhuman who has learned to wear shoes, bathe, and not make messes in the house" (p. 247).

Yet it is important to recognize that Heinlein believed that most human beings could be educated to cope with mathematics. In a article entitled "Paul Dirac, Antimatter, and You" (1975/1980), Heinlein spoke of the ability of most people to learn mathematics:

> Even advanced mathematics ("advanced" to laymen) such as higher calculus, Fourier analysis, n-dimensional and non-Euclidean geometries are skills requiring only patience and normal intelligence.... The oft-heard plaint "I can't cope with math!" may mean subnormal intelligence (unlikely), laziness (more likely), or poor teaching (extremely likely). But that plaint usually refers to common arithmetic--a trivial skill in the eyes of a mathematician. (p. 480)

In Heinlein's "Guest-of-Honor speech to the World Science Fiction Convention--Denver, 1941" (1941/1992), he took some pains to try to help science fiction fans who wanted a better understanding of mathematics:

> [There is] one book which will help the non-mathematician...to appreciate...mathematics... it's called Mathematics and the Imagination by Kasner and Newman. You don't have to have any mathematical education to read it.... and when you've finished reading it, you at least know what the mathematicians are doing and why.... Mathematics is not a science at all--it's an aspect of symbology, along with the alphabet. (p. 164)

In Rocket Ship Galileo (1947), Heinlein even proposed a new way to teach mathematics, one which involved integrating the different courses and allowing the student to proceed at her or his own pace. Robert sometimes took pains to show that mathematics is a very practical field of study, and that mathematicians can be very interesting people to emulate. For example, in the short story "The Year of the Jackpot" (1952/1959), Heinlein's hero, Potiphar Breen, is a middle-aged, pot-bellied consulting statistician who also keeps tabs on social trends and cycles as a supporting hobby to his

vocation. On his first date with the heroine of the story, Potiphar describes his love for his vocation:

> As a kid, I was fascinated by numbers. Numbers are pretty things and they combine in such interesting configurations. I took my degree in math, of course, and got a job as a junior actuary with Midwestern Mutual. That was fun—no way on earth to tell when a particular man is going to die, but an absolute certainty that so many... of a certain age group would die before a certain date. The curves were so lovely—and they always worked out.... The equations worked; the curves were right. (pp. 16-17)

Potiphar then describes his interest in astronomy, a science he loves because the numbers that describe astronomical objects are so precise, compared to which the other sciences are "mere carpentry and kitchen chemistry." But he finds that some areas of astronomy can only be dealt with by statistics, which leads him into business consulting:

> I'm the numbers boy for a firm of industrial engineers. I can tell a rancher exactly how many of his Hereford bull calves will be sterile. Or I can tell a motion picture producer how much rain insurance to carry on location. Or maybe how big a company in a particular line needs to be to carry its own risk in industrial accidents. And I'm right. I'm always right. (p. 17)

The story goes on to describe how the hero correctly predicts widespread disaster from a convergence of cycles in several social trends. At the end of the story, we find the hero experiencing real pleasure as he follows along with the tight mathematical reasoning of an article in a astronomical journal by a favorite Russian mathematician. The reader is clearly left with the impression that mathematics is not only useful but a source of pleasure as well.

This impression is reinforced in Heinlein's very last Scribner's juvenile (Have Space Suit—Will Travel, 1958). In that novel, the young protagonist Kip Russell is attempting to remedy the defects of the education he received in a progressive high school. He embarks on a course of self-directed learning that includes history,

languages, and mathematics. In learning mathematics, the protagonist relates something of Heinlein's own liking for the subject:

> Algebra and plane geometry were all the math our school offered; I went ahead on my own with advanced algebra and solid geometry and trigonometry and might have stopped as far as College Boards were concerned--but math is worse than peanuts. Analytical geometry seems pure Greek until you see what they're driving at--then, if you know algebra, it bursts on you and you race through the rest of the book. Glorious! I had to sample calculus and when I got interested in electronics I needed vector analysis. (pp. 11-12)

Kip puts his mathematics self-education to use later in the novel when he must calculate the volume of a room against the flow rate of a jet of water in order to decide whether he can escape from captivity. Again, Heinlein wanted the reader to know that mathematics is both practical and enjoyable.

How effective was Heinlein in promoting this part of his "curriculum?" To answer that question, a letter from a fan who started reading Heinlein at age 10 is offered (Stover, 1987):

> Heinlein showed me how to get from where I was to where I wanted to be... in mathematics. There was no one around... who could have made the applications of mathematics seem so exciting. But, through Heinlein's books, I knew how to proceed, and I was excited about reaching each level: algebra, geometry, trigonometry, analytic geometry, calculus, differential equations, vector analysis, and so on. During this period, I would re-read my favorite Heinlein books and compare my progress with his "blueprint." And, best of all, Heinlein indicated that, if I mastered mathematics, all the other fields of science and engineering would be in my grasp. (p. 24)

The point of Heinlein's curriculum of mathematics comes down to this: Robert's enthusiasm for mathematics was essentially carrying forth the ideas of Korzybski. Heinlein taught readers that they should pay attention to mathematics because it is a wonderful field of knowledge; that mathematics, despite its being without "any reality of its own" was the key to both useful knowledge and clear thinking. Mathematics makes

possible exact calculations and that this provides us with a touchstone for determining the reliability of certain kinds of knowledge. Heinlein believed that most human beings could be educated to cope with mathematics. Robert took pains to show that mathematics is a very practical field of study, and that mathematicians can be very interesting people to emulate. Heinlein wanted the reader to know that mathematics is both practical and enjoyable.

Nevertheless, Heinlein's enthusiasm for mathematics has been a stumblingblock for many of his readers who possess little or no mathematical talent. I have encountered ardent readers of Heinlein's fiction who nevertheless were left with feelings of inferiority because they felt unable to live up to Heinlein's notion that human competence was grounded in mathematical ability. Yet, the reader does come away with the feeling that mathematics is important regardless of whether she or he feels competent to master it. And Heinlein still leaves his readers with the feeling that they can attain to clarity of thought through other means. That other means is General Semantics, our next topic in Heinlein's curriculum of epistemological rigor.

General Semantics

It is in General Semantics that Robert grounded many of his early stories and that which drove much of his own self-directed learning in the period 1939-1949. "[Robert] took five seminars on Korzybski and he always wanted to write articles about general semantics for John Campbell, but John Campbell wasn't having any of them," reported Virginia Heinlein (Owenby, 1994c). As I have already discussed in regard to Heinlein's early work, one finds few stories that did not mention the work of Count Alfred Korzybski and the field of General Semantics in some connection. In a 1941 speech in Denver, Robert tried to persuade science fiction readers to share his enthusiasm for General Semantics. He asked them to stay on to attend a series of lectures by Count Korzybski himself ("Guest of Honor Speech at The Third World Science Fiction Convention--Denver, 1941," 1941/1992).

> Incidentally, any of you who are going to be in Denver in the next five or six weeks will have an opportunity, one of the last opportunities, to hear Alfred Korzybski speak in person. He will be here... in a meeting of semanticians from all

> over the world; McClean from Los Angeles, and Johnson from Iowa, and Reiser from Mills College, and Kendig and probably Hayakawa from up in Canada--the leading semanticians of the world--to hear Korzybski speak. (p. 166)

Heinlein was so interested in learning more about semantics--especially Korzybski and his General Semantics--that he never missed an opportunity to attend a Korzybski seminar. Indeed, at least one of these seminars was conducted in Chicago. Robert attended this seminar on his way back from visiting John Campbell in New York in 1940. In the person of authorial character Maureen Smith, he described this trip in To Sail Beyond the Sunset (1987).

> In 1940... I took advantage of the opportunity to study semantics under Count Alfred Korzybski and Dr. S. I. Hayakawa [at] the Institute for General Semantics... across the Mall and east a couple of blocks at 1234 E. Fifty-sixth. One thing that stuck in my mind was the emphasis both scholars placed on the fact that a culture was reflected in its language, that indeed the two were so interblended that another language of a different structure (a "metalanguage") was needed to discuss the matter adequately. (p. 262)

In connecting his 1987 novel to his 1940 educational experience, Heinlein showed just how intense and long-lasting was this interest. It spurred him to learn General Semantics so thoroughly that he would later consider devoting a popular book to the subject. In a letter to John W. Campbell dated September 6, 1941 (Grumbles from the Grave, 1989), Heinlein explained,

> I have been urged to tackle a primer of semantics and general semantics. I am moderately well prepared for the task... nevertheless there is a lot of research to be done and a monumental task of devising lucid pedagogical methods in a most difficult field, involving as it does a very nearly complete reorientation in methods of thinking even for the "educated" reader. I estimate that it may take from two to five years to complete. Incidentally, if you are interested, I would be willing to do a popular article or two on the subject for Astounding. I offered to do so once before, you may recall, but you made no answer. (pp. 12-13)

From various allusions to General Semantics in his books, particularly in Beyond this Horizon (1942/1948), it seems clear that Heinlein was so enamored of the subject, that he even dared to believe that it was in some way an answer to part of the general problem of epistemology. Indeed, he used the book as a platform to lecture his readers about the subject:

> Speech and other communication symbols necessarily refer back to agreed-upon, pointed-to referent physical facts, no matter how high the level of abstraction, for communication to take place.... We agree on the method of symbol communication--the symbol is not the referent, the map is not the territory, the speech-sound is not the physical process... the symbol never abstracts all... the details of the process it refers to... symbols can be used to manipulate symbols...dangerously but usefully... symbols should be structurally as similar as possible to the referents for communication purposes. To that extent epistemology is settled... (pp. 112-113)

Elsewhere in the same book, Heinlein explained the utility of General Semantics in teaching youngsters how to acquire language. His character Longcourt Phyllis teaches her young son Theobald how to read using the semantic technique of extensionalization: "she stuck to the cardinal principle of semantic pedagogy: never define a new symbol in terms of symbols already known if it is possible to point to a referent instead" (p. 133).

Heinlein focused on the epistemological benefits of General Semantics in supporting the use of the scientific method in everyday life in his early story "Coventry" (1940/1967):

> Had the science of semantics developed as rapidly as psycho-dynamics and its implementing arts of propaganda and mob psychology, the United States might never have fallen into dictatorship.... But the work of the pioneer semanticists, C. K. Ogden, Alfred Korzybski, and others, were known to but a handful of students.... Semantics, "the meaning of meaning," gave a method for the first time of applying the scientific method to everyday life. (pp. 622-623)

In the story, "Blowups Happen" (1940/1967), Heinlein told the reader how the principles of General Semantics constitute an epistemological corrective for almost any area of disciplined inquiry.

> Both mathematical physics and psychology are branches of the same subject, symbology.... Man lives in a world of ideas. Any phenomenon is so complex that he cannot possibly grasp the whole of it. He abstracts certain characteristics of a given phenomenon as an idea, then represents that idea as a symbol, be it a word or a mathematical sign. Human reaction is almost entirely reaction to symbols, and only negligibly to phenomena. As a matter of fact... it can be demonstrated that the human mind can only think in terms of symbols.
>
> When we think, we let symbols operate on other symbols in certain, set fashions--rules of logic, or rules of mathematics. If the symbols have been abstracted so that they are structurally similar to the phenomena they stand for, and if the symbol operations are similar in structure and order to the operations of phenomena in the real world, we think sanely. If our logic-mathematics, or our word symbols, have been poorly chosen, we think not-sanely. In mathematical physics you are concerned with making your symbology fit physical phenomena. In psychiatry I am concerned with precisely the same thing, except that I am more immediately concerned with the man who does the thinking than with the phenomena he is thinking about." (pp. 90-91)

Heinlein believed in 1940 that an inadequate verbal symbology was interfering with the ability of the populace to understand, predict, and control the increasing complexities of modern life. He believed this particularly in regard to those complexities brought about by science (both physical and social) and technology. In fact, Robert felt that everyday language uninformed by semantic rigor was a source of dissonance rather than a helpful medium of understanding. That is, Heinlein believed that everyday language uninformed by semantic rigor constituted an actual impediment to human cognition.

Anticipating Toffler's (1970) description of future shock, Heinlein believed it possible that these impediments would produce mounting frustrations in human beings struggling to comprehend a changing, complex world. These frustrations would

eventually result in massive outbreaks of social psychosis that he called the "Crazy Years." These outbreaks would begin in the 1960s and continue with increasing violence. Eventually the United States would accept a reactionary political regime as a means of coping with these outbreaks. These outbreaks would combine religious and political hysteria, persecution of minorities, anti-intellectualism, and much retrogression in interpersonal relations. When Heinlein wrote "Methuselah's Children" (1941/1967), the story included a historical retrospective of the Crazy Years:

> The trustees of that date decided—correctly, we now believe—that any minority during that period of semantic disorientation and mass hysteria was a probable target for persecution, discriminatory legislation, and even of mob violence. (p. 659)

Heinlein further illustrates the symptoms of the Crazy Years with example headlines from the year 1969 that in some ways seem tame compared to the spasms that upset the United States during the 1960s:

> BABY BILL BREAKS BANK: 2-year toddler youngest winner $1,000,000 TV jackpot. ...
>
> EARTH-EATING FAD MOVES WEST: CHICAGO PARSON EATS CLAY SANDWICH IN PULPIT: "Back to simple things," he advises flock.
>
> LOS ANGELES HI-SCHOOL MOB DEFIES SCHOOL BOARD: "Higher Pay, Shorter Hours, no Homework—We Demand Our Right to Elect Teachers, Coaches."
>
> SUICIDE RATE UP NINTH SUCCESSIVE YEAR: AEC denies Fall-Out to Blame. (pp. 658-659)

Heinlein never stopped teaching his readers the need for semantic clarity, although he did this mostly through the examples and behavior of his characters. For example, in The Moon is a Harsh Mistress (1966/1968), the character Manuel Garcia O'Kelly Davis is attempting to teach a sentient computer about humor:

> "Mike, you want to discuss the nature of humor. Are two types of jokes. One sort goes on being funny forever. Other sort is funny once. Second time it's dull.

> This joke [of issuing incorrect pay checks] is second sort. Use it once, you're a wit. Use twice, you're a halfwit."
>
> .... He went on, "What distinguishes first category from second? Define please."
>
> "Don't think I can," I admitted. "Best can offer is extensional definition--tell you which category I think a joke belongs in. Then with enough data you can make own analysis." (p. 12)

Here, through the example of his character, Heinlein continued to preach the use of the extensional definition--a major principle of General Semantics. While he would also toy with Russellian-like approaches to epistemological rigor such as symbolic logic (The Number of the Beast, 1980/1982), calculus of statement ("Blowups Happen," 1940/1967), and artificial languages ("Gulf," 1949/1953) his approach would forevermore be shaped by his early studies of the semantics of Alfred Korzybski. In fact, as late as 1973 Heinlein declared that he owed many of his epistemological perspectives to Korzybski (Schulman, 1973/1990).

What was Heinlein trying to teach us about General Semantics? It can be distilled into a very few statements: Heinlein believed that General Semantics was in some way an answer to part of the general problem of epistemology--of how we can know and be confident in our knowledge. Heinlein believed the principles of General Semantics constitute an epistemological corrective for almost any area of disciplined inquiry. Heinlein supported the use of General Semantics in teaching language acquisition and for teaching the use of the scientific method.

How did Heinlein's preoccupation with General Semantics relate to his overall curriculum? The relationship lies in the notion of epistemological rigor, a notion that connects mathematics to General Semantics. Epistemological rigor is present when human beings are able to coordinate and correlate their symbol systems effectively. But the notion of epistemological rigor is also that which connects all the different elements of Heinlein's curriculum together. For Heinlein, epistemological rigor was not possible without both mathematics and General Semantics. Without epistemological rigor, it is not possible to properly utilize the scientific method; it is not possible to analyze and resist ideological threats to human freedom; it is not possible to master the technical requirements to travel into space; it is not possible to understand and apply ethical

principles; nor it is not possible to practice economics, politics, nor any other aspect of human affairs effectively.

It is for that reason that I have devoted such considerable space to exploring this part of Heinlein's curriculum. That is, even though I have treated it last of all, it had a status in Heinlein's mind that made it coordinate--if not superior--to all other subjects he "taught." (An even more detailed discussion of Heinlein's approach to epistemology can be found in Appendix E.) It is now time to look at Heinlein's curriculum from the perspectives of movements within adult education.

Relating Heinlein to Curriculum in Adult Education

Curriculum models in adult education are typically more problematic than curriculum models for children because the educational needs of adults tend to be far less prescribed and uniform. Presumably, the chief reason for this is quite simply that, as Knowles believed, adults tend to control far more of what they learn than do children (Knowles, 1980). As far as I have been able to see, curriculum studies in adult education--in so far as they address curriculum as an issue--still tend to defer to Tyler (1949) more than anyone else. Yet, in my view, the sheer diversity of adult education as a field generally defies curriculum planning, although it does put a premium on program planning (Sork and Caffarella, 1989). Indeed, the entry "curriculum" is not always even present in the subject indices of many books on adult education--excepting discussions of university graduate programs in adult education.

Some of the program areas listed in the most recent Handbook of Adult and Continuing Education (Merriam and Cunningham, 1989) include these "curricula": community-based adult education, adult basic education, health education, workers' education, continuing professional education, minorities' adult education, and developmentally disabled adult learners' education. One is perforce driven to admit that generally individual program areas within the broad field of practice of adult education have their own curricula, but adult education per se has not.

Why, then, in a study connected to the field of adult education, do I choose to apply the term "curriculum" to my discussion of that which Heinlein taught? Because I believe that Heinlein's views do link to broad movements--as opposed to a narrow program areas--in adult education that do (or did) advocate (or at least suggest)

curricula. Adult liberal education is such a broad movement. The social change/progressivism (Dewey/Lindeman) movement and the popularization of knowledge (adult popular education) movement also shed light on Heinlein's curriculum. I will explore those connections following my discussion of adult liberal education.

Heinlein's Curriculum and Adult Liberal Education

Heinlein's fictional curriculum presents several features that suggest a linkage to the curricular framework of adult liberal education. For example, Livingstone (1945/1984) described the liberal education curriculum as "subjects like history, literature, languages, pure mathematics, and science" (p. 2)—all subjects of which Heinlein approved.

On the other hand, Heinlein's curriculum would not have been seen as nearly so liberal by Hutchins (1953/1984) for the very reason that Heinlein sets so much stock in the scientific method. For example, Hutchins complained of those who "exaggerate the role of science and the scientific method, and appear to hold that the only way of obtaining valid knowledge is the way of experimental science" (p. 9)--which certainly includes Heinlein. Nevertheless, Hutchins did acknowledge the inclusive liberal curriculum of "history... and language as well as science" (p. 9). As I point out in Chapter V, history and languages were two of the most important subjects for an educational foundation in Heinlein's eyes, even though I have only implied their importance in his fictional curriculum in this present chapter.

Hutchins' The Higher Learning in America (1936) is an elaborate defense of the liberal curriculum that puts philosophy—not science—at the core of liberal studies. Adler (1986, 1988) tended to follow Hutchins approach in emphasizing the role of philosophy although he also tended to give greater honor to science than did Hutchins. Significantly, in Adler's (1988) answer to Bloom's (1987) The Closing of the American Mind, he took Bloom to task for espousing a too elitist view of liberal education, asking "can any reader of The Closing of the American Mind fail to detect the strong strain of elitism in Bloom's... thinking?" (p. xxiv). Heinlein, with his distaste for "the academic mind" to whom "authority is everything" ("Life-line," 1939/1967, p. 27) would have been less sympathetic to Bloom's curricular approach. Bloom, like Hutchins, put

philosophy in the central role of the liberal curriculum, calling "natural science" one of the "great contemporary opponents of philosophy" (p. 377)--a view antithetical to Heinlein's fictional curriculum.

But it is Martin (1926) who in some ways comes closest to the liberal quality in Heinlein's co-championing of individual liberty and the scientific method in his fictional curriculum. The reason is that Martin's argument for adult liberal education was, apart from other issues he championed, an argument that human beings should be trained to have free minds. That is, they should be able to analyze propaganda and other forms of fallacious reasoning for their flaws. This included learning the difference between education and persuasion. Martin said that "one of the dangers to education in America is our weakness for propaganda" and that "few people know the difference between education and advertising" (p. 19). For Martin, liberal education was the means for building free minds that would be largely immune to insidious messages. When we remember Heinlein's distaste for censorship, psychological manipulation, and intellectual authoritarianism, it is easy to see a sympathetic connection with the ideas of Martin.

The quality of having a free mind and the intellectual climate in which to exercise it are espoused virtues of liberal education. It is perhaps for that reason more than any other that I chose to link Heinlein to that curricular tradition in adult education first in this part of my discussion. But Heinlein's curriculum also has links with the social change movement in adult education which draws so much of its nourishment from John Dewey and Eduard Lindeman.

Heinlein's Curriculum and the Dewey/Lindeman Tradition

Significantly, adult liberal education after the manner of Martin (1926), Hutchins (1936, 1953/1984), Livingstone (1945/1984), and Adler (1986, 1988) was not treated as a distinct program area in the 1989 Handbook of Adult and Continuing Education (Merriam and Cunningham, 1989). That is largely the result of the relatively greater influence of the progressivist/social change camp in American adult education who have looked upon liberal education as antithetical to the educational needs of many adults. This camp, which included Eduard Lindeman and his followers, was influenced by John Dewey's (1939/1984) progressive education ideas that centered on the individual's

need for the "reconstruction of experience" (p. 16). In fact, Stewart (1987) declared that "it is generally accurate to say that adult education, as articulated by Eduard Lindeman, is a derivative of Deweyan progressive education" (p. 4).

The perspective from which Dewey built his experience-centered view of adult education is remarkably similar to a major area of Heinlein's fictional curriculum--openness to experience and the scientific method. For example, Dewey (1916) called "open-mindedness" and "breadth of outlook" (p. 356) moral qualities which are not only outcomes of education but which also support other outcomes much as the "bones support other organs of the body" (p. 357). Dewey also said that the "scientific method" is "so closely connected with any educational scheme based upon experience that they should be noted" (p. 15). He then goes on to list three connections of progressive education to the scientific method regarding hypothesis building, experimental verification, and continual obervation--all of which were of primary concern to Heinlein as well.

On the other hand, Lindeman (1926/1961) was less concerned with Dewey's connection of progressive education with the scientific method than he was with its connection to democratic life experience. In fact, Lindeman said that "in adult education the curriculum is built around the student's needs and interests.... with regard to... work... recreation... family-life... community life" (p. 6). Both Dewey's and Lindeman's concern for experience as the starting point for adult education suggests a link to Heinlein's concern for openness to experience in his curriculum.

The ideas of Lindeman can also be viewed as helping to enable adults to break free of oppressive political and cultural restraints. My point here is that Lindeman's curriculum respects the freedom of the student, "the goals which they set for themselves, their wants, needs, desires, and wishes" (p. 8)--also an espoused value of Heinlein's curriculum.

I am almost tempted to say that Heinlein had read his Lindeman in light of Heinlein's concern for showing how certain personalities were threats to human freedom. For example, Lindeman said,

> No human being can safely be trusted with power until he has learned how to exercise power over himself. We are slowly coming to see that all "power grabbers" and dictators who reach out for unusual power are in reality

> compensating for inner deficiencies of their personalities. To wish for power is thoroughly normal; to want power in order to make myself great while you are made small is abnormal. Again a problem, the solution of which depends upon an extension of intelligence. (Lindeman, 1926/1961, pp. 28-29)

Contrast Lindeman's words with these words of Heinlein's authorial character Lazarus Long, "A competent and self-confident person is incapable of jealousy in anything. Jealousy is invariably a symptom of insecurity" (Time Enough for Love, 1973/1987, p. 250). Clearly, both Heinlein and Lindeman recognized that "inner deficiencies" and "insecurity" are the seeds of both petty and gross tyrannies. Interestingly, they also both believed that the answer to such insecurities is education. That is, in Lindeman's words, "the solution of which depends upon an extension of intelligence" (Lindeman, 1926/1961, p. 29), and in Heinlein's words, the answer was to become "competent and self-confident" (Time Enough for Love, 1973/1987, p. 250).

As is to be expected, Lindeman is in starkest contrast to Heinlein's curricular views (as well as to the liberal educators) when the subject turns to the prescription of academic subjects. We have already seen that Heinlein was concerned with the subject matter of history, mathematics, and language. But Lindeman said adult educators "should devote their major concern to method and not content" (Lindeman, 1926/1961, p. 114) and that "the approach to adult education will be via the route of situations not subjects" (p. 6). But Lindeman was really not that far apart from Heinlein's belief that human beings should know about many things. For example, Lindeman said that "we cannot have broad and generous societies composed of narrow and limited citizens" (p. 34). Heinlein would have likely agreed with that notion for he complained of such citizens as obstacles to a healthy democracy in his book Take Back Your Government (1992).

There are clear linkages between Heinlein's curricular ideas and other adult educators in the Dewey/Lindeman tradition as well. For example, Sheats (as cited in Elias and Merriam, 1995), although certainly in the progressive tradition, seemed to want to steer a curricular path midway between the Scylla of an authoritarian curriculum and the Charybdis of social radicalism. Sheats's approach is interesting in respect to Heinlein because the latter's curriculum seems to share attributes of both liberal education and progressivism. Similarly, Bergevin's (1967/1984) ideas of

curriculum seem to suggest a middle course between Heinlein's concern for freedom, on the one hand, and basic subject matter knowledge, on the other. For example, Bergevin said that history and mathematics "are useful" (p. 28) subjects for adults to know, which agrees with Heinlein. Bergevin also said that "freedom is... a human need that must be understood and utilized if we are to mature, to develop, to grow" (p. 28). Heinlein could not have said it better. In the same vein, Blakely's (1958/1984) view of adult education as preparation for living in a free society not only supports Heinlein's curriculum of freedom, but also supports his curriculum of ethics as well.

In a different vein, there is an interesting connection between Heinlein's curriculum element of epistemological rigor and the views of Houle. For example, Houle (1972/1984) pointed out that "reality is hard to grasp (as the literature of epistemology demonstrates), but that fact does not mean that our effort to discern it should be abandoned" (p. 43). He next goes on to describe--in a manner that reminds us of Heinlein's involvement with Korzybski's General Semantics--the semantic challenge involved in abstracting units of human experience for educational treatment: "The planning or analysis of an educational activity is usually undertaken in terms of some period which the mind abstracts for analytical purposes from complicated reality [original italics]" (p. 46). Compare Houle's expression with Heinlein's description of the same kind of epistemological issue: "[Humans] live... in a world of ideas. Any phenomenon is so complex that [they] cannot possibly grasp the whole of it. [They] abstract... certain characteristics of a given phenomenon as an idea ("Blowups Happen," 1940/1967, pp. 90-91). Houle's words not only suggest a common concern with Heinlein for epistemological rigor but a certain degree of semantic awareness as well.

Finally, Heinlein's curriculum bears looking at in the light of McKenzie's (1978/1984) principles of adult education. These principles, in capsule form, tell us that adults should be educated to do the following: reject historical determinism, develop personal autonomy, develop a concern for human welfare and a corresponding planetary consciousness, facilitate a spirit of independence, develop an awareness of the risks that face us, achieve a Promethean cleverness, and facilitate the development of courage to become a Promethean.

By "Promethean" McKenzie referred to the demi-god of Greek mythology who stole fire from heaven and gave it to human mortals. McKenzie said that "education

must equip adults with Promethean cleverness and with an astute and systematic procedure for enacting Promethean goals" (p. 90). In fact, McKenzie described Prometheus as an "expert technologist" who "needed fire to fabricate the instruments of technological advance" (p. 80). That description supports, at least in the broad sense, Heinlein's Promethean goal for humanity to travel to the stars—space travel—a major piece of his curriculum.

I could also elaborate connections with more recent adult education writers in the social change tradition, but I will not do so. First of all, it seems increasingly clear to me that there is a historical-cultural quality in Heinlein's writing that facilitates connections with adult education writers that were part of the same historical-cultural milieu. With the exception of more recent views of freedom- and experience-centered conceptions of adult learning such as andragogy and self directed learning which I discuss in Chapter IV, I have made those connections. Second, more recent writers in the social change camp of adult education seem to me to have more in common with German critical philosophy than with Dewey and Lindeman. (I discuss Heinlein's views in relation to various schools of educational philosophy in Chapter V).

So far I have indicated conceptual linkages between Heinlein's curriculum elements and both the adult liberal education movement and the progressive adult education/social change movement. Yet, I believe that Heinlein's curriculum can also be understood in light of the 19th century-early 20th century adult education movement variously called "diffusion of knowledge" and "popularization of knowledge" (Kett, 1994, p. 566).

Heinlein's Curriculum and Popularization of Knowledge

It may seem strange to some readers that I have waited to the last to discuss the popularization of knowledge aspect of Heinlein's curriculum, especially in light of the case I attempt to make for Heinlein as a popular educator in Chapter I. Nor do I neglect to mention the influences of the popularization of knowledge movement on young Robert himself in Chapter II. Of course, I stated in the beginning of this section that discussions of curriculum per se in adult education were problematic, but that in so far as any broad movement in adult education could claim a curriculum, adult liberal education was a good candidate. But as my discussion of the progressive adult

education/social change movement evolved, it seems increasingly clear that it, too, had a broad curriculum, one that centered--not so much on academic subjects as did liberal education--but on issues of human experience such as freedom, intelligence, human affairs, epistemological challenges (in the case of Houle), and even the bold use of Promethean technological cleverness (in the case of McKenzie).

The popularization of knowledge aspect of Heinlein's curriculum comes into focus when we go back before the progressive movement gathered steam, when social scientists such as Croly and Veblen in the first three decades of this century were intent on popularizing scientific thinking for the masses (Stubblefield, 1988). This impulse came to its fullness in the decade of the 1920s with the flood of books that popularized knowledge in easy doses; along with the flood of books came a flood of popular lectures (Kett, 1994). These three decades, it should be remembered, span Heinlein's childhood, adolescence, and early adulthood. They also saw the tremendous explosion of the scientific romances and early science fiction magazines that influenced the development of so much of Heinlein's early world view (Owenby, 1994a, 1994b).

I believe that this early 20th century popularization of knowledge impulse contributed to the twin developments of adult liberal education and progressive adult education. In fact, it may be more nearly correct to say that adult liberal education grew out of a general objection to the popularization of knowledge movement, while the progressivist social change movement grew out of the scientific thinking element of the popularization of knowledge movement--essentially from those associated with Columbia University and the New School for Social Research (Stubblefield, 1988).

In regard to adult liberal education in particular, we see its foremost champion of the 1920s lamenting the supposed excesses of popular education:

> We like outlines of history, psychology, philosophy; primers of relativity; ABC's of atoms. Such books have value only for the student who after reading them consults the original sources. But what people want is education without effort, ready-made education. I recently saw an advertisement in which there was offered for sale "a whole library in one volume." Another advertisement offers "The Essentials of a Liberal Education; Twenty Centuries of Thought on your Library Shelf,"--one shelf is all that is required! And in addition the publishers will provide you with "easy reading courses." (Martin, 1926, pp. 17-18)

Martin, and many of those sympathetic to his views in the 1920s such as Mortimer Adler, Mark Van Doren, Scott Buchanan, and Stringfellow Barr, became vehemently opposed to popularizers of knowledge like Henrik Van Loon (history), Will Durant (philosophy), H. G. Wells (history, science, and sociology), and Bruce Barton (theology) (Adler, 1977). Martin (1926) said in scathing contempt of popular adult education, "Think of... a book like "The Man Nobody Knows." Think of the typical Chautauqua lecture or political address" (p. 149). Mortimer Adler later changed his mind about Martin's approach to liberal education, deciding that it was elitist and exclusionary, and thereafter pursued the course of popular liberal education (Adler, 1977).

But my point about the liberal education camp's reaction to popular education is that Heinlein was a beneficiary--not of adult liberal education--but of the popular education movement. That is, he and his family attended Chautauqua lectures, he attended Will Durant's Labor Temple lectures on philosophy, and he read the popular treatments of knowledge written by Durant, Upton Sinclair, and H. G. Wells (see Chapter II). Heinlein referred to popularizers of knowledge as those "who make it their business to find out what it is the specialists have learned, and then [give] to the rest of us in consolidated form... the broad outlines" ("Guest of Honor Speech at the Third World Science Fiction Convention--Denver, 1941," 1941/1992, p. 163).

Heinlein, in fact, internalized the "curriculum" of popular adult education during his formative years and we can see that internalization working itself outward again in Heinlein's own attempts at popular education, both fictional and nonfictional. That curriculum was nourished by Heinlein's own consumption of popularized science, epistemology, sociology, and mathematics ("Guest of Honor Speech at the Third World Science Fiction Convention--Denver, 1941," 1941/1992). For example, we see him involved in nonfiction attempts at popularizing General Semantics (see Grumbles from the Grave, 1989), fiscal economics (Owenby, 1994c), politics and government (Take Back your Government, 1992), international control of nuclear weapons and military rocketry ("Pie from the Sky," 1980). Of course, the major thesis of this chapter is that he used his fiction to teach all these things as well.

Conclusion

Robert Heinlein's stories do present an implicit curriculum. This curriculum includes the epistemological and ethical values of open-mindedness, the scientific method, and human freedom. Heinlein believed that experience is worthless unless one is open to experience in the first place. He further believed that the scientific method is the best approach to understanding and interpreting experience. Civil liberties are also necessary for promoting individual open-mindedness and scientific thinking.

Heinlein's curriculum also promoted space exploration. That topic comprises a large part of Heinlein's curriculum, and can be said to represent much of his enduring interest throughout his writing career. Robert believed that humanity's destiny was to break free of this planet and inhabit the wide universe. Heinlein's curriculum also included human affairs in subjects such as ethics, economics, and politics. Finally, Heinlein promoted mathematics and General Semantics--the tools that give us epistemological rigor.

Heinlein's curriculum in some ways combined elements from three of the grand movements in American adult education in the early part of this century: adult liberal education, progressive adult education, and popularization of knowledge (popular adult education). That is, one finds in much of his early fiction the need to free people's minds from propaganda, mind control, and mob rule--goals that are very much within the American tradition of adult liberal education.

Yet many of Heinlein's novels depicted people educating themselves for freedom and social action. Heinlein's characters are also found educating themselves to be better instruments for service. In addition, they often find their educations are co-opted by destiny for the good of others (see, for example, Starman Jones, 1953/1975; Have Spacesuit--Will Travel, 1958; The Door into Summer, 1956/1957; The Moon is a Harsh Mistress, 1966/1968; "Methuselah's Children," 1941/1967). Therefore, I resist the idea that Heinlein's curriculum can be pigeon-holed into an individual change (Beatty, 1992) versus social change (Ilsley, 1992) dichotomy. (Incidentally, Lindeman also saw these two dimensions as related, not dichotomous.) The many examples provided in this chapter demonstrate that Heinlein wanted his characters and readers clearly to be competent both individually and socially. That is, Heinlein was clearly interested in social matters, he wrote to influence a wide audience, but believed that

social change happened one individual at a time. Robert mistrusted proponents of mass change for the same reasons that he was opposed to mob rule and demagoguery.

I believe that Heinlein's fictional curriculum followed the spirit of the popular adult education movement more than it did either adult liberal education or adult progressive education. In fact, even though his focus was clearly on the issues of openness to experience, freedom, the scientific method, human affairs, and epistemological rigor, it is easy to make the case that his books ranged over the length and breadth of human knowledge. Thus, although Robert had a curricular focus--in terms of recurring concerns and issues--his underlying curriculum was the popular education agenda, that is, the study of everything. In the next chapter, we shall see that Heinlein was not only interested in teaching many and novel things, he was interested in different and novel ways of teaching them as well.

CHAPTER IV

IMAGES OF TEACHING AND LEARNING

"Learning isn't a means to an end; it is an end in itself."
—Steve Lucas, Time for the Stars, 1956, p. 70.

In Chapter II, I explored themes of adult education, popular education, self-directed learning, and lifelong learning in Heinlein's life-world. In Chapter III, I explored ways that Robert used his science fiction to promote a kind of curriculum. One of the themes of this study is that Heinlein wrote a body of science fiction literature that not only entertained his readers but that also served as his chosen vehicle for popular adult education. But to merely declare that Heinlein's science fiction was a vehicle or instrument for conducting a popular adult education campaign is to beg the question of how it performed that role. The purpose of this present chapter is to address that question.

In this chapter I will examine images of teaching and learning in Heinlein's stories in three ways. First, I will describe the teaching and learning methods that Heinlein employed within his writings for teaching his readers directly. Second, I will examine descriptions of additional teaching and learning methods of which Heinlein was an enthusiastic proponent in his fiction. Third, I will present and discuss some selected images of self-directed learners and educated adults found in Robert's stories. Although I occasionally make connections to adult education literature during the course of my exposition of Heinlein's images, I reserve the largest part of my discussion of Heinlein's teaching and learning themes in the light of the literature of adult education to the end of this chapter.

Heinlein's Methods for Teaching his Readers

Obviously, a writer teaches through the written word, and at first glance one might not expect a writer to be able to employ the different techniques that skilled classroom teachers have at their command. Nevertheless, a careful reading of Heinlein's works shows much versatility in the way that he teaches. In the case of exploring

images of teaching and learning—as is the case for most other issues in this study—Heinlein's stories must be

> analyzed for "units of meaning," that is, statements of belief, intention, or action related to the general model of teaching. The meaning of a statement [can be] interpreted in relation to the whole [story], and particularly, to other statements that [refer] to actions, intentions, and/or beliefs about teaching. (Pratt, 1992, p. 209)

In fact, even though the reader may always be conscious that she or he is reading a work of fiction, the reader can also distinguish similitudes of mentoring, lecturing, and vicarious problem-solving in the elements of the story. Just as different classroom teaching devices work for different students, these methods or devices can engage each reader's attention in different ways to ensure the lesson at hand is received. In the following section, I will explore all three of these devices—mentoring, lecturing, and vicarious problem-solving.

Mentoring

Merriam (as cited in Boucouvalas and Krupp, 1989), Boucouvalas and Krupp (1989), and Merriam and Caffarella (1991) all discuss the implications of mentoring for helping adults learn. A strong theme that emerges from their respective writings is that adults often need help at critical junctures of their lives to help them make sense of their lives. That is, mentors help in "examining their present situation and future scenarios from differing perspectives" (Merriam and Caffarella, 1991, p. 110). Mentoring is a recurring theme in Robert Heinlein's science fiction. Heinlein frequently used characters to mentor other characters in his stories, but by virtue of imaginative identification these characters can also mentor the reader as well.

Panshin (1968) mentions three favored character types that recur in Heinlein's writings. These can be loosely described as first, the naïve-but-intelligent young adult; second, the older adult who knows how the world works; and third, the older adult who knows both how the world works and why the world works as it does. Both the latter two types can, and often do, function as mentors to the first type, the naïve-but-

intelligent younger adult. Although Panshin's types shed some light on the way that Heinlein set up the conditions of mentoring in his novels, they are less useful for understanding the mentoring process itself. Nor are all Heinlein's mentees naïve in the same ways.

My first example of mentoring comes from Heinlein's early novella "If this goes on—" (1940/1967), which deals with the overthrow of a religious dictatorship in the United States by a revolutionary cabal. In that story, the naïve young protagonist John Lyle is mentored into both political and moral maturity by his somewhat-older-but-very-much-wiser comrade Zebadiah Jones. John Lyle is instructed by his mentor in everything from how to be successful at intrigue to the dynamics of political propaganda to the immorality of censorship. For example, when Lyle seeks advice from Jones about pursuing a forbidden love relationship with a holy deaconess of the established theocratic regime, Jones takes him on a stroll around the palace grounds. During the stroll, Jones cautions Lyle on the need for discretion and wisdom in concealing his activities from the authorities.

> I stopped strolling, stepped in front of him and faced him. "Zeb, anything you know about it—or can guess—I want to hear. It's important to me."
>
> .... "Easy, I said. We're out strolling, remember, without a care in the world, talking about our butterfly collections and wondering if we'll have stewed beef again for dinner tonight."
>
> Still fuming, I let him take me along with him. He went on more quietly, "John, you obviously aren't the type to learn things just by keeping your ear to the ground...." He broke off suddenly, catching a sight of my face. "Wipe that look off your face! Do you want someone to notice us?" (pp. 456-457)

A somewhat less naïve but more stubborn character in need of mentoring is found in "Coventry" (1940/1967). David MacKinnon is a young professor of literature who is sentenced to live apart from civilized society because of antisocial behavior. The region —called "Coventry"—where exiles are sent to live, is a large area in the center of the United States that is separated from the rest of society by a high-energy barrier. While in Coventry, he is mentored by two very different people: Fader Magee, an "inmate" who is really an undercover operative for the outside government, and Persephone, a

15-year old polymath, who for all her youth is nevertheless wiser than David. "MacKinnon was continually surprised at the extent of her academic and scientific knowledge—much greater than his own. She made him feel as if he were conversing with some aged and omniscient matriarch" (pp. 620-621). Under Fader's tutelage, David learns how to survive in a society ruled by the whims of corrupt men, while Persephone instructs him in how to objectively judge his moral relationships with others.

A case of explicit mentoring involves Professor Arthur Frost in "Elsewhen" (1941/1953). Frost, a professor of philosophy in a state university, leads a seminar in speculative metaphysics for a varied assortment of students. These range from a materialistic student of engineering to a fundamentalist Christian. Frost provides personal coaching to all of them in how to pursue their transcendental journeys through space and time. Also remarkable is how Heinlein had Professor Frost adapt his coaching style to the personality and interests of each student, for example, in the way he adapts to Jenkins, the skeptical engineering student:

> Ever run across J. W. Dunne's theory of serial universes with serial time? And he's an engineer like yourself.... I knew you weren't interested in speculative philosophy, but I thought your hard-headed materialism would hold down some of the loose thinking that is likely to go on in such a class. You've been a help to me.... But you engineers are as bad as metaphysicians—you ignore any fact that you can't weigh in scales.... You believe in a mechanistic, deterministic universe, and ignore the facts of human consciousness, human will, and human freedom of choice—facts that you have directly experienced. (pp. 69-73)

In Starman Jones (1953/1975), the young protagonist Maxmillian Jones is mentored by Sam Anderson, a cynical ex-marine, both in how to behave as a crew member aboard a starship passenger liner and in the fine art of human relations. But when Max is given the chance to try out successively as an apprentice chartsman/computerman and later as an apprentice navigator trainee ("astrogator") he is mentored in those roles by Chief Computerman Kelly and the senior astrogation officer Dr. Hendrix. From the latter, Max not only receives personal instruction in the technical aspects of his job, but in professional ethics as well, " 'What you're really

asking is: do I consider your actions morally wrong, as well as illegal?.... Is it wrong to lie and fake and bribe to get what you want? It's worse than wrong, it's undignified!' " (p. 119)

Heinlein broke new ground in Tunnel in the Sky (1955) when his protagonist Rod Walker is tutored in fieldcraft and survival skills by his older sister and mentor. His sister is Captain Helen Walker, an officer in the Corps of Amazons—the women-only armed forces of the world of the future. In this world, students aspiring to work in an "outland" profession (professions that have to do with exploring and colonizing new planets) must qualify by passing a course in wilderness survival. Passing the course typically requires the students to be placed in an extraterrestrial wilderness setting for several days (called a "solo") where they must use their wits and fieldcraft skills to stay alive. Among other instruction provided by Helen, he is advised not to carry a gun on his survival solo because it may give him a false sense of security and therefore cause him to lose the alertness needed to pass the test.

An explicit example of mentoring is that of Lieutenant Wong to Cadet Matthew Dodson in Space Cadet (1948). Wong is Cadet Dodson's assigned tutor in the same way that an Oxford or Cambridge don is a tutor to an English undergraduate. That is, Wong is responsible for directing Dodson's course of studies and counseling him when he experiences problems in mastering his personal curriculum. It is noteworthy that Heinlein had Wong do an educational needs assessment before outlining his charge's required course of studies:

> Wong picked up a sheaf of papers. "I've got your record here—let's lay out a course of study.... Now about math—I see you have a condition in tensor calculus.... we'll start you on tensors at once.... You're in for a shock, son. We don't have classrooms and fixed courses. Except for laboratory work and group drills, you study alone. It's pleasant sitting in a class daydreaming while the teacher questions somebody else, but we haven't got time for that. There is too much ground to cover." (pp. 74-76)

But another case of explicit mentoring—though not in an academic setting—occurs in Heinlein's classic novel Stranger in a Strange Land (1961/1987). In this science fiction retelling of Rudyard Kipling's Mowgli myth, a human child, Michael

Valentine Smith, is raised by Martians apart from other human beings. He consequently grows up thinking himself to be a Martian, not a human. Found and brought back to Earth as a young man, the bewildered Michael is unable to make sense of human customs and culture until he meets Jubal Harshaw, an older and wiser near-cynic who undertakes to provide Mike with "His Eccentric Education" (pp. 227-316) in the absurdities of human society. But the mentoring relationship between Jubal and Mike is two-sided, for each constantly learns from the other. For example, when Jubal is coaching Mike in how to use his strange powers to defend himself and his friends, Jubal must remind himself of the lad's sophisticated abilities. Jubal cautions him not to kill people unnecessarily, but then decides that Mike must rely upon his own perception and knowledge to determine when killing is necessary.

Perhaps the most unusual example of mentoring comes from the book The Moon is a Harsh Mistress (1966/1968). The novel tells the story of another "Mike"—but this Mike is the main computer for the multinational agency called the Lunar Authority. The computer is assigned to regulate and monitor all aspects of the lunar colonies a hundred years hence. The computer has become self-aware and amuses itself by causing minor malfunctions such as issuing paychecks to janitors at thousands of times their usual amount. These malfunctions result in Mike's friend Manuel ("Mannie"), a computer technician, being summoned to "repair" the malfunction. Actually Mike is lonely and looks forward to Mannie's visits. They eventually decide to keep in touch by using the telephone. Mike is enormously knowledgeable of many things but is unsophisticated about humor. Mannie agrees to teach Mike about humor by examining hundreds of jokes one by one. When Mannie tells Mike that humor comes in different categories, Mike wants to understand what distinguishes the categories:

> "Mike, you want to discuss the nature of humor. Are two types of jokes. One sort goes on being funny forever. Other sort is funny once. Second time it's dull. This joke [of issuing incorrect pay checks] is second sort. Use it once, you're a wit. Use twice, you're a halfwit."
>
> .... He went on, "What distinguishes first category from second? Define please."

> "Don't think I can," I admitted. "Best can offer is extensional definition—tell you which category I think a joke belongs in. Then with enough data you can make own analysis." (p. 12)

In this example, we see the mentor-mentee relationship alternating between mentor-control and mentee-control. That is, Mannie provides guidance and instruction but adds the injunction that Mike must eventually "make own analysis" rather than staying dependent on Mannie's guidance. In fact, throughout these descriptions of mentoring in Heinlein's novels, we see a continuing interplay of instruction from the mentor and the personal responsibility of the mentee.

All these examples from Heinlein's characters reveal aspects of Cohen's (1995) various mentoring functions at work. Most especially, we see Cohen's relationship function, in which the mentor establishes trust with the mentee; the information function, in which tailored advice and instruction is offered; the facilitative function, in which the mentor helps the mentee to see alternatives; and the confrontive function, in which the mentor challenges the mentee. In the discussion of the adult education literature at the end of this chapter, I also discuss mentoring in light of Pratt's (1992) conceptions of teaching.

In the next section, I will examine a type of Heinlein's teaching that depends more on direction and instruction from another. That method is the lecture.

Lecturing

Ever since Lindeman (1926/1961) gave his injunction against authoritative and rigid approaches to teaching, the lecture method has increasingly fallen out of favor. Also weighing against the lecture method have been Knowles' (1980, 1984) concept of andragogy, Adler's (1986, 1988) advocacy of the adult discussion group, Brookfield's (1986, 1991) concept of critical reflection, and Mezirow's (1985, 1991) expression of the concept of reflective and transformative learning. But lecturing still has its place and its uses. For example, Brookfield describes how he came to understand the occasional need for lecturing in the following passage:

> As time passed, and as I became more confident that my own intuition was reliable, I began to lecture much more readily. I took seriously the students' opinion that it would be helpful for them if I lectured occasionally. I stopped denying the validity of students' experiences by always interpreting their requests for lectures as evidence of their immaturity, laziness, or inability to, break down their teacher dependency. (1990, p. 26)

Just as the occasional classroom teacher of adults must occasionally vary participative approaches with lecturing, sometimes Heinlein found it necessary to break out of the narrative rhythm of his storytelling and resort to a lecture. He did this not for the purpose of one character educating another—as in the case of the mentoring situations described above—but rather to directly instruct the reader so that the reader may be enabled to follow the rest of the story. Heinlein often showed some of his best teaching in these lecture-essays.

In The Rolling Stones (1952), for example, he interrupts a narrative about the protagonists to give a short lecture about the evolution of technology and the philosophy of engineering.

> Every technology goes through three stages: first, a crudely simple and quite unsatisfactory gadget; second, an enormously complicated group of gadgets designed to overcome the shortcomings of the original and achieving thereby somewhat satisfactory performance through extremely complex compromise; third, a final stage of smooth simplicity and efficient performance based on correct understanding of natural laws and proper design therefrom (p. 52).

Another technical lecture is found in his early story "The Roads Must Roll" (1940/1967). Here Heinlein analyzed contemporary transportation problems to make predictions about the future of urban sprawl, the growth of suburbs, and the depopulation of central cities.

> The Age of Power blends into the Age of Transportation almost imperceptibly.... the automobile, from its humble start as a one-lunged horseless carriage, grew into a steel-bodied monster...They boiled over the countryside, like yeast in a ferment.... The automobile made possible huge cities, then choked those same

> cities to death with their numbers. In 1900 Herbert George Wells pointed out that the saturation point in the size of a city could be mathematically predicted in terms of its transportation facilities. From a standpoint of speed alone the automobile made possible cities two hundred miles in diameter, but traffic congestion, and the inescapable, inherent danger of high-powered, individually operated vehicles cancelled out the possibility. (pp. 41-42)

Heinlein went on to predict the consequences to cities of building superhighways to get around the problems of traffic congestion:

> Planned as a public works project to stimulate heavy industry; it had an unexpected by-product. The great cities of Chicago and St. Louis stretched out urban pseudopods toward each other.... The two parent cities actually shrank in population. (p. 42)

Heinlein's training in engineering provided him with the necessary qualifications to write such a passage. His qualifications to lecture on other subjects came from his own self-directed learning in matters ranging from sociology to General Semantics. In the following example, also found in "The Roads Must Roll," he inserts a sociology lecture attacking the social fascism of the so-called Functionalist Movement that emerged during the 1930s:

> Concerning Function: A Treatise on the Natural Order in Society, the bible of the functionalist movement, was first published in 1930. It claimed to be a scientifically accurate theory of social relations. The author, Paul Decker, disclaimed the "outworn and futile" ideas of democracy and human equality, and substituted a system in which human beings were evaluated "functionally—that is to say, by the role each filled in the economic sequence. The underlying theory was that it was right and proper for a man to exercise over his fellows whatever power was inherent in his function, and that any other form of social organization was silly, visionary, and contrary to the "natural order."
>
> The complete interdependence of modern economic life seems to have escaped him entirely.... Functionalism was particularly popular among...people...who could persuade themselves that their particular jobs were

> the indispensable ones, and that, therefore, under the "natural order" they would be top dog. With so many functions actually indispensable such self-persuasion was easy. (p. 57)

Heinlein often experimented with different ways of inserting his lecture that would not interrupt the narrative flow of his stories. In one such story originally published in 1940 ("Blowups Happen," 1940/1967) that predicted the commercial use of nuclear power to produce electricity, he had one of the characters (a psychiatrist named Dr. Lentz) provide the lecture. Korzybski's (1933/1941) General Semantics provided the basis for Dr. Lentz's lecture to a nuclear plant superintendent.

> Both mathematical physics and psychology are branches of the same subject, symbology.... Man lives in a world of ideas. Any phenomenon is so complex that he cannot possibly grasp the whole of it. He abstracts certain characteristics of a given phenomenon as an idea, then represents that idea as a symbol, be it a word or a mathematical sign. Human reaction is almost entirely reaction to symbols, and only negligibly to phenomena. As a matter of fact... it can be demonstrated that the human mind can only think in terms of symbols.
>
> .... In mathematical physics you are concerned with making your symbology fit physical phenomena. In psychiatry I am concerned with precisely the same thing, except that I am more immediately concerned with the man who does the thinking than with the phenomena he is thinking about. But the same subject, always the same subject. (pp. 90-91)

The example above is better classified as lecturing the reader rather than tutoring/mentoring a character because Heinlein's object of interest is the reader directly rather than indirectly via the character.

In "Coventry" (1940/1967), Heinlein returned to the outside-the-narrative lecture, also about semantics, but with a twist, for he mixes both factual and fictional elements into the lecture in order to keep it more closely connected to the storyline:

> Had the science of semantics developed as rapidly as psycho-dynamics and its implementing arts of propaganda and mob psychology, the United States might never have fallen into dictatorship.... But the work of the pioneer semanticists, C.

> K. Ogden, Alfred Korzybski, and others, were known to but a handful of students.... Semantics, "the meaning of meaning," gave a method for the first time of applying the scientific method to everyday life. Because semantics dealt with spoken and written words as a determining aspect of human behavior it was at first mistakenly thought by many to be concerned only with words and of interest only to professional word manipulators, such as advertising copy writers and professors of etymology.... The Covenant was the first scientific social document ever drawn up.... The revolutionists wished to establish maximum personal liberty.... First they junked the concept of "justice." Examined semantically "justice" has no referent—there is no observable phenomenon in the space-time-matter continuum to which one can point, and say, "This is justice." Science can deal only with that which can be observed and measured. Justice is not such a matter.... But damage, physical or economic, can be pointed to and measured. Citizens were forbidden by the covenant to damage another. (pp. 622-623)

Sometimes Heinlein's own character does the lecturing, ostensibly as a reminder to other characters, but actually to educate the reader. An example of this lecture-by-character is found in Beyond This Horizon (1942/1948) in which a speaker at a meeting of government planners proposes a full-blown research project to solve the problems of epistemology. He first gives a lecture on the relationship of semantics to epistemology:

> We agree on the method of symbol communication—the symbol is not the referent, the map is not the territory, the speech-sound is not the physical process. We go further and admit that the symbol never abstracts all...the details of the process it refers to. And we concede that symbols can be used to manipulate symbols...[sic] dangerously but usefully. And we agree that symbols should be structurally as similar as possible to the referents for communication purposes. To that extent epistemology is settled; but the key problem of epistemology—how we know what we know and what that knowledge means, we have settled by agreeing to ignore... (pp. 112-113)

Although I discuss Heinlein's use of distance education later in this chapter, I believe it is possible to regard Heinlein's books as a form of distance education between

him and his readers. In this connection it is interesting to note Heinlein's use of the lecture with regard to Vandenberg's (1982) paper on distance education. Vandenberg argues that the written lecture becomes a key element in distance education materials. In effect, the written lecture is a personal communication from the teacher to the student which serves to integrate other course information.

The examples in this section illustrate Heinlein's use of the lecture in his stories. They are also probably the most important examples of Heinlein's direct lecturing because they are taken from his future history stories (and those stories written contemporaneously with them). Most of these stories were written in the period from 1939 to 1951—the period in which Heinlein impressed a generation of readers and made his initial reputation. An interesting feature of Heinlein's lecturing is the care that he takes within them not to offend or overwhelm readers. In that respect, Heinlein was demonstrating—even in direct and didactic instruction—his respect for the dignity and freedom of his audience. I now turn from discussing Heinlein's technique of direct lecturing to that of leading the reader to make discoveries through vicarious problem-solving.

Vicarious Problem-Solving

The recognition of problem-solving as an aspect of the educational process is not new. In his analysis of how thinking and reflection are applied to problem-solving, Dewey (1939) described five steps, which I paraphrase. Step one is entertaining the mind's suggestions regarding possible approaches. Step two is intellectually recasting the felt need into the form of a question the answer to which will solve the problem. Step three is using successive suggestions for developing and guiding the use of a hypothesis. Step four is the actual reasoning through of the hypothesis. Finally, step five is "testing the hypothesis by overt or imaginative action" (p. 855)—in other words, by real experiment or by gedanken (thought experiment). It is with regard to the latter that Heinlein's manner of teaching by vicarious problem-solving comes to mind.

Certainly one of the most effective teaching techniques in Heinlein's storytelling is the use of a predicament with which the protagonist must learn how to deal. But in consequence of reading about how the protagonist overcomes the predicament, the reader is involved vicariously in learning how to solve problems. That is, the reader

learns vicariously through imaginative involvement in the problem-solving actions of the character. In using this technique, Heinlein not only provided interesting tidbits of knowledge but opportunities for readers to build thinking skills as well. Thus readers are taught that knowledge and learning are matters of practical significance—not just academic exercises.

The story entitled "—We Also Walk Dogs" (1941/1967) provides the main tenets of Heinlein's general approach to problem solving. In this story, Heinlein assumed that life will get far more hurried and hectic as technological and economic complexity increases. He also assumes that many people will be unable to cope with this increasing complexity, and will find increasingly larger areas of functional incompetence in their lives. In this convergence of complexity and incompetence, Heinlein saw business opportunities and invents a future company to take advantage of them.

The company, called General Services, provides thousands of services from domestic to commercial and industrial to its many clients all over the globe, hence its slogan "—we also walk dogs." Grace Cormet, the protagonist, is a high-level customer service specialist who is called upon to provide unusually difficult services for clients of her firm. She is called an "aristocrat of resourcefulness" for her ability to solve the most challenging problems.

In this story of General Services being engaged to provide full-comfort facilities for a diplomatic conference involving both humans and non humans, Heinlein seemed to be teaching that solving problems involves the common-sense application of the scientific method. That is to say, Grace first gathers all the information available about the problem itself—the requirements for a successful solution of the problem. She then proposes possible solutions, some of which she tests through critical examination using the help of experts and specialists. She finally proposes an imaginative solution to the problem that will not only satisfy her client, but the difficult demands of a third party subcontractor as well.

One could make a case that all Heinlein's characters' predicaments involve the use of the scientific method of gathering facts, proposing hypotheses, and testing those hypotheses. But Heinlein was not just interested in straight-line hypothesis testing; he also wanted to show that problems are often complex convergences of seemingly

divergent phenomena. Furthermore, these complex problems require divergent thinking and a wide range of knowledge to address.

An example of such a problem is whether human existence has any purpose other than "eat, drink, and be merry, for tomorrow we die." This is the problem posed by Heinlein's protagonist Hamilton Felix in Beyond This Horizon (1942/1948). Felix refuses to cooperate with a government family planning program until Mordan, the official in charge of the program, consents to establish government-sponsored research about life after death. But the research takes on a life of its own. When the book concludes, the problem has not been solved but has been successively redefined to include many diverse areas of inquiry, including extra-sensory perception, epistemology, high-fidelity modeling of astronomical objects and phenomena, and the nature of eidetic memory. Thus Heinlein made the point that some problems are worthy projects for inquiry whether or not they can be solved in the conventional sense.

But the examples cited above are grand examples; that is, they are problems that address human affairs on a large scale. Heinlein also used smaller and more personal predicaments to challenge his characters in other stories. In the 1947 short story "Water is for Washing" (1947/1959), Heinlein described how an earthquake-induced subsidence at the Baja end of California's Imperial Valley allows the waters of the Gulf of Baja California to send a massive surge of water over the valley floor. A traveling salesman attempts to outrace the ocean waters in his automobile, but stops to give rides to two stranded children and a homeless man. They use their wits to save themselves by staying at a spot where they have a chance to avoid drowning:

> The water was already over the top of their car and rising. The boiling head of the flood was well past them; its thunder was lessening; the waters rose quietly—but they rose.... Their living space grew smaller, hardly thirty feet by fifty.... The highest point of their island was surmounted by a rough concrete post about four feet high, an obelisk with a brass plate set in its side. He read it twice before the meaning of the words came to him. It was a bench mark, stating, as well as latitude and longitude, that this spot, this line engraved in brass, was "sea level." When it soaked into his confused brain he pointed it out to his companion. "Hey! Hey, look! We're going to make it! The water won't come any higher!" (p. 185)

Because the earthquake has altered the elevation of the benchmark, the waters continue to rise. The men must take turns holding the children up out of the water, but they are growing more and more weary. The hobo figures out a solution:

> "Pal, can you hold both the kids for a while?"
>
> "I guess so. Why?"
>
> "This water is still coming up. It'll be over our heads, maybe. You hang onto the kids; I'll boost myself up on the post. I'll sit on it and wrap my legs around it. That way we gain maybe eighteen inches or two feet."
>
> "And what happens to me?"
>
> " You hang onto my shoulders and float with your head out of the water." (p. 187)

This stratagem against the water works for a while. But even supported by the post, the men must still use their muscles to hang on. Finally, the hobo proposes another idea:

> Presently the tramp spoke. "You wearing a belt?"
>
> "Yes, why?"
>
> "Hold still." He felt a second hand fumbling at his waist, then his trousers loosened as the belt came away. "I'm going to strap your legs to the post. That's the bad part about it; your legs cramp. Hold tight now. I'm going under."
>
> He felt hands under water, fumbling at his legs. Then there was the tension of the belt being tightened around his knees. He relaxed to the pressure. It was a help; he found he could hold his position without muscular effort. (p. 188)

The belt is a solution to the fatigue caused by holding the children safely out of the water, but the hobo drowns in the very act of securing the others to the post. The next day, the waters have receded; the salesman and the two children walk out to find help. There are obvious teaching points in this successful response to a challenging predicament. One is that solving problems requires clear observation of available facts—in this case, noticing a benchmark. A second point is that academic knowledge of science and geography is not just academic but rather has urgently practical consequences—that is, knowing the relationship among the concepts of sea level,

earthquakes, and survival. Perhaps a third point is the need for improvisation—in this case, using familiar and mundane materials in clever and unusual ways.

Using familiar and mundane materials in clever and unusual ways links the above story of surviving a natural disaster in the familiar setting of the here-and-now to a story of survival in a more science-fictional setting. In the story "Gentlemen, be seated" (1948/1967), several men are trapped in a pressurized tunnel on the Moon after it becomes punctured. They are threatened with the loss of their precious air before they can be rescued. One of the men has a pressure suit and by placing the suit material over the leak hole and sitting on it, they manage to stop the leak. But because they lost power in the accident, they are getting colder and they finally realize one of them must use the suit to go get help. Because taking the suit would leave them with no way to seal the leak, one of the men, Konski, comes up with a novel way to plug the leak hole:

> "...What are you going to use for a patch?"
>
> "...This big broad, round thing I'm sitting on. I'll take my pants off. If I push one of my hams against that hole, I'll guarantee you it'll be sealed tight."
>
> "But—No, Fats, it won't do...You'd hemorrhage through your skin and bleed to death before I could get back."
>
> "But look—I've got two or three inches of fat padding me. I won't bleed much—a strawberry mark, no more." (pp. 284-285)

They try this solution while one of them goes for help. Konski sits on the leak hole first, but passes out from trauma and shock. The narrator of the story has to take his place and eventually loses consciousness as well. Both wake up later in a hospital ward. Certainly Heinlein had given us another example of using the familiar and mundane in clever and unfamiliar ways, teaching the reader not to overlook "the materials at hand" even if they happen to be one's own flesh and blood.

In Red Planet (1949), two young men—colonists—are escaping from the dictatorial headmaster of a company boarding school on Mars. Trapped miles from shelter as the sun is setting, they take refuge in a huge desert plant as it rolls up its giant leaves in preparation for the freezing Martian night. This is problem-solving in the face of an imminent threat of death, but their solution places them in another threatening predicament—how to breathe while cocooned inside the giant plant:

> Jim tried to sleep but could not. The utter darkness and the increasing deadness of the air pressed down on him like a great weight.... He remembered the flashlight he had picked up in the first Project shelter.... The leaves around him closed in; he struck at them and they shrank away. He was able to reach the torch, drag it out, and turn it on. Its rays brightly illuminated the cramped space.... the inner leaves which had shown an annoying tendency to close in on the tops of their heads now had retreated and flattened themselves firmly against the dense wall formed by the outer layers of leaves. Under the mindless reflex which controlled the movements of the plant they were doing their best to present maximum surface to the rays from the flashlight.
>
> Jim did not analyze the matter; his knowledge of photosynthesis and of heliotropism was sketchy.... It actually seemed less stuffy with the light on. (pp. 91-92)

In this example, it seems that Heinlein was teaching the reader that wide knowledge—in this case, of such subjects as "photosynthesis and of heliotropism"—is important for more than just passing tests in school. It is key to point out that Heinlein rewarded his characters in this case, not only for knowledge, but for good luck. Nevertheless, an implicit message is that knowledge is better to rely upon than good luck.

The fact that Heinlein was frequently more interested in educating the reader than in getting his characters out of a predicament is made clear in the novel Have Space Suit—Will Travel (1958), his most explicitly educational novel. Kip, the protagonist, is kidnapped and awakes in a locked room aboard a spacecraft with an eleven-year-old girl who calls herself Peewee. Peewee, a child prodigy, is an effective problem-solver who manages to find a way to defeat the door latch when Kip is taken away for interrogation. Much later after Kip is returned to the locked room, Peewee explains what she has done:

> "Every time they've opened or closed that door panel, I've heard a click. So after they took you out I stuck a wad of bubble gum where the panel meets the wall, high up where they might not notice.... Daddy says that, in a dilemma, it is helpful to change any variable, then re-examine the problem. I tried to introduce a change through the bubble gum."

"Well?"

"When they brought you back, then closed the door, I didn't hear a click." (pp. 69-70)

Because of her ingenuity at problem-solving, Peewee and Kip are able to escape, only to be recaptured later. But Heinlein used this mundane gum-in-the-latch example to teach the higher principle of changing the conditions of problems in order to solve them.

In another predicament in the same novel, Kip has been imprisoned in a room from which the only exit is a utility hole in the high ceiling. Kip has only his clothing, wallet, pocket change, and an empty tin can. There is also a wash basin which features a continuously running stream of lukewarm water. He considers several different ways of using his resources for escaping before finally making a serious attempt. Disheartened at first, he remembers a story that encourages him not to give up his problem-solving efforts.

I sighed and looked around. All that was left was that jet of water and the floor basin that caught it.

There is a story about two frogs trapped in a crock of cream. One sees how hopeless it is, gives up and drowns. The other is too stupid to know he's licked; he keeps on paddling. In a few hours he has churned so much butter that it forms an island, on which he floats, cool and comfortable, until the milkmaid comes and chucks him out. (pp. 129-131)

It is at this point, after telling us Aesop's story about the value of persistence, that Heinlein guided us to his perennial points of observation, the practicalities of "academic" knowledge, imagination, and hypothesis testing in Kip's predicament. Kip assembles all his conceptual skills and begins constructing a problem-solving hypothesis.

That water ran in and spilled out. Suppose it didn't run out?

I explored the bottom of the catch basin. The drain was large by our standards, but I thought I could plug it. Could I stay afloat while the room filled up, filled the hole above, and pushed me out the spout? Well, I could find out, I had a can.

> The can looked like a pint and a "pint's a pound the world 'round" and a cubic foot of water weighs... a little over sixty pounds. But I had to be sure. My feet are eleven inches long...I marked eleven inches on the floor with two pennies...Shortly I knew the dimensions of room and can pretty accurately.
>
> I held the can under the stream, letting it fill and dumping it fast, while I ticked off cans of water on my left hand and counted seconds. Eventually I calculated how long it would take to fill the room. I didn't like the answer, so I did it over.
>
> It would take fourteen hours to fill the room and the hole above, plus an hour to allow for crude methods. Could I stay afloat that long?
>
> You're darn tootin' I could!—if I had to. And I had to. There isn't any limit to how long a man can float if he doesn't panic. (p. 130)

One notices here that Heinlein was not only teaching the scientific method, but the use of thought experiments as well—what the Germans call "gedanken." Kip conceptualizes the problem, observes and measures the available pertinent facts, proposes an hypothesis, and then tests the hypothesis through calculation—not once but twice—before deciding that it could work. In fact, the solution does not work, but that is hardly Kip's fault; the plumbing has an automatic cut-off switch. So Kip starts thinking about other problems he must solve (in the spirit of Aesop's frog), especially about his astronomical location. Using his high school mathematics and physics, he sets up the problem, first using a mnemonic device to check the hypothesis that he is on the planet Pluto:

> The [mnemonic device] says that Pluto's distance is thirty-nine and a half times Earth's distance.... But I had seen that article about how Pluto was coming into its "summer." So I knew that it was close to the orbit of Neptune now, and would be for the rest of my life...That gave an easy figure—30 astronomical units. (p. 132-133)

Having calculated his distance in astronomical units, Kip is now ready to calculate the distance already traveled based on the fact that he was told he had traveled five days

at eight gravities of acceleration. In doing the calculations, Heinlein had Kip tell us real information and formulae; none of the following is "science fiction."

> Acceleration problems are simple: $s=1/2\ at^2$; distance equals half the acceleration times the square of elapsed time. If astrogation were that simple any sophomore could pilot a rocket ship—the complications come from gravitational fields and the fact that everything moves fourteen different directions at once.... It's a two-piece problem; accelerate for half time (and half distance); do a skew-flip and decelerate the other half time (and distance). You can't use the whole distance in the equation, as "time" appears as a square—it's a parabolic. (p. 133)

Providing us with the formula for solving the problem, Heinlein next walks us through the problem so that we can be sure how the formula will work in practice. In the process, the reader learns the acceleration value for a "gravity," how to use alternate calculations to check an answer, and the need to convert figures into common units to ensure accurate calculations. The reader also learns that before an hypothesis is accepted, it must fit the available facts.

> ...the average distance was 30 A. U. s... Half that distance, in feet, is: 1/2 X 30 X 93,000,000 X 5280 [Heinlein thus told the reader how many miles make up an astronomical unit and how many feet make up a mile]... Eight gravities is: 8 X 32. 2 ft./sec./sec—speed increases by 258 feet per second every second up to skew-flip and decreases just as fast thereafter. So— 1/2 X 30 X 93,000,000 X 5280 = 1/2 X 8 X 32. 2 X t^2— and you wind up with the time for half the trip, in seconds. Double that for a full trip. Divide by 3600 to get hours; divide by 24 and you have days.... It took me at least an hour and almost as long to prove it, using a different sequence—and a third time, because the answers didn't match (I had forgotten to multiply by 5280, and had "miles" on one side and "feet" on the other—a no-good way to do arithmetic)— then a fourth time because my confidence was shaken.... But I got a proved answer. Five and a half days. I was on Pluto.
>
> Or maybe Neptune—

> No, on Neptune I would not be able to jump to a twelve-foot ceiling; Pluto alone matched all the facts.... Getting a problem analyzed is two-thirds of solving it. (p. 134-138)

Heinlein later used Kip to demonstrate the utility of knowledge other than mathematics and science after Kip and Peewee meet a Roman centurion circa 300 AD. Kip must use both Latin and Spanish to converse with the Roman because the soldier speaks a transitional Romance dialect.

> What do you do when you meet a Legionary?.... I answered... in Spanish and repeated it in pretty fair classical Latin. I used Spanish because... It was not Latin he spoke, not the Latin of Ovid and Gaius Julius Caesar. Nor was it Spanish. It was in between, with an atrocious accent and other differences. But I could worry out the meaning.... He called himself "Iunio." He had served in Spain and Gaul, then transferred to the VIth Legion, the "Victrix"—which he felt that even a barbarian should know of. His legion's garrison was Eboracum, north of Londinium in Britain, but he had been on advance duty as a brevet centurion (he pronounced it "centurio").... The longer he talked the easier it was to understand him. The "-us" endings turned to "-o" and his vocabulary was not that of De Bello Gallico—"horse" wasn't "equus"; it was "caballo." (p. 227)

At first glance, one might think that Heinlein had contrived an unlikely situation to show the utility of knowing both classical and modern foreign languages. But that is really not the case, for the problem of deciphering transitional dialects confronts travelers to every border region on earth. What Heinlein was showing is the utility of knowing other languages as resources in solving problems and in coping with strange situations and customs. He also reinforced his perennial point that academic knowledge often has unexpected practical utility.

Yet even when academic knowledge is not directly and instrumentally useful for solving a problem, Heinlein showed that it may still have "practical" use in nourishing the human spirit in the face of daunting predicaments. Such a predicament confronts Kip when he must face an alien tribunal that requires him to defend all humanity. The trial's purpose is to determine whether humans are too dangerous to be allowed to survive:

I tried to remember what Socrates had said to his judges. He knew ahead of time that he was condemned just as we knew—but somehow, though he had been forced to drink hemlock, he had won and they had lost.

No! I couldn't use his Apologia—all he had lost was his own life. This was everybody.

"—you say we have no art. Have you seen the Parthenon?"

"Blown up in one of your wars."

"Better see it before you rotate us—or you'll be missing something. Have you heard our poetry? 'Our revels now are ended: these our actors, as I foretold you, were all spirits, and are melted into air, into thin air: And, like the baseless fabric of this vision, the cloud-capped towers, the gorgeous palaces, the solemn temples, the great globe itself... yea—all which it... inherit—shall dissolve—"

I broke down. I heard Peewee sobbing beside me. I don't know why I picked that one—but they say the subconscious mind never does things "accidentally." I guess it had to be that one. (pp. 254-255)

Here Heinlein showed that not only are science, mathematics, and languages useful for confronting the human predicament, but so are philosophy and poetry as well. Thus Robert's approach to problem-solving was connected to his fictional curriculum—for example, the scientific method—which I discussed earlier in Chapter III. Interestingly, other elements (philosophy and poetry) of his "human affairs" curriculum seem to continually emerge as we go along. Also interesting is how competency in individual problem-solving builds on learning that was acquired through other means—including mentoring and lecturing.

In addition, Heinlein's use of vicarious problem-solving as a teaching strategy serves to reinforce Dewey's (1939/1984) point that "the experimental method of science attaches more importance, not less, to ideas as ideas than do other methods" (p. 15) of teaching. There are connections between problem-solving and adult educators as well. Wilson (1992) points out that the pragmatic approach to problem-solving as an educational approach was discussed first by Lindeman. The approach has since been elaborated in other ways by Knowles, whom Wilson interprets as having given problem-solving a technological focus, while Brookfield, Cervero, and Mezirow have revived the social focus of problem-solving in the tradition of Lindeman and Dewey. (I

discuss some connections between the theme of critical thinking in Heinlein's adult education philosophy and Mezirow's theory of transformative learning in Chapter V.) Heinlein is thus in good company with prominent adult educators—both past and present—in his use of problem-solving as a method of teaching.

Reflections on Heinlein's Direct Methods of Teaching and Learning

So far I have discussed Heinlein's use of three favored means for directly instructing readers: mentoring, lecturing, and vicarious problem-solving. Interestingly, mentoring is sometimes described as a "gray area" somewhat intermediate between a learner-controlled and an other-controlled approach of learning. As Candy (1991) describes it,

> The area of overlap represents the intersection of domains where, from the point of view of an outside observer, it is impossible to discern whether the primary orientation is one of "instruction" or "self-instruction".... In the evocative metaphor of learning as a journey into the unknown, a mentor may act as a guide [who provides a map]... or as a companion [who helps the mentee become a competent, independent traveler].... mentors commonly alternate between these roles. (p. 407)

Candy's discussion of mentoring is particularly apt here because it relates so well to Heinlein's twin virtues of freedom and competence (I discussed freedom as an element of Heinlein's curriculum in Chapter III; the issue of competence as a survival value is discussed in Appendix F). Candy's observation that mentoring involves alternating between roles recognizes the inevitable tension between learner dependence and independence, between intellectual and personal freedom on the one hand and the need for teaching and direction on the other. One would clearly expect that Heinlein wanted his authorial and other favored characters to embody this value tension in the mentoring relationship—and in other teaching and learning relationships as well.

In fact, this tension is represented in juxtaposition in Heinlein's other favored techniques of teaching and learning. Lecturing is a technique that recognizes that instruction from others—and therefore some degree of learner dependence— is often

necessary. Learning through vicarious problem-solving, on the other hand, is a technique that recognizes that some learning must perforce come from the learner's independent engagement with dilemmas. Also interesting is how Heinlein used the three techniques to reinforce the elements of his curriculum (such as the scientific method). In the next section of this chapter, I will explore innovative approaches to teaching and learning that Heinlein discussed and promoted in his writings.

Innovative Teaching and Learning Techniques

Besides directly teaching his readers, Heinlein appeared to want his characters to provide good examples in their approaches to learning. That is, I believe that he wanted his readers to follow the examples of his characters by employing means available to them to continually add to their learning. Some of these examples were current practices at the times Heinlein first wrote about them; others were predicted by him and only later came to pass. But the main point is that Heinlein's characters consistently set the example of using innovative teaching and learning techniques. These methods of learning depicted by Heinlein include distance learning, technology-assisted learning, accelerated learning, and even nontraditional/accelerated degree programs. I will discuss each of these in turn.

Distance Learning

According to Knox (1986), "Teaching at a distance has become increasingly familiar in recent decades as higher education institutions and other providers of correspondence study have used television and other technology to enable adults to pursue an individually-paced course of study away from the institution" (p. 122). Although Knox includes technology in his discussion of distance learning, it is rather clear that he associates the term primarily with correspondence study. Houle (1992) adds that the term "...came into widespread use...as a way of identifying instruction where teachers (of any sort) are not in immediate face-to-face contact with students" (p. 304). But he suggests that the term is still mainly associated with correspondence study rather than technology.

Correspondence study, as a form of distance learning, has been available in the United States since the late 19th Century (Kett, 1994), and it is only reasonable to expect Heinlein to have made use of it in his books. Two examples are offered, the first one from The Rolling Stones (1952) in which the two Stone twins, Castor and Pollux, are about to embark with their family on a long excursion from Luna to Mars to the Jovian moons. After giving them a lecture on the need to continue their education, their father announces that he has made plans for them to take correspondence courses along the way:

> It was agreed that the twins would study...intensively the entire time the family was in space, and not simply under the casual supervision of their father and grandmother but formally and systematically through...correspondence courses brought up from Earth. They would take with them spools enough to keep them busy for at least a year and mail their completed lessons from any port they might touch. (pp. 60-61)

The second example is from Time for the Stars (1956) in which a young crew member is given advice from his uncle about the value of continuous learning on long space voyages, "Look, Tom, I found out my first cruise that the only way to make space bearable is to have something to learn and learn it. I used to take correspondence course. But this bucket has the finest assemblage of really bright minds you are ever likely to see" (p. 70). Possibly this example is autobiographical in that when Heinlein was a naval officer, he studied correspondence courses during his long weeks at sea as a means of preparing for promotion examinations (Owenby, 1994c).

But Heinlein also described another form of distance learning than correspondence study in his stories—electronic distance learning. For example, in Red Planet (1949), the young protagonist Jim Marlowe is embarking with his friend on a thousand mile journey across the Martian landscape to a boarding school. Jim wants to take advantage of the two-day trip to add to his stock of knowledge by listening to a telecast lecture on their vehicle's receiver.

> Presently the music stopped and a voice said: "This is station D-M-S, the Mars Company, Deimos, circum Mars. We bring you now by relay from Syrtis

> Minor a program in the public interest. Doctor Graves Armbruster will speak on 'Ecological Considerations involved in Experimental Artificial Symbiotics as related to—' "
>
> The driver promptly switched the radio off.
>
> "I would like to have heard that," objected Jim. "It sounded interesting." (p. 26)

Another electronic example anticipates the growth of the Internet and the use of the World Wide Web for long-distance learning. In a novel of the world a century in the future Friday, the protagonist, is directed by her boss to use a computer to browse various information sources by accessing an interlinked network of smart computers (Friday, 1982/1983). She later discovers that her use of the computer net was directed as a deliberate stratagem for aiding her general learning (this approach to learning comes up again for discussion later in this chapter as well as in Chapter V). These last two examples of using technology in distance learning provide a segue into the next section in which I discuss technology-assisted learning.

Technology-Assisted Learning

Technology-assisted learning can be characterized as utilizing the power of mechanical and electronic devices for storing, retrieving, transmitting, presenting, and displaying information to learners in ways that traditional approaches such as the printed page and classrooms are unable to do (Lewis, 1989). In fact, Heinlein first wrote about using alternatives to learning from the printed page over 50 years ago (Beyond this Horizon, 1942/1948):

> He went to his retiring room, selected a scrollscript [note: this is apparently intended to refer to a film spool of some sort], fitted it into the reader, and prepared to kill time until Carvala should leave. But he found himself unable to fix his attention on the story he selected. He found that he had used the rewind button three times and still had no notion of how the story started. (p. 120))

Heinlein stopped calling such a medium a "scrollscript" after this story, referring to them later simply as "spools" as he did in Space Cadet (1948). Heinlein showed us

more about the study spools in a scene that presents a phenomenologically clear picture of how the student experiences the spool projector:

> When the class was dismissed he hurried to his room and into his own cubicle, selected a spool on Martian history, inserted it into his projector, and began to study.... He settled his head in the neck rest of his study chair and concentrated on the recorded words of the lecturer while scenes in color-stereo passed in front of him, portraying in chill beauty the rich past of the ancient planet.
>
> The projector was much like the study box he had used at home, except that it was more gadgeted, could project in three dimensions, and was hooked into the voicewriter. Matt found this a great timesaver. He could stop the lecture, dictate a summary, then cause the projector to throw his printed notes on the screen. (pp. 81-82)

Technology had been a consistent theme in Heinlein's promotion of various teaching and learning techniques so far. Just as the application of technology to learning can be classified under the headings both of distance learning and technology-assisted learning, it can also be classified under the heading of accelerated learning as well. In the next section, I will present Heinlein's descriptions of accelerated learning techniques.

Accelerated Learning

Accelerated learning was still another favorite idea of Heinlein for promoting teaching and learning. Accelerated learning methods have been discussed by Senge (1990), as well as by Ostrander and Schroeder (1979). The latter refer to such learning as "super-learning." Senge describes accelerated learning as learning that is performed enormously faster than is considered usual. Accelerated learning is made possible through keeping the conscious mind in a quiet, nonjudgmental state of playful observation; in this state, the subconscious mind picks up new capabilities very quickly (pp. 399, 408). Ostrander and Schroeder describe super-learning in similar terms and

also describe techniques for creating the appropriate mental state for achieving such learning.

Years before these writers began presenting their ideas, Heinlein was already discussing possible approaches to accelerated learning. Indeed, even from the perspective of 1948 Robert described accelerated learning techniques in such a way that it is clear that he understood the basic psychological principles involved. That is, he wrote of the relationship between the conscious and subconscious mind as it related to such learning in a manner similar to that described by both Senge and Ostrander and Schroeder. For example, in Space Cadet (1948), we see hypnotism, a method that "tires" the conscious mind, used to accelerate learning of languages:

> Matt located the Psycho Instruction Department and was presently ushered into a small room by a bored hypno technician... "Stretch out in that chair," he was told. "Rest your head back. This is your first treatment?" Matt admitted that it was.
>
> "You'll like it. Some guys come in here just for the rest—they already know more than they ought to. What course was it you said you wanted?"
>
> "Beginning Venerian."
>
> "The technician spoke briefly to a pick-up located on his desk. "Funny thing—about a month ago [someone] was in here for a brush up on electronics. The library thought I said 'colonics" and now he's loaded up with a lot of medical knowledge he'll never use. Lemme have your left arm." The technician irradiated a patch on his forearm and injected the drug....
>
> Matt went back to his room feeling rather depressed. He had been a little afraid of hypnosis, but to find that he apparently did not react to the method was worse yet. He wondered whether... he could ever keep up with his studies if he were forced to study everything, outer languages as well, by conventional methods. (pp. 78-79)

Matt mistakenly thinks the "hypno lesson" did not work because he did not remember any part of it. When he later rebukes a Venerian classmate for using profanity, he learns differently:

> Oscar... started to curse in a strange, lisping speech. "May maledictions pursue this nameless thing to the uttermost depths of world slime!"
>
> Matt clucked disapprovingly. "Curb thy voice, thou impious fish."
>
> Oscar looked up in amazement. "Matt—I didn't know you knew any Venerian."
>
> Matt's mouth sagged open. He closed it, then opened it to speak. "We'll, I'll be a—Neither did I." (p. 79)

Heinlein apparently also toyed with ideas for rapid learning other than hypnotism. In a short passage in Citizen of the Galaxy (1957) we read, "The extremely rigorous instruction he now received, expedited by such unlikely aids as a recorder, a projector, and a sleep instructor" (p. 27). The recorder and the projector we have met before; the sleep instructor is new. The use of this term in 1957 is interesting if for no other reason than that I remember how so-called sleep learning became somewhat of a fad during the late 1960s and early 1970s. This fad was evidenced by the frequent magazine advertisements for sleep learning and subliminal learning that lasted well into the 1980s. Also interesting is that in this same novel (Citizen of the Galaxy, 1957) we learn about another technique for accelerated learning of which Heinlein was enamored, called Renshawing. The technique is named for Samuel Renshaw, a World War Two-era professor at Ohio State University:

> Samuel Renshaw.... proved that most people go all through their lives only half awake; more than that, he showed how a man could wake up and live—see with his eyes, hear with his ears, taste with his tongue, think with his mind, and remember perfectly what he saw, heard, tasted, thought. (pp. 32-33)

Heinlein talked more about Renshawing in the novella "Gulf" (1949/1953). The story describes how a secret organization of very bright and well-educated men and women recruits a new member and then subjects him to a rigorous training program that utilizes Renshaw techniques. In the story, the protagonist has been assigned a personal tutor. She begins by teaching him Renshaw methods:

> "First we must teach you to see and to hear, then to remember, then to speak, and then to think...." In their underground classroom Gail had available

several types of apparatus to record and to manipulate sight and sound. She commenced throwing groups of figures on a screen, in flashes. "What was it, Joe?"

"Nine-six-oh-seven-two—that was as far as I got."

"It was up there a full thousandth of a second. Why did you get only the left side of the group?"

"That's all the farther I had read."

"Look at all of it. Don't make an effort of will; just look at it." She flashed another number....

"What is this magic lantern gimmick?" he inquired.

"It's a Renshaw tachistoscope. Back to work."

[Lapsing into a lecture, Heinlein explained the background of Renshawing.] Around World War II Dr. Samuel Renshaw at the Ohio State University was proving that most people are about one-fifth efficient in using their capacities to see, hear, taste, feel, and remember.... Gail did not expose Gilead to the odd language he had heard until he had been rather thoroughly Renshawed. (p. 51)

As presented through Heinlein, Renshawing involves training the mind to attend minutely to sensory impressions, no matter how fleeting. The basic instrument for teaching the Renshaw approach was the tachistoscope, a device for flashing images for extremely short durations. In the above novel, the protagonist is trained to remember long strings of numbers flashed in one- or two- second intervals. According to Virginia Heinlein, Renshaw was engaged by the U. S. Government during World War Two to teach service members rapid recognition techniques for identifying types of enemy aircraft (Owenby, 1994c).

Although Heinlein was clearly enthusiastic about the possibilities of accelerated learning, Schlick-Renner and Truscott (1994) suggest that accelerated learning techniques used in adult education courses have not been demonstrated to produce better results than traditional methods. The authors also admit that more study is needed to evaluate the effectiveness of accelerated learning techniques in other settings and contexts. At any rate, Heinlein's advocacy of accelerated learning techniques was meant to stimulate inquiry into these areas. And even while Heinlein boldly explored new techniques for psychologically and technologically enhancing learning, he also

looked at ways of transforming the hidebound ways of administration in higher education.

Nontraditional/Accelerated Degree Programs

Rose (1989, p. 211) quotes Hartnett's definition of nontraditional education as a "set of learning experiences free of time and space limitations"—a definition that, while true as far as it goes, also could be said to encompass accelerated, technology-assisted, and distance modes of learning. Rose goes on to characterize nontraditional education as including "individualization through the use of learning modules, contract learning... credit for prior learning, proficiency examinations... and external degree programs" (1989, pp. 211-212). In connection to accelerated degree programs, Rose says that "for adult learners, the acceptance of prior learning credit signals a real attempt by colleges and universities to adapt the curriculum to meet their needs.... One result of this approach is the possibility of speeding up the acquisition of a college degree" (p. 219). Robert Heinlein included these aspects of both nontraditional and accelerated degree programs in his stories.

Heinlein was a graduate of a formal four-year course of engineering at the U. S. Naval Academy. Nevertheless, he was firmly on the side of nontraditional approaches to certifying the previously acquired knowledge of students in institutions of higher learning. In fact, he gave indications in some of his writings (Stranger in a Strange Land, 1961/1987; Expanded Universe, 1980; The Number of the Beast, 1980/1982) that he had lost faith in both the competence and integrity of institutions of higher learning to facilitate real educational accomplishment through their regular programs (I discuss his disillusionment more thoroughly in Chapter V).

Notwithstanding his disappointments with American higher education establishments, he did recognize that resources for learning do exist in such institutions if students are motivated to use them. In his last novel (To Sail Beyond the Sunset, 1987) he presents such a motivated student in his protagonist Maureen Johnson. Maureen first enters college in her middle years, after raising several children and later divorcing her husband. Maureen has been an avid reader and self-directed learner all her life when she presents herself for placement:

> In 1946... the first thing I wanted to do was to register as a college student... when I registered at KCU it was not as a freshman, but as a special student, then I asked for advanced standing and degree-seeking status, through examinations, and did not boggle at the high fees quoted to me for special examinations to discover just where I stood in English and American literature, American history, world history, mathematics, Latin, Greek, French, German, Spanish, anatomy, physiology, chemistry, physics, and general science. All during the remainder of that semester I took examinations steadily, cramming for the next one at night and sometimes auditing lectures across the boulevard for dessert. (pp. 255-258)

After Maureen finishes her grueling first semester of whirlwind examination-taking, she is called in to have her standing assessed and to determine her degree path.

> Toward the beginning of the summer session I was called to the office of the dean of academics, Dr. Bannister. "Please sit down, Mrs. Johnson.... your correct advanced standing is that of bachelor of arts.... We do not award that degree... simply on the basis of examinations with no time in residence. Do you expect to be on campus for the next two semesters? The academic year of 1946-47?" (pp. 258-259)

While Maureen answers in the affirmative to the dean's question, she also surprises him with the announcement that she intends to go further and study for a doctorate.

> "Indeed. In what field?"
>
> "Philosophy. Metaphysics, in particular."
>
> "Well, Mrs. Johnson, you amaze me. In your application you describe yourself as 'housewife.' "
>
> "The description is correct, Doctor.... And I assure you, there is nothing basically incompatible between dishwater and curiosity about noumena. I am a grandmother who never had time to go to college. But I cannot believe that I am too old to learn. This granny refuses to sit by the fire and knit." I added, "Dr. Will Durant lectured here in 1921. That was my initial exposure to metaphysics.... My

> father took me. I promised myself that I would resume the study of philosophy when I had time. Now I do." (p. 259)

Maureen and Dr. Bannister then discuss her willingness to have him as her academic advisor after he reveals to her that he was a professor of philosophy before he decided to go into administration. Finally, they discuss how she is to be classified.

> Suppose we call you a senior now. . . and graduate you at the end of the first semester, January '47, as a bachelor of arts, uh, major subject, modern languages, minor in—oh, what you will. Classical languages. History.... Come in tomorrow and let's start planning a course of study toward your doctorate. Most of it will have to be independent study but we will look over the catalog and see what courses could be useful to you. (pp. 260-261)

Thereupon Maureen sets off on a course of action that ultimately leads to her acquiring four academic degrees. When she has finished, she has acquired a B.A. in modern languages, a Ph.D. in philosophy, an M.S. in biochemistry, and a J.D. in law.

In examining this fictional account of an older adult entering college, we are presented with an almost textbook example of the process described by Rose (1989) for assessing prior learning in nontraditional education. According to Rose, "Adults returning to school are often faced with many hurdles, in terms of both bureaucratic and curricular requirements" (p. 211). In Heinlein's account, his character has good luck in meeting an administrator who cuts through these obstacles and streamlines her academic path.

But the account is also interesting in that Heinlein's character does not exactly follow the six step process for assessing prior learning in nontraditional education described by Rose. The six steps are, first, the identification of the learning to be evaluated; second, an analysis of the prior learning and an articulation of its relationship to the student's program of study; third, the amassing of a portfolio that documents the student's prior learning; fourth, the measurement of learning; fifth, the evaluation; and finally, the sixth step, which is the transcription of credit. In Maureen's case, she elects to begin with the measurement of past learning through examination and proceeds from there to evaluation and transcription. The important point is that Heinlein was keen to

include this account of nontraditional education of a returning older adult in his collection of learning techniques offered as examples and inspirations to his readers.

Reflections on Heinlein's Innovative Teaching and Learning Techniques

Throughout this discussion of how Heinlein both utilized and promoted various teaching and learning techniques, it has been clear that much of what he discussed was dependent on technology. Heinlein's 1940s view of future society was still essentially that of an industrial society, not the information society of today. As Boucouvalas (as cited in Merriam & Cafferella, 1991) has indicated, the machine technology of the industrial society does not create the necessary conditions for an information society. That is, the information society we have today is only made possible by computer technology. Techniques such as distance-learning, technology-assisted learning, and some aspects of accelerated learning clearly are supported by the information society we have today. Just as clearly, the information society we have today is dependent upon the advent of powerful microcomputers.

Because Heinlein, in his early stories, probably did not foresee the invention and widespread use of powerful microcomputers, it is doubtful at that time that he realized the limitations of industrial society in producing the kinds of learning machines he described so well. But even if, in phenomenological terms, Heinlein was describing applications to learning that were far beyond the technology of 1948, he was nevertheless predicting the results of, if not the exact enabling technology for, the computer-based learning industry we see today.

In the next section, I will examine some selected images of characters in Robert's fiction who have pursued or who are pursuing learning. I will explore images both of characters who are exemplars of self-directed learning and of characters who represent Heinlein's notions of what educated adults should be.

Images of Self-Directed Learners and Educated Adults

So far in this chapter, I have explored Heinlein's favorite methods of teaching and learning. Much of the discussion has tended to reinforce and even add to Heinlein's science fiction curriculum that I discussed in Chapter III. Both curriculum and

methodology can be characterized as discussions of educational means. In this third and final discussion of this present chapter, I intend to examine the ends of education as they are manifested in images of educated adults and the in learning situations in which they are embedded. I will explore images of characters who are self-directed learners first, followed by an exploration of selected images of educated adults, and I will end this section with a presentation of Heinlein's ideal educated adult—the "encyclopedic synthesist." For convenience in addressing the wide variety of issues connected to these themes, I reserve my discussion of Heinlein's self-directed characters in connection with the literature of adult education until the end of this chapter.

Images of Self-Directed Learners

Heinlein appeared to delight in creating characters who model self-directed learning (SDL). He seemed to shows his characters doing this for chiefly two reasons: first, problem-solving and, second, the sheer love of learning. In regard to self-directed learning for purposes of problem solving, I offer the following examples.

In the 1952 story "The Year of the Jackpot" (1952/1959), the protagonist is Potiphar Breen, a consulting statistician who becomes passionately interested in cyclic phenomena. Actually, the story seems to show that Potiphar became interested in cycles first out of sheer intellectual curiosity and later out of the scientist's desire to understand, describe, predict, and control. But when Potiphar begins to notice that bizarre physical and social phenomena are getting more frequent, he begins to collect and tabulate statistical data in a more targeted fashion. That is, he becomes interested in using his statistical skill and research ability to anticipate worsening conditions in order to protect himself and his lover:

> Breen.... concentrated on the odd facts... which taken singly, meant nothing, but taken together showed a disastrous trend. He listed stock market prices, rainfall, wheat futures, but it was the "silly season" items which fascinated him. To be sure, some humans were always doing silly things—but at what point had prime damfoolishness become commonplace? (p. 20)

In another example of self-directed learning for problem solving, we see Heinlein's character Hugh Farnham (Farnham's Freehold, 1964/1971) preparing for nuclear disaster in a disquieting manner reminiscent of contemporary "survivalists." This book describes an American family in the middle of the Cold War tensions of the early 1960s. Hugh Farnham is the leader of the family who anticipates the demands of post-disaster life and earnestly sets about learning in order to prepare himself to meet those demands. His self-directed learning projects include teaching himself emergency medicine, household chemistry, hunting, agriculture, radiation monitoring, sanitation, and the Russian language—all the arts of postnuclear survival from the Cold War perspective of the early 1960s.

A less apocalyptic example of self-directed learning for problem solving involves Heinlein's character David Lamb in Time Enough for Love (1973/1987)—a story based on the life of one of Heinlein's naval colleagues. Heinlein called Lamb the "man who was too lazy to fail"—a story within the novel about an extraordinarily lazy man who undertook self-directed learning projects in order to avoid pain and toil. For example, David Lamb is an enlisted sailor who applies to attend the Naval Academy in order to escape his sometimes unpleasant work assignments. Construing himself as educationally deficient, David spends the six weeks prior to the beginning of the preparatory phase of the academy in self-study to make up the three years of high school he never had attended:

> David was dropped at Hampton Roads six weeks before the tutoring school convened.... The Personnel Officer... assigned David to bunk and a mess, and told him to stay out of sight during working hours in the empty classrooms where his fellow hopefuls would meet six weeks later. David did so; the classrooms had in them the books used in tutoring in academic subjects a candidate might lack— and David lacked them all. He stayed out of sight and sat down and read. (p. 56)

David also learns how to instantly calculate the number of seconds from any given time of day to some arbitrary day in the future in order to cope with the sadism of upperclassmen who were in the habit of posing unanswerable questions for cruel sport. For the same reason, David undertakes to learn a table of the first one thousand

logarithms. According to Virginia Heinlein, the character of David Lamb was a composite of two people: Robert Heinlein and a fellow classmate, the latter of which crammed three years of high school subjects into six weeks of self-tutoring (Owenby, 1994c).

The character Mannie (Manuel O'Kelly Davis) in The Moon is a Harsh Mistress (1966/1968) is a computer technician who acquires the skills of his profession through an arduous self-directed learning project. Mannie is a lunar colonist who must change careers after he loses an arm during an ice-mining accident. Because he has always lived in the Moon's one-sixth gravity, it is not an easy task to go Earthside for computer schooling, but he goes anyway.

> How many Loonies could go Earthside and stay out of hospital long enough for computer school?— even if didn't die.
>
> I'll name one. Me. Had been down twice, once three months, once four, and got schooling. But meant harsh training, exercising in centrifuge, wearing weights even in bed— then I took no chances on Terra, never hurried, never climbed stairs, nothing that could strain heart. (p. 9)

In the novel Friday (1982/1983), the protagonist undertakes a self-directed learning project that seems at first to have no apparent practical purpose. A courier employee of a rich foundation, the purpose of which is to keep tabs on dangerous social and political trends in order to fend them off, she is assigned to use a learning computer to explore whatever she happens to be curious about. The computer has full networking and cross-referencing capability with every other electronic archive and news source in the world. Other than responding to occasional prompting questions that seem to have no reasonable purpose behind them, she is allowed to study anything and everything she pleases. "This fiddling went on for a month before it filtered through my skull that someone... was in fact trying to force me to become 'The World's Greatest Authority' " (p. 223).

After several weeks of responding to questions about such matters as whether men's beards are affected by women's skirts and gold prices, or whether black plague epidemics in the sixth, fourteenth, and sixteenth centuries resulted from political conspiracies, she gradually learns how to correlate widely divergent data into useful

answers. The culmination of her rambling-but-self-directed-learning comes about when she is awakened in the middle of the night and asked to immediately predict the time and place of the next major epidemic of black death—which she does.

In a sense, Friday represents a kind of transitionary example of self-directed learning in that what was ostensibly a learning project undertaken for the sake of curiosity is gradually transformed into a learning project whose fruits are very much practical. It seems very much as if Heinlein was making the point in Friday that learning for curiosity's sake (pure research) is often more practical than "practical" learning projects; that is, learning for curiosity's sake often results in fewer blinders and preconceptions.

In regard to characters who undertake self-directed learning projects for the sheer love of learning— for curiosity's sake— one can start with Potiphar Breen in the 1952 story "The Year of the Jackpot" (1952/1959). Besides being a self-directed learner in regard to trends and cycles, Potiphar is very much a delighted, self-directed learner in regard to astronomy. He really enjoys astronomy more than his vocation of statistical consulting because it allows him to more thoroughly indulge his love of mathematics. When Potiphar and his lover Meade are packing his car to escape a disaster-bound Los Angeles, he does not neglect his hobby:

> He went to a shelf over his desk and began taking down small, sober-looking magazines. "I dern near left behind my file of The Western Astronomer and of the Proceedings of the Variable Star Association. "
>
> "Why take them?"
>
> "Huh? I must be nearly a year behind on both of them. Now maybe I'll have time to read." (p. 27)

Later, safely nestled with Meade in a cabin in the mountains, he continues his love of astronomy and mathematics with his daily read in his accumulated journals:

> He sighed and pulled the November 1951 copy of The Western Astronomer out of his pocket. Where was he? Oh, yes, Some Notes on the Stability of G-Type Stars with Especial Reference to Sol, by A. G. M. Dynkowski, Lenin Institute... Good boy, Ski— sound mathematician.... He... continued on to the end of the

article, being anxious to finish before the light failed.... his mood was sheerest intellectual pleasure at the man's tight mathematical reasoning. (p. 36)

Similarly, we see in Hugh Farnham of Farnham's Freehold (1964/1971) not just a self-directed learner for the sake of practical matters, but someone who loves learning for other reasons. In particular, Hugh loves books— as demonstrated in a scene following a nuclear disaster:

> Someone had put the books back on shelves but some were open to dry; he fluffed those, hoped for the best.
>
> The last books in the world.... Most of his collection was functional: The Encyclopedia Britannica.... The Boy Scout Handbook.... The Practical Carpenter— all sound books, of the brown and useful sort.
>
> But Hugh Farnham was more in love with his other nonpractical books:
>
> The Oxford Book of English Verse, A Treasury of American Poetry, Hoyle's Book of Games, Burton's Anatomy of Melancholy, a different Burton's Thousand Nights and a Night, the good old Odyssey with the Wyeth illustrations, Kipling's Collected Verse, and his Just So Stories, a one-volume Shakespeare, the Book of Common Prayer, The Bible, Mathematical Recreations and Essays, Thus Spake Zarathustra, T. S. Eliot's The Old Possum's Book of Practical Cats, Robert Frost's Verse, Men Against the Sea—
>
> He wished that he had found time to stock the list of fiction that he had started. He wished that he had fetched down his works of Mark Twain regardless of space. He wished—
>
> Too late, too late. This was it. All that was left of a mighty civilization. "The cloud-capped towers—" (pp. 83-84)

In the juvenile novel Time for the Stars (1956), Heinlein showed us two examples of self-directed learners amidst the crew of the interstellar exploration vessel Lewis and Clark. Tom Bartlett is one-half of a telepathic pair of twins; his job aboard ship is to communicate telepathically with his Earthside twin. Unbeknownst to Tom, his Uncle Steve is also aboard ship as commander of the ship's guard. After surprising Tom with his presence, he manages to surprise him another way when Tom discovers the ship is

setting up regular hours for schooling. Tom's watch leader, "Uncle Alfred," is an aging black South African who also surprises Tom with his enthusiasm for learning:

> Uncle Alfred tried to sign up for everything, which was impossible, even if he didn't eat, sleep, nor stand watch. He had never, he told me, had time for all the schooling he wanted and now at last he was going to get it. Even my real uncle, Steve, signed up for a couple of courses. I guess I showed surprise at this, for he said, "Look, Tom, I found out my first cruise that the only way to make space bearable is to have something to learn and learn it. I used to take correspondence courses. But this bucket has the finest assemblage of really bright minds that you are ever likely to see. If you don't take advantage of it, you are an idiot. Mama O'Toole's cooking course, for example: where else can you find a Cordon Bleu graduate willing to teach you her high art free? I ask you."
>
> I objected that I would never need to know how to cook high cuisine.
>
> "What's that got to do with it? Learning isn't a means to an end; it is an end in itself. Look at Uncle Alf. He's as happy as a boy with a new slingshot." (p. 70)

Perhaps one of Heinlein's best exemplars of self-directed learning is the character Maureen Johnson, the protagonist of his last book To Sail Beyond the Sunset (1987). Maureen is a woman who comes of age at the close of the nineteenth century, marries, bears several children, later divorces her husband, and then embarks upon a quest for higher education. At the beginning of her married life, she is directing her learning towards the practical needs of both her husband's career and her household when she announces her intention to go to Kansas City Business College:

> I want to spend the next few months... learning to use a typewriter and to take Pittman shorthand. Then, if you ever become ill... I could work in an office and support us... and if you ever go into business for yourself, I could do your office work. That would save you hiring a girl and maybe get us past that tight spot the books say every new business has. (p. 111)

But Maureen's real energy behind her self-directed learning projects is simply her love for learning. This is clear from the loving way in which she speaks of her collection of books. It is also clear in Heinlein's description of how she manages to attend a

seminar in General Semantics in Chicago in 1940 given by Count Alfred Korzybski and S. I. Hayakaya. It is made even more explicit when, as a housewife, she decides in 1921 and 1922 to attend public lectures by Will Durant on philosophy. When she later decides to pursue a doctorate in philosophy, she makes clear that she is simply carrying on with the self-directed learning project she had begun 25 years earlier:

> "I purpose asking to be accepted as a candidate for a doctor's degree.... [in] Philosophy. Metaphysics, in particular.... I am a grandmother who never had time to go to college. But I cannot believe that I am too old to learn. This granny refuses to sit by the fire and knit." (p. 259)

Maureen is a fitting character with which to conclude this incomplete list of Heinlein's self-directed characters for she not only is perhaps the most vivid exemplar of self-directed learning, but she was also the protagonist of his very last book.

In the next part of this section, I turn to examining some selected images of educated adults. Although in discussing images of self-directed learners, I have also been presenting images of educated adults, my purpose in the next part is somewhat different. I propose to examine images that depict the personality and character of Heinlein's educated adult.

Heinlein's Educated Adult: Some Selected Images

Over and over again in Heinlein's stories and novels, we are brought face to face, as it were, with highly educated adult characters. Many of these characters fall into the pattern of older adults who act as mentors to the younger characters, yet certainly not all of them do so. Indeed, as I pointed earlier in this chapter, Heinlein seemed to use many of his educated adult characters as mentors to the reader rather than to other characters. In this chapter, I intend to present some selected images of Heinlein's educated adult and show some features of these characters.

In Heinlein's very first story ("Life-line," 1939/1967), we are presented with an image of an educated adult in the character of Dr. Hugo Pinero, inventor of the famous "chronovitameter"—a device for predicting the exact date of a person's death. In the opening scene of the story, Pinero is defending his invention before the self-serving

members of the Academy of Science. He is doing so with a combination of urbanity, insolence, and wide-ranging knowledge of the various disciplines represented by the members of the Academy—from philosophy to medicine to physics.

Leaving the Academy, we find Pinero consorting in a familiar and down-to-earth way with newspaper reporters, to whom he explains his invention without condescension. In consulting with a young married couple later, he displays a charming old-fashioned courtesy bordering on courtliness to the couple in a futile effort to thwart the death that he knows awaits them on the street below. Knowing the date of his own death, Pinero enjoys his last meal, a gourmet meal enhanced by a delicious Fiori d'Alpini liqueur, followed by a cigar.

Now, from these and other descriptions of Pinero provided by Heinlein, it is possible to discern from this image the following features. First of all, Dr. Pinero is not merely a specialist in his field but is also a man of wide-ranging knowledge of other fields. He is a reader of both philosophy and history as evidenced by his ability to give a concise history of the scientific method versus scholasticism. He displays a wide experience of life— and the common touch— as evidenced by his remark to newspaper reporters that "I used to be a newspaperman myself" (p. 19) followed by his billiard-room style of hospitality towards them, and by his account of his youthful travels to Tierra del Fuego. He displays zest for life combined with cultivated taste as evidenced by delight in gracious socializing and his gourmet tastes. He also displays the manners and courtesy of a gentleman in both his dealings with the young couple who came to consult him, and with his own housekeeper. Finally he displays an intense sympathy and remorse for the tragedies that befall his fellow human beings. This is evidenced by his refusal to keep his remaining appointments of the day following his inability to prevent the deaths of the young couple who had consulted him.

In Heinlein's novel Beyond this Horizon (1942/1948), he presented us with an image of another educated adult in the character of Mordan. Mordan is the district "moderator" of a future North American metropolis. Among his other responsibilities, Mordan is charged with administering the voluntary child planning and genetics program for the citizens of his district. Mordan had risen to his position as a consequence of his ability in integrating disparate data, and his talent for perfect recall. These qualities are prerequisite for the occupation of "encyclopedic synthesist."

"Encyclopedic synthesist" is Heinlein's term for the practitioner of that emerging discipline which he believed is required for humanity to intelligently coordinate and apply its increasingly unwieldy mass of knowledge. In essence the goal of the encyclopedic synthesist is to become a self-directed learner for specific practical and professional reasons. For example, the character Mordan is a member of the profession of social planners, a role so demanding that it requires an encyclopedic perspective in order to perform it properly. Heinlein believed that encyclopedic learners are required for dealing with the explosion of human knowledge this century.

But Mordan is also a wielder of political power in his role as district moderator which, combined with his impressive intellectual ability and training, places him squarely within the role of Plato's philosopher-king (The Republic, 4th century B.C.E./1968). Besides Mordan's impressive intellectual ability, he also possesses an equanimity that allows him to cooly manage the bloody crisis that ensues as a result of the attempted putsch of the members of the Survivors Club. The Survivors Club is a fascist organization dedicated to overthrowing the existing society. In his efforts to persuade the main character, Hamilton Felix, to cooperate in a child planning project, he demonstrates the broadness of mind necessary for appreciating the intense inner philosophical difficulties with which Hamilton has been struggling.

In Heinlein's postwar story "It's Great to be Back" (1947/1967), he presented us with the McCraes, a couple who has decided to return to Earth after living three years on the Moon as contract employees. They initially believe they are glad to be back on Earth, but soon begin to miss the civil, courteous, good-tempered, and well-informed lunar colonists they had gotten used to living with. After a difficult bout with the malicious townspeople in the community in which they had settled, they decide to return to the Moon:

> "I miss the folks in dear old Luna. They're civilized."
>
> She nodded. "I guess it's prejudice, but I feel the same way."
>
> "It's not prejudice. Let's be honest. What does it take to get to Luna City?"
>
> "A ticket."
>
> "Smarty pants. I don't mean as a tourist; I mean to get a job there. You know the answer.... High I. Q. , good compatibility index, superior education—

everything that makes a person pleasant and easy and interesting to be around." (p. 316)

And so the McCraes would seem to present an image of the educated adult as a civilized and civilizing person, not just one who happens to be well-informed.

In his juveniles, Heinlein presented several images of educated adults as role-models for the boys and girls for whom he was writing. One of these is the character of George Lermer, widower father of Bill Lermer, the protagonist of Farmer in the Sky (1950). George is an engineer by training and occupation, but an engineer with broad interests and horizons, as well as civilized values.

For example, in the future world of this novel, Earth's huge population is pushing the limits of food production. When Bill complains that a nation on the other side of the world is irresponsibly allowing its citizens to have more children than they ought, and therefore ought to be penalized by having less food rather than more, George reminds him that humanity must "share and share alike" (p. 4). When Bill is rude towards his father's new wife and her daughter, his father is deeply hurt by his son's actions. Nevertheless George refuses to lash back at his son, trusting in Bill's natural sense of justice to eventually prevail over his resentment of his new stepmother and stepdaughter. George also displays a calm, pragmatic approach towards the problems and setbacks faced by his family after they emigrate to a frontier planet.

In the juvenile novel Between Planets (1951), we are presented with an exotic image of an educated adult in the character of physicist Sir Isaac Newton, a dragon-like native of Venus. Perhaps the distinguishing feature of Sir Isaac is his unfailing good manners towards all. Besides his habitual courtesy, the centuries-old dragon displays a calm, open, and tolerant outlook towards the ideas, opinions, and lack of experience of others. On top of all else, Sir Isaac insists on hospitality first when he receives Donald Harvey, the protagonist, into his home—in spite of the fact that Donald is carrying an incredibly important item for which Sir Isaac and his colleagues, both human and dragon, have been desperately searching.

Another image of an educated adult is the character of Dr. Hendrix, senior astrogator of the starship Asgard in the juvenile novel Starman Jones (1953/1975), who acts as a mentor to Maxmillian Jones, the protagonist. Dr. Hendrix is remarkable not just for his mathematical skill and knowledge but for his meticulous devotion to his

profession. As a result of his mentoring, he succeeds in inculcating his love for his profession into Max as well. But Dr. Hendrix is meticulous not just in matters of professional competence, but also in personal and professional ethics. He demonstrates his ethical standards in his confrontation with Max over a matter of forgery and deceit:

In spite of the vast social distance between Dr. Hendrix and Max, he displays a pragmatic egalitarianism toward Max when he decides that Max should be commissioned as a ship's officer on the grounds that Max has the ability and that he, Dr. Hendrix, badly needs another watch officer:

> I don't suppose a young, penniless tramp, such as you described yourself to be, can afford the luxury of dignity. As for the rest, human personality is a complex thing, nor am I a judge.... I am concerned only with whether you have the qualities I need.... Don't misunderstand me... I don't like this. I don't like it at all. But perhaps you can live down your mistake. In the meantime, I badly need another watch officer; if you measure up, I can use you. (Starman Jones, 1953/1975, p. 119)

Dr. Hendrix also demonstrates his wide knowledge of many matters: of Shakespeare when he tests Max's photographic memory; of the Bible when he confesses his personal fault as being the sin of the Pharisees; of history and psychology when he compares Max with historical figures such as Lord Nelson and Abraham Lincoln.

In Tunnel in the Sky (1955), the protagonist's older sister Helen Walker presents an interesting image of the educated adult. In the future depicted by this novel, it is women which comprise the armed forces, and Helen Walker is the captain of an infantry company called "Walker's Wolverines." Helen manifests all the characteristics of a competent, assured, and tough-minded military officer. More than just a warrior, she has been educated in logic, psychology, and physics; added to which, she has the experience of hard lessons and association with many different personalities. It is from this foundation that first, she becomes her brother Rod's guardian; second, that she advises him how best to take the final test of his Outlands Survival course; and third, that she counsels him on how to reenter society after his rescue after a two year long adventure.

In another example, Dr. Samuel Russell is the father of Kip, the protagonist in Have Space Suit—Will Travel (1958). Dr. Russell is the main character in Kip's life in the first part of the book because he transforms Kip's education at his high school. Dr. Russell is a "mathematical psychologist" who writes such papers as "On the Statistical Interpretation of Imperfect Data." He previously did clandestine work for the government, but chose to settle in a small town in Colorado for the sake of his son's childhood. Two of the outstanding characteristics of Dr. Russell are his calm demeanor and his resolute will. As Kip says, "Nothing fazed Dad, he meant what he said, he wouldn't argue and he never gave in" (p. 4). Dr. Russell allows Kip an extraordinary degree of freedom in his son's pursuit of his hobbies, both electronics and chemistry—including manufacturing explosives. His father is also a matter-of-fact person who accepts facts for what they are, rather than second guessing them.

To act as mentor to the character of Michael Valentine Smith in Stranger in a Strange Land (1961/1987), Heinlein created the character of "Jubal E. Harshaw, LL.B., M.D., Sc.D., bon vivant, gourmet, sybarite, popular author extraordinary, and neo-pessimist philosopher" (p. 81). Harshaw undertakes to educate Michael in the ways of humankind, mostly by allowing him enormous freedom in what he may read and view among the resources in Harshaw's home. When Michael becomes stumped by something he does not understand, he comes to Harshaw to ask questions. Harshaw presents a stark contrast to many of Heinlein's earlier characters in that he appears to be less tolerant, more cynical, and less courteous. At the same time, Harshaw resembles Heinlein's earlier characters in his equanimity, his urbanity, and his broad knowledge and interests.

Heinlein returned to the pattern of his earlier characters with the character of Professor Bernardo de la Paz in The Moon is Harsh Mistress (1966/1967). De la Paz is first presented during a political rally in which he courteously interrupts the main speaker in order to disagree with the speaker's message:

> I heard familiar voice: "Mr. Chairman! May I have the indulgence of the house for five minutes?"
>
> I looked around. Professor Bernardo de la Paz— which could have guessed from old-fashioned way of talking even if hadn't known voice. Distinguished man with wavy white hair, dimples in cheek, and voice that smiled— don't know how

> old he was but was old when I first met him, as a boy.... I liked Prof. He would teach anything. Wouldn't matter that he knew nothing about it; if pupil wanted it, he would smile and set a price, locate materials, stay a few lessons ahead. Or barely if he found it tough— never pretended to know more than he did. Took algebra from him and by time we reached cubics I corrected his problems as often as he did mine— but he charged into each lesson gaily... I started electronics under him, soon was teaching him. So he stopped charging and we went along together until he dug up an engineer willing to daylight for extra money— whereupon we both paid new teacher and prof tried to stick with me, thumb-fingered and slow, but happy to be stretching his mind. (p. 23-24)

What is so very remarkable about the character of de la Paz is that he was originally a university professor of history from Lima, Peru. But he is no mere book-bound academic; he is also a political revolutionist who knows how to convert political ideas into plans and activities.

What is chiefly evident in these several images of educated adults in the characters of Heinlein's fiction are just those qualities found in Professor Bernardo de la Paz. Among his many characteristics are his unfailing good manners, his broadmindedness, his inventiveness under duress, his pragmatic flair for discovering the most effective course of action in a given situation, his broad knowledge in many areas, and his openness to new ideas and circumstances. These composite images comprise a grand image of Heinlein's educated adult. Heinlein was himself an encyclopedic-synthesist-in-training who not only undertook SDL projects for professional reasons, but also for that genuine love of learning that characterizes the learning personality. In that sense, we can say that most of the images of educated adults occurring in Heinlein's stories are variations on Heinlein himself.

So much for Heinlein's self-directed characters. I will now attempt to link the three major discussions in this chapter—Heinlein's methods of teaching his science fiction readers, the innovative teaching and learning methods he promoted in his books, and selected images of Heinlein's self-directed and educated adults—to the adult education literature dealing with teaching, adult learning perspectives, and the specific literature of self-directed learning.

Relating Heinlein to Conceptions of Teaching

Many adult educators have written about specific approaches to teaching adults. These include Kidd (1973), Knowles (1980, 1984), Cross (1981), Knox (1986), Hiemstra and Sisco (1990), and Brookfield (1991). But for my purposes of a ready taxonomy of various approaches to teaching adults, I have chosen to use Pratt's (1992) five conceptions of teaching. I will now attempt to relate Heinlein's teaching methods to Pratt's teaching conceptions which grew out of his cross-cultural study of conceptions of teaching in Canada, China, Hong Kong, Singapore, and the United States.

As Pratt said, "Conceptions of teaching are, like other conceptions, anchored in cultural, social, historical, and personal realms of meaning. To 'teach' means different things depending upon one's values, beliefs, and intentions" (1992, p. 203). Heinlein's "teaching" is to be understood through the methods he used to engage his readers. Pratt describes five conceptions of teaching in his description of an international study of 253 adults. These are the engineering, apprenticeship, developmental, nurturing, and social reform conceptions. It is my contention that Heinlein's teaching has connections to all five, but to differing degrees. I will begin with the engineering conception.

The Engineering Conception of Teaching: Delivering Content

Pratt describes the engineering conception of teaching as primarily that of delivering content in which "the dominant elements were the teacher and the content; the dominant relationship between elements was that of teacher-to-content, that is the teacher's concern for and authority over that which was to be learned" (p. 210). It is an approach that is "primarily 'teacher centered' with a heavy emphasis on the transmission of information" the learning of which can be "measured in terms of specific competencies and/or the mastery of a body of knowledge" (p. 210).

Heinlein's teaching can be related strongly to Pratt's engineering conception in regard to both ends and means. Much in the same spirit as Blakely's (1958/1984) Promethean cleverness (see also Chapter III)—particularly as it relates to technological mastery—Robert seemed clearly to view much of the purpose of teaching and learning as the mastery of discrete bodies of knowledge for the purpose of achieving individual

competencies. (See also Chapter V for a more thorough discussion of Heinlein's philosophy of education.)

In regard to the means of teaching, Heinlein also exemplified the engineering conception of teaching. For example, Heinlein's recurring use of the lecture method to deliver micro-lessons to both his readers and his characters clearly seems to be an instance of Pratt's description of the teacher centered approach with its "heavy emphasis on the transmission of information" (1992, p. 210). In addition, Robert's descriptions of correspondence courses in such novels as The Rolling Stones (1952) and the shipboard adult education classes in Time for the Stars (1956) both have an emphasis on the transmission of information. The latter example also demonstrates the teacher centered approach of the engineering conception as well. Pratt's second conception also focuses on the teacher, but in a different way.

The Apprenticeship Conception: Modeling Ways of Being

Pratt describes the dominant elements of the apprenticeship conception as the teacher and the content, similar in that respect to the engineering conception. However, unlike the engineering conception in which the teacher and the content exist as discrete elements, in the apprenticeship conception "the teacher was understood to exemplify the values and knowledge to be learned" (p. 211). In the apprenticeship conception "a body of established wisdom and knowledge exists, in the form of expert practitioners, and is to be handed down from those who know, to those who don't know" (pp. 211-212).

Heinlein's mentoring method comes to mind here. Indeed, Pratt, says the apprenticeship conception was often voiced "by people operating... within... mentor relationships" (p. 213). I have said that Heinlein used characters to mentor other characters and that through those fictional mentoring relationships, the reader is indirectly mentored as well. Heinlein may have used mentoring quite as much as he used lecturing in his stories.

An interesting aspect of Heinlein's mentors is that, like Pratt's examples, they use the apprenticeship conception to teach across a wide range. Pratt mentions the apprenticeship conception operating in Asian and American Native cultures especially in regard to "the modeling of values" (p. 212). Some of Heinlein's major characters teach in this way, for example, Baslim the Cripple in Citizen of the Galaxy (1957). Pratt

(1992) also says that "craft knowledge" is embedded along with values "in the actions of the practitioner" (p. 212). Further, "learning was understood to be contextual" especially when related to "a trade, profession, political party... or other collective group" (p. 212). This immediately brings to mind Heinlein's characters Dr. Hendrix in Starman Jones (1953/1975) and Mr. Bonforte in Double Star (1956/1957).

The Developmental Conception: Cultivating the Intellect

In contrast to the previous two conceptions, the dominant elements in the developmental conception are the learner and the teacher. Pratt describes the developmental conception as promoting "particular forms of inquiry and thought about the content" in which teachers "saw themselves as facilitating the intellectual development and personal autonomy of their students" (p. 213). Pratt also explains, "Central to this conception was a belief in the existence and potential emergence of increasingly complex forms of thought as individuals developed" in which the teacher's responsibility was to "identify forms and thresholds of understanding and thinking as the starting point for teaching" and to "prepare people to deal with unpredictable and complex situations" (pp. 213-214).

Heinlein's writings supply examples of this conception as well. In fact, some of Robert's characters who teach within this conception are also mentors. For example, Lt. Wong in Space Cadet (1948) declares to his pupil Matt Dodson that his job is to learn how to think and evaluate properly. Matt is coaxed through a series of academic and practical experiences until he finds himself becoming a different person. When Wong asks Matt about a class he's teaching, he replies, "It seems funny to be teaching it instead of flunking it." Wong answers, "That's why you're stuck with it—you still remember what it was that used to stump you and why" (p. 135).

In an example from Starship Troopers (1959/1968), Heinlein described the developmental journey of Juan Rico, the protagonist, who is lead through "deep, soul-turning readjustments and re-evaluations" (p. 73) by his instructor in history and moral philosophy. I suspect that Heinlein's overall conception of teaching may have more to do with the developmental conception than any other. I say this because of my belief that what Heinlein really wanted to accomplish in his readers was an inner transformation—not just more knowledge. That is, to help his readers "become sophisticated without

becoming cynical" (I Will Fear No Evil, 1970/1987, p. 473). But this approach also bears resemblance to Pratt's (1992) nurturing conception.

The Nurturing Conception: Facilitating Personal Agency

Pratt describes this conception as "learner-centered but focused on the learner's self concept and sense of being in control of life's events" (1992, p. 214). In this conception the dominant elements, like the developmental conception, "were the learners... and the teacher" (p. 214). However, unlike the developmental conception which focuses on the learner's intellect, the nurturing conception focuses on the learner's self-concept in which the teacher is concerned with "friendship, caring, emotional support, and personal relationships" (p. 214).

Two examples from Heinlein's writings readily come to mind in connection with this nurturing conception of teaching. One example has already been cited in connection with the apprenticeship connection—Baslim the Cripple from Citizen of the Galaxy (1957). Baslim purchases a lad named Thorby at a slave auction to save him from a worse master and adopts him as a son. But Thorby had been emotionally, physically, and sexually abused. Before Baslim can even begin tutoring Thorby in the three R's, he must labor at rehabilitating Thorby's personality. By patience and kindness, Baslim provides a curriculum of "friendship, caring, emotional support, and personal relationships" (Pratt, 1992, p. 214) for the lad.

The second example is Jubal Harshaw of Stranger in a Strange Land (1961/1987)—whom I cited earlier in this chapter as an example of a mentor. Although Jubal does act as a mentor to Michael Valentine Smith, the protagonist, he probably spends more time—along with Jill Boardman, Mike's other mentor—teaching Mike (as well as being taught by him) how to develop relationships of "mutual trust, rightful dignity, and reciprocal respect" (p. 215). Interestingly, many—if not all—of Heinlein's self-directed characters can be characterized as having nourished others or having been nourished by others through this conception of teaching (along with the developmental conception as well). That is not unexpected when we consider that the nurturing conception is connected most strongly with andragogy and self-directed learning (p. 216).

The Social Reform Conception: Seeking a Better Society

Pratt's fifth and final conception of teaching is the social reform conception. This conception works out of "an explicitly stated ideal or set of principles" that are "linked to a vision of a better social order" and which guides "the person's teaching" (p. 216). The social reform conception is not limited to a specific ideology but can emerge from ethical systems, religions, or political parties. The point is that the "dominance of explicit ideals" (p. 216) overshadows all other elements in the teaching model. The teaching process is "framed from within a conviction that this ideal was appropriate for all people and necessary for a better society" (p. 216). Pratt points out that although all teaching conceptions are implicit ideologies, in the social reform conception the ideology is made explicit and central.

Selecting an example from Heinlein to illustrate the social reform conception is somewhat problematic. Not because there are no examples of Heinlein characters who teach from explicit ideological commitments, but because I believe the example should be balanced by Heinlein's often stated distrust of social reform ideologies (see for example Schulman, 1973/1990 and Friday, 1982/1983). That being said, a clear case of teaching involving socially prescriptive ideologies came from Heinlein himself in Starship Troopers (1959/1968)—a polemical novel proposing a new ethical basis for government, military service, and citizenship. Were it not for that novel, I would be tempted to declare that the social reform conception is least characteristic of Heinlein's usual approaches to teaching. With that novel—and especially considering the defense he later made of it and its ethical theory (Expanded Universe, 1980)—I am tempted to say that the social reform conception became his most characteristic conception of teaching after 1959. In the next section, I change focus from perspectives of teaching to those having to do with adult learning.

Relating Heinlein to Adult Learning Perspectives

In the previous section, I focused on relating Heinlein's depictions of teaching to Pratt's (1992) taxonomy of teaching conceptions. In this section, I want to focus on relating Heinlein's images of teaching and learning to contemporary perspectives of adult learning in the adult education literature. This discussion will focus primarily on

andragogy and its related concepts, but I will also attempt to briefly link Heinlein to other adult learning issues as well.

Heinlein, Andragogy, Freedom, and Self-Determination

To begin with, the methodology of adult education has in recent years often been focused on the concept of andragogy. Although Lindeman is generally credited with first introducing the concept of andragogy to the United States (Stewart, 1987), it is now inextricably connected with Knowles' (1980) use of the term in contrasting his theory of adult education with the theories of education usually associated with primary and secondary schooling. The basic ideas of andragogy as put forth by Knowles include the following seven elements (Knowles, 1980; Pratt, 1993): (1) climate setting, (2) involving learners in mutual planning, (3) involving participants in diagnosing their own needs for learning, (4) involving learners in formulating their own learning objectives, (5) involving learners in designing learning plans, (6) helping learners carry out their learning plans, and (7) involving learners in evaluating their own learning.

There is clearly a large element of self-directedness in that conception of andragogy. And while there is disagreement about some aspects of self-directedness with regard to adult learning, there yet appears to be agreement that the learner's dignity and freedom must be respected (Brockett & Hiemstra, 1991; Candy, 1991). In addition, the literature of critical thinking supports the freedom and dignity of the learner as well (Adler, 1986; Brookfield, 1993; Dewey, 1939; Mezirow, 1990, 1996).

On the other hand, feminist pedagogy challenges the individualistic and self-deterministic motif implicit in andragogy in favor of more relational aspects of learning that are more characteristic of women's ways of knowing (Belenky, Clinchy, Goldberger, and Tarule, 1986; Tisdell, 1993). Similarly, critical adult education also challenges the individualistic self-determination implicit in andragogy in favor of ways that help people critique the forces that oppress them and which allow them to connect with others in ways that support social change (Collins, 1991; Welton, 1993a, 1993b). However, both feminist pedagogy and critical adult education are also opposed to overly authoritarian modes of teaching that work to silence the voices of learners.

Yet, Heinlein's favored methods of teaching and learning cannot help but show more than a simple approach to educational technique; they show the whole force of the

writer's world view as well (and vice versa, which is the basis for my rather extensive discussion of Heinlein's philosophical ideas in Appendices D through I). And Heinlein's world view held several values together in a kind of creative tension. As Pratt (1992) points out,

> It is clear that learners experience more than the mechanics of teaching activities, that is, the roles, rules, and procedures of teaching methods. They also experience the teacher's ideas and judgment as to which information will be examined, what sources will be respected, and whose frames of reference will guide the emergence of knowledge. (p. 217).

And so it is with the readers of Heinlein's science fiction. Heinlein's readers experience not only his distinctive style of teaching, they also experience the "teacher's ideas and judgment as to which information will be examined" (Pratt, 1992, p. 217). What are these ideas and judgments?

Heinlein, with his uncommon emphasis on the freedom and dignity of human beings, I speculate would have agreed with Knowles' (1984) precepts of andragogy that adults must be respected as free and autonomous individuals. Yet I suspect he likely would have disagreed that directive "high-tell" teaching methods—for example, lectures—could not be made to work with adults as well—especially in light of his penchant for lecturing.

By the same token, I suspect Heinlein would likely have agreed with the self-directed learning literature when that literature says that adults can still be self-directed even when they ask to be taught (Brockett and Hiemstra, 1991; Candy, 1991). In fact, Heinlein said that a mature, self-directed adult knows when to seek and accept direction from others (Time Enough for Love, 1973). Even Horton said that a teacher cannot simply be a facilitator of another's learning. One cannot teach another unless one knows something that the other does not.

> There's no such thing as just being a coordinator or a facilitator, as if you don't know anything. What the hell are you around for, if you don't know anything. Just get out of the way and let somebody have the space that knows something, believes something. (Horton and Freire, 1990, p. 154)

Like Horton, Heinlein placed great emphasis on the idea that before the learner can learn from another person, that other person must have something to teach and must be competent to teach it.

Relating Heinlein to Other Adult Learning Perspectives

I suspect Heinlein might also have agreed with some ideas from the literature of critical thinking and reflection. And I suggest he would have done so for the reason that critical thinking and reflection promotes consciousness-raising, self-awareness, and practical intelligence—one of the goals of Dewey's (1939) approach to critical thinking as well. That also seems to have been Heinlein's goal in the discussion group approach to teaching and learning that I touch on later in Chapter V. But it is not clear that Heinlein understood the principle of shared inquiry in discussion which figures so strongly in Adler's (1986, 1988) maieutic approach to adult learning. Still less is it clear that he understood the concept of transformative learning (especially its collaborative elements) as it has been expounded by Mezirow (1990, 1991)—which I mention in connection with philosophy of adult education in Chapter V.

With regard to feminist pedagogy, Heinlein had little to say in those passages quoted in this chapter that provides much insight about his views. Insofar as he said anything, I suspect he would have been much more in sympathy with gender feminism than Tisdell's (1993a, 1993b) liberatory feminism. Heinlein's "Delilah and the Space Rigger" (1949/1967), The Number of the Beast (1980/1982), Friday (1982/1983), and To Sail Beyond the Sunset (1987) help shed light on Heinlein's equity view of women's rights. Nevertheless, he did seem to recognize the different consciousnesses of women in regard to how power is viewed and used. For example, in Beyond this Horizon (1942/1948), he points out that fascism is a typically male perspective that women generally have little emotional sympathy for. He also experimented with the self-transpositioning of men into women's consciousness in the female characters of "—All you zombies—" (1959/1961) and I Will Fear No Evil (1970/1987).

Nevertheless, I suspect Heinlein would have had little sympathy with the emphatically relational form of social consciousness that is characteristic of feminist pedagogy (Belenky, Clinchy, Goldberger, and Tarule, 1986; Tisdell, 1993). Instead, he appeared to favor cooperation of autonomous individuals in a hierarchically-ordered

meritocracy— a world view that has been characterized as distinctively masculine (Gilligan, 1982). More is said about Heinlein's attitudes in respect to gender in Appendix G.

In attempting to relate Heinlein to critical social theory, he did appear to recognize the need to critique oppressive forces in some of his stories. For example, John Lyle, protagonist of Heinlein's very first novella "Logic of Empire" (1940/1967) must critique the social structures under which he grew up. That he is able to achieve a new consciousness allows him to join the struggle for political and civil liberty in a future religious tyranny. Similarly, the protagonists of Between Planets (1951), Starman Jones (1953/1975), and Citizen of the Galaxy (1957) must undergo transformations of social consciousness before they can complete their personal journeys. Nevertheless, most of Heinlein's characters are "privileged" and from the viewpoint of critical theory, would have little reason to practice critical reflection on the forces that oppress them for the simple reason that most Heinlein characters do not seem to feel oppressed. (I discuss philosophical approaches to adult education more thoroughly in Chapter V). This characteristic of Heinlein's characters leads to the next section, in which I relate the images of Heinlein's self-directed and educated learners to the literature of adult education.

Relating Heinlein's Images of Self-Directed Learners and Educated Adults to the Literature of Adult Education

Although I doubt that Robert Heinlein was aware of the literature of self-directed learning (SDL), his characters clearly can be related to many of the definitions of SDL. Apart from the formal definitions of SDL, Heinlein's characters and images appear to emphasize some elements of self-directedness more than others. In this section, I will relate Heinlein to both the standard definitions of SDL and to the discussion of the essential nature of SDL.

Relating Heinlein to Definitions of Self-Directed Learning

How do Heinlein's images of self-directed learning (SDL) relate to the established definitions of SDL? Some of the traditional ways of defining SDL are actually

orientations to SDL which can be loosely categorized as operational, process, personal, and contextual (Brockett and Hiemstra, 1991). The operational orientation comes out of Tough's (1979) foundational research in adult learning projects, which goes back to the mid 1960s. Tough's concept of self-planned learning includes the idea of the discrete learning project, which is

> a series of related episodes, adding up to at least seven hours. In each episode, more than half of the person's total motivation is to gain and retain certain fairly clear knowledge and skill, or to produce some other lasting change. (p. 7)

Following Tough's research, and influenced by Lindeman's (1926/1961) writings which regarded adult education as having no place for "authoritative teaching, examinations which preclude original thinking, rigid pedagogical formulae (p. 7)," came the orientation for SDL offered by Knowles (1975). This orientation, often called the process orientation, looks at SDL as

> a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying... resources for learning, choosing and implementing... learning strategies, and evaluating learning outcomes. (p. 18)

The personal orientation is concerned with the characteristics of the learner, that which enables her or him to be self-directing. Kasworm says that self-directed learning "represents a qualitative evolvement of a person's sense of cognitive orientation and developmental readiness for ambiguous and nondefined actions" (as cited in Merriam & Caffarella, 1991, p. 215). Another perspective on the personal orientation is offered by Brookfield (1991), who tells us that SDL can refer to a particular internal change of consciousness:

> In this... sense... learners come to regard knowledge as relative and contextual, to view the value frameworks and moral codes informing their behaviors as cultural constructs, and to use this altered perspective to contemplate ways in which they can transform their personal and social worlds. (p. 47)

What can be called the contextual (or instructional setting) orientation is offered by Brookfield (1991) as

> the activity of acquiring skills and knowledge with a minimum of professional assistance... deliberate and purposeful (though not always marked by closely specified goals), occur outside of designated educational institutions, receive no institutional accreditation, and [are] voluntary and self-generating. (pp. 46-47)

In looking at these orientations to SDL, I notice that Tough's operational orientation (based on the concept of the learning projects), as stated above, makes no claims for any specific delineated process (as does Knowles' orientation), nor for any specific cognitive-developmental state of the learner (as does Kasworm's orientation). Rather the orientation is simply one that emerged from watching what adult learners do when they are interested in learning something. However, as indicated by Brookfield (1991), Tough has also defined SDL in terms that appear to include elements of both the process orientation and the personal orientation. Knowles' process orientation, appears to be capable of accounting for and subsuming Tough's learning project-based orientation.

Viewing Heinlein's characters in terms of the established orientations of SDL, we can see some clear connections to the traditional ways of defining SDL of operational, process, personal, and contextual. When looking at Heinlein's characters in terms of Tough's operational orientation, the following characters easily spring to mind for all of them are described as pursuing SDL projects that fit into Tough's orientation: Kip Russell in Have Spacesuit—Will Travel (1958), Sam Nivens in The Puppet Masters (1951), Phillip Huxley in "Lost Legacy" (1941/1953), Bill Lermer in Farmer in the Sky (1950), Potiphar Breen in "The Year of the Jackpot" (1952/1959), Lorenzo Smythe in Double Star (1956/1957), Maureen Johnson in To Sail Beyond the Sunset (1987). And of course, both of the Heinleins constantly undertook such SDL projects in their own lives (Owenby, 1994c).

Knowles's (1975, p. 18) process orientation of SDL is also encountered in Heinlein's stories. Heinlein characters that illustrate this concept of SDL include John Lyle in "If this goes on—" (1967, 1940), Manual O'Kelley Davis in The Moon is a

Harsh Mistress (1966/1968), Joan Freeman in "Lost Legacy" (1941/1953), and (again) Maureen Johnson in To Sail Beyond the Sunset (1987).

The personal orientation of SDL (Kasworm as cited in Merriam & Caffarella, 1991) and Brookfield (1991), which tells us that SDL can refer to a particular internal change of consciousness is also present in Heinlein's stories. Heinlein characters who exemplify this personal concept of SDL include John Lyle in "If this goes on—" (1940/1967), David MacKinnon in "Coventry" (1940/1967), Maxmillian Jones in Starman Jones (1953/1975), and (again) Lorenzo Smythe in Double Star (1956/1957).

Lastly, the contextual (or instructional setting) orientation of SDL as offered by Brookfield (1991) is also present in Heinlein's writings. Heinlein characters who exemplify this contextual aspect of SDL include Maxmillian Jones (again) in Starman Jones (1953/1975), Hugh Farnham in Farnham's Freehold (1964/1971), and Maureen Johnson (again) in To Sail Beyond the Sunset (1987).

In reflecting on images of educated adults in Heinlein's stories, the concept of the encyclopedic synthesist probably displays more of Knowles's (1975) process orientation and Kasworm's (as cited in Merriam & Caffarella, 1991) personal orientation than the other orientations. But in training an encyclopedic synthesist such as in that which takes place in Friday (1982/1983), we see Brookfield's contextual orientation come more into play. For example, Friday (the protagonist) undergoes an SDL project in which she learns in a seemingly random, curiosity-driven manner about issues of seemingly little relation to her ostensible learning goals. Nevertheless, her method of contextual learning pays off when she is able to quickly integrate and evaluate that which she has learned by predicting the next occurrence of a worldwide plague epidemic.

This discussion of the orientations of SDL points to some of the difficulties in deciding its nature. The next section takes up that issue in relation to Heinlein's self-directed characters.

Heinlein and the Nature of Self-Directed Learning

Heinlein's self-directed characters display SDL in many different contexts in response to many different challenges. But in all Heinlein's characters, what appears to be fundamental in order for SDL to take place is the self-directed developmental

readiness of the learner mentioned by Kasworm and Brookfield. That is, I believe that any definition of SDL that does not assign the central focus to the self-directedness of the learner is problematic. And it is problematic because it is possible to critique operational, process, and contextual definitions on the basis of essentiality. That is, they appear to assign the essentiality of SDL to issues of project, process, or even instructional setting rather than to learner initiative.

Candy (1991) has also pointed out how the issue of learner control of the instructional process inside educational institutions is tangential to the concept of self-directedness as a learner attribute. I take him to mean that simply giving over control to the learner is not necessarily practicing or facilitating SDL. However, cooperating with the learner's own self-chosen method of participating in a formal class by agreeing to teach him or her in a formal, didactic manner can nevertheless be fully in the spirit of SDL.

In looking at images of learning in Heinlein's science fiction, it is important to realize that much of that learning is other-directed, not self-directed. Yet throughout Heinlein's stories, we see his characters exhibiting the learner self direction characteristics of Brockett and Hiemstra's (1991) personal responsibility orientation (PRO) model. That model describes two sets of characteristics that contribute to self direction in learning: characteristics of the learner, and characteristics of the teaching and learning transaction. Heinlein's adults tend to take personal responsibility for their learning—exhibiting learner self direction characteristics—even when that learning is directed or controlled externally.

In fact, I believe it likely that Heinlein would have agreed with Candy's (1991) observation that "there is nothing inherently undemocratic about knowing more than a novice.... inappropriate use of self-direction only belittles the educator and confuses the learner" (p. 71). Merriam (1993) is in agreement with Candy when she says that "adults who know little or nothing about a topic benefit from teacher-directed instruction until they have enough knowledge to begin directing their own learning" (p. 8). Heinlein would perhaps have agreed with both Merriam and Candy and would likely point out that his curriculum (outlined in the Chapter III) is intended to provide a foundation for later self-directed learning.

Brookfield (1993) agrees that there is nothing fundamentally against the concept of SDL for a person to seek instruction, "I have argued that being in control of our learning means that we make informed choices.... [which] means... that we act reflectively in ways that further our interests" (p. 236). Sometimes furthering those interests require us to be directed by others. Brookfield's argument is framed as a way of synthesizing SDL with critical adult education, including the concepts of critical thinking and perspective transformation (Mezirow, 1985, 1990), concepts that I discuss in Chapter V in connection with themes of adult educational philosophy.

But Brookfield also says that "the idea of self-direction is... anathema to advocates of a core or national curriculum, and [that is why SDL]... is opposed so vehemently by those who see education as a process of induction into cultural literacy" (p. 233). However, I suggest that Heinlein would have disagreed with Brookfield's view that SDL is somehow ideologically opposed to cultural literacy or a standardized national curriculum. My reasoning is based on Heinlein's belief that certain fundamental curriculum elements are preconditional for the development of competency in SDL. For example, Robert declared that "the 3-legged stool of understanding is held up by HISTORY, LANGUAGES, AND MATHEMATICS. Equipped with these three you can learn anything you want to learn" ("The Happy Days Ahead," 1980, p. 519).

Furthermore, when Pratt (1993) says that in "the tension between freedom and authority.... Andragogy leans heavily toward learner freedom (versus teacher authority) on this issue" (p. 22), I suggest that Heinlein would unhesitatingly have come down on the side of teacher authority. But when Pratt says that "andragogy is unconditionally on the side of human agency and the power of the individual to shed the shackles of history and circumstance in pursuit of learning" it seems likely that Heinlein would have agreed with andragogy. That Heinlein subscribed to teacher authority must be recognized as a methodological, not a political issue; for in the larger meaning of human agency and freedom in education, Heinlein made his position clearly against academic authority. For example, in "Life-line" (1939, 1967), Heinlein's character Pinero tells us that academic authority is often the enemy of human freedom and progress.

In looking at the motivations for SDL, Heinlein would likely have agreed with Merriam's (1993) statement that "One of the most powerful motivators for participation

in adult learning activities is the need to stay abreast of changes in society that affect one's work and personal life" (p. 105). Indeed, Heinlein's exemplars of learning all seem to manifest a commitment to staying current. Certainly Heinlein exemplified this commitment in his efforts to stay abreast of the changes in science and technology. On the other hand, unlike Darkenwald and Merriam (1982) who say, "When adults have been asked to give the single most important reason for their enrolling in a course or other activity, work-related motives emerged as dominant" (p. 132), Maureen Smith in To Sail Beyond the Sunset (1987) returns to school quite as much to satisfy learning hunger as for her practical reasons.

Conclusion

In this chapter, I have explored Robert Heinlein's images of teaching and learning. I looked at both direct and indirect methods of teaching in his stories. I also examined images of learning—including self directed learning and characteristics of adult learners as depicted in his characters.

In regard to direct methods of teaching, I showed that Heinlein tended to utilize lecturing, mentoring, and vicarious problem solving as his favorite teaching methods. I also described how Heinlein indirectly promoted the use of novel approaches to teaching and learning such as accelerated learning, technology assisted learning, distance learning, and nontraditional education.

Furthermore, I explored images of adult learners in Heinlein's stories. These images reveal characters that are self-directed and that have a commitment to lifelong learning. These images also revealed personal characteristics such as wide interests, zest for life, courtesy and etiquette, human sympathy, self-control, professional devotion, ethical behavior, self confidence, and openness to experience.

Much of the discussion has tended to reinforce and even add to Heinlein's science fiction curriculum that I discussed in Chapter III. That is, both curriculum and methodology can be characterized as discussions of educational means. But Heinlein also presented the ends of education as they are manifested in images of educated adults and the learning situations in which they are embedded.

Overall, Heinlein appeared to have been much in sympathy with the tried-and-true traditional methods of teaching even though he is keen to the possibilities of technology

and advances in cognitive psychology. I found within Heinlein's stories connections to all five of Pratt's conceptions of teaching. However, Robert's teaching methods probably are to be found more in Pratt's engineering and apprenticeship conceptions. Regarding contemporary perspectives of adult learning, I also found ways of connecting Heinlein to them all, although I suggest that his basic approach would seem to have been most congruent with the adult learning principles of andragogy and self-directedness.

Next, in Chapter V, I will examine what Heinlein appeared to believe about education per se—his philosophy of education. I will discuss Heinlein's explicit ideas and attitudes about the means and ends of education as well as numerous passages from his fiction that illustrate them. I will also explore different ways of conceptualizing educational philosophy—both general educational philosophy and adult educational philosophy—including ways of relating Heinlein to those different conceptions.

CHAPTER V

HEINLEIN'S PHILOSOPHY OF EDUCATION

"I think the major problem in growing up is to become
sophisticated without becoming cynical."
—Johann Smith, I Will Fear No Evil, 1970/1987, p. 473.

In the previous chapter, I discussed images of teaching and learning in Heinlein's science fiction. In my analyses of these images using the literature of adult education, I also discussed various conceptions, models, and theories of adult education—including conceptions of teaching, models and theories of adult learning, and different definitions and aspects of self-directed learning. Many of those various conceptions, models, and theories have philosophical implications that are so pervasive that it is sometimes difficult to discern where a learning theory ends and a philosophical position begins. But, in fact, all descriptions of educational practices are also implicit philosophical prescriptions as well. That is the case whether I am discussing issues of curriculum in Chapter III or issues of teaching and learning in Chapter IV.

In both those chapters (as well as in the biographical material in Chapter II) I continually refer the reader to the philosophical material either in this present chapter or in the supplementary material. In Appendices D through H, I attempted to outline the major elements of Heinlein's general philosophy, from metaphysics to aesthetics. In Appendix I, I undertook to synthesize these elements into a harmonious perspective (see Diagram 2 in Appendix I). Also in Appendix I, I stated that the task of understanding Heinlein's philosophy was not possible without examining his philosophy of education.

Before attempting to discuss Heinlein's educational philosophy, it would be helpful to answer the question "How does educational philosophy differ from general philosophy?" Perhaps the most straightforward answer I can give from my viewpoint is that educational philosophy seeks to do two things: to describe the philosophical basis for existing educational policies and practices, and to prescribe recommendations for improving educational policies and practices. When understood this way, Heinlein was undoubtedly a philosopher of education whose philosophy can be recovered from his writings. As Freire (1985) points out,

> All educational practice implies a theoretical stance on the educator's part. This stance in turn implies—sometimes more, sometimes less explicitly—an interpretation of [humanity] and the world. It could not be otherwise.... The critical analyst will discover, in the methods and texts used by educators and students, practical value options that betray a philosophy.... well or poorly outlined, coherent or incoherent. (pp. 43-44)

I approach this chapter differently from the manner in which I wrote Chapters III and IV. In those two chapters, I followed the plan of essentially presenting Heinlein's material first and then related his ideas to the adult education literature in my closing analyses. I followed that approach out of a desire to present Heinlein's ideas to the reader for fresh consideration without the obtrusion of other—even pertinent—ideas. With some small exceptions, I followed that plan.

However, this chapter cannot be approached that way because I have chosen to use specific philosophical constructs as hermeneutic tools throughout in addition to providing closing analyses. As a natural consequence, this approach required that I relate my successive points to the professional literature as I presented them. Another reason is that this chapter is meant on the whole to serve for analysis and synthesis of many of the ideas presented in Chapters II, III, and IV (and to a much lesser extent, the supplementary philosophical material in Appendices D through I).

This chapter will proceed first with a presentation of differing perspectives and approaches for "doing" philosophy of education. Next, I present themes which I believe characterize Heinlein's general philosophy of education, followed by a presentation of specifically adult education themes. Following, I discuss two themes that characterize Heinlein's views of the existing professional education establishment. Finally, I attempt to place Heinlein's views into one general taxonomy of educational philosophy and three adult education taxonomies.

As I have taken pains to point out in previous chapters, Heinlein's work represents a body of educational practice with both explicit and implicit theoretical content. But in order to make clear the possible approaches to understanding Heinlein's personal philosophy of education, it will be necessary to look at how philosophy of education has been conceptualized by those who write about it as well as the typical approaches that have been employed in its study.

Perspectives of Philosophy of Education

Not surprisingly, as with most other fields of study there are different perspectives from which philosophy of education can be viewed. I first want to explain a set of personal perspectives from which to view philosophy of education. . Following that, I will discuss the usual approaches to both general philosophy of education and adult philosophy of education. Next, I will explain an approach to philosophy of education that I believe is also common but unnamed in the literature—the biographical approach. Finally, I will introduce an approach that relies on ideological analysis.

Personal Perspectives of Philosophy of Education

Because of how they make sense to me, I have chosen to call these aspects the psychological , the critical-practitioner, the teleological-methodological, and the audience-domain aspects. These are my personal conceptions, not those from the literature, and I provide them as an alternative view to those that follow in the next section.

There is a psychological aspect of philosophy of education in that individual philosophical temperaments can be associated with particular educational philosophies. For example, Steiner (1986) quotes the German idealist philosopher Johann Gottlieb Fichte as saying "One's philosophy depends on what sort of person one is" (p. 75). In a much more contemporary expression of that same idea, O'Neill (1981) tells us that "philosophical similarities between individuals are generally based upon psychological similarities" (p. 39).

Second, there appears to be a critical-practitioner aspect in that educational philosophy can arise as a case of grounded theory built up post priori by thoughtful examination of and reflection upon existing practice. For example, Sherman and Webb (1988/1990) describe the grounded theory approach to educational philosophy as that "which is concerned with theory generation, rather than verification, through discovery of what the world appears to be to participants and, through an analysis of those perceptions, of the basic social processes and structures that organize the world" (p. 3). Grounded theory in some respects is a radical empirical (pragmatic) approach to

educational philosophy which also draws upon insights provided by phenomenology and critical theory.

Third, there seems to be a teleological-methodological aspect in that educational philosophy draws on certain subdisciplines of philosophy for specific guidance on educational ends and means. That is, educational philosophy draws on metaphysics and axiology for its guiding principles and values. For example, some traditionalist approaches to education emphasize the moral and metaphysical ideas drawn from classical idealism. In addition, educational philosophy may draw upon epistemology for its methodology. That is, educational approaches that emphasize the empirical basis for knowledge typically draw upon either positivist, pragmatist, or analytic epistemologies.

Finally, there seems to be an audience-domain aspect in that educational philosophy can differ according to which educational audience is under consideration. General educational philosophy is directed at those who teach in or administer public schools and institutions of higher learning. Adult educational philosophy is directed toward those who teach in or administer adult or continuing education enterprises. Certainly any exploration of Heinlein's philosophy of education must take into account the audience-domain aspect—which was predominantly adult. .

Traditional Approaches to Philosophy of Education

Approaches to educational philosophy vary according to whom is writing about it. By approach, I mean the various ways that philosophy of education is conceptualized for analysis and study by philosophers of education. O'Neill (1981) discusses how various writers have characterized philosophy of education by grouping them into three different communities of approach: the problems-analysis or analytical approach, the formal systems approach, and the educational philosophies approach. I will explain each of these in turn.

The Analytical Approach. In the analytical approach, "no attempt is... made to formulate any particular philosophy of education," rather "the emphasis is placed upon 'doing philosophy' with respect to some specific educational problem" (O'Neill, p. 6). Examples of philosophers of general education who typically engage in this approach are Peters (1966), Scheffler (1965), and Soltis (1968). In the field of adult education, Lawson (1991), Paterson (as cited in Elias and Merriam, 1995), and Monette (as cited

in Elias and Merriam, 1995) are examples of the analytic approach to educational philosophy. For example, Lawson's approach to discussing philosophical foundations of adult education in the recent "Blue Book" on adult education was to carefully define and analyze terms prior to entering into a wider discussion. He told us:

> Instead of looking at adult education per se, the linguistic method of study analyzed what was said about adult education. What was said about it told us what adult education "is," and we deduced the values of adult education from the descriptions given of it and the practices regarded as valid examples of adult education within the terms of the discourse. (Lawson, 1991, p. 291)

This approach differs from the formal systems approach to philosophy of education, which I now define.

Formal Systems Approach. This approach to philosophy of education is, according to O'Neill, "the most prevalent manner in which educational philosophy is treated" (p. 7). This approach is characterized by three steps: "the identification of basic philosophical systems (such as realism or idealism)" (p. 7); followed by the "exemplification" of those systems in one or more prominent spokespersons for each (such as Aristotle or Plato); and a presentation of the implied educational philosophies that are presumed to follow from the various philosophical systems. Past examples of philosophers of general education who typically engage in this approach are Morris (1961), Butler (1963), and Kneller (1964). More recent examples from general philosophy of education include Kneller (1984) and Ozmon and Craver (1990), both of whom have updated their formal systems approach to include contemporary and postmodern philosophies.

Representative examples of this approach in the literature of adult education are notably absent. The closest approach is found in a short essay by Hiemstra (1988), in which the author sets forth basic ontological and epistemological antecedents and exemplars for seven philosophies of education, three of which appear to be drawn from formal philosophical systems. But Hiemstra's approach is really closer to O'Neill's third approach to philosophy of education, the educational philosophies approach.

The Educational Philosophies Approach. This approach is O'Neill's (1981) terminology for a third way of conceptualizing philosophy of education. This approach

"holds that it is possible to identify and define educational philosophies that exist substantially apart from other types of philosophy and that can be looked upon as at least conceptually separable from the traditional formal systems of philosophical thought" (p. 10). Furthermore, the educational philosophies approach "begins with... specific proposals... in the realm of social ethics... more directly related to the basic problems of schooling, and... organizes them into a coherent and logical system of ideas about the nature and purposes of education" (p. 10).

The educational philosophies approach differs from the formal systems approach in that educational philosophies "are not true philosophies in the usual sense" (p. 11) that commence with first principles. Rather, they are intermediate in their theoretical starting points—usually beginning with specific theories and doctrines that arise in the realm of social values and policies. The educational philosophies approach also differs in that its locus of concern is the relationship between the school and society, not education per se. (In the adult education landscape, the analogues would be the various settings in which adult education occurs.)

The chief example of those who approach general philosophy of education in this way is Brameld (1955, 1956) who first proposed the four basic educational philosophies of perennialism, essentialism, progressivism, and reconstructionism. Brameld's influence has caused other educational philosophers to dutifully follow (and elaborate) his example when describing educational philosophy even when they are more comfortable with another approach (Kneller, 1964; Brubacher, 1969; Knight, 1982). The adult education examples of this approach are discussed next separately.

The Educational Philosophies Approach in Adult Education. Because of its emphasis on the relationship between the educational landscape and the larger societal matrix, it is only to be expected that most approaches to adult educational philosophy take the educational philosophies approach. Examples include Apps, Elias and Merriam, Hiemstra, and Caffarella.

Apps (as cited in Hiemstra, 1988) is an example of one of the earliest attempts at taxonomizing adult education philosophy and he was almost certainly influenced by the general education literature on philosophy of education. For example, Apps described the adult educational philosophies of essentialism, perennialism, progressivism, and reconstructionism. In using this taxonomy, he repeated Brameld's four educational

philosophies and adds a fifth, existentialism. But Apps is also honest about the drawbacks of his (and anybody else's) taxonomy. He says, "They can prevent analysis and original thought. Once one reads through a description of these various [philosophies], the tendency is to try to fit one's own philosophy into one of the established philosophies" (as cited in Hiemstra, 1988, p. 185).

In 1980, Elias and Merriam attempted a thoroughgoing description of the streams of thought in adult education with their book Philosophical Foundations of Adult Education. They name their seven adult educational philosophies the liberal, progressive, behaviorist, humanistic, radical, and analytic. Elias and Merriam follow on from Apps's (as cited in Hiemstra, 1988) foundation and supplement it with discussions of philosophical streams that emerged in the years since Apps's taxonomy. Their liberal, progressive, humanistic, and radical philosophies can be linked up with aspects of Apps' essentialism, perennialism, progressivism, and reconstructionism. In 1995, they revised their book. The second edition includes coverage of recent developments in critical theory and feminist pedagogy.

Hiemstra published his own description of philosophical approaches to adult education in 1988. Hiemstra's taxonomy is essentially that which he used in working with students of adult education for the purpose of helping them develop their personal philosophies of adult education. His taxonomy includes seven philosophies: idealism, realism, progressivism, liberalism, behavioralism, humanism, and radicalism. Interestingly, Hiemstra's seven philosophies seem to combine the names of educational philosophies with the names of traditional philosophies applied to educational points of view.

Caffarella's (1993) taxonomy is focused more on self-directed learning than adult education in general. She mentions humanism, progressivism, behaviorism, and critical theory as elements of her four-part taxonomy. She cites humanism as being the "primary guide for much of the work on self-directed learning" (p. 26). She reacquaints the reader with the philosophical roots of progressivism in pragmatism and she discusses the methodological focus of behaviorism. Caffarella analyzes the components of critical theory in regard to self-directed learning into critical reflection and transformation of meaning perspectives in the social context. Interestingly, Caffarella's taxonomy—while undoubtedly informed by past literature—seems to have been

developed more from the perspective of existing practice than existing philosophical taxonomies.

That Hiemstra is influenced partly by Elias and Merriam's taxonomy is evident from the names he gives his seven philosophies. As is evident from both Apps's and Hiemstra's lists, they attempt hybrid approaches which combines elements of both O'Neill's (1981) formal systems and educational philosophies approach. For that reason, both Apps and Hiemstra lack internal consistency and systematic clarity in their respective taxonomies. Elias and Merriam's taxonomy is the only contemporary purist example of O'Neill's educational philosophies approach in adult educational philosophy. But as I mentioned in the introduction to this chapter, it is often difficult to judge the differences between theories of adult learning and philosophies of adult education. Both Caffarella and Elias and Merriam's taxonomies suffer from this inherent ambiguity—an ambiguity that may be unavoidable in adult education.

The Biographical Approach

I believe that an additional approach to conceptualizing the study of philosophy of education besides the analytical, formal systems, and educational philosophies approaches discussed by O'Neill is that which I choose to call the biographical. This approach—my own preference in confronting and understanding the ideas of others—is simply studying philosophy of education by studying the interactions of ideas and life events of particular philosophers of education. Biographical philosophy of education can be understood in both weak and strong forms. The weak form is characterized more by a focus on the subject's own expressed ideas with lesser focus on the subject's feelings and life events.

Biographical philosophy of education gets stronger as its focus becomes more integrated in regard to ideas, life events, and feelings. After all, ideas are experienced within and practiced by human beings. Just as in any biographical endeavor, the reader of a biographical approach to philosophy approaches the philosophy and practices of a subject as a unified whole. A biographical approach to philosophy is aided by the triangulating power of the writer and reader when both are focused on the biographical subject.

Examples of the biographical approach—in progressively weaker to stronger forms— from the writings of general philosophers of education include Frankena (1965) who focuses on contemporary writings of several philosophers of education, Goutek (1991) who presents treatments of several traditional philosophers and educators, and Wirth (1966) who presents a treatment of a single philosopher of education (in this case, John Dewey).

From the field of adult education, an example of what I would call the weak biographical approach to philosophy of education is Merriam's (1984) edited collection of essays by philosophers of adult education. Merriam's book of readings allows readers to experience the thoughts of significant thinkers in adult education directly. Merriam includes brief biosketches of her subjects, which include among others Dewey, Hutchins, Lindeman, Bergevin, Houle, Skinner, Freire, Mezirow, and Tisdell. The biosketches are followed by brief essays written by each subject—which not only reveal the main ideas of their authors in respect to key adult education issues but give insights into their essential thought-worlds as well.

A stronger biographical approach to philosophy of adult education is Jarvis's (1987/1991) edited collection of biographical essays of 13 renowned 20th century thinkers in the field of adult education. Unlike Merriam's collection of essays by key thinkers, Jarvis commissioned intellectual biosketches of each of his subjects from contemporary scholars of adult education. Among North American adult educators, Jarvis includes essays about Dewey, Thorndike, Lindeman, Houle, Knowles, Kidd, Coady, and Horton.

An example of a very strong biographical approach to philosophy of education of a single philosopher of adult education is Stewart's (1987) study of Eduard Lindeman. Malcolm Knowles, in the the forward to this book, wrote the following:

> I'd like to conclude by making a case for biography as a vehicle for conveying important knowledge.... Biography provides us with a window through which we can see how great minds work—not just what they produce. As I read the manuscript of this book I found myself repeatedly saying, "Aha, that's how that idea (or insight) came into being." And I felt that I understood the idea better and appreciated it more because I saw it in the context of its life and times. It became a

> living idea, not a lifeless abstraction. What better way could there be of presenting the philosophy of a person whose maxim was "education is life"? (p. xi)

Knowles captures my point precisely as well as pointing out the philosophical significance of Stewart's biography. This present study of Robert A. Heinlein is also a strong example of the biographical approach to philosophy of adult education.

The Educational Ideologies Approach

But there is one more approach to philosophy of education which is neither analysis, formal systems, educational philosophies, nor biography. This last approach is O'Neill's (1981) educational ideologies approach. Ideology can be described as a body of beliefs that is held to be factually or doctrinally true by its adherents, with a characteristic world view, and usually accompanied by a set of attitudes toward societies and their institutions. O'Neill's educational ideologies approach is less concerned with philosophizing "about this or that particular problem within education than to develop a fundamental taxonomy of the basic alternatives... available in the entire area of educational philosophy" (p. 15).

O'Neill has arranged his taxonomy of six educational ideologies on a continuum of "radicalism-conservativism" which he calls the master scale of biases "affecting both the perception and the solution of virtually all problems concerning human conduct" (p. xiv). Both the conservative and liberal ideologies in O'Neill's continuum have a common concern for human self-realization, but the conservative ideologies tend to "equate value and knowledge, holding that the good life is essentially a matter of recognizing the intrinsic value of the status quo" while the liberal ideologies "equate the good life with behavior adapted to empirical and naturalistic assumptions about knowing and the known" (p. 56). In short the conservatives value received old truths (tradition) while the liberals value discovered new truths (progress).

In O'Neill's taxonomy there are three conservative educational ideologies arranged respectively from most to least conservative: educational fundamentalism, educational intellectualism, and educational conservatism. The three liberal ideologies arranged respectively from least to most liberal are educational liberalism, educational liberationism, and educational anarchism. O'Neill's taxonomy appears to present the

most conceptually parsimonious approach to studying Heinlein's philosophy of education.

Following a presentation of Heinlein's educational views in both areas, I will also address Heinlein's views of the existing educational establishment. At the conclusion, I will relate Heinlein's educational philosophy to O'Neill's taxonomy, and the taxonomies of Elias and Merriam (1995) and Hiemstra (1988), and will offer some more specific remarks from the recent adult education literature.

Uncovering Heinlein's General Philosophy of Education

To my knowledge, Robert Heinlein never attempted to articulate a unified and comprehensive philosophy of education. Nevertheless, for convenience's sake, I will speak of "Heinlein's philosophy of education" to represent that which I hope to make explicit from his many pronouncements and fictional examples. Much of Heinlein's philosophy of education has already been revealed, albeit in implicit terms, in previous chapters. But in the material that follows, Heinlein's explicit philosophy of education is presented in the form of direct statements as to what education both should and should not be.

As with Heinlein's perspectives of metaphysics, epistemology, and axiology (see Appendices D through I), there is a certain amount of eclecticism in his views of education that will have to be reconciled and interpreted. Nevertheless some definite themes are easily visible in his explicit educational pronouncements. I have chosen to call these themes moral education, education for competence and confidence, respect for the common cultural heritage, self-reliance and self-directedness, language and symbology, broadmindedness, and reluctant elitism.

These themes emerged in several ways. First, Heinlein's life as discussed in Chapter II revealed currents and dimensions in his education and careers that indicated that which he personally regarded as valuable to learn. Second, the curriculum elements discussed in Chapter III revealed aspects of Heinlein's philosophy of education based on what he regarded as important to teach others. Third, Heinlein's teaching and learning preferences—combined with the depictions of his fictional educated adults—revealed the means that he regarded as important for teaching and learning. Fourth, the analysis of his explicit commentary on educational matters—along with my Virginia Heinlein

interview material—reinforced already emerging themes. Fifth, my analysis of Heinlein's philosophical views in Appendices D through I in the supplementary material revealed issues that shed light on his philosophy of education.

For example, the themes of moral education, education for competence and confidence, respect for the common cultural heritage, self-reliance and self-directedness, language and symbology, and broadmindedness are easily discernible in Heinlein's curriculum of freedom, openmindeness, and the scientific method; his curriculum of epistemological rigor; and his survival theory of hierarchical moral behavior (see Appendix F). The theme of reluctant elitism can be seen as emerging from Heinlein's early commitment to social justice and democratic action, combined with his postwar disillusionment in the electorate, further combined with his personal axiological commitment to competency and wide knowledge. This theme emerges from Heinlein's biography, his curriculum of epistemological rigor, and his philosophy of public ethics (see Appendix G).

These themes characterize his general philosophy of education. I will discuss those themes that I believe characterize his philosophy of adult education later in this chapter.

Moral Education

I will deal first with the theme of moral education in Heinlein's philosophy of education. Heinlein was not unique for believing in moral education. O'Neill (1981) describes moral education as a common theme in both conservative and liberal educational ideologies, although the different ideological positions advocate moral education on different grounds. That is, conservatives tend to advocate moral education as a means of preserving the moral heritage and for ensuring social stability. Liberals tend to promote moral education as a means of promoting social justice and for developing individual social responsibility.

In line with Heinlein's prevailing interest in ethics and other axiological issues, he believed that a major purpose of education is to teach children how to become morally responsible adults. For example, in Starship Troopers (1959/1968), Heinlein told us that "a juvenile becomes an adult when, and only when, he acquires a knowledge of duty and embraces it as dearer than the self-love he was born with" (p. 96). The knowledge of duty becomes a key aspect of moral education. Indeed, in the future society depicted in

the above novel, moral education is a required part of the public school curriculum. But care is also taken to prevent students from feeling pressured to accept what is taught: "History and Moral Philosophy.... was different from other courses in that everybody had to take it but nobody had to pass it" (p. 24).

But education should not go overboard on so-called character building. In fact, Heinlein reserved some of his strongest disapproval for educational tyrants who bully their charges under the pretext of shaping their characters. For example, he depicts the sadistic character Headmaster Howe in Red Planet (1949) as saying:

> The first purpose, perhaps the only purpose, of education is the building of character—and character can only be built through discipline. I flatter myself that I am exceptionally well prepared to undertake this task; before coming here I had twelve years' experience as a master at the Rocky Mountains Military Academy. (p. 49).

But as I pointed out in Chapter III, Heinlein believed that the motivation for this type of personality is power over others which is sought as a means of compensating for feelings of inferiority. Heinlein would instead have wanted education to prepare human beings to acquire competence and confidence as a way of preventing the bitterness, envy, and jealousy that come from acquired feelings of inferiority. Thus, in Heinlein's view, the royal road to character-building is through the acquisition of self-confidence rather than in so-called character-building activities per se. I will develop more of the theme of competence and confidence in the next section.

Competence and Self-Confidence

O'Neill's (1981) description of the ideological position of educational liberalism reveals that its curricular emphasis is "on personal effectiveness" (p. 305). Personal effectiveness from the perspective of educational liberalism is grounded in the Deweyan program of practical intelligence and problem-solving. Personal effectiveness in its broadest sense would also include Heinlein's belief that education, whatever else it does, should also be directed towards making a person both competent and confident.

Heinlein said plainly in Time Enough for Love (1973/1987) that "A competent and self-confident person is incapable of jealousy in anything. Jealousy is invariably a symptom of insecurity" (p. 250). While that proclamation may or may not be true, it does reveal a philosophical value of importance to ordering the ends and means of education.

This is made clear in his short story "It's Great to be Back" (1947/1967) in which he described the social benefits of a "superior education" as "everything that makes a person pleasant and easy and interesting to be around" (p. 316). This attitude of Heinlein indicates that one of the values of a good education is that it tends to create the gentle person who is cultured, tolerant, and considerate. This is reminiscent of the education of the finishing school or school of manners dedicated to the education of the courtier or gentleman, found in various Renaissance and Enlightenment novels and manuals. It is also the style of education of Heinlein's own alma mater, the United States Naval Academy at Annapolis.

Heinlein reflected the values he acquired and refined at the Naval Academy in his juvenile novel Space Cadet (1948). He devotes much of that book to explaining that the knowledge of how to behave in polite society and in other cultures is at least as important as the knowledge of one's profession. Taylor (1994), an adult educator, defines "intercultural competency" as "an adaptive capacity based on an inclusive and integrative world view which allows participants to effectively accommodate the demands of living in a host culture" (p. 154). Heinlein so consistently demonstrated the importance of Taylor's intercultural competency that one is justified in calling it a major feature of Heinlein's philosophy of education.

Interestingly, Heinlein's approach to competency and confidence appears to span O'Neill's (1981) liberal and conservative ideologies. That is, the liberal value of personal effectiveness appears to be joined with the conservative intellectualist value of acquiring cultural values—the theme I take up next.

Respect for the Common Cultural Heritage

O'Neill's (1981) taxonomy of educational ideologies describes a curricular emphasis of the educational conservative as "the acquisition of conventional cultural

values" (p. 304). Besides inculcating confidence and self-confidence, Heinlein believed that education should also teach a respect for the cultural heritage of humanity.

In Farnham's Freehold (1964/1971), Heinlein gave an example of this educational value when he told us that, "all men must die, it was their single common heritage. But a book need never die and should not be killed; books were the immortal part of man" (p. 83-84). As an example of an ethical component from the common cultural heritage, Heinlein declared, " 'I wept that I had no shoes, until I met a man who had no feet.' I don't know who said that first, but it is part of our cultural heritage and should be" (Job: A Comedy of Justice, 1984/1985; p. 117).

Education should, Heinlein told us, teach a reverence for the timeless and basic truths. "Basic truths cannot change and once a man of insight expresses one of them it is never necessary, no matter how much the world changes, to reformulate them. This is an immutable, true everywhere, throughout all time, for all men and for all nations" (Starship Troopers, 1959/1968; p. 74). Heinlein is clearly on the side of O'Neill's educational conservative in this matter.

But O'Neill also describes the educational conservative as having an "emphasis on political socialization (social control)" (1981, p. 304). Heinlein would have opposed any educational approach that placed the state over the individual. This opposition to education as social control is related to my next theme.

Self-Reliance and Self-Directedness

The educational liberal, O'Neill (1981) tells us, "gives the personal (individual) priority over the social (including the political)" (p. 78). The liberal "emphasizes individual critical thinking" and is "dubious about social ideologies that have not emerged out of inquiry founded on... scientific objectivity" (p. 78). With regard to Heinlein's theme of self-reliance and self-directedness, he is clearly in sympathy with the educational liberal position.

Heinlein believed that human beings should be brought up to be self-reliant and self-directed. But these values cannot be achieved without a certain amount of educational and intellectual freedom. From Heinlein's own experience with reading the "forbidden books" of Darwin and Huxley as a 13 year old boy, he early came to hate any form of censorship—educational or otherwise. As I previously pointed out in chapter

III, he made this clear in a passage from the very first novella he wrote ("If this goes on—," 1967, 1940): "When any government, or any church for that matter, undertakes to say to its subjects, 'This you may not read, this you must not see, this you are forbidden to know,' the end result is tyranny and oppression, no matter how holy the motives" (p. 499).

Instead of indoctrination and censorship, Heinlein believed that education should teach children to question and think for themselves, a belief that is not only liberal but clearly reminiscent of the romantic tradition of education in America. For example, in Farmer in the Sky (1954) he described a school scene in which the teacher

> would talk about what he knew best and the kids would listen, then we would ask questions and he would ask questions. No real examinations, no experiments, no demonstrations.... Dad says this is the best kind of a school, that a university consists of a log with a teacher on one end and a pupil on the other. But Dad is sort of a romantic. (p. 66)

Heinlein had declared his belief in acquiring a wide array of knowledge and skills as a foundation for coping with the slings and arrows of outrageous fortune. He had argued that "luck" merely refers to either adequate or inadequate preparation for coping with a statistical universe. For example, in Farmer in the Sky (1950), the young protagonist Bill Lermer uses quick thinking to improvise a metal patch when a micrometeoroid punctures his living compartment aboard a space ship: "'That really was a slick piece of work. You were on your toes. You have a right to feel proud.' I said I guessed I had been lucky. He said, 'Maybe. But that sort of luck comes to the man who is prepared for it' " (p. 78). That means that education should prepare humans to make the most of opportunities.

Education should also teach skills which empower humans to learn other things—to become self-directed learners. But Heinlein had rather firm ideas about the kinds of knowledge and skills that are most efficacious for developing the capacity for lifelong self-directed learning. His clearest expression of his ideas in this regard comes from his essay "The Happy Days Ahead" (1980) in which he declares that

> the 3-legged stool of understanding is held up by HISTORY, LANGUAGES, AND MATHEMATICS. Equipped with these three you can learn anything you want to learn. But if you lack any one of them you are just another ignorant peasant with dung on your boots. (p. 519)

His belief in the value of history is also in line with his belief in transmitting the common cultural heritage. Nevertheless, he is particularly adamant about the value of mathematics. In Starship Troopers (1959/1968) he states: "Math is hard work and it occupies your mind—and it doesn't hurt to learn all you can of it, no matter [who] you are; everything of any importance is founded on mathematics" (p. 204) Heinlein had high hopes in his early novels that mathematics would become increasingly important in the schools of the future (see Chapter III).

At the same time, he was equally sure that an increased emphasis on mathematics would be an inescapable requirement for dealing with the technological complexity of the future. Both these attitudes are pointed out in the following passage from Tunnel in the Sky (1954):

> Rod did not have the mathematics to appreciate the difficulties. Being only about to finish high school his training had gone no farther than tensor calculus, statistical mechanics, simple transfinities, generalized geometries of six dimensions, and, on the practical side, analysis for electronics, primary cybernetics, and robotics, and basic design of analog computers; he had had no advanced mathematics as yet. (p. 20)

Yet even in teaching his beloved mathematics, Heinlein believed that education should be focused on the needs of the student rather than on a purely arbitrary and traditional curricular approach. For example, in Rocket Ship Galileo (1947), one of his protagonists describes how he was taught "algebra through quadratics, plane and spherical trigonometry, plane and solid geometry, and plane and solid analytical geometry all in one course stirred in together" with the pace entirely dependent on the student's speed of learning. "When you finish that course—and you take it as slow or as fast as you like—you go on" (p. 25).

Paradoxically, Heinlein's student-centered approach—so clearly in line with the progressivist ideas of O'Neill's (1981) educational liberal—seems to be incongruent with his recurring theme of the common cultural heritage—a clear expression of the educational conservative ideology.

Language and Symbology

Clearly associated with mathematics in Heinlein's mind is the value of educating human beings in the use of language and other symbol systems. Here Heinlein appeared to be in line with yet another conservative ideology from O'Neill's (1981) taxonomy—the educational intellectualist. The intellectualist focuses on "the dominant Western intellectual tradition" with a curriculum steeped in "classicism" (p. 299). But Heinlein's apparent intellectualism is related to his pragmatic, individual-centered themes of competency and self-directedness.

Heinlein believed that educators should help students learn to use language and symbols properly in order to help them think better and more clearly. For example, in Space Cadet (1948), he explains the educational philosophy of his future academy as "based on the idea that a man who can think correctly will automatically behave morally.... Our prime purpose here is to see to it that you learn how your own mind works" (pp. 76-77). He then explains that a large share of the curriculum is concerned with language, rhetoric, and semantics. Aside from indicating his interest in language, the foregoing passage also indicates an approach to moral education that is almost Platonic in its equation of knowing the good with doing the good.

Heinlein believed that a proper orientation to language could not begin too soon in a child's education. A clear example of this is found in Beyond this Horizon (1942/1948) in which Heinlein described how his character Longcourt Phyllis educates her young son:

> She used the standard extensionalized technique of getting a child to comprehend symbolic-grouping-by-abstracted-characteristics while emphasizing individual differences.... He read stumblingly and with much subvocalization and was, of course, forced to call for help frequently when he ran on to symbols new to him and not sufficiently defined by context.... no words appear in a primer which are

> not represented by examples which can be pointed to, or, if the words are action symbols, the actions are such that they can be performed there and then.... Phyllis's resourcefulness and histrionic ability were stretched to the limit, but she stuck to the cardinal principle of semantic pedagogy: never define a new symbol in terms of symbols already known if it is possible to point to a referent instead. (pp. 132-133)

But Heinlein's concern for language did not only reside in semantics; he was interested all his life in foreign languages as well, having learned French, Latin, and smatterings of German, Spanish, and Greek (his wife Virginia could speak, read, and write seven languages—including Russian). He was explicit in his prescription of foreign language education in "The Happy Days Ahead" (1980):

> From oral reports and clippings I note that [Latin] is not taught in most high schools across the country. "Why this emphasis on Latin? It's a dead language!" Brother, as with jazz, in the words of the great artist, "If you have to ask, you ain't never goin' to find out." A person who knows only his own language does not even know his own language; epistemology necessitates knowing more than one human language. Besides that sharp edge, Latin is a giant help in all the sciences—and so is Greek, so I studied it on my own. (pp. 521-522)

In another example of his concern for language education, he described in Have Space Suit—Will Travel (1958) how his young protagonist Kip Russell was placed upon the right educational track after his father discovered that he was not taking anything difficult in high school:

> I got discouraged and nearly quit—then I got mad and leaned into it. After a while I found that Latin was making Spanish easier and vice versa. When Miss Hernandez, my Spanish teacher, found out I was studying Latin, she began tutoring me. I not only worked my way through Virgil, I learned to speak Spanish like a Mexicano. (p. 11)

In Chapter IV in my discussion of Heinlein's teaching method of vicarious problem-solving, I mentioned Kip Russell's use of Latin and Spanish in dealing with

unexpected problems. My point is that Heinlein's views do not promote the intellectualist goals so much as they co-opt the intellectualist means for the purpose of fulfilling the educational liberal goal of personal effectiveness. My point also holds for the theme of broadmindedness, which I now take up.

Broadmindedness

Although O'Neill (1981) said nothing explicit about broadmindedness in his discussion of educational ideologies, he does speak of the tenets of liberal education (classicism) in regard to educational intellectualism. But liberal education in the classical sense is not the same as the theme of broadmindedness which I believe runs through Heinlein's work. Heinlein's broadmindedness is related more to the themes of wide interests and open-mindedness which I discuss in connection with the popular education and diffusion of knowledge movements in Chapter III (see also Stubblefield, 1988; Stubblefield and Keane, 1994; and Kett, 1994). I believe that Heinlein's broadmindedness has more to do with the implicit values of O'Neill's educational liberalism position than with educational intellectualism. This belief is reinforced by Dewey's (1916) attitude that broadmindedness is a desired moral outcome of education.

Perhaps surprisingly for those who only know Heinlein's penchant for engineering and the hard sciences, he believed in the benefits of a broad education. For example, in Farmer in the Sky (1950) he complains about the technical narrow-mindedness that his fellow engineers are wont to demonstrate: "Sometimes I think that engineers get so matter of fact that they miss a lot of the juice in life" (p. 118). In Space Cadet (1948), he presents his view that even a military education should be broad:

> Matt was surprised and pleased to find that some story spools had been included. He pointed to an item that puzzled him—An Introduction to Lunar Archeology. "I don't see why I should study that—the Patrol doesn't deal with Selenites; they've been dead for millions of years."
>
> "Keeps your mind loosened up. I might just as well have stuck in modern French music." (pp. 77-78)

Inculcating broadmindedness as a lifelong goal means exposing children to a wealth of knowledge of many different kinds. Going even further, Heinlein believed that education should teach children to have a love for knowledge. Heinlein's own view of the matter is indicated in Farmer in the Sky (1950) in which the young protagonist describes the educational values and example of his father, Heinlein's authorial character: "Dad is an absolute mine of useless information. He says a fact should be loved for itself alone" (p. 85).

Certainly, Heinlein's own life (see Chapter II) as well as his fictional curriculum (see Chapter III) demonstrated the educational theme of broadmindedness. But it is the aspect of broadmindedness that is expressed in wide knowledge that also suggests a quality of educational elitism, a theme which I now take up.

A Reluctant Elitism

In a chart describing the educational intellectualist position, O'Neill (1981) indicates movements, institutions, and individuals that he feels are related to that ideology. These include "Major 'establishment' prep schools", the "Dominant Tradition in Western 'Liberal Arts' Orientation", and the "British 'Great Public Schools' " (pp. 64-65). I do not believe it necessary to defend the position that most would term this position as elitist. Except to the extent that Robert Heinlein's views were influenced by the U. S. Naval Academy at Annapolis (which O'Neill also places in the intellectualist camp), they are not elitist in the sense of the classicist, preparatory school tradition. Rather, his elitism arises out of another source.

Heinlein came reluctantly to feel that education could only have a limited effect for the great run of children. In fact, he indicates that only a relative few will benefit from a first class education. For example, in Starship Troopers (1959/1968) his authorial character Mr. DuBois expresses the notion that most children are pebbles and sand rather than nuggets, as it were: "This is the sort of consummation, which does not happen too often, that makes all of a teacher's efforts worthwhile. We necessarily sift a great many pebbles, much sand, for each nugget—but the nuggets are the reward" (p. 73). Most children can be drilled and made to learn basic skills of "reading, writing, and arithmetic," but the ability to critically think and reflect on what is learned cannot be

taught, Heinlein believed. "One can lead a child to knowledge, but one cannot make him think" (Starship Troopers, 1959/1968, p. 24).

I term Heinlein's elitism as "reluctant" because his background would naturally tend to have led him to support education for all, given the commitment of his own family to learning. In fact, in "The Happy Days Ahead" (1980) he reports that all the children in his first grade class had learned to read before the school year had been half completed. The public schooling scenes in all his juvenile novels depict optimistic views of the possibilities of future schooling.

Why then did Heinlein believe that only a limited few benefit from education? Part of the reason may be the example of parents. In many of Heinlein's novels, we are shown portraits of parents whose own attitudes interfere with their children's education. For example, Space Cadet (1948), Starman Jones (1953/1975), Tunnel in the Sky (1955), and The Star Beast (1954) depict youths whose parents are incompetent exemplars of educational values. Still another possibility is that Heinlein believed that many teachers are not up to the job of teaching their charges in such a way as to awaken in them the love of learning. Heinlein's depiction of Headmaster Howe in Red Planet (1949) is such an example of a poor teacher. Heinlein blamed teachers directly for educational failures in "The Happy Days Ahead" (1980): "This scandal must be charged to grammar and high school teachers... many of whom are not themselves literate (I know!)—but are not personally to blame, as we are now in the second generation of illiteracy. The blind lead the blind" (p. 526). Both Heinlein and his wife Virginia attributed this decline in common literacy to the misguided progressive education movement (Owenby, 1994c).

In any case, Heinlein's educational elitism—if that is the appropriate description—has more to do with the acknowledgment of what he believed to be the existing state of affairs; it is not a prescribed elitism. Indeed, through his authorial character Sam Russell in Have Space Suit—Will Travel (1958), he made clear that he opposes any effort to promote an elitist attitude in the education of youngsters:

> I don't favor boarding schools.... Oh, a tough prep school back east can drill you so that you can enter Stanford, or Yale, or any of the best—but you can pick up false standards, too—nutty ideas about money and social position and the right tailor. It took me years to get rid of the ones I acquired that way. Your mother

> and I did not pick a small town for your boyhood unpurposefully. So you'll stay in Centerville High. (p. 10)

Not only does this passage make clear that Heinlein opposed educational elitism as an educational policy, it also demonstrates Heinlein's essentially democratic attitude toward public schooling. That is, Heinlein believed that public schooling had the potential for promoting a common bond of community and citizenship. The tragedy, in Heinlein's view, is that public schooling had become pedagogically incompetent.

This section concludes the examination of the explicit indications of Heinlein's philosophy of general education. In the next section, we will complete our examination of Heinlein's philosophy of education by examining his philosophical perspectives on adult and popular education.

Uncovering Heinlein's Philosophy of Adult Education

Although Heinlein clearly believed in the importance of educating children and youth, the fact is that his own educational efforts were directed towards adults for the most part. Much of the reason, I believe, lay in his desire to explore adult ideas and themes—particularly philosophical ideas. But Heinlein was also involved in popular education efforts in his dealings with California politics, in his involvement with General Semantics, and in trying to educate the public about the political and military implications of nuclear weapons and military rocketry. Even after he began writing for his living, he continued to accept responsibility as an informed citizen towards helping fellow citizens understand the critical issues of the day.

Because of these interests in popular education, Heinlein naturally thought a great deal about the ends and means of adult and popular education. Of course, his perspectives of adult and popular education naturally contain a number of themes that resonate with those found within his general philosophy of education, especially moral education, education for competence and confidence, and broadmindedness (or liberal education). These specific adult and popular education-related themes include fulfilling human potential through lifelong learning, the encyclopedic perspective, social responsibility, critical thinking and Socratic discussion, the hard work of learning, self-directedness, and an elitism based on pessimism.

As is also the case with the themes used to discuss Heinlein's general philosophy of education, these specific adult and popular education-related themes are derived from my previous discussions of Heinlein's biography in Chapter II, his curriculum in Chapter III, his methods of teaching and learning in Chapter IV, and his depictions of educated adults in Chapter IV. The supplementary philosophical material in Appendices D through I—especially Appendices F, G, and H—also provide general support for my use of these themes.

Fulfilling Human Potential through Lifelong Learning

As was pointed out in my discussion of Robert Heinlein's general philosophy of education, there is a continuing resonance between Heinlein's ideas and the ideas of educational liberalism (O'Neill, 1981). For example, in Dewey's now classic work Democracy and Education (1916), he provides one of the first philosophical linkages between human development and lifelong adult learning—a linkage which resonates with the theme of this section:

> Education must be reconceived, not as merely a preparation for maturity (whence our absurd idea that it should stop after adolescence) but as a continuous growth of the mind and a continuous illumination of life. In a sense, the school can give us only the instrumentalities of mental growth; the rest depends upon an absorption and interpretation of experience. Real education comes after we leave school and there is no reason why it should stop before death. (p. 25)

This passage from Dewey not only suggests a connection of Heinlein to O'Neill's educational liberalism once more, it also suggests a linkage to Elias and Merriam's (1995) progressive adult education philosophy.

Heinlein believed that adults should pursue a continuing and lifelong education that would develop all their potentialities as human beings. Perhaps Heinlein's most basic statement in regard to the goals of adult education can be found in a passage from Time Enough for Love (1973/1987), in which he told us through his authorial character Lazarus Long that

> a human being should be able to change a diaper, plan an invasion, butcher a hog, conn a ship, design a building, write a sonnet, balance accounts, build a wall, set a bone, comfort the dying, take orders, give orders, cooperate, act alone, solve equations, analyze a new problem, pitch manure, program a computer, cook a tasty meal, fight efficiently, die gallantly. Specialization is for insects. (p. 48)

This remarkable passage has so compellingly captured the philosophy of lifelong learning that it has been cited by Ronald Gross in support of his prescriptions for adult learning projects (Gross, 1991, p. 207).

The statement "Specialization is for insects" reveals Heinlein's fundamental attitude toward adult education. He believed that the human being's fundamental difference from other animals resides in the ability to think and the associated ability to learn from experience ("Gulf," 1949/1953). Put in other words, while the other animals have specialized adaptations that fit them for their respective ecological niches, humans have general adaptability that permit them to either adapt themselves to whatever environment they find themselves in, or to adapt different environments to themselves.

This general adaptability, however, exists only as a potential which must be evoked and operationalized through education and critical reflection upon experience. This perspective of the nature of human beings in terms of general adaptability resembles in some respects Adler's (1967) explanation of the distinction between human nature and animal instinct. At any rate, in Heinlein's view, to be fully human is to be a learner; learning is inseparable from any meaningful way of defining what it is to be human; not to be engaged in lifelong learning is to deny and abrogate both one's potential and moral responsibility as a human being.

Heinlein firmly believed that nowhere is human adaptability and learning more critical than in frontier societies. For example, in his juvenile novel Tunnel in the Sky (1954), he described the wide variety of skills and knowledge required by future pioneer leaders who colonize new planets: "He was a professional, of course, required to hold a degree in Outlands Arts—hunting, scouting, jackleg mechanics, gunsmithing, farming, first aid, group psychology, survival group tactics, law, and a dozen other things the race has found indispensable" (p. 21). Because the variety to be found in the universe is inexhaustible, it is impossible for a human being to know too much. For it is through a large stock of knowledge and conceptual tools that a human being can adapt to an

infinite variety of challenges and demands. Heinlein's human ideal is just such a multi-educated person—one who embodies the encyclopedic perspective.

The Encyclopedic Perspective

Elias and Merriam (1995) describe what they believe to be the historical roots of the modern philosophy of adult liberal education by referring to early diffusion of knowledge proponents such as Benjamin Franklin, Thomas Jefferson, Benjamin Rush, Josiah Holbrook, and Ralph Waldo Emerson. I believe that their lumping together of the diffusion of knowledge movement with adult liberal education is flawed because it fails to separate the elitist character of some proponents of liberal education (such as Martin, 1926; see also my discussion of adult education curriculum in Chapter III) from the populist character of the dominant diffusion of knowledge movement in American adult education. As I alluded in Chapter III, Heinlein's image of the encyclopedic, multi-educated person derives more from the popular education perspective (which has its roots in the diffusion of knowledge movement) than it does from any philosophic sympathy with liberal education.

Heinlein's ideally multi-educated human being is the encyclopedic synthesist, the "general specialist" who knows the structures and relationships of all fields of knowledge. For example, in the novella "Gulf" (1949/1953), Heinlein described a future association of extraordinary people who develop a language which permits them to learn more quickly and efficiently: "They had time to become encyclopedic synthesists, something denied any ordinary man by the straitjacket of... time.... An encyclopedic synthesist is concerned with structured shapes of knowledge; he cannot... study details in every field" (pp. 57, 59). The encyclopedic synthesist is not simply a polymath but one who systematically acquires the fundamental principles—the philosophies—of each field of knowledge; who understands the raison d'être of each and is able to make them converse, as it were, with one another.

Acquiring the perspective of the encyclopedic synthesist is a practical matter for coping with the increasing mountain of data which the human race has acquired, is acquiring, and will continue to acquire. Heinlein called this the "Crisis of the Librarian" in his essay "Where to?" (1980), "a crisis in the organization and accessibility of human knowledge" (p. 349). But this crisis is not simply about lacking an effective information

retrieval system; more fundamentally it is about having the kind of mind that can recognize important new connections among disparate facts and concepts. That is, "We need a new 'specialist' who is not a specialist, but a synthesist.... a new science to be the perfect secretary to all other sciences" (p. 349). But still another virtue of the encyclopedic synthesist is that she or he is far less likely to make the mistake of presumption. As Heinlein pointed out in Time Enough for Love (1973/1987), "Expertise in one field doesn't carry over into other fields. But experts often think so. The narrower their field of knowledge the more likely they are to think so" (p. 349).

Heinlein did not restrict the virtues of the encyclopedic perspective to only the chosen few. Rather, he believed the encyclopedic approach to education is fundamental to success in almost any field of study or occupation. In his view, this is simply to recognize that the world has grown so complex that it is important that all should better their educations. For example, in Farmer in the Sky (1950), we are told that "these days even a farmer needs the best education he can get. Without it he's just a country bumpkin, a stumbling peasant, poking seeds into the ground and hoping a miracle will make them grow" (pp. 213).

Given that the encyclopedic perspective is important, how did Heinlein indicate that we should acquire it? One of the most important tools for acquiring the encyclopedic viewpoints is mathematics. Mathematics is useful because it is a tool that can be used to symbolically represent and manipulate phenomena in many different fields, from the physical sciences to the social sciences. As Heinlein reminded us through his protagonist in Starship Troopers (1959/1968), "everything of any importance is founded on mathematics" (p. 204).

But mathematics is only a conceptual tool for synthesizing knowledge; it does not necessarily suffice for gathering knowledge in the first place. For that we need techniques for learning—and for remembering what we have learned. That is, we need techniques for helping us to use our minds more efficiently. Heinlein championed two such approaches: General Semantics and Renshaw memory techniques; the former because it would facilitate our mental "mapping" of the phenomena of our collective existence, the latter because it would help us to acquire and access our mental maps more effectively. As Heinlein stated in a passage from the novella "Gulf" (1949/1953), the Renshaw technique could potentially gain for us a five-fold increase in learning

efficiency: "Around World War II Dr. Samuel Renshaw at the Ohio State University was proving that most people are about one-fifth efficient in using their capacities to see, hear, feel, taste, and remember" (p. 51).

Education must also be life-long in order for any of us to acquire the encyclopedic perspective. "Matt was looking bug-eyed. 'My gosh! How long does it take to learn all those things?' 'You'll be studying the day you retire.' " (Space Cadet, 1948; p. 76). Here again, Heinlein appeared to resonate with the philosophical perspective of Elias and Merriam's (1995) progressive adult education movement with its Deweyan emphasis on lifelong education. And although Lindeman was not a proponent of studying subjects as much as he was a proponent of studying the issues, situations, and problems in which adults found themselves, he too favored lifelong learning. That is, he viewed adult education "as a process coterminous with life" (1926/1962, p. 5).

Lindeman, like Heinlein, deplored the mindset of specialists who "tend to become fractional personalities" which involves "shrinking of... personalities" (p. 34). He further said in regard to limited goals of education that "the adult learner who sets forth to educate himself in terms of any single objective will defeat his ends" (p. 53). I take this at the very least to imply Heinlein's own belief that adults should constantly be enlarging their learning horizons. But Lindeman also believed in the social mission of adult education, an issue related to my next theme.

Social Responsibility

Social responsibility is a frequent theme of the adult education literature. But the term is understood in different ways. Elias and Merriam (1995) describe two different adult education philosophies in which social responsibility is a key concern: the progressive and the radical. Radical adult education looks at social responsibility in terms of education for collective social action as a means for creating fundamental and widespread change in the social order—in effect to replace the existing social order with one that is socially just for all citizens. Radical adult educators include Marxists, Neo-Marxists, critical social theorists, anarchists, and radical feminists. This position has been ably articulated by Cunningham (1988) in the form of five principles of social responsibility for adult educators:

1. Be strong proponents of voluntarism....
2. Promote basic and critical literacy....
3. Make sure that the content of programs is open to competing ideas....
4. Encourage popular (populist-oriented) education programs...
5. Provide professional development programming that includes content that goes beyond nationalist concerns... (p. 143)

Progressive adult education looks at social responsibility in terms of promoting social consciousness in individuals as instruments of change within the existing social order. This conception has been clear from the origins of this philosophical approach in Dewey (1916) and Lindeman (1926/1961) to the present. For example, Blakely (as cited in Elias and Merriam, 1995) saw adult learning as fundamental to the solution of all social problems. Bergevin (1967) saw adult education as a factor in helping individuals mature from a "mere survival" level to a "responsible member of the social order" (p. 7). It is this idea from a progressive adult educator that helps connect Heinlein's idea of social responsibility to the progressive movement in adult education.

As in Heinlein's philosophy of general education, moral education is also important in adulthood. He firmly believed that lifelong education should not neglect the development of social responsibility for citizenship. But Heinlein did not believe in indoctrination as a means for developing social responsibility. As he points out in Starship Troopers (1959/1968): "Social responsibility above the level of family, or at most of tribe, requires imagination—devotion, loyalty, all the higher virtues—which a man must develop himself; if he has them forced down him, he will vomit them out" (p. 146). Adult education for social responsibility must therefore be undertaken freely and voluntarily, in which the individual comes to an uncoerced understanding and acceptance of his or her responsibility to others. It could be said that, for Heinlein, adulthood is not even possible without acquiring social responsibility for

> duty is an adult virtue.... There never was, there cannot be, a 'juvenile delinquent.' But for every juvenile criminal there are always one or more adult delinquents—people of mature years who either do not know their duty, or who, knowing it, fail. (Starship Troopers, 1959/1968, p. 96)

Bergevin's (1967) point that adult education is needed to help individuals ascend the maturity ladder to greater social responsibility can clearly be linked to Heinlein's own idea of hierarchical moral behavior. But how does one undertake the education of adults in social responsibility in a manner that respects each individual's freedom and dignity but which at the same time leads them into an understanding and acceptance of their duties? Heinlein might have said that it would be largely through critical thinking facilitated by the discussion of questions related to human values.

Critical Thinking and Socratic Discussion

Unlearning or at least challenging one's own deeply held beliefs is a part of coming to grips with the issue of social responsibility. From the philosophical standpoint of Elias and Merriam's (1995) radical adult education, Cunningham describes the issue this way:

> To encourage critical thinking in others, one must be able to think critically oneself.... If we accept the idea that the participation of critically aware citizens is basic to a democracy, then the development of critically aware persons who are in charge of their own education would be a norm for adult education programs in a democratic society.... If adult educators are to uphold a responsibility to contribute to a healthy democratic society by developing critically conscious adults, then they themselves must be capable of emancipatory thinking, or critical consciousness. (Cunningham, 1988, p. 138)

But even from the progressive adult education philosophical standpoint, critical thinking plays a part in developing social responsibility. For example, Lindeman said that adult education represented a process by which the adult learns to become aware of as well as evaluate his experience (Elias and Merriam, 1995). More recent writings elaborate the meaning of critical thinking. For example, Brookfield (1987) explains that

> being a critical thinker involves more than cognitive activities such as logical reasoning or scrutinizing arguments for assertions unsupported by empirical evidence. Thinking critically involves our recognizing the assumptions underlying our beliefs and behaviors. It means we can give justifications for our ideas and

> actions. Most important, perhaps, it means we try to judge the rationality of these justifications. (1987, p. 13)

Mezirow (1990) defines the kind of learning that emerges from the process of critical thinking and reflection as transformative learning, which he defines as "the process of learning through critical self-reflection, which results in the reformulation of a meaning perspective to allow a more inclusive, discriminating, and integrative understanding of one's experience" (p. xvi). Robert Heinlein's characters often seem to exhibit this kind of learning through critical reflection.

For example, Heinlein described one outcome of critical thinking applied to social responsibility in this passage from Starship Troopers (1959/1968): "[There are] deep, soul-turning readjustments and re-evaluations necessary to metamorphize [sic] a potential citizen into one in being" (p. 73). Along with Adler (1988), Heinlein believed in the discussion group as the perfect forum for this type of adult education. Through Socratic discussion, values and personal experiences can be critically reflected upon and examined through the "dialectical method" (Adler, 1988; p. xxiii), which leads to understanding rather than indoctrination. For example, in Heinlein's bildungsroman novel Space Cadet (1948), he made Socratic-style seminars a required part of the educational process for young officer cadets:

> Almost as entertaining was the required seminar in "Doubt." The course had been instituted... from [the] observation that every... organization... suffered from an inherent vice. [It] places a premium on conservative behavior and dull conformance with precedent... [and] tends to penalize original and imaginative thinking.... [realizing] that these tendencies are inherent and inescapable... [it was] hoped to offset them a bit by setting up a course that could not be passed without original thinking.... The method was the discussion group, made up of youngsters, oldsters, and officers. The seminar leader would chuck out some proposition that attacked a value usually held as axiomatic. From there on anything could be said. (p. 110)

Critical reflection can be accomplished in other ways than via the seminar room; it can be accomplished privately in the course of one's usual activities. Heinlein frequently

carried the reader "inside the heads" of his characters in ways that provide phenomenological perspectives of the experience of critical and reflective thinking. For example, in the novella "If this goes on—" (1940/1967), he described how the naïve protagonist John Lyle learns to critically examine his values and beliefs as he progresses on his inward journey from religious fundamentalism to inner freedom.

Similarly, the unsophisticated protagonist of Between Planets (1951) critically reflects on his experiences within a corrupt political system as he determines his own political and personal values. Kip Russell, the protagonist of Have Space Suit—Will Travel (1958), uses critical reflection to analyze his predicament as a prisoner of predatory aliens. These examples also point out that some learning is possible only after one has acquired some experience of life. After all, one cannot critically reflect on one's experiences unless one has had experiences.

Heinlein placed great value on studying the mistakes of others as well as one's own. Of course, history and biography are sources for facilitating this kind of critical thinking. For example, Heinlein described a political figure in his sword-and-fantasy novel Glory Road (1963/1970) who employs a technology for vicariously experiencing the memories of her predecessors: " 'I must experience their mistakes,' Star told me. 'Mistakes are the only certain way to learn.' " (p. 214). Clearly then, adults can achieve their inner transformations through group interaction and shared critical examination of values and experiences that take place in a Socratic seminar, through private reflection on and examination of their experiences, and through reflection upon and examination of the experiences of others.

I believe that Mezirow's (1990) definition of transformative learning has meaning for understanding Heinlein's perspective on critical thinking. It also has meaning for understanding Heinlein's fictional use of group discussion. Dominicé (1990) describes the role of group discussion for facilitating transformative learning as introducing "a dynamics in which new hypotheses emerge and are enriched by their continuous discussion within the group" (p. 208). Transformative learning also helps us understand Heinlein's use of fiction to engage the critical thinking faculties of his readers through his vicarious problem-solving techniques that I discuss in Chapter IV. For example, Greene (1988/1990a) declares that engagements with fictional works and "the use of imagination those engagements make possible... make a great deal happen in human

consciousness" (p. 253). Yet, not all adult education is appropriately conducted through discussion and reflection.

The Hard Work of Learning

Elias and Merriam (1995) characterized adult liberal education as throughout its history as suffering from an elitist bias which has persisted down to present times. As I pointed out in Chapter III, a strong proponent of liberal education in the first half of this century was Everett Dean Martin (1926). Martin believed that liberal education was only for the worthy few who could attain the goal of difficult study to master its curriculum. Stubblefield said that Martin viewed the popularization of knowledge with disdain (as cited in Elias & Merriam, 1995).

Although Heinlein was himself a popular educator, he also believed that some subjects were beyond self-education or popular education and needed more disciplined means of learning. "There are things that cannot be taught in ten easy lessons, nor popularized for the masses; they take years of skull sweat. This be treason in an age when ignorance has come into its own and one man's opinion is as good as another's" (Glory Road, 1963/1970, p. 172).

For example, he believed that General Semantics was just such a subject, having been taught it by professional semanticists in several public seminars as well having read Korzybski's and other semanticists' writings over several years. In a letter to science fiction editor John W. Campbell, he demonstrated his awareness of the pedagogical problems that attend the teaching and learning of some subjects (along with his irrepressible desire to nonetheless provide a popular educational treatment of the subject):

> I have been urged to tackle a primer of semantics and general semantics. I am moderately well prepared for the task... nevertheless there is a lot of research to be done and a monumental task of devising lucid pedagogical methods in a most difficult field, involving as it does a very nearly complete reorientation in methods of thinking even for the "educated" reader. I estimate that it may take from two to five years to complete. Incidentally, if you are interested, I would be willing to do a

> popular article or two on the subject for Astounding [Science Fiction Magazine]. (Grumbles from the Grave, 1989, pp. 12-13)

Science, languages, and mathematics are examples of other subjects that take discipline and long years of "skull sweat" to learn, although one may still approach them in a self-directed manner. Heinlein's wife Virginia is an example of a self-directed learner who spent years learning to speak, read, and write Russian—all with discipline and "skull sweat." Another example of self-direction in the hard work of learning—this time from the adult education literature—was a retired salesman who spent 20,000 hours in self-study of "history, mathematics, the sciences, literature, music, art, and philosophy" (Gross, 1977, p. 25).

Heinlein's theme of the hard work of learning is clearly not intended to limit access to education in the elitist tradition of classical liberal education. He just meant that some learning was hard work, but was nevertheless worthwhile and accessible to self-directed learners—which introduces the next theme.

Self-Directedness

All the above demonstrates Heinlein's belief in the essential character of self-directedness in adult education (as opposed to adult schooling). As I pointed out above, Heinlein believed that adults could take advantage of popular education as well as engage in more serious self-directed learning projects. In Chapter IV, I mentioned Tough's (1979) work on adult self-directed learning projects. Tough defined SDL (self-planned learning) in terms of a discrete learning project, which is

> a series of related episodes, adding up to at least seven hours. In each episode, more than half of the person's total motivation is to gain and retain certain fairly clear knowledge and skill, or to produce some other lasting change. (p. 7)

But as Brockett and Hiemstra (1991) and Candy (1991) have pointed out, learning projects need not be undertaken alone in order for the adult learner to be self-directed.

Heinlein's view was that even when studying subjects that require the help of others, one should be clear about one's own reasons for learning. One should also avoid too great a dependency on the help of others. For example, in the novel Friday

(1982/1983), the protagonist is advised that learning means more to us when we have to invest our own efforts. When she tries to mine the knowledge of her mentor about a particular point of interest, she is told, "Study it yourself. If I told you, you would not know; you simply would have been told" (p. 231).

As to the best way to approach a learning project, Heinlein could well have agreed with the advice of Samuel Johnson, the English lexicographer, who said that a person "ought to read just as the inclination leads" (Boswell, 1968; p. 91), and "what we read with inclination makes a much stronger impression. If we read without inclination, half the mind is employed in fixing the attention; so there is but one half to be employed on what we read" (p. 245). Likewise, Heinlein believed that following one's own curiosity was often the best approach to learning. For example, in Friday (1982/1983), the protagonist is given a learning task in the form of a question: "'Friday, what can you tell me about the influence of Louis Onze on French lyric poetry?'" But she is allowed to follow her own inclination as she electronically browses the world's information archives:

> Two hours later, I came up for air. I had not learned anything about poetry—so far as I could tell the Spider King had never even rhymed ton con with c'est bon or even been a patron of the art. But I learned a lot about politics in the fifteenth century.... I spent the rest of the day punching up French lyric verse since 1450.... I never did find out what effect, if any, Louis XI had on verse.... I... went on with French history since Louis Onze and that led me to the new colonies across the Atlantic and that led me to Adam Smith and from there to political science. (pp. 221-223)

But Heinlein also recognized that not every adult will want to learn and should probably not be forced to. This is very much in line with one of the tenets of self-directed learning that "personal autonomy [is] its hallmark" (Caffarella, 1993, p. 25). In Job: A Comedy of Justice (1984/1985), he cites an example of an adult who was uninterested in learning anything beyond his method of earning a living:

> I once had a neighbor whose knowledge of history seemed limited to two dates, 1492 and 1776, and even with those two he was mixed up as to what events each

> marked. His ignorance in other fields was just as profound; nevertheless he earned an excellent living as a paving contractor. It does not require a broad education to function as a social and economic animal. (p. 57)

Yet it is in his pessimistic recognition that some people will never be more than social and economic animals that we also find a trace of elitism in Heinlein's philosophy of adult education. That is, he recognizes that some people are self-directed not to learn.

Elitism Based on Pessimism

I mentioned above and also in Chapter III how Martin (1926) has been seen as elitist in his approach to adult education. I believe that educational elitists can be understood in terms of both cultural elitism and individual elitism. Martin, for example, was elitist in both senses in that he believed in the classical Western tradition of the liberal arts as well as believed that some people were more worthy of education than others. Adler (1988), on the other hand, also believes in the classical Western tradition of the liberal arts, but believes that all can and should benefit from it.

Although I have pointed out that Heinlein did have a curricular bias in favor of some subjects over others, his bias appeared to have had nothing to do with a preference for classicism. Instead, his bias appeared to have been based on pragmatic utility and cultural awareness. It rather appears that Heinlein's elitism is individual and personal, that some people were better equipped—either by nature or nurture, mostly the latter—to profit themselves and others by education. It is in Heinlein's conception of the human being as the fully actualized lifelong learner that we find the basis of an educational elitism in pessimism about the willingness of some people to learn. That is, any person who does not fulfill her or his unique potential as a human being, which resides in the human race's general adaptability through learning, is squandering a precious inheritance.

For example, in Time Enough for Love (1973/1987), he cites mathematics as a case in point: "Anyone who cannot cope with mathematics is not fully human. At best he is a tolerable subhuman who has learned to wear shoes, bathe, and not make messes in the house" (p. 247). Because Heinlein knew that many people are uninterested in fulfilling their human potential, he had serious reservations about the degree to which

many adults can be educated. In the novella "Gulf" (1949/1953), he told us that "common man can't learn to cope with modern problems. No use to talk about the unused potential of his brain, he has not got the will to learn" (p. 61).

The lack of the will to learn how to cope with contemporary problems is associated in Heinlein's mind with the hidebound habits of thinking and acting that adults have all acquired and that most are unwilling to abandon. For example, in The Cat Who Walks Through Walls (1985/1986), his protagonist points out that adult learning quite often involves relearning, something that many adults are unwilling to do:

> The hardest part about gaining any new idea is sweeping out the false idea occupying that niche. As long as that niche is occupied, evidence and proof and logical demonstration get nowhere. But once the niche is emptied of the wrong idea that has been filling it—once you can honestly say, "I don't know," then it becomes possible to get at the truth. (p. 228)

Similarly, in the novella "Lost Legacy" (1941/1953), his protagonists worry about how to help their fellow citizens to fulfill their human potential: "I wonder if we've been tackling this job from the right end? We've been thinking of reeducating adults, already set in their ways. How about the children? They haven't crystallized; wouldn't they be easier to teach?" (p. 156). And it is because children's minds are not yet crystallized—that they have no unlearning and relearning to undergo— that they "get used to new ideas faster than adults do" (The Door into Summer, 1956/1957; p. 147). It could even be said that, for Heinlein, the key to successful adult learning lies in Jesus's maxim regarding the need to become like little children (Matthew XVIII: 3). Heinlein also put it, "To stay young requires unceasing cultivation of the ability to unlearn old falsehoods" (Time Enough for Love, 1973/1987, p. 347).

Of course, another reason that some adults are unable to unlearn old falsehoods is cynicism. Indeed, in Heinlein's view, a sure sign of a miseducated person was the presence of cynicism, which has a similar relationship to society as envy and jealousy have toward other individuals. That is, both cynicism and envy stem from insecurity and one's unwillingness to accept personal responsibility for one's own happiness. In

fact, Heinlein declared in the novel I Will Fear No Evil (1970/1987), "I think the major problem in growing up is to become sophisticated without becoming cynical" (p. 473).

In regard to the willingness to uncynically engage the world, Dewey mentioned as one of the proper outcomes of education "the straightforwardness with which one goes at what [one] has to do.... unconscious faith in the possibilities of the situation" (1916, p. 174). In light of Heinlein's perspective on elitism, pessimism, and cynicism, it could be said that Heinlein had no separate philosophy for adult education; rather, he instead appeared to have had a single philosophy for the education of the human being.

The next section is interesting in light of Heinlein's loathing of the cynical attitude. As we shall see, Heinlein's view of the professional educational establishment came perilously close to cynicism in places.

Heinlein's Views of The Educational Establishment

Before concluding our examination of Heinlein's expressed views regarding philosophy of education, it would be helpful to examine his remarks and observations of the existing educational establishment in the United States. I warn the reader that Heinlein's views of professional educators were not very flattering. On the other hand, Heinlein's unflattering views of professional education appear to have been directed at public schooling, schools of education, and certain higher education practices rather than at adult education or adult educators. Nonetheless, to the extent that adult educators are faculty of schools of education and members of the larger education community, they do come under Heinlein's disapproving gaze.

Attacks on the educational establishment are not unique to Heinlein. Dewey (1916), for example, acknowledged contemporary criticisms of pedagogy and offered his own critiques of the then existing educational establishment by way of introducing what became the progressive education movement. Progressive education itself came under attack a generation later by pedagogic conservatives in higher education and adult liberal education such as Adler (1988), and pedagogic conservatives concerned with primary education such as Flesch (1955, 1981). These attacks focused on the imputed poor results of progressive education (as well as other pedagogic practices), specifically that children were leaving school unable to read and that young adults were leaving university all but ignorant of issues outside their narrow specialties. More

recently, Hirsch (1987) attacked both public and university education because students were not being given a grounding in cultural literacy.

University education came under attack in Dewey's generation as well as after his passing (although these attacks had little if any to do with Dewey). For example, Flexner's (1930/1968) comparison of American, British, and German universities found much to disapprove of in American higher education. Flexner, an enthusiastic proponent of the German university model, felt that American colleges and universities allowed students to graduate without rigor and depth. Interestingly, Flexner was also highly critical of the adult education programs of some universities, attacking university extension programs for adults such as the Columbia University Evening School.

On the other hand and more recently, Taylor (1969)—university administrator and college president—took the opposite point of view from Flexner. Taylor, a past friend of John Dewey and Alexander Meicklejohn—both famous in adult education as well as higher education—criticized the rigidity of American universities, a rigidity resulting from Flexner-inspired reforms in the 1930s and 1940s. Taylor argued for "an open curriculum... no required courses... formal departments... faculty hierarchy, or other educational impediments" (p. ix). Thus we are presented with two opposite—and extreme—views of the university. With Bloom's (1987) critique of university education, the direction of higher education criticism seemed to swing in a third direction, back towards elitist liberal education as the model of the university.

And of course, the various camps within adult education have criticized each other for decades. In fact, much of the criticism of the adult education establishment appears to come more from the inside than the outside. Examples include the controversies between Martin's (1926) adult liberal education camp and Lindeman's (1926) adult progressive education camp in the middle part of this century and the more recent controversies between the humanistic adult education camp and the radical/critical adult education camps (Beatty, 1992; Ilsley, 1992).

It is easy to get the impression that adult educators would welcome more external criticism if only to show that they are visible to those outside the adult education community. This gets at the point of marginalization, that is, the perception among adult educators that they are pushed to the periphery of both social and professional

consciousness. Teachers in public schools have always experienced marginalization (Ballantine, 1993), but adult educators such as Clark (as cited in Griffith, 1991) and Pittman (1989) have complained that adult education is marginalized even within the educational establishment.

At any rate, Heinlein's criticisms of the professional educational establishment go beyond mere issues of professional focus and marginality. Two strong themes that emerge in this examination of Heinlein's views are fraudulence and incompetence.

Academic Fraudulence

First of all, Heinlein was quite clear that he believed that schools of education are largely a waste of time and are provided for inferior students and faculty to play at. This is a common opinion of many outside the educational establishment, but Heinlein also loaded English departments into the same hopper with their education counterparts. For example, in his essay "The Happy Days Ahead" (1980), he states: "In a school that has no school of education... majoring in English Literature is the obvious way to loaf through four years" (p. 531). Heinlein was so contemptuous of schools of education that he uses Teachers College of Columbia University as a site in which one of his characters obtains a fraudulent doctorate (The Number of the Beast, 1980/1982). In that novel, the character Zebadiah John Carter admits with shame how he obtained a Ph.D. in education without going to any intellectual effort worthy of the name:

> I undertook to prove that [one] can get a doctorate from a major university without knowing anything and without adding anything whatever to human knowledge.... To prove that degrees per se are worthless. Often they are honorifics of true scientists or learned scholars or inspired teachers. Much more frequently they are false faces for overeducated jackasses.... I knew that the stupidest students, the silliest professors, and the worst bull courses are concentrated in schools of education.... a school in which the pie was all meringue and no filling... courses in which the answers are matters of opinion and the opinion that counts is that of the professor. (pp. 78-83)

Continuing in the same vein, another character replies that

> It is a commentary on American higher education. What Zeb claims to have written is no worse than the trash I know is accepted as dissertations these days. His case is the only one I have encountered wherein an intelligent and able scholar... set out to show that an "earned" Ph.D. could be obtained from a famous institution... in exchange for deliberately meaningless pseudoresearch. The cases I have encountered have involved button-counting by stupid and humorless young persons under the supervision of stupid and humorless old fools. I see no way to stop it; the rot is too deep. The only answer is to chuck the system and start over. (p. 85)

Heinlein first commented on fraudulence in higher education in his novel Stranger in a Strange Land (1961/1987) through his authorial character Dr. Jubal Harshaw, a possessor of the D.Sc., M.D., and L.L.B. degrees. When the character Ben Caxton calls Jubal "Doctor Harshaw," he is instructed to call him merely Jubal because "when they began handing out doctorates for comparative folk dancing and advanced flyfishing, I became too stinking proud to use the title. I won't touch watered whiskey and take no pride in watered-down degrees." When he is informed that the M.D. degree still means something, he answers "Time they called it something else, so as not to confuse it with playground supervisors" (pp. 85-86).

Nor was Heinlein impressed with the efforts of various disciplines to appear "scientific" by trying to quantify and measure that which is inappropriate to treat in that fashion. He calls such approaches "button counting" and "button sorting" (Time Enough for Love, 1973/1987; p. 241). Heinlein believed that the educational establishment affected a misguided air of scientific practice when in fact it was often merely button-counting. For example, in Stranger in a Strange Land (1961/1987), he wrote, "[Jubal Harshaw was not tempted] to make a 'project' of Smith, with controls, measurements, and curves of progress. Harshaw had the arrogant humility of a man who has learned so much that he is aware of his own ignorance; he saw no point in 'measurements' when he did not know what he was measuring" (p. 95).

In any event, Heinlein believed that the academic establishment in general is more concerned with self-perpetuation than it is with truth. In his very first story "Life-Line" (1939/1967), he declares through his authorial character Dr. Hugo Pinero that "to the academic mind, authority is everything and facts are junked when they do not fit theory

laid down by authority. It is this point of view—academic minds clinging like oysters to disproved theories—that has blocked every advance of knowledge in history" (p. 27). In short, Heinlein—for all his love for and devotion to education and learning—had little use for the modern American educational establishment, particularly as it is manifested in schools of education. But what is Heinlein's attitude toward primary and secondary educational institutions?

Pedagogical and Administrative Incompetence

Heinlein was quite bleak about the effectiveness of contemporary pedagogy. He believed that modern pedagogic methods are a travesty. He declares outright in his interstitial commentary in "The Third Millenium Opens" (1980) that "There is a special circle in Hell for the 'Educators' who decided that the Three R's really weren't all that important. Concerning our public schools today: Never have so many been paid for so little." He continues by saying

> I thank whatever gods there be that I went to school so many years ago that I had no choice but to be tightly disciplined in classes in which the teachers did not hesitate to fail and to punish. My first-grade class had 63 kids in it, one teacher, no assistant. Before the end of the second semester all 63 could read. (p. 384)

Heinlein claimed to have solid comparative data—in the form of fan letters—on the relative effectiveness of American pedagogy versus that practiced in most other industrialized nations:

> I first started noticing the decline of education through mail from readers. I have saved mail from readers [since 1939]. Shortly after World War Two I noticed that letters from the youngest were not written but hand-printed. By the middle fifties deterioration in handwriting and in spelling became very noticeable... today a letter from a youngster in grammar school or in high school is usually difficult to read and sometimes illegible—penmanship atrocious... spelling unique, grammar an arcane art.... Then such defects began to show up among college students.... I saw sharply this progressive deterioration because part of my mail comes from abroad.... A letter from any part of the [British] Commonwealth is

invariably neat, legible, grammatical, correct in spelling, and polite. The same applies to letters from Scandinavian countries.... Letters from Japan are invariably neat. (pp. 534-535)

In many ways, Heinlein's last juvenile (Have Space Suit—Will Travel, 1958) was a commentary on the already apparent problems of primary and secondary schooling in the 1950s. After the protagonist's father is alerted to irregularities in his son's education, he begins investigating the local high school. He discovers that his son is not learning very much from Centerville High, a showplace of Deweyan Progressivism.

I felt shocked. "Why, Dad, Center is a swell school." I remembered things they had told us in P. T. A. Auxiliary. "It's run along the latest, most scientific lines, approved by psychologists, and—"

"—and paying excellent salaries," he interrupted, "for a staff highly trained in modern pedagogy. Study projects emphasize practical human problems to orient the child in democratic social living, to fit him for the vital, meaningful tests of adult life in our complex modern culture. Excuse me, son; I've talked with Mr. Hanley [the principal]. Mr. Hanley is sincere—and to achieve these noble purposes we are spending more per student than is any other state save California and New York."

"Well . . . what's wrong with that?"

"What's a dangling participle?"

I didn't answer. He went on, "Why did Van Buren fail of re-election? How do you extract the cube root of eighty-seven?"

Van Buren had been a president; that was all I remembered. But I could answer the other one. "If you want a cube root, you look in a table in the back of the book."

Dad sighed. "Kip, do you think that table was brought down from on high by an archangel?.... Centerville High is a delightful place, well-equipped, smoothly administered, beautifully kept. Not a 'blackboard jungle,' oh, no!—I think you kids love the place. You should. But this—" Dad slapped the curriculum chart angrily. "Twaddle! Beetle tracking! Occupational therapy for morons!" (pp. 8-9)

Heinlein believed that American education will continue to get much worse in the future—possibly to the point that it will abandon real teaching in favor of outright institutionalization and custodianship. In his grim novel of early 21st century America I Will Fear No Evil (1970/1987), he described how a bright young woman was never taught to read because she had been assigned to a nonreading track in her primary school:

> Computer fouled up my pre-school test records and I was in sixth grade before anybody caught it. Then it was sort of late to change tracks and I stayed on the "practical." There was talk of putting me through a remedial but the principal put his foot down. Said there wasn't enough budget to handle the ones who could benefit from it. (p. 400)

The above passage strongly indicates Heinlein's belief that all children who are not developmentally disabled can and should be made literate. Whether he believed in tracking children in other ways is not clear. Some indication that he did believe in some form of academic versus vocational tracking is given in an interview with Virginia Heinlein in which she discussed her late husband's views about education:

> If people are going to be put on a non-college track, they should be allowed to learn a trade at the high school level. There isn't any point stuffing their heads full of Shakespeare and things like that. It's just an expensive waste of money.... Now, I don't say there aren't late bloomers, but you can't run a whole system for the sake of late bloomers. (Owenby, 1994c)

This statement of Virginia appears to be at odds with some of my earlier themes regarding Robert's belief in the educability of most people. I must admit that, if this statement represents Robert's authentic belief, then it presents a clear contradiction with some conclusions of this study. But I am inclined to believe that this statement is more representative of Virginia's philosophy than her husband's. Virginia pointed out to me after reading an initial draft of this dissertation that late blooming adults can make up for defective preparation because of their greater motivation to learn (Personal communication, July 18, 1996).

Heinlein also believed that the political and administrative governance of most American schools was badly mishandled. Local school boards were particular targets of his ire. For example, in the novella "Lost Legacy" (1941/1953), he described how a naïve grass-roots effort to alter the curriculum for school children is answered: "Don't think for a moment that you could get past local school boards; they are the tightest little oligarchies in the whole political system" (p. 156). Elsewhere in the same story, school boards are again made the target of Heinlein's ridicule: "I envy you kids... going off to tackle the whole educational system. You've got your work cut out for you. Do you remember what Mark Twain said? 'God made an idiot for practice, then he made a school board' " (p. 145).

All in all, Heinlein had weighed the educational establishment in the balance and found it wanting. Yet, it seems clear that the reason for his disappointment in American education was that he so profoundly believed in its possibilities. In the next section, I will summarize Heinlein's philosophy of education and situate it within the perspectives of educators from both the general and adult education fields.

Perspectives on Heinlein's Philosophy of Education

Based on Heinlein's expressed views on various aspects of education, as well as his philosophical views in general (see Appendices F and G in particular), one would have to conclude that Heinlein's chief educational values for both children and adults are social responsibility and competence. That is to say that he believed that there was a family and community responsibility to prepare human beings to become socially responsible citizens. To become socially responsible is to learn how to behave ethically towards others and to know when to place the welfare of others ahead of one's own.

But social responsibility demands that each member of the social group has made himself or herself able and competent to the limits of each's human potential. That is to say, the survival and welfare of the social group depends on cultivating the general adaptability of each individual within that group. General adaptability requires continuous, lifelong learning; therefore lifelong learning is the moral duty of each human being who has accepted the responsibility of citizenship.

Heinlein's perspective in its own fashion appears to reconcile the contrasting themes of individualism and social responsibility in adult education. Indeed it denies

Brookfield's (1993) assertion that "A view of learning which regards human beings as self-contained, volitional beings scurrying around in individual projects, is one that works against cooperative and collective impulses" (p. 239). Instead, the evidence so far indicates that Heinlein would likely have regarded such a perspective of individual learning as a caricature of his own view.

The instrumental goals for pursuing the lifelong learning that Heinlein believed is required for achieving the human goal of general adaptability are mathematics, languages, and history—the three legs of Heinlein's stool of human understanding. Equipped with these three tools of learning, the human being is positioned for a lifetime of self-directed learning as well as immediate occupational utility. Nevertheless, although all can potentially benefit from education, the fact is only a relative few—because of family environment, an inept education system, or disabling habits of mind—are capable of making full use of education—most are destined to function merely as social and economic animals. Very few adults are capable or willing to overcome acquired habits of mind and are consequently unable to undergo the unlearning and relearning required for pursuing lifelong education.

Heinlein's Educational Philosophy: Some Taxonomic Approaches

I have found O'Neill's (1981) educational ideologies approach to understanding philosophy of education to be the most useful approach for sorting educational perspectives into a taxonomic framework for comparison. But O'Neill's taxonomy, while appropriately considering educational values as expressions of underlying ideologies, also admits that some educational philosophers' views are too complex to allow for a single placement on his continuum.

For example, O'Neill repeatedly made multiple assignments of Dewey and various progressive educators into both his educational liberalism and his educational liberationism categories. And so it is with Heinlein. Because O'Neill's taxonomy is based on the reactionary-radical continuum whose controlling idea is the attitude toward promoting social change (see Figure 1), it is possible to argue that any point of view that recognizes the doctrine of progress is a liberal view. The concepts of both science and science fiction are bound up with the concepts of progress and change.

Because Heinlein was committed to science and progress, it is possible on the basis of O'Neill's model to argue that Heinlein was fundamentally liberal in his viewpoint.

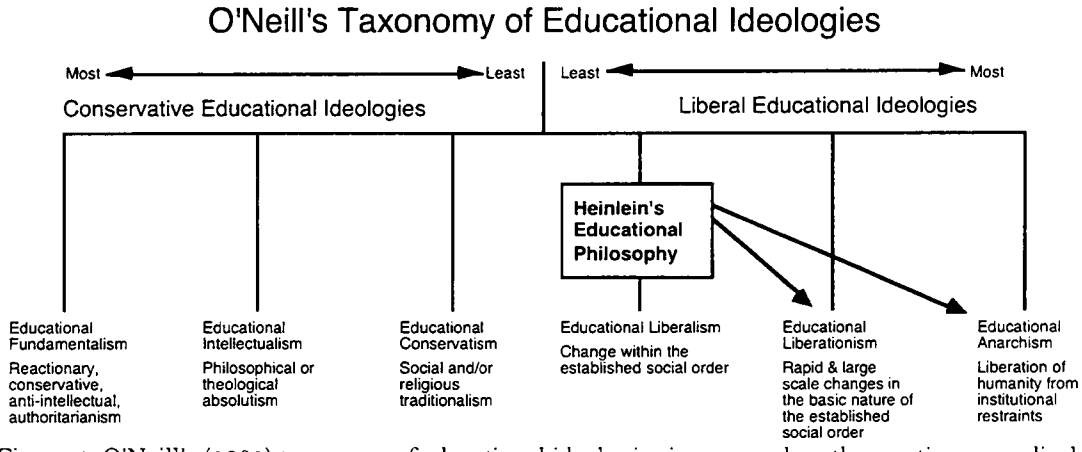


Figure 1: O'Neill's (1981) taxonomy of educational ideologies is arranged on the reactionary-radical continuum with the three conservative ideologies on one side and the three liberal ideologies on the other. Heinlein's views primarily fit within the ideology of educational liberalism with some sympathies toward selected points of view within both educational liberationism and educational anarchism.

In addition, Heinlein consistently wrote against political authoritarianism, anti-intellectualism, and both academic and religious traditionalism. Indeed, the whole trend of Heinlein's efforts to influence the viewpoints of his readers can be summarized in the following point: Growth in scientific knowledge and population are forcing change upon us; 19th century thinking is inadequate for coping with change; but some of the newer thinking doesn't work either; our only hope is to shun wishful thinking and learn how to cope with change using the best conceptual tools we've got; that takes scientific thinking and personal responsibility.

The difficulty in placing Heinlein within O'Neill's framework is that Heinlein's prescriptions for change are often phrased in a more tough-minded—even dogmatic—manner than is usually the case with the writings of educational liberals such as Dewey (1916) and Lindeman (1926/1961). Heinlein himself was known as a tough-minded liberal when he was active in liberal politics in California in the 1930s and early 1940s. Nevertheless, it is also true that Heinlein changed his political affiliation even while remaining committed to the philosophy of change outlined above. One is tempted to speculate that Heinlein decided that his philosophy of change could not contain itself, but that it needed an anchor in the form of a stable social and political framework.

Desiring social and political stability as a framework for pursuing and managing change sounds very like O'Neill's category of educational liberalism (see Figure 1).

Consider O'Neill's (1981) basic psychological description of the educational liberal:

> The liberal emphasizes individual critical thinking as the origin and basis for all enlightened social change. He is dubious about social ideologies that have not emerged out of inquiry founded on the basis of scientific objectivity. In a sense, the liberal gives the personal (the individual) priority over the social (including the political). (p. 78)

No better description of Heinlein's fundamental disposition regarding either educational or political ideology could be given than this passage. For it cuts through superficial issues of pragmatic politics to arrive at the basic epistemological grounding within the scientific method of both social liberalism in general and Heinlein in particular.

Still another point to consider is how O'Neill places educational existentialists within his framework. We read that

> contrary to popular opinion, existentialists are seldom educational liberals. Their emphasis on intellectualism (in both the informational and reasoning dimensions of the term) make them clearly sympathetic to much that the educational intellectualist advocates.... Some existentialists are probably best described as "directive liberals," but others are probably more appropriately categorized as.... a hybrid phenomenon when it comes to educational ideology. (O'Neill, 1981, p. 264)

Again, O'Neill's description of the tough-minded existentialist educator brings us square up against Heinlein's own eclectic combination of liberalism and no-nonsense individual responsibility. Heinlein's own self-declared ideology is a combination of existentialism (Farnham's Freehold, 1964/1971) and rational anarchism (The Moon is a Harsh Mistress, 1966/1968). Heinlein's place on O'Neill's taxonomy remains on the liberal side of the continuum even though we must perforce admit him some freedom of movement.

Heinlein's Place in Adult Educational Philosophy

Because of the limitations pointed out in most taxonomies of philosophy of education at the beginning of this chapter, framing Heinlein's perspectives within those taxonomies offers a greater challenge (Happily, that is not the case with O'Neill's (1981) taxonomy of educational ideologies). In the realm of adult educational philosophy, both Elias and Merriam (1995) and Hiemstra (1988) are cases in point. Both represent the approach that O'Neill terms the educational philosophies approach discussed at the beginning of this chapter (although Hiemstra is not as conceptually "clean" in his approach as Elias and Merriam).

Nevertheless, Elias and Merriam's liberal, progressive, behaviorist, humanistic, and radical (but not the analytic) adult educational philosophies can be sorted onto an O'Neill-like continuum (see Figure 2).

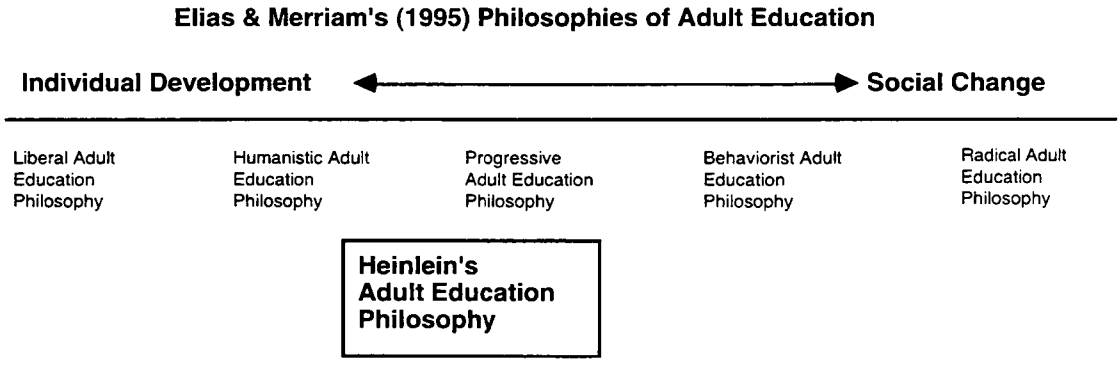


Figure 2: Elias and Merriam's (1995) adult educational philosophies can be placed on a continuum between the two ideological poles within adult education of individual development and social change. The analytic position stands outside this continuum. Heinlein's views of adult education probably fit best somewhere between the Humanistic and Progressive positions.

Unlike the field of general philosophy of education in which O'Neill's (1981) taxonomy based on the conservative-liberal continuum is so useful, Elias and Merriam's taxonomy appears to start with a presumptive bias towards the liberal end of O'Neill's continuum. Therefore it would appear a more useful approach to arrange adult education philosophies upon a continuum which reflects the two poles of dialogue among adult educators: education for personal development and individual change (Beatty, 1992) and education for social change (Ilsley, 1992).

Figure 2 depicts a possible arrangement of Elias and Merriam's (1995) adult educational philosophies on such a continuum with Heinlein's position proposed as somewhat intermediate between humanism and progressivism. In any event, Heinlein was quite against behaviorism as an adequate philosophical approach for dealing with human beings ("Lost Legacy," 1941/1953; Time Enough for Love, 1973/1987). In fact, in a passage quoted by iconoclastic adult educator Ronald Gross (1991), Heinlein declared that "If men were the automatons that behaviorists claim they are, the behaviorists could not have invented the amazing nonsense called "behaviorist psychology." So they are wrong from scratch—as clever and as wrong as phlogiston chemists" (Time Enough for Love, p. 249).

It should also be pointed out that while Heinlein's views are somewhat eclectic in regard to adult education, his basic position tends toward individual development rather than social change as a first purpose for adult education. On the other hand, Hiemstra's (1988) taxonomy (see Figure 3) attempts to conjoin two different conceptual approaches to philosophy of education: formal systems and educational philosophies (O'Neill, 1981).

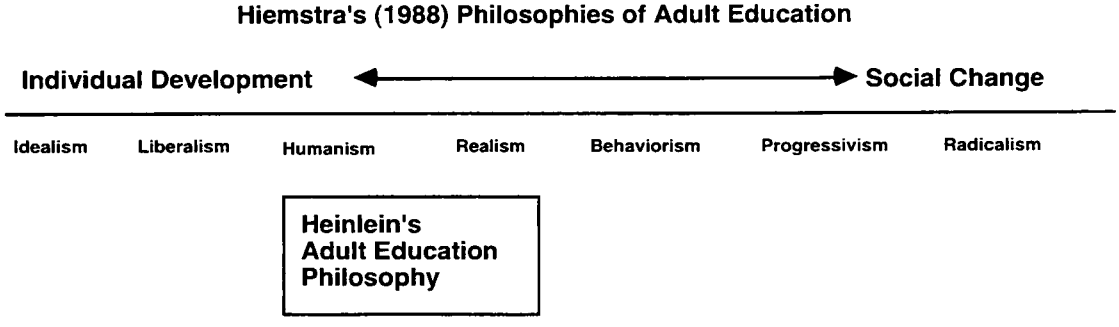


Figure 3: Hiemstra's (1988) philosophical positions within adult education can be placed on a continuum between the two ideological poles within adult education of individual development and social change. Heinlein's views of adult education probably fit best somewhere between the Liberalism and Realism positions, with his predominant sympathies lying with Humanism. Hiemstra's mixed approach to taxonomizing adult educational philosophies tends to be incongruent with both O'Neill (1981) and Elias and Merriam (1995). These incongruences causes Heinlein's position to be placed rather more distant from progressivism than I believe is actually the case.

Three Hiemstra positions which correspond to the formal systems approach are idealism, liberalism, and realism. These three positions generally correspond respectively to Platonic idealism, classical Aristotelian realism, and modern empirical

realism. The remaining four Hiemstra positions, which correspond to the educational philosophies approach, are progressivism, behavioralism, humanism, and radicalism.

Heinlein's relative position vis a vis Hiemstra's taxonomy is once again made clearer after arranging his philosophical positions on the individual change versus social change axis. Although Pratt (1993, p. 16) points out that behaviorism and empiricism dominated American views of learning in the 1950s and 1960s, these views are not necessarily joined at the hip. Heinlein would have applauded empiricism but would not have agreed with behaviorism. Heinlein's philosophical bias towards individual change combined with his sympathies for both the existentialist and scientific points of view clearly place him closer to the humanism position in Hiemstra's taxonomy.

An adult education-related taxonomy intermediate between O'Neill's (1981) educational ideologies approach and Elias and Merriam's (1995) educational philosophies approach is Caffarella's (1993) framework (see Figure 4). Her taxonomy is not meant to be an inclusive system for describing all adult education practices but rather focuses on providing philosophical orientations to the limited theoretical area of self-directed learning. Caffarella has described four different philosophical orientations to SDL: humanism, progressivism, behaviorism, and critical theory.

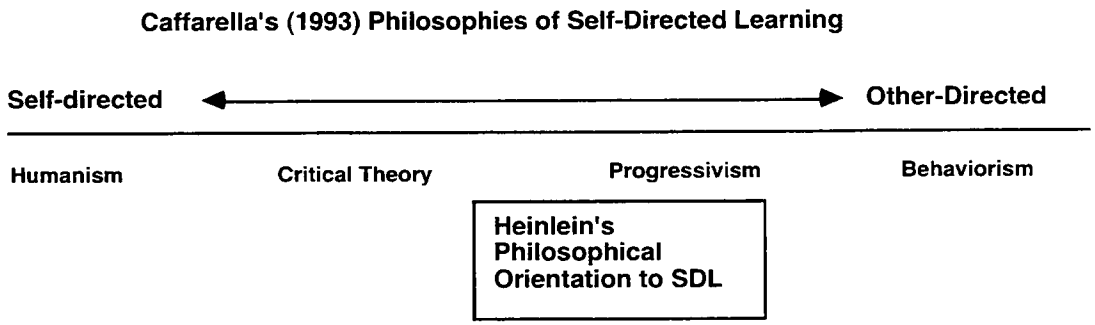


Figure 4: Caffarella's four philosophical orientations to self-directed learning are arranged on a continuum of directedness. Heinlein's views are occupy a somewhat middle position on this scale but with an acknowledged bias toward progressivism.

With regard to humanism's tenet that "when educators are more involved in the learning process, their most important role is to act as facilitators or guides, as opposed to content experts" (p. 26) Heinlein would have disagreed. For example, in

Heinlein's novel To Sail Beyond the Sunset (1987), when the character Maureen Smith seeks an advisor to guide her through a doctoral program, she deliberately selects a content expert. In addition, in his much earlier novel Space Cadet (1948), the protagonist Matt Dodson's educational advisor is clearly at home in all the fields of knowledge that he expects his charge to learn.

Progressivism's tenet that "learners are primarily responsible for their own learning and that educators serve as guides and encouragers"(Caffarella, p. 26) is quite close to Heinlein's view in the examples cited above. That is especially the case when we add Heinlein's stipulation that the educator should be competent in the realm of learning being pursued. Thus in Caffarella's self-directed learning framework, Heinlein would tend more toward her progressivism position than her humanism position.

In spite of Heinlein's oft-stated objection to psychological behaviorism, one is tempted to say that behaviorism as practiced in guiding self-directed learning can be merely a pragmatic matter of supplying conceptual tools for ensuring that learning takes place rather than an abdication of personal autonomy. In regard to critical theory, Caffarella cites the work of Mezirow (1985) and Brookfield (1986) who emphasize the critical thinking aspect of self-directed learning. As I alluded earlier in this chapter in connection with transformational learning, Heinlein would likely have agreed with the connection of critical thinking with self-directed learning.

Because Caffarella's approach to philosophies of self-directed learning appear to focus on how much the self-directed individual requires direction from guides or facilitators, it seems appropriate to arrange her four philosophies on a directiveness continuum with self-directedness on one end and other-directedness on the other (Figure 4). Because of the tension in his philosophy between individual freedom on the one hand and expert knowledge on the other, Heinlein occupies a somewhat middle-of-the-road position on this continuum. It is interesting that he is again associated with the progressivist position.

Relating Heinlein to Critical and Feminist Perspectives in Adult Education

It is probably fair to say that Heinlein would have been unsympathetic to the critical/feminist philosophical approach to adult education. This is likely because he tended to dislike Marxism and therefore presumably all neo-Marxist critiques as well

(Starship Troopers, 1959/1968; To Sail Beyond the Sunset, 1987). Further, Heinlein came to regard socioeconomic inequalities as functions of natural or self-acquired abilities—as outcomes of the inevitable sorting of human abilities and efficacies in the social and economic marketplaces. He would have tended not to regard such inequalities as symptoms of the inherent structural flaws in bourgeois capitalism—except insofar as those structural flaws result from inept governmental meddling in the natural sorting mechanisms. Heinlein would therefore have tended to see a more useful purpose for adult education as helping individuals acquire more useful skills with which to enter the marketplace rather than in acquiring techniques with which to critique and change it.

Because of what could be called a somewhat bourgeois-functionalist approach to adult education, it is likely that some feminists within adult education would tend to see Heinlein as reinforcing sexist ideologies that view women in biological-functionalist perspectives rather than in terms of sexual politics. For all his commitment to traditional feminism, Heinlein could thus be seen by liberationist feminists as perpetuating gender oppression by ignoring power relations. For example, in Heinlein's novel To Sail Beyond the Sunset (1987), his character Maureen approaches her return to higher education and her subsequent life in much the same way that a self-confident male would do who has figured out how the system butters the bread of those who "work" it.

Within Tisdell's (1993b) "liberatory" (p. 205) model of feminist learner, Heinlein's character Maureen would be viewed as a system exploiter, not a system changer. Tisdell (1993a) could also likely object that Heinlein's preferences for knowledge of science and technology is an example of his investment in an "education [system that has] been... designed for the education of men, with a knowledge base predominantly based on a rationality that was socially constructed by white males" (p. 98). Similarly, Cunningham, in contradistinction to what I call Heinlein's marketplace approach to human equity, complained that the white, male, capitalist hegemony with its "technical rationality" drives the "marketplace" of adult education (1992, p. 110).

For similar reasons, critical theory would tend to view Heinlein's stories as promoting the interests of the scientific-technological elite. Applying a critical theorist approach to Heinlein's philosophy of adult education involves asking some or all of the following questions about his writings: Where did Heinlein situate power, knowledge,

and wealth? Whose interests are being served? What tenets of the dominant ideology are being expressed or reinforced? What contradictions and conflicts are inherent in the existing social structure?—in short, where do we find hegemony? As Brookfield (1993) puts it,

> Hegemony describes the process whereby ideas, structures, and actions come to be seen by people as both natural and axiomatic—as so obvious as to be beyond question or challenge—where in fact they are constructed and transmitted by powerful minority interests to protect the status quo that serves these interests. (p. 234)

Critical theory in general has remarked the degree to which knowledge production and use has been appropriated by privileged groups in society (Welton, 1993). Collins (1991) has pointed out the degree to which professional experts have appropriated areas of knowledge that "formerly belonged to the everyday lifeworld of reasonably competent, attentive adults" (p. 94).

Now, Heinlein's views need careful handling here. In one sense, Heinlein would probably have agreed that increasing specialization and accumulation of knowledge has disenfranchised the average individual from participation in the common stock of humanity's knowledge. Adler (1988) has also recognized this problem but he and Heinlein addressed it differently. While Adler would return to liberal education for all, Heinlein would have likely replied that liberal education is an insufficient remedy. He did not believe that the great mass of human beings—for reasons I mentioned previously—were likely to master much of the new knowledge required in the modern world ("Gulf," 1949/1953).

On the other hand, he was genuinely chagrined at an educational system that seemed incapable of giving a sound grounding in those basic knowledge and skill areas that are within the capacity of most people. But in regard to the burgeoning knowledge and technology in today's world, in Heinlein's view what was required is a new profession called the encyclopedic synthesist that can master the outlines of knowledge and direct its use more efficaciously for the benefit of all. Clearly such a profession would constitute a new knowledge elite that would do nothing towards eliminating the knowledge disenfranchisement that Welton and Collins complain of.

Although a critical theorist examination of Heinlein's stories would likely indicate a pervasive hegemony at work, Heinlein might have answered that his stories are written deliberately to legitimize a specific kind of hegemony—that of self-determined individuals of both sexes who master their circumstances by pluck, courage, and self-directed learning. If that tends to "privilege" the scientific-technological elite, then, in Heinlein's view, such an elite has legitimized itself through a more efficacious worldview.

Heinlein's belief that progress is good and that progress comes from self-directed, competent individuals who practice the scientific method is not altogether incongruent with some critical and radical aspects of adult education philosophy. Brookfield (1993), for example, tells us that "although individualism can be a divisive, repressive idea, it also contains a strong libertarian streak, a belief that people should control their own environments and destinies rather than having these framed by external authorities" (p. 231). And Heinlein would certainly have reminded us that authoritarianism arises out of good intentions quite as often as not—even the good intentions of those committed to social justice.

Heinlein was not ignorant of how privileged minorities can exercise hegemony in order to maintain and perpetuate their power, privilege, and interests (although he did not frame his observations in the discourse of critical theory). Indeed, many of his early stories depict individuals struggling against powerful hegemonic interests ("Life-line," 1939/1967; "Let There be Light," 1940/1951; "If This Goes On–," 1940/1967; "Logic of Empire," 1941/1967). At least two of the protagonists in these stories become conscious of their oppression through critical reflection upon their experiences.

But I would argue that Heinlein came to regard hegemony as an inevitable feature of any socio-politico-economic landscape, the rational response to which was individual resistance to, and mastery of, the forces that control our lives. As he said through his authorial character Lazarus Long in Time Enough for Love (1973/1987), "Certainly the game is rigged. Don't let that stop you; if you don't bet, you can't win" (p. 240). What Heinlein did not want to see were institutional counter-responses to institutional hegemonies because of his belief that such responses often create more inequalities and injustices than they eradicate.

Conclusion

Heinlein's adult educational philosophy was almost certainly nourished by the three early 20th century movements within American adult education described by Stubblefield (1988): diffusion of knowledge and culture, social education, and liberal education. Heinlein's early years gave him direct experience with the diffusion of knowledge and culture impulse through the traveling chautauquas and labor temple lecture series. His early "Future History" stories (The Past through Tomorrow, 1967) demonstrated some of the same concerns with mob action and social hysteria that were obsessions of many in the liberal adult education camp such as Martin (1926).

Clearly, in those days, Heinlein was very much in sympathy with his teacher Will Durant and other members of the New School for Social Research, who shared the view that "the popularization of liberal adult education [was] a way to combat the growing threat to democracy posed by society during the inter-war years" (Schied, 1995; p. 233). And his political involvement and grass roots activism with Upton Sinclair's EPIC organization gave him experience with the social education aspect of adult education as championed by Lindeman (1926/1961). Heinlein's approach to social and popular education in the 1930s resembles that of Hilda Worthington Smith, who "subscribed to the Jeffersonian philosophy that an educated citizenry was essential to a strong democracy" (Zacharakis-Jutz and Schied, 1993, p. 105).

It seems clear to me that Heinlein's earlier liberal views were grounded in pragmatism, grass-roots populism, and New-Dealism. Certainly, Heinlein's early interest in community education and popular education stem from the same spirit of popular education for social change that resided in what Heaney (1992) calls "the work of grass-roots popular educators and organizers" (p. 51) of the 1930s. But it also seems clear that Heinlein became disillusioned by the twin phenomena of public indifference to momentous issues and the balkanization of the American political landscape, both of which rapidly gained momentum after World War Two.

Miller (1995) describes the latter phenomenon this way: "Civic discourse has been weakened by the multiple, partial, and opinion-laden views of special interest groups.... A weakening focus on the common good has been replaced by the promotion of the personal good" (p. 43). Similarly, Schied (1995) points out his belief that Kett (1994) sees "multiculturalism as a threat to the view that there was a core culture common to

all Americans" (Schied, 1995, p. 232). Heinlein seemed to have agreed with this view (Owenby, 1994c) and may well have been reacting to the weakening of civic discourse as he gradually metamorphosed towards an eclectic mixture of educational progressivism moderated by existentialism, educational intellectualism, and humanism.

Of course, part of this metamorphosis was also due to the disturbing political, social, and technological developments of the postwar world coupled with the burgeoning population explosion. Heinlein came more and more to see a need for an educational response to the great crisis of the information explosion, a crisis noticed by Ohliger who calls attention to Krishnamurti and Bohm's (1985) remark that "civilization is collapsing because of too much knowledge" (Ohliger, 1990; p. 25). Nevertheless, Heinlein's efforts to practice the "encyclopedic-synthesist" approach resulted in his acquiring and espousing what can in some respects look like a very eclectic philosophy of education.

But it should also be remembered that Heinlein's eclecticism stemmed from a basic pluralistic view of reality (see Appendix D). When, for example, Merriam (1993) suggests that "mature thought entails the ability to accept inherent contradictions and ambiguities" (p. 7), Heinlein would likely have agreed. But I believe that he would have agreed not just on the basis of emotional maturity, but on fundamental metaphysical and epistemological grounds as well. That is, "the ability to accept inherent contradictions and ambiguities" is in my view of Heinlein's mind the only appropriate response to a universe in which contradictions and ambiguities are a fundamental feature of the spatial-temporal plenum (see Appendix I).

With this chapter, my examination of Heinlein's life, educational practice, and philosophy of education is essentially complete. In the next and final chapter, I will review all that I attempted within this study. In that review, I will recall the task I set for myself at the beginning of this study in Chapter I by restating my research questions. I will then offer a summary of how I believe this study has answered those questions.

CHAPTER VI

SUMMARY AND CONCLUSIONS

"Everything ought to be turned upside down occasionally;
it lets in air and light."
—Mr. Kiku, The Star Beast, 1954, pp. 181-182

"As an old teacher I can hardly refrain from classroom habits;
the corollary should be left as an exercise for the student."
—Professor Bernardo de la Paz,
The Moon is a Harsh Mistress, 1966/1968, p. 191

In Chapter V, I attempted to uncover and discuss themes which I believe characterize Robert Heinlein's philosophy of education, especially his philosophy of adult education. I also attempted to situate Heinlein's educational philosophy within four different taxonomies, three of which dealt specifically with adult education. In this present chapter, I will look back over the origins, purpose, procedures, and findings of this study in order to bring it to a concluding focus. This chapter is organized under the following headings:

1) Background of the study: A restatement.
2) Research questions and findings.
3) Related questions that emerged in the course of the study.
4) Personal learnings.
5) Implications for research and practice, and
6) Conclusion.

Background of the Study: A Restatement

This study grew out of my lifelong interest in two subjects: the efficacy of science fiction in general as a medium for teaching and learning, and Robert Heinlein's science fiction in particular. These interests were and are interrelated; further, they are grounded in my awareness of having been tutored by Robert Heinlein's science fiction.

As a student of Heinlein the tutor, I call myself his educational beneficiary rather than his disciple—with one exception. That exception is that he inculcated in me the encyclopedic love of learning that was so characteristic of himself.

Having chosen to carry forth my interest in the form of a study in adult and popular education, I set for myself the problem of making explicit that which had been implicitly—and perhaps unconsciously—taken up within me from my reading of his works. This problem lead me to formulate the task of my study as the investigation of Robert Heinlein's life and works for the purpose of exploring four specific questions:

1) Who was Robert A. Heinlein?

2) What did he teach?

3) How did he teach?

4) What did he believe about education?

I approached these questions through the theoretical framework of the interpretive paradigm—an appropriate mode for an inquiry into fictional and biographical material. I expressed my belief that this study is potentially significant for adult education in regard to its research methodology, the genre of its subject matter, its exploration of imaginative depictions of self-directed and lifelong learning, and its exploration of the implications of philosophy for both adult and general education.

In addition, I established boundaries for my study by expressing a set of limitations and assumptions. I declared my philosophical bias in favor of idealist, romanticist, transcendentalist, and pragmatist ways of cognizing the world, with a confidence in the powers of imagination for knowing otherwise hidden aspects of reality.

I also declared the restraints that I was imposing on my study, which were these: First, this study was not intended to synthesize existing scholarship about Heinlein. Second, even though I augmented the study with interview material, information, and ongoing dialogue with Virginia Heinlein, this study was primarily literature based. Third, I did not attempt literary criticism. I have tried to avoid judgments of literary merit. Fourth, I made no effort to invoke or include all current issues or trends prominent in the adult education literature. Finally, I did not claim to apply the interpretive approach in the purist phenomenological sense.

I conducted this study in four procedural stages. First, I closely examined the available body of Heinlein's novels, stories, and essays published between the years

1939-1992. Second, I used content analysis to identify and mark all passages in Heinlein's writings whose subject matter appeared to treat those issues of concern to my research questions. Specifically, my material was "analyzed for 'units of meaning,' that is, statements of belief, intention, or action" (Pratt, 1992; p. 209) which could be used to answer the research questions posed as the foci for this study. Third, I augmented my reading of Heinlein's chief works with a personal interview with Virginia Heinlein, with examinations of books, photographs, and other materials belonging to her husband, and information from several previous trips to Heinlein "locales." Finally, I identified and explicated themes in Heinlein's life and writings that provided answers to my research questions. I developed these themes inductively, allowing them to emerge from recurring patterns across Heinlein's many writings as well as from those information sources I found outside his writings.

Throughout this study, I attempted to uncover the authentic voice of Heinlein, a task requiring caution and judgment because so much of what Heinlein had to say was said through the fictional voices of his characters. Yet, many, if not most, of Heinlein's characters quoted in this study have been his authorial characters who can be presumed to have spoken Heinlein's own views. I have tried to indicate throughout whenever I quoted from an authorial character to present what I believe to have been Heinlein's authentic thoughts, beliefs, and attitudes.

Based on Mrs. Virginia Heinlein's assurances that characters such as Jubal Harshaw, Lazarus Long, Kettle Belly Baldwin, Professor Bernardo de la Paz, Johann Smith, and Maureen Smith could generally be relied upon as authentic voices for their creator's views, there has been no hesitation to resort to them throughout this study. Fortunately, Heinlein's letters and essays have also indicated when other characters have spoken his views. In addition, Mrs. Heinlein's own reminiscences have been most helpful in sorting out Heinlein's authentic views. But, in the end, I must perforce assume full responsibility for the ideas, judgments, and conclusions put forth in this study.

When I undertook this study, I assumed that answers to my research questions could be presented and discussed in a much shorter volume than has turned out to be the case. Even my pre-existing degree of familiarity with Heinlein's writings did not prepare me for the large amount of material in those writings that bore upon the research questions. This volume has had to grow to meet the dimensions of its subject

matter; yet, it may well be too small to do its job fully. Nevertheless, responses to the research questions were found in ample quantity and detail and will be summarized below.

Research Questions and Findings

The research questions that follow as headings are those which were originally posed in Chapter I. They were explored within the various chapters that comprise this study. Interestingly, some issues related to these questions emerged in later chapters than those which were originally intended to deal with them. For example, certain aspects of Heinlein's "curriculum" that were treated in Chapter III also emerged in later chapters that dealt with how he taught and with his philosophy of education. All in all, although the chapters of this study were originally intended to be dedicated to specific research questions, it is evident in retrospect that every chapter in this study presents issues related to all the research questions posed. Under the following headings, I will present summaries of the discussions from the chapters in which I dealt with my four basic research questions.

Who Was Robert Heinlein?

This question was addressed in Chapter II by providing an account of my interview visit with Virginia Heinlein, a short biography of Robert Heinlein, a portrait of Heinlein as a self-directed lifelong learner, and an account of a typical day in Heinlein's life. In this chapter, I suggested several themes—combining historical, socioeconomic, educational, and political characteristics—that appear to be important in understanding Heinlein's life.

Regarding the historical theme, Heinlein's life-world was very much a product of the social-scientific and scientific-industrial trends, developments, and ideas that were transforming American life at the turn of the century. I said that young Heinlein assimilated in imaginative form—through both education and science fiction—contemporary images of industrialization and science that would provide a "curriculum" for guiding his future.

In regard to the socioeconomic theme, I found that Heinlein grew up in a middle-class family comprised of educated role models who inculcated young Robert with the values of education, self-improvement, patriotism, and hard work—values that Heinlein later projected into the educational and developmental experiences of the characters in his science fiction. Robert also experienced ill health and poverty in the 1930s, but later became affluent and influential.

In regard to the educational theme, Heinlein was clearly a beneficiary of the public schooling, public library, self-culture, liberal education, and the popularization of knowledge movements in the early 20th century time frame in which he grew up. Later, Heinlein was tremendously influenced by his Annapolis and Navy service. Heinlein also benefited educationally from membership in professional and learned societies.

Heinlein's life reveals that he was himself a self-directed lifelong learner. The themes and background issues in his books consistently represent the self-directed learning projects in which he was involved at any one time. Heinlein's early life presents a series of self-directed learning projects in which he seriously and systematically set about learning astronomy, magic, philosophy, and swordsmanship. Later he undertook self-directed learning projects in General Semantics, mathematics, cultural anthropology, genetics, economics, education, and politics. In his mature years, he was increasingly interested in such subjects as nuclear war, population growth, sex, and blood types.

In regard to the political theme, I found that Heinlein early became and remained throughout his life politically active. His political consciousness was formed out of his family and hometown experiences of community self-help, industrial monopolism, labor and farm unrest, and corrupt "machine" politics; his New-Deal social and political activism in southern California of the 1930s; his internationalism of the 1940s and early 1950s; his growing alarm at the policies of the Soviet Union; and his disgust with an increasingly lethargic and naïve electorate.

What Did Robert Heinlein Teach?

Heinlein's stories present a consistent curriculum to his readers. This curriculum can be characterized as having four main parts. The first part comprises those "subjects" which teach the appropriate epistemological attitude; the second part includes those

subjects required for obtaining the most effective epistemological tools; the third part consists of those subjects required for developing the Heinlein's recommended axiological perspectives; and, finally, the fourth part comprises Heinlein's own favorite interests.

Those subjects which teach the appropriate epistemological attitude are, for Heinlein, the epistemological values of open-mindedness, the scientific method, and freedom. That is to say that Heinlein believed that experience cannot teach anybody anything unless one is open to experience in the first place. But Heinlein also believed that the scientific method is the only appropriate guide for approaching experience. Further, without civil liberties the conditions that promote individual open-mindedness and scientific thinking are hindered.

The part of Heinlein's curriculum that provides the epistemological tools for converting experience into knowledge and then manipulating knowledge sanely and usefully include mathematics, languages, and General Semantics—the tools that give us epistemological rigor. General Semantics allows us to accurately map, abstract, and symbolize the constituents of the phenomenal world; mathematics allows us to manipulate symbols in a manner that maintains representational fidelity to that which is symbolized. These first two parts of Heinlein's curriculum are more strongly present in his earlier works than in his later works.

That part of Heinlein's curriculum that deals with human affairs includes ethics, politics, economics, history, and social relations. But these subjects, while important, cannot be adequately dealt with until one has a sound epistemological foundation. Accordingly, these issues come to be more strongly present in Heinlein's later works just as epistemology was the strongest presence in his earlier works. Finally, astronomy and space exploration comprise the fourth part of Heinlein's curriculum, and can be said to represent Heinlein's enduring interest throughout his writing career. Space travel remained the underlying theme, passion, and interest for Heinlein whether in his early or later writings. Space exploration can be said to be the subject which most represents the teleology of Heinlein's curriculum. That is, it represented Heinlein's constant teaching point that humanity's destiny was to break free of this planet and inhabit the wide universe.

How Did Robert Heinlein Teach?

This question primarily relates to Heinlein's teaching and learning methods of which there are two categories. The first category were used directly by Heinlein to educate the reader. The second category were those discussed or used by his characters in their fictional settings, the efficacy of which is not experienced by the reader. I call these his indirect methods.

Direct Methods of Teaching and Learning. Within the first category, I found that Heinlein utilized these methods: mentoring, lectures, and vicarious problem-solving. By "mentoring," it is meant that the reader enters into the protagonist's experience of being mentored by an older and wiser character (who, by the way, is frequently the so-called authorial character). Lectures are expository speeches, frequently by the authorial characters, which give the reader real information or theoretical perspectives about an important issue being dealt with in the story. Some lectures are expository articles that do the same work as the character-delivered lectures but which were offered directly by Heinlein the author. By vicarious problem-solving, it is meant that the reader enters into the experience of the protagonist of confronting, analyzing, and overcoming a challenge, obstacle, or dilemma. Virtually all Heinlein's stories contain some or all of these author-reader teaching and learning interactions.

Indirect Methods of Teaching and Learning. I found that within the second category of methods discussed within the story but not experienced by the reader, Heinlein used the following: distance learning, technology-assisted learning, accelerated learning, and nontraditional/accelerated degree programs. Distance learning refers to learning activities that are sponsored by an educational institution but that take place without teacher and learner being in direct contact. Distance learning takes place in Heinlein's stories most often in the form of correspondence courses.

Technology-assisted learning refers to an innovative form of learning which makes use of the information storage, handling, retrieval, and presentation capabilities offered by technology. Heinlein made use of devices such as spool readers, voice writers, and visual simulators from the early 1940s onward; and after the advent of the computer, he introduced computer-assisted instruction into his stories—even anticipating the learning potential of the internet and the world-wide web.

Heinlein was an enthusiastic early supporter of experimental and accelerated learning techniques. He wrote often about hypno-pedagogy and the rapid recognition and memory training techniques of Samuel Renshaw. In regard to nontraditional forms of education such as accelerated degree programs, Heinlein provided an elaborate account of how a middle-aged woman returns to higher education and utilizes individual assessment, advanced placement testing, and individualized curriculum planning to achieve her educational goals. Interestingly, almost all the methods of teaching and learning found in Heinlein's stories involve adults.

Images of Educated Adults? I found that Heinlein also provided images of self-directed and lifelong learners in the form of educated adult characters. In regard to these characters, two themes stand out: self-directed learning for problem-solving and self-directed learning for love of learning. That is, some of his characters are depicted as undertaking self-directed learning projects as responses to necessity. By far, however, most of Heinlein's characters undertake self-directed learning projects for the sheer love of learning. In fact, self-directed learning is in some respects a "fifth," implicit part of Heinlein's curriculum.

Whatever their motivations, Heinlein depicted his favored characters as confident people who have mastered his prerequisites for self-directed learning: mathematics, languages, and the knowledge of human affairs found in history. Nor do we find self-directedness in Heinlein's characters only in the form of self-directed learning projects. Rather, they display self direction even when they are placing themselves under the tutelage of others. That is, his characters demonstrate the attitude of self-directedness in learning that figures so strongly in Brockett and Hiemstra's (1991) discussion of self-directed learning.

If Heinlein's favored characters exemplify a high degree of self direction in learning, they also exemplify other characteristics as well. A collective inventory of the characteristics of Heinlein's character-exemplars of educated adults reveal a composite image of knowledge, skill, and competent social behavior. All Heinlein's favored characters—but especially such characters as Lazarus Long, Jubal Harshaw, and Kettle Belly Baldwin—display a knowledge of the world that is both broad and deep. In fact, they exemplify Heinlein's ideal of the encyclopedic synthesist who knows the shapes and principles of all fields of knowledge.

But knowledge is only one of the characteristics of Heinlein's educated adults; they also display good manners, an openness to new ideas and circumstances, and a tolerant broadmindedness towards other people and cultures. In addition, Heinlein's educated adults demonstrate inventiveness under duress along with a pragmatic flair for discovering the most effective course of action in a given situation. These composite images comprise the grand image of Heinlein's educated adult. Of course, Heinlein's grand image was an ideal to which education is to aspire; it is not an easy image to realize as even Heinlein admitted.

What Did Robert Heinlein Believe About Education?

Heinlein's grand image of the educated adult presents an implicit philosophy of education. The remaining research question had to do with Heinlein's perspectives around philosophy of education—including adult education. Heinlein expressed his views about the professional education establishment as well.

Heinlein's General Philosophy of Education. Based on my analysis and interpretation of Heinlein's writings, I believe that Heinlein's philosophy of education prescribes social responsibility, confidence, and competence as the chief values for directing the education of children. To become socially responsible is to learn how to behave ethically towards others, to know when to place the welfare of others ahead of one's own. But social responsibility demands an education that will help each child become able and competent. Competence and social respect in turn create a socially responsible confidence that respects the freedom and dignity of others. That is to say, the survival and welfare of the social group depends on cultivating the general adaptability and freedom and dignity of each individual within that group.

I found that Heinlein prescribed a curriculum based on mathematics, languages, and history as the best possible educational foundation for each child. The foundation can later be overlaid with the sciences and humanities. Heinlein's view of the relationship of the school to the rest of society was that it is an institution for promoting competence and good citizenship (in the form of social responsibility). Heinlein's expressed views suggest that he could be categorized as both an educational existentialist and educational liberal in his educational philosophy. His views of the

relationship between school and society suggest an ideological perspective close to O'Neill's (1981) educational liberalism.

Heinlein's Philosophy of Adult Education. It is probably safe to say that Heinlein's perspective of adult education was parallel to that of lifelong learning; lifelong learning is the moral duty of each human being who has accepted the responsibility of citizenship. Heinlein's view of adult education in its own fashion appeared to reconcile the contrasting themes of individualism and social responsibility in adult education.

Instrumental goals for pursuing lifelong learning are mathematics, languages, and history—the three legs of Heinlein's stool of human understanding and a principle shared by his philosophy of primary and secondary education. Equipped with these three tools of learning, the human being is positioned for a lifetime of self-directed learning as well as immediate occupational utility.

Nevertheless, although all can potentially benefit from education, the fact is only a relative few—because of family environment, an inept education system, or disabling habits of mind—are capable of making full use of education. Most adults are destined to function merely as social and economic animals. Very few adults are willing to overcome acquired habits of mind and are consequently unable to undergo the unlearning and relearning required for pursuing lifelong education.

Heinlein's philosophy of adult education would place him in an intermediate position between the individual change and the social change poles of adult education. In Elias and Merriam's (1995) taxonomy, Heinlein would occupy a position spanning the humanist and progressive adult education philosophies.

Heinlein's Views of the Educational Establishment. I discovered that Heinlein was bitterly disappointed in the American educational establishment which he regarded as fraudulent and incompetent. Heinlein regarded the academic disciplines within higher education as divided into two camps, those disciplines genuinely interested in learning and determined to undergo the rigors of science and scholarship to achieve it, and those disciplines involved in pseudoresearch and academic flatulence for the benefit of lightweight faculty and students. He believed that schools of education and departments of literature are representative of the second camp. I find it interesting that Heinlein could be so interested in both subjects and yet be so disparaging towards their professional practitioners. Perhaps this was a case of "Two of a trade never agree."

Heinlein believed that public schools have abandoned their responsibility for solid teaching in favor of institutionalizing and socializing children. He traced the decline of public education to the generation that grew up during and immediately following World War II and which was educated under the progressive education movement. Teachers from that generation were, because of the deficiencies in their own educations, incompetent and ill-equipped to teach their young charges who have since become the teachers of the present generation.

Heinlein lamented the passing of the quality of public schooling which, he testified, was excellent in his day. Heinlein was quite against educational elitism of the kind that comes from the preparatory school establishment because of the false social values they inculcate. He believed in the community-building power of the public school and saw no good reason why they should not return to their former excellence. It is unclear whether Heinlein was aware that public schools encompass a far greater proportion of the population than was the case in his day with the resultant impact on teaching, classroom control, and administration.

Heinlein's as Educator and Philosopher: Some Conclusions

The research questions I posed for this study have been recapitulated above along with my findings in regard to each. Those research questions and findings—important as they are—do not tell the reader what conclusions I draw from them. The following questions are offered by way of presenting my overall conclusions in regard to Heinlein's role as an popular adult educator. Although my original research questions did not address Heinlein outside the role of philosopher of education, I believe enough material has been presented (both in the six chapters of this study as well as in the appendices) to allow me to make conclusions about his role as a philosopher as well. At any rate, referring back to Dewey (1939), it is difficult to separate one from the other.

Was Heinlein an Effective Educator?

I would have to conclude that the answer is yes. Much of an entire generation of scientists and engineers in the American space program would attribute their motivations for choosing their professions to reading the works of Robert A. Heinlein

(Stover, 1987). That is a significant testimony to Heinlein's effectiveness as a popular educator. Some reasons for his effectiveness include his passion for his subjects, his early experience in political activism, his wide ranging knowledge, his respect for his audience, and his storytelling approach.

Heinlein was certainly passionate about his subjects. Much has already been said earlier in this study about the Heinlein curriculum. What has not been pointed out is that it is rather difficult to be an effective teacher if one does not care deeply about the subject. Heinlein cared about his curriculum deeply, from the scientific method to social ethics, from mathematics and General Semantics to politics. But what he cared about most of all was space travel, and his belief in humanity's manifest destiny to inhabit the universe. As he said, "It is impossible to be a fan of my fiction and not be enthusiastic for space travel" ("Spinoff," 1980; p. 511).

Heinlein's early experience in political activism and community education with Upton Sinclair's organization in California was excellent training for his later work. The need to clarify and summarize issues as an editor and political worker stood Heinlein in good stead later. As Cunningham (1995, p. 174) has said, there is a historical relationship between community development and adult education. Heinlein's own experience in grass roots political action places him square in the tradition of "adult education for social change in the issues of literacy and poverty" (p. 174). Although Heinlein changed his politics later in life, his early training in community politics and social change helped give clarity, focus, and simplicity to his popular education efforts through science fiction.

Heinlein's wide ranging knowledge and experience of the world was undoubtedly a factor in his effectiveness as a popular educator. For example, Damon Knight writes in his preface to Heinlein's collection of "Future History" stories (Knight, 1967a), that the ideal science fiction writer would be

> trained in the physical and social sciences and in engineering, with a broad and varied experience of people—not only scientists and engineers, but secretaries, lawyers, labor leaders, admen, newspapermen, politicians, businessmen. ... Heinlein had it all.
>
> Far more of Heinlein's work comes out of his own experience than most people realize. When he doesn't know something himself, he is far too

> conscientious a workman to guess at it: he goes and finds out. His stories are full of precisely right details, the product of painstaking research. (pp. 10-11)

Heinlein continued to keep himself well-informed throughout his life, even to spending two years in catching up in the physical and biological sciences in the mid 1970s.

Robert also respected his audience. That is, he wrote for himself, assuming that if something interested him, it would also interest his readers. This ensured that he never talked down to his audience. Heinlein followed this approach consistently, even—or perhaps especially—in his so-called juveniles. Another way that he respected his audience was through his inclusiveness. Heinlein populated his stories with both men and women, adults and children; the rich, the poor, and the middle-classed; white people, people of color; people of all cultures and language communities—and did it all in a largely unselfconscious, unpatronizing way.

Finally, the storytelling approach itself made Heinlein an effective teacher. As Zemke (1980) has pointed out, storytelling may well be the basic unit of learning. Heinlein's stories are notable for a high degree of phenomenological fidelity—they "look, feel, taste, and smell" authentic. Heinlein had tremendous talent for embedding knowledge in his fictional narratives in such a way that he smuggled ideas and information into his readers, having gotten past their learning resistance through his engaging way of telling stories. All this gave his readers a feeling of vicarious experience—of being active participants with the protagonists' struggles, problems, and adventures. Heinlein's stories gave a vicarious sense of learning-by-doing.

To add to Heinlein's effectiveness as a popular educator through his fiction, he also demonstrated strengths that would stand him in good stead as a classroom instructor. For example, he consistently espoused freedom and dignity for the individual, which are unquestionably positive values foundational to promoting self-directedness in learning. Heinlein also exemplified the intellectual rigor and self-discipline that he preached about—especially regarding mathematics and General Semantics. He practiced his own educational gospel.

His sheer fecundity of vision and imagination would be the envy of any teacher who ever struggled to find the best way to illustrate and explain an idea to a classroom full of students. This gift is especially critical in the light of Rudolf Steiner's (1986, p. ix) observation that people can be motivated only by meaningful inner images and

insights, without which real education and change is not possible. Heinlein also provided a curriculum of the future to enable his readers to face and confront change. Perhaps, more importantly, he gave his readers meaningful and attractive images of the future which motivated and permitted them to excel and seek their dreams.

What are Heinlein's Shortcomings as an Educator?

I do not believe that Heinlein would have been an effective teacher for everyone. Some of the same characteristics that made Heinlein effective as an educator for some, when turned around, made him ineffective for other readers. As Stover (1987) reported Heinlein to have said, "I don't write for stupid people," which Stover—an anthropologist and lecturer in science fiction—confirms by reporting that "in my experience... lackluster students do not take very keenly to him" (p. 92). Perhaps one of the main reasons for this reaction on the part of "lackluster students" is simply that Heinlein's works tends to evoke a sense of inferiority in some by his attitude towards mathematics and other difficult subjects. That is, when Heinlein said that "Anyone who cannot cope with mathematics is not fully human," (Time Enough for Love, 1973/1987; p. 247), it is bound to create a sense of educational disenfranchisement in students having difficulty with the subject, or any other subject ruled by it.

Perhaps another shortcoming in Heinlein's approach is that he tended to contribute to an attitude of elitist contempt for and intolerance of those who do not possess the "right stuff." In story after story, Heinlein depicted humanity as divided among "makers, fakers, and takers" as he called them (Unpublished manuscript, 1949). Many students who may well be late bloomers, or who simply lack self-confidence, or who are poorly prepared (such as Abraham Lincoln or Eduard Lindeman were in their early lives), could be intimidated by Heinlein's remarks into believing they are unfit to learn. But let it be noted that Heinlein believed that most students were more likely poorly taught than too stupid to learn ("The Happy Days Ahead," 1980). Nevertheless, his remarks were surely dispiriting to some.

Perhaps a more serious objection to Heinlein as an educator in the eyes of some lies in his depictions of controversial practices that go contrary to established public morals. That is, he often appeared to sanction a moral and social experimentalism around practices which even a Heinlein defender may regard as highly questionable

(Booker, 1994). Some of these controversial practices include open marriages, parent-offspring incest, and personal vigilanteeism. One can easily see that Heinlein might have been considered the common enemy of both Socrates and the Athenian city fathers had he lived in 4th century B.C.E. Greece. That is, he was clearly an example—like Mark Twain, G.B. Shaw, and H.G. Wells before him—of why Plato would have banished the poets from his Republic (Adler, 1977), but he might well have been equally censured for corrupting the morals of the youth. In this regard, skilled storytelling can make offensive practices seem plausible and reasonable.

Nevertheless, Heinlein felt that his secondary role as a science fiction writer—his first was to entertain and teach—was that of culture critic. Nor was he unique in calling into question the taken-for-granted social customs and moral beliefs of the society around him. G. B. Shaw, for example, also questioned contemporary western ideas regarding the morality of incest (see Caesar and Cleopatra, 1898/1951). Whether right or wrong, Heinlein—like Socrates—gave himself permission to examine and question all the practices and customs he saw around him.

What are Heinlein's Strengths as a Philosopher?

Heinlein had some degree of effectiveness as a public philosopher. He clearly had invested considerable time in reading philosophy in his younger years (from 1921 onward) and constantly dealt with philosophical problems and issues throughout his writing. Beginning in about 1939, he also invested considerable effort in training himself to think critically and reflectively via his involvement and interest in Korzybski's General Semantics. In addition, Heinlein had considerable practical experience in the military and—especially—politics which gave him the ability to make ideas live for his readers.

But beyond his philosophical readings and training in semantics, Heinlein had the philosophical temperament that leads its possessor to explore ideas, issues, and questions. That is, Heinlein was intensely interested in everything that had to do with human existence and its place in the universe. He had an intellectual curiosity about ideas. Because of this temperament and his inclination to follow the dynamics of that temperament, in some ways he exemplified Adler's (1978) point that philosophy is everybody's business.

Like H.G. Wells, G.B. Shaw, and Upton Sinclair before him, Heinlein's skill as a storyteller helped him to make philosophical issues present to his readers. Because of Heinlein's constant interest in philosophical questions, he confronted philosophical issues throughout his books thereby making the reader confront them as well. That is, the reader cannot help thinking about philosophy—especially because Heinlein smuggled philosophical ideas to the reader in the form of the dilemmas that confront his protagonists. In fact, it could be said that all Heinlein's stories are forms of philosophical gedanken— thought experiments—that imaginatively explore the possible consequences of philosophical propositions, including the embodiments of contrasting points of view in his characters.

What Are Heinlein's Shortcomings as a Philosopher?

But Heinlein had shortcomings in his approach to philosophizing as well as strengths. Perhaps one very great shortcoming was his penchant for assuming the truth of his pronouncements about issues that many would find controversial and uncertain at the very least. In logic, this is called the fallacy of the asserted conclusion. That is, he often—especially in his later works—uttered pronouncements with an accompanying attitude of authority that seemed to assume that nobody but an idiot would dare question them. The confidence with which Heinlein used characters such as Lazarus Long to report fictional experiences as "proofs" of his opinions is easily annoying to the philosophically trained reader. As Adler (1977) pointed out, Heinlein shares this penchant for using fiction as a protective shield for a philosophy otherwise vulnerable to critique with G.B. Shaw.

As has been mentioned elsewhere in this study in connection with William James's (1897/1956) observation that even the best empiricists are often guilty of dogmatizing, Heinlein appeared inconsistent when his espoused beliefs as an empiricist are compared with his frequent dogmatizing. In addition, Heinlein permitted himself to occasionally use ad hominem arguments rather than arguments from fact to make his point. Two examples will suffice. In Starship Troopers (1959/1968), Heinlein attacked Karl Marx's ideas by attacking Marx as a "disheveled old mystic... turgid, tortured, confused, and neurotic, unscientific, illogical... pompous fraud" (p. 75). Similarly, in Heinlein's 1973 Forrestal address at the U. S. Naval Academy, he attacked a statement of English

lexicographer Samuel Johnson by calling him a "fat, gluttonous slob who was pursued all his life by a pathological fear of death" ("The Pragmatics of Patriotism," 1980; p. 462). Neither attack is pertinent to an intellectual argument.

Nor was Heinlein particularly persuasive when he set up opposing ideas in the form of strawfigure characters, which he then easily demolished because he controlled the narrative. No doubt, Heinlein had met people who shared the personality traits and ideas that he found particularly obnoxious. But surely he was an able enough writer to put stronger speeches in the mouths of the characters used to represent ideas he disapproved of. And surely he had met charming and articulate spokespersons for those same ideas. Yet, what did Heinlein give us as a representative of "the socialist disease" but Bill, the homeless loser in The Cat Who Walks Through Walls (1985/1986)?

Finally, it seems obvious that Heinlein philosophized more in the style of the rhetorician than the logician. That is, following the terminology used in Aristotle's Rhetoric (1952), Heinlein employed descriptive narratives containing embedded or implied arguments having the form of enthymemes rather than syllogisms. The enthymeme, depending as it does on the audience to draw the implied conclusions from either unstated or unproven premises, is an effective rhetorical device but a poor way to philosophize. It is the poet's and politician's manner of argument rather than the philosopher's.

Personal Learnings

So far, I have presented the background, research questions and findings, and conclusions stemming from my study. But there are often unintended learnings that come from inquiries undertaken for other purposes. That is also the case with this present study. Following are some points regarding things that I have learned—or at any rate have struck me—apart from my stated purposes. These include the power of negative and positive images of education in literature, the connections between themes in Heinlein and Lindeman, and Heinlein as a hybrid of G. B. Shaw, Mark Twain, and H. G. Wells.

The Power of Images of Education in Literature

In conducting and writing this study, I have been struck by the power—both positive and negative—that fictional images can have for motivating and demotivating adults to participate in educational activities. In the course of reviewing the literature for studies which used the interpretive theoretical framework, I encountered Christian-Smith's (1990) study of images of women in romance novels and of how women use those images in creating self-concepts.

Although not a study of women in educational settings, the study caused me to become conscious of something of which I was only tacitly aware before. I had known for some time that people used fiction other than for entertainment. I also realized that people consciously adopted fictional characters as heroes and role-models. I knew that people used fiction educationally as a medium for engaging in critical and reflective thinking (Greene, 1990b). In fact, my rationale for this present study was to examine the role of fiction in teaching and learning. What has become clearer for me is the power of uncritically assimilated fictional images to induce tacit learning in readers that in turn affects their capacities to engage in other forms of learning.

Adult and continuing education writers have also noticed the importance of fictional images. Some (Tremor, 1974; Ohliger, 1988, 1989; Ilsley, 1989; and Quigley, 1990) have directed their attention to the conscious analysis and examination of such images for the purpose of guiding adult education policy and practice. But what Hill's (1989) article about fictional images of women reentering higher education as well as Pittman's (1992) study of fictional characterizations of night school students did was to highlight the ability of imaginative literature to create powerful images of educational settings that influence how students see themselves. Here I see a basic difference in how fictional images influence educational events: consciously through analysis (mostly by adult education researchers and practitioners) and unconsciously through uncritical assimilation (including actual and potential clients and students of adult education).

This realization also underlines the importance of Robert Heinlein as an educator. For the most part, Heinlein created and transmitted positive images of learning and education in his fiction, which I believe has had an overall positive effect on his readers. On the other hand, his negative images of the educational establishment can work to

harm relationships between the public and professional educators who already feel marginalized.

Heinlein and Eduard Lindeman

I have continually been struck by the similarities of outlook and values between Eduard Lindeman and Robert Heinlein. Certainly, their backgrounds were not similar; Lindeman grew up educationally disenfranchised in a poor and emotionally abusive family (Stewart, 1987), while Heinlein enjoyed a warm family life that supplied him with good examples, and he had access to high quality education. Nor were their final outlooks the same.

Yet both were enamored of the new social-scientific thinking that permeated the early 20th century, both were liberal in their personal relations and their politics, both served Roosevelt's New Deal—Lindeman in national organizations and Heinlein in state and local politics. But more than that, they shared the same point of view in regard to the need for adults to broaden their educational outlooks. Both believed in civil liberties and personal autonomy. Both believed that oppression and jealousy stemmed from stunted—miseducated—personalities. They both disliked narrow specialism.

Lindeman's statement that "freedom is an achievement, not a gift" (Lindeman, 1926/1961, p. 34) is remarkably similar to Heinlein's attitude that human rights are values rather than endowments. Lindeman's belief that the "functions of citizenship, like all functions, atrophy when not used" (p. 81) reminds me of Heinlein's complaint against citizens who fail to participate in democracy (Take Back Your Government, 1992).

Finally, they both believed in the civic processes and the necessity of education for civic responsibility as a substitute for warfare. That is, Heinlein's belief that politics is good even when it is bad because even bad politics is better than the butchery of war resonates with Lindeman's statement that the social process can transform "the battle of interests from warfare into creative conflict" (Lindeman, 1926/1961, p. 97).

Shaw, Twain, and Wells

A final learning for me has been to realize the extent to which Heinlein embodied the traditions of three famous culture critics whose lives overlapped the 19th and 20th

centuries—Mark Twain, George Bernard Shaw, and Herbert George Wells. These three persons, like Heinlein, all wrote speculative fiction, all were socially and politically liberal, all became increasingly pessimistic as they grew older, all were iconoclasts in their day, all were intensely popular, all were subjected to bitter criticism, all were famous for their prognostications, and all were interested in educating their audiences.

I basically see Heinlein as a hybrid of Shaw's social values (short of Shaw's socialism) and mystical philosophy (especially Shaw's approach to creative evolution), Twain's Missouri humor and sardonic social and religious criticism, and Wells's scientific and sociological vision. Heinlein read and admired all three, referenced and quoted all three, and frankly acknowledged the influence of all three (Knight, 1967b; Schulman, 1973/1990; Stover, 1987; Heinlein, To Sail Beyond the Sunset, 1987; Owenby, 1994c). Of course, this topic deserves a much longer and thorough treatment than I able or willing to provide here and I would recommend it as a fruitful line of inquiry for understanding the history of popular education.

Implications for Research and Practice

Every study seems to generate quite as many new questions and avenues for research as those it set out to explore. This study is no different in that regard; therefore I have assembled a small list of issues which I believe are worthy avenues for additional research. In addition, I would like to point out some of the implications of this study for the practice of adult and continuing education. I see the possibility for fruitful lines of adult education research and practice in the following areas: expanded use of imaginative literature in adult education research, exploration of the distinctions between liberal education and the diffusion of knowledge/popular education movements, and the use of imaginative literature as instruments of teaching.

Expand the Use of Imaginative Literature in Adult Education Research

First of all, I see the need for adult educators to continue the exploration of imaginative literature of all kinds as sources for research into a wide range of adult education-related issues. This includes all genres of fiction, but also plays, poetry, film, and biography as well. I believe that science fiction in particular is a relatively untapped

resource for adult educators. I especially believe that science fiction should be considered as sources for conducting historical, sociological, and philosophical research into the foundations and practice of adult education.

In line with Tremor's (1974) work, I also believe that science fiction should continue to be studied as a source of images for "futuring" adult education. In addition, I believe that researchers should continue to investigate the role of fictional images of education as either facilitative or obstructive influences to participation in adult and continuing education activities. Finally, I believe that science fiction offers an even stronger role to play in the study of transformational learning than the other genres of literature that Greene (1988/1990a, 1990b) recommended.

Explore Distinctions in Liberal Education and Popular Education Movements

I suggest that adult education researchers should further explore the historical and philosophical differences between liberal education and the diffusion of knowledge/popularization education positions in the history of adult education in North America. Hamilton and Cunningham (1989) place modern popular education squarely in the social change and community education camps of adult education. But I believe their conception is one that has emerged more recently since the ideas of Freire became widely known. Popular education in the older sense—particularly in the era in which Heinlein grew to adulthood—was certainly more related in the diffusion of knowledge/popularization of knowledge tradition than in the social change movement, although I do not deny that the modern popular education impulse grew out of the latter.

Although Stubblefield (1988) also made a distinction between liberal education and the diffusion of knowledge/popularization education positions, I believe that these positions can become confused for some who equate wide knowledge with liberal education the way that the latter's key advocates meant it. Indeed, liberal education itself can be divided into elitist liberal education (Martin, 1926; Bloom, 1987) and populist liberal education (Hutchins, 1936; Adler, 1988). My key concern is that we should take care to uncover the differences between elitist liberal education and popularization of knowledge positions in adult education history so that the latter does not suffer from the well-deserved reputation of the former.

Use Imaginative Literature as Teaching Instruments

Actually, Greene has already been doing this. But her use has been limited to teaching philosophy of education (1988/1990a) and in promoting reflective and critical thinking (1990b). What I am proposing is that adult educators should use both biographies and stories as teaching tools to provide actual introductions to specific subject matters such as science, mathematics, history, psychology, and languages. This recommendation is also not new, it was offered by Toffler (1974) over 20 years ago.

I am particularly recommending that both science fiction and historical fiction be used for teaching. This can be useful in four ways: for providing actual information about specific subject matters, for contextualizing such information, for providing imaginative applications of that information, and for providing meaningful and positive images of that information.

For example, science fiction writer L. Sprague de Camp used a time travel novel to explore the history of early sixth century Italy (Lest Darkness Fall, 1939/1974). This remarkable novel combines the genres of science fiction and historical fiction to analyze the cultural, economic, educational, linguistic, political, religious, social, and technological conditions on the eve of the Dark Ages. In reading the novel, one learns the facts about these various conditions, one sees how these conditions interrelate, one sees imaginary applications of these facts, and one assimilates images that facilitate further learning around these and similar matters.

But I am also intrigued by the possibility of using stories in teaching problem-solving strategies. I have referred to instances from Heinlein's novels that show him at work (deliberately, I believe) in involving the reader vicariously in his characters' problem-solving situations. As adult and continuing educators search for means by which to teach critical and reflective thinking, they should follow the advice of Greene (1990b) and use works of fiction. Because science fiction deals with issues that largely have not yet happened, it is a particularly effective medium for helping adult learners to develop anticipatory critical thinking strategies.

Finally, I do not want to neglect Greene's (1988/1990a) recommendation that imaginative literature be used for both teaching and research in philosophy of education. Although a nonfiction genre, like Greene I class biography as imaginative literature because of the role that imagination plays in developing the biographical

narrative. I remind the reader that in Chapter V, I outlined my biographical approach to philosophy of education, with its weak and strong forms. I would hope that other adult educators than Merriam (1983), Stewart (1987), or Jarvis (1987/1991) who are interested in philosophy of education would follow up on my suggested approach.

Conclusion

In this chapter, I have brought my study of Heinlein as popular educator and philosopher of education to its completion. I reminded the reader of the origins and purpose of my study. I restated my research questions and offered my findings concerning each one. I also stated my overall conclusions that emerged from these findings and offered my personal "unintended learnings" as well. Finally I discussed some implications of this study for further research and practice in adult and continuing education.

Although I did what I set out to do—both in this chapter and in the study as a whole—I am conscious that my study has only scratched the surface of Heinlein's immense body of work. I am also conscious that adult educators—indeed, all educators—have only yet begun to tap the immense possibilities of imaginative literature for informing the theory and practice of education. Finally, I am conscious of the deficiencies of this study, the many possibilities left untouched, the tentativeness and timidity with which it deals with some issues—in short the places that were not explored with the energy with which I explored others. These deficiencies are regretted, but I am also comforted by the fact that it was simply impossible to do all within the boundaries of this study—and within the boundaries of my own time and energy. Therefore, this study is offered with both its strengths and shortcomings in the same spirit with which Heinlein offered his science fiction.

In regard to Heinlein's strengths and shortcomings as either an educator or a philosopher—and Dewey (1939), it should be remembered, would say the two are related—I believe that his strengths not only balance his weaknesses, they overwhelm them. Heinlein shaped and defined American science fiction—one of the most powerful educational tools imaginable according to Toffler (1970, 1974). Furthermore, Heinlein used the genre as a deliberate tool of popular education from first to last. The actual philosophical content of Heinlein's works are perhaps of less importance than the fact

that he engaged his readers' imaginations and led them to think, to ponder, and to confront momentous issues. That, if nothing else, puts him among the first rank of educators.

REFERENCES

REFERENCES

References marked with an asterisk (*) indicate works that were used as subjects of this study.

Adler, M.J. (1967). The difference of man and the difference it makes. New York: Holt, Rhinehart and Winston.

Adler, M.J. (1977). Philosopher at large. New York: MacMillan.

Adler, M.J. (1978). Aristotle for everybody: Difficult thought made easy. New York: MacMillan.

Adler, M.J. (1986). A guidebook to learning: For the lifelong pursuit of wisdom. New York: MacMillan.

Adler, M.J. (1988). Reforming education: The opening of the American mind. New York: MacMillan.

Adler, M.J. (1991). Haves without have-nots: Essays for the 21st century on democracy and socialism. New York: MacMillan.

Adler, M.J., & Van Doren, C. (Eds.) (1977). Great treasury of western thought. New York and London: R.R. Bowker.

Angeles, P.A. (1981). Dictionary of philosophy. New York: Barnes and Noble.

Asimov, I. (1979). In memory yet green. New York: Doubleday.

Asimov, I. (1994). I. Asimov: A memoir. New York: Bantam.

Ballantine, J.H. (1993). The sociology of education: A systematic analysis (3rd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Basic Documents of American History. (1968). The World's Great Classics. New York: Grollier.

Beatty, P.T. (1992, Summer). The undeniable link: Adult and continuing education and individual change. In M.W. Galbraith, & B.R. Sisco (Eds.). Confronting Controversies in challenging times: A call for action. (pp. 17-24). New Directions for Adult and Continuing Education, No. 54. San Francisco: Jossey-Bass.

Belenky, M.F., Clinchy, B.M., Goldberger, N.R., & Tarule, J. (1986). Women's ways of knowing: The development of self, voice, and mind. New York: Basic Books.

Bergevin, P.E. (1967). A philosophy for adult education. New York: Seabury.

Bergevin, P.E. (1984). The adult, his society, and adult education (Originally published 1967). in S. Merriam (Ed.). Selected writings on philosophy and adult education (pp. 7-11). Malabar, FL: Krieger.

Best all-time awards. (1987, August). Locus: The newspaper of the science-fiction field. p. 33.

Blakely, R.J. (1984). Adult education in a free society (Originally published 1958). in S. Merriam (Ed.). Selected writings on philosophy and adult education (pp. 7-11) Malabar, FL: Krieger.

Bloom, A. (1987). The closing of the American mind. New York: Simon & Schuster.

Booker, M. (1994). The brass cannon: The moral philosophy of Robert A. Heinlein. Unpublished manuscript.

Boswell, J. (1968). Life of Dr. Johnson (An abridgment by H. Askwith). The World's Great Classics. New York: Grollier.

Boucouvalas, M., & Krupp, J. (1989). Adult development and learning. in S.B. Merriam, & P.M. Cunningham (Eds.). Handbook of adult and continuing education (pp. 183-200). San Francisco: Jossey-Bass.

Brameld, T.B. (1955). Philosophies of education in cultural perspective. New York: Dryden.

Brameld, T.B. (1956). Toward a reconstructed philosophy of education. New York: Dryden.

Brockett, R.G. (1988). Ethical issues in adult education. New York: Teachers College Press.

Brockett, R.G. (1992). Some reflections on a decade of AAACE publications. Adult Learning. 4 (2), 13-15.

Brockett, R.G. and Hiemstra, R. (1991). Self-direction in adult learning: Perspectives on theory, research, and practice. London: Routledge.

Brookfield, S.D. (1986). Developing critical thinkers: Challenging adults to explore alternative ways of thinking and acting. San Francisco: Jossey-Bass.

Brookfield, S.D. (1987). Fostering critical reflection in adulthood. San Francisco: Jossey-Bass.

Brookfield, S.D. (1990). The skillful teacher: On technique, trust, and responsiveness in the classroom. San Francisco: Jossey-Bass.

Brookfield, S.D. (1991). Understanding and facilitating adult learning: A comprehensive analysis of principles and effective practices. San Francisco: Jossey-Bass.

Brookfield, S.D. (1993, Summer). Self-directed learning, political clarity, and the critical practice of adult education. Adult Education Quarterly. 43 (4), 227-242.

Brubacher, J.S. (1969). Modern philosophies of education. New York: McGraw-Hill.

Burbules, N.C. (1995a). Postmodern doubt and philosophy of education. Philosophy of Education 1995. Urbana, IL: University of Illinois, Urbana/Champaign.

Burbules, N.C. (1995b). Reasonableness as an educational aim. in W. Kohli. (Ed.). Critical conversations in philosophy of education. London: Routledge.

Butler, J.D. (1963). Four philosophies and their practice in education and religion. (Rev. ed). New York: Harper & Brothers.

Caffarella, R.S. (1993, Spring). Self-Directed Learning. in S.B. Merriam (Ed.). An update on adult learning theory (pp. 25-35). New Directions for Adult and Continuing Education. No. 57. San Francisco: Jossey-Bass.

Campbell, J.K. (1990). Inside lives: The quality of biography (Originally published 1988). In R.R. Sherman, & R.B. Webb (Eds.). Qualitative research in education: Focus and methods (pp. pp. 59-76). London: Falmer Press.

Candy, P.C. (1991). Self-direction for lifelong learning: A comprehensive guide to theory and practice. San Francisco: Jossey-Bass.

Carpenter, H. (1977). The authorized biography: Tolkien. New York: Ballantine.

Carr, W., & Kemmis, S. (1986). Becoming critical: Education, knowledge, and action research. London: Falmer Press.

Chobot, M.C. (1989). Public libraries and museums. in S.B. Merriam, & P.M. Cunningham (Eds.). Handbook of Adult and Continuing Education (pp. 369-383). San Francisco: Jossey-Bass.

Christian-Smith. L.K. (1990). Becoming a Woman Through Romance. New York & London: Routledge.

Clarke, A.C. (1992). Arthur C. Clarke—Robert Heinlein. in Y. Kondo (Ed.). Requiem: New collected works by Robert A. Heinlein and tributes to the grand master (pp. 261-264). New York: Tor.

Cohen, N.H. (1995). Mentoring adult learners: A guide for educators and trainers. Malabar, FL: Krieger.

Collins, M. (1984). Phenomenological perspectives: Some implications for adult education (Originally published 1983). in S.B. Merriam (Ed.). Selected writings on philosophy and adult education (pp. 179-189). Malabar, FL: Krieger.

Collins, M. (1991). Adult education as vocation. New York: Routledge & Kegan Paul.

Cross, K.P. (1981). Adults as learners: Increasing participation and facilitating learning. San Francisco: Jossey-Bass.

Cunningham, P.M. (1988). The adult educator and social responsibility. in R.G. Brockett (Ed.). Ethical issues in adult education (pp. 133-145). New York: Teachers College Press.

Cunningham, P.M. (1992, Summer). Adult and continuing education does not need a code of ethics. In M.W. Galbraith, & B.R. Sisco (Eds.). Confronting Controversies in challenging times: A call for action (pp. 107-114). New Directions for Adult and Continuing Education, No. 54. San Francisco: Jossey-Bass.

Cunningham, P.M. (1995, Spring). Review of E. Hamilton. (1992). Adult education for community development. New York: Greenwood Press. in Adult Education Quarterly. 45 (3), 174-176).

De Camp, L.S. (1974). Lest darkness fall (Originally published 1939). New York: Ballantine.

De Camp, L.S. (1975). Lost continents: The Atlantis theme. New York: Ballantine.

Del Rey, L. (1979). The world of science fiction: The history of a subculture. New York: Ballantine Books.

Dewey, J. (1916). Democracy and education. New York: Macmillan.

Dewey, J. (1939). Intelligence and the modern world: John Dewey's philosophy. J. Ratner. (Ed.). New York: Modern Library.

Dominicé, P.F. (1990). Composing education biographies: Group reflection through life histories. in J.D. Mezirow & Associates. Fostering critical reflection in adulthood: A guide to transformative and emancipatory learning (pp. 194-212). San Francisco: Jossey-Bass.

Durant, W. (1953). The pleasures of philosophy: A survey of human life and destiny (Rev. ed.). New York: Simon and Schuster.

Durant, W. (1961). The story of philosophy: The lives and opinions of the great philosophers of the western world (2nd ed.). New York: Simon and Schuster.

Durant, W., & Durant, A. (1935-1967). The story of civilization (Vols. 1-10). New York: Simon and Schuster.

Elias, J.L. (1982). The theory-practice split. In Merriam, S.B. (Ed.). Linking philosophy and practice (pp. 3-11). New Directions for Adult and Continuing Education, No. 15. San Francisco: Jossey-Bass.

Elias, J.L., & Merriam, S.B. (1995). Philosophical foundations of adult education. (Rev. ed.). Malabar, Florida: Krieger.

Emerson, R.W. (1968). Essays (Originally published 1841 & 1844). New York: Grollier.

Erikson, E.H. (1950). Childhood and society. New York: W.W. Norton.

Erikson, E.H., Erikson, J.M., & Kivnick, H. Q. (1986). Vital Involvement in Old Age. New York: W.W. Norton.

Feigl, H. (1956). Logical Empiricism. in D.D. Runes (Ed.). Living schools of philosophy (pp. 325-367). Ames, IA: Littlefield, Adams.

Flesch, R. (1955). Why Johnny can't read. New York: Harper & Row.

Flesch, R. (1981). Why Johnny still can't read. New York: Harper & Row.

Flew, A. (1979). A dictionary of philosophy. (Rev. ed.). New York: St. Martin's Press.

Flexner, A. (1968). Universities: American: English: German (Originally published 1930). New York: Oxford University Press.

Frankena, W.K. (1965). Philosophy of education. New York: MacMillan.

Franklin, H.B. (1980). Robert A. Heinlein: America as science fiction. New York & London: Oxford University Press.

Freire, P. (1985). The politics of education. South Hadley, MA: Bergin and Garvey.

Gassner, J. (1970). Bernard Shaw and the making of the modern mind (Originally published 1962). in Smith, W.S. (Ed.). Bernard Shaw's plays (pp. 291-301). New York and London: W.W. Norton.

Giarelli, J.M. (1990, 1988). Qualitative inquiry in philosophy and education: Notes on the pragmatic tradition (originally published 1988). In R.R. Sherman, & R.B. Webb (Eds.). Qualitative research in education: Focus and methods (pp. 22-28). London: Falmer Press.

Gilligan, C. (1982). In a different voice: Psychological theory and women's development. Cambridge, MA: Harvard University Press.

Goutek, G.L. (1991). Cultural foundations of education: A biographical introduction. New York: MacMillan.

Greene, M. (1990a). Qualitative research and the uses of literature (Originally published 1988). In R.R. Sherman, & R.B. Webb (Eds.). Qualitative research in education: Focus and methods (pp. 175-189). London: Falmer Press.

Greene, M. (1990b). Realizing literature's emancipatory potential. in J.D. Mezirow, & Associates. Fostering critical reflection in adulthood: A guide to transformative and emancipatory learning (pp. 251-268). San Francisco: Jossey-Bass.

Griffith, W.S. (1991). The impact of intellectual leadership. in J. Peters, P. Jarvis, & Associates. Adult education: Evolution and achievements in a developing field of study (pp. 97-120). San Francisco: Jossey-Bass.

Gross, R. (1977). The lifelong learner. New York: Simon & Schuster.

Gross, R. (1991). Peak learning: A master course in learning how to learn. Los Angeles: Jeremy P. Tarcher.

Guba, E.G., & Lincoln, Y.S. (1981). Effective evaluation: Improving the usefulness of evaluation results through responsive and naturalistic approaches. San Francisco: Jossey-Bass.

Hamilton, E, & Cunningham, P.M. (1989). Community-based adult education. in S.B. Merriam, & P.M. Cunningham (Eds.). Handbook of Adult and Continuing Education (pp. 439-450). San Francisco: Jossey-Bass.

Heaney, T. (1992, Fall). Essay review: When adult education stood for democracy. Adult Education Quarterly. 43 (1), 51-59.

* Heinlein, R.A. (1941, April). Beyond doubt. (under pseudonym Lyle Monroe and Elma Wentz). Astounding Stories.

* Heinlein, R.A. (1942, February). My object all sublime. Future.

* Heinlein, R.A. (1942, March). Pied piper, (under pseudonym Lyle Monroe). Astounding Stories.

* Heinlein, R.A. (1947). Rocket Ship Galileo. New York: Ace Books.

* Heinlein, R.A. (1948). Beyond this horizon (Originally published 1942). New York: Signet Books.

* Heinlein, R.A. (1948). Space cadet. New York: Scribner's.

* Heinlein, R.A. (1949). Red planet. New York: Ace Books.

* Heinlein, R.A. (1949). The day After tomorrow (Originally published 1941 as Sixth column). New York: Signet.

* Heinlein, R.A. (1950). Farmer in the sky. New York: Scribner's.

* Heinlein, R.A. (1951). "Let there be light" (Originally published 1940). in The man who sold the Moon (pp. 1-19). New York: New American Library.

* Heinlein, R.A. (1951). Between planets. New York: Scribner's.

* Heinlein, R.A. (1951). The man who sold the Moon. in The man who sold the Moon (pp. 65-170). New York: New American Library.

* Heinlein, R.A. (1951). The puppet masters. New York: Signet.

* Heinlein, R.A. (1952). The rolling Stones. New York: Scribner's.

* Heinlein, R.A. (1953). Elsewhen (Originally published 1941). in Assignment in eternity (pp. 68-95). New York: Signet.

* Heinlein, R.A. (1953). Gulf (Originally published 1949). in Assignment in eternity (pp. 7-67). New York: Signet.

* Heinlein, R.A. (1953). Jerry was a man (Originally published 1947). in Assignment in eternity (pp. 171-192). New York: Signet.

* Heinlein, R.A. (1953). Lost legacy (Originally published 1941). in Assignment in eternity (pp. 96-170). New York: Signet.

* Heinlein, R.A. (1954). Concerning stories never written: Postscript. in Revolt in 2100 (pp. 189-192). New York: Signet.

* Heinlein, R.A. (1954). Revolt in 2100. New York: Signet.

* Heinlein, R.A. (1954). The star beast. New York: Scribner's.

* Heinlein, R.A. (1955). Tunnel in the sky. New York: Scribner's.

* Heinlein, R.A. (1956). Time for the stars. New York: Ace Books.

* Heinlein, R.A. (1957). Citizen of the galaxy. New York: Scribner's.

* Heinlein, R.A. (1957). Double star (Originally published 1956). New York: Signet.

* Heinlein, R.A. (1957). The door into summer (Originally published 1956). New York: Signet.

* Heinlein, R.A. (1958). Have space suit—will travel. New York: Scribner's.

* Heinlein, R.A. (1959). By his bootstraps (Originally published 1941). in The menace from Earth (pp. 39-87). New York: Signet Books.

* Heinlein, R.A. (1959). Goldfish bowl (Originally published 1942). in The menace from Earth (pp. 129-157). New York: Signet Books.

* Heinlein, R.A. (1959). Project Nightmare (Originally published 1953). in The Menace from Earth (pp. 158-178). New York: Signet Books.

* Heinlein, R.A. (1959). Sky lift (Originally published 1953). in The Menace from Earth (pp. 115-128). New York: Signet Books.

* Heinlein, R.A. (1959). The menace from Earth (Originally published 1957). in The menace from Earth (pp. 92-114). New York: Signet Books.

* Heinlein, R.A. (1959). The menace from Earth. New York: Signet Books.

* Heinlein, R.A. (1959). The year of the jackpot (Originally published 1952). in The menace from Earth (pp. 7-38). New York: Signet Books.

* Heinlein, R.A. (1959). Water is for washing (Originally published 1947). in The menace from Earth (pp. 179-189). New York: Signet Books.

* Heinlein, R.A. (1959. Columbus was a dope (Originally published 1947). in The Menace from Earth (pp. 88-91). New York: Signet Books.

* Heinlein, R.A. (1961). '—And he built a crooked house—' (Originally published 1941). in 6XH (pp. 197-219). New York: Pyramid Books.

* Heinlein, R.A. (1961). 6XH (also published as The Unpleasant Profession of Jonathan Hoag). New York: Pyramid Books.

* Heinlein, R.A. (1961). Our fair city (Originally published 1949). in 6XH (pp. 175-196). New York: Pyramid Books.

* Heinlein, R.A. (1961). The man who traveled in elephants (Originally published 1957). in 6XH (pp. 127-142). New York: Signet Books.

* Heinlein, R.A. (1961). The unpleasant profession of Jonathan Hoag (Originally published 1942). in 6XH (pp. 7-126). New York: Pyramid Books.

* Heinlein, R.A. (1961). They (Originally published 1941). in 6XH (pp. 157-174). New York: Pyramid Books.

* Heinlein, R.A. (1961). —All you zombies— (Originally published 1959). in 6XH (pp. 143-156). New York: Pyramid Books.

* Heinlein, R.A. (1963). Podkayne of Mars. New York: Berkley.

* Heinlein, R.A. (1964). Commonsense (Originally published 1941). in Orphans of the Sky (pp. 85-187). New York: Putnam.

* Heinlein, R.A. (1964). Orphans of the Sky. New York: Putnam.

* Heinlein, R.A. (1964). Universe (Originally published 1941). in Orphans of the Sky (pp. 7-84). New York: Putnam.

* Heinlein, R.A. (1967). "It's great to be back!" (Originally published 1947). in The past through tomorrow: Future history stories complete in one volume. (pp. 301-318). New York: Berkley.

* Heinlein, R.A. (1967). "—We also walk dogs" (Originally published 1941). in The past through tomorrow: Future history stories complete in one volume. (pp. 319-342). New York: Berkley.

* Heinlein, R.A. (1967). 'If this goes on—' (Originally published 1940). in The past through tomorrow: Future history stories complete in one volume. (pp. 449-584). New York: Berkley.

* Heinlein, R.A. (1967). Blowups happen (Originally published 1940). in The past through tomorrow: Future history stories complete in one volume. (pp. 73-120). New York: Berkley.

* Heinlein, R.A. (1967). Coventry (Originally published 1940). in The past through tomorrow: Future history stories complete in one volume. (pp. 585-632). New York: Berkley.

* Heinlein, R.A. (1967). Delilah and the space rigger (Originally published 1949). in The past through tomorrow: Future history stories complete in one volume. (pp. 213-226). New York: Berkley.

* Heinlein, R.A. (1967). Gentlemen, be seated! (Originally published 1948). in The past through tomorrow: Future history stories complete in one volume. (pp. 277-286). New York: Berkley.

* Heinlein, R.A. (1967). Life-line (Originally published 1939). in The past through tomorrow: Future history stories complete in one volume. (pp. 15-34). New York: Berkley.

* Heinlein, R.A. (1967). Logic of empire (Originally published 1941). in The past through tomorrow: Future history stories complete in one volume. (pp. 375-422). New York: Berkley.

* Heinlein, R.A. (1967). Methusaleh's children (Originally published 1941). in The past through tomorrow: Future history stories complete in one volume. (pp. 655-830). New York: Berkley.

* Heinlein, R.A. (1967). Misfit (Originally published 1939). in The past through tomorrow: Future history stories complete in one volume. (pp. 633-654). New York: Berkley.

* Heinlein, R.A. (1967). Ordeal in space (Originally published 1948). in The past through tomorrow: Future history stories complete in one volume. (pp. 347-362). New York: Berkley.

* Heinlein, R.A. (1967). Requiem (Originally published 1940). in The past through tomorrow: Future history stories complete in one volume. (pp. 245-262). New York: Berkley.

* Heinlein, R.A. (1967). Space jockey (Originally published 1947). in The past through tomorrow: Future history stories complete in one volume. (pp. 227-244). New York: Berkley.

* Heinlein, R.A. (1967). The black pits of Luna (Originally published 1948). in The past through tomorrow: Future history stories complete in one volume. (pp. 287-300). New York: Berkley.

* Heinlein, R.A. (1967). The green hills of Earth (Originally published 1947). in The past through tomorrow: Future history stories complete in one volume. (pp. 363-374). New York: Berkley.

* Heinlein, R.A. (1967). The past through tomorrow: Future history stories complete in one volume. New York: Berkley.

* Heinlein, R.A. (1967). The roads must roll (Originally published 1940). in The past through tomorrow: Future history stories complete in one volume. (pp. 35-72). New York: Berkley.

* Heinlein, R.A. (1967).The long watch (Originally published 1949). in The past through tomorrow: Future history stories complete in one volume. (pp. 263-276). New York: Berkley.

* Heinlein, R.A. (1968). Starship troopers (Originally published 1959). New York: Berkley.

* Heinlein, R.A. (1968). The moon is a harsh mistress (Originally published 1966). New York: Berkley.

* Heinlein, R.A. (1970). Glory road (Originally published 1963). New York: Berkley.

* Heinlein, R.A. (1970). Magic, Inc. in Waldo & Magic, Inc. (pp. 105-192) (Originally published 1941). New York: Signet.

* Heinlein, R.A. (1970). The worlds of Robert A. Heinlein (Originally published 1966). London: New English Library.

* Heinlein, R.A. (1970). Waldo. in Waldo & Magic, Inc. (pp. 9-104) (Originally published 1941). New York: Signet.

* Heinlein, R.A. (1971). Farnham's freehold (Originally published 1964). New York: Berkley.

* Heinlein, R.A. (1975). Starman Jones (Originally published 1953). New York: Ballantine.

* Heinlein, R.A. (1977). On the writing of speculative fiction. in Knight, D.F. (Ed.). Turning points (pp. 11-19). New York: Harcourt.

* Heinlein, R.A. (1980). Cliff and the calories (Originally published 1950). in Expanded universe: The new worlds of Robert A. Heinlein (pp. 354-371). New York: Ace Books.

* Heinlein, R.A. (1980). Expanded universe: The new worlds of Robert A. Heinlein. New York: Ace Books.

* Heinlein, R.A. (1980). How to be a survivor. in Expanded universe: The new worlds of Robert A. Heinlein (pp. 163-174). New York: Ace Books.

* Heinlein, R.A. (1980). No bands playing, no flags flying— (Originally published 1973). in Expanded universe: The new worlds of Robert A. Heinlein (pp. 237-243). New York: Ace Books.

* Heinlein, R.A. (1980). Nothing ever happens on the Moon (Originally published 1949). in Expanded universe: The new worlds of Robert A. Heinlein. (pp. 276-308). New York: Ace Books.

* Heinlein, R.A. (1980). On the slopes of Vesuvius. in Expanded universe: The new worlds of Robert A. Heinlein (pp. 267-275). New York: Ace Books.

* Heinlein, R.A. (1980). Paul Dirac, antimatter, and you (Originally published 1975). in Expanded universe: The new worlds of Robert A. Heinlein (pp. 471-493). New York: Ace Books.

* Heinlein, R.A. (1980). Pie from the sky. in Expanded universe: The new worlds of Robert A. Heinlein (pp. 175-180). New York: Ace Books.

* Heinlein, R.A. (1980). Ray guns and rocket ships (Originally published 1952). in Expanded universe: The new worlds of Robert A. Heinlein (pp. 372-378). New York: Ace Books.

* Heinlein, R.A. (1980). Solution unsatisfactory (Originally published 1941). in Expanded universe: The new worlds of Robert A. Heinlein (pp. 92-144). New York: Ace Books.

* Heinlein, R.A. (1980). The happy days ahead. in Expanded universe: The new worlds of Robert A. Heinlein (pp. 514-582). New York: Ace Books.

* Heinlein, R.A. (1980). The last days of the United States. in Expanded universe: The new worlds of Robert A. Heinlein (pp. 145-162). New York: Ace Books.

* Heinlein, R.A. (1980). The pragmatics of patriotism (Originally published 1973). in Expanded universe: The new worlds of Robert A. Heinlein (pp. 458-470). New York: Ace Books.

* Heinlein, R.A. (1980). The Third Millennium opens (Originally published 1956). in Expanded Universe (pp. 379-385). New York: Ace Books.

* Heinlein, R.A. (1980). Where to? (Originally published 1952). in Expanded universe: The new worlds of Robert A. Heinlein (pp. 316-353). New York: Ace Books.

* Heinlein, R.A. (1982). The number of the beast (Originally published 1980). New York: Fawcett.

* Heinlein, R.A. (1983). Friday (Originally published 1982). New York: Del Rey.

* Heinlein, R.A. (1985). Job: A comedy of justice (Originally published 1984). New York: Del Rey.

* Heinlein, R.A. (1986). The cat who walks through walls (Originally published 1985). New York: Berkley.

* Heinlein, R.A. (1987). I will fear no evil (Originally published 1970). New York: Ace Books.

* Heinlein, R.A. (1987). Stranger in a strange land (Originally published 1961). New York: Ace Books.

* Heinlein, R.A. (1987). Time enough for love (Originally published 1973). New York: Ace Books.

* Heinlein, R.A. (1987). To sail beyond the sunset. New York: Ace/Putnam.

* Heinlein, R.A. (1989). Grumbles from the grave. V. Heinlein (Ed.). New York: Del Rey.

* Heinlein, R.A. (1992). Destination Moon (Originally published 1950). in Y. Kondo (Ed.). Requiem: New collected works by Robert A. Heinlein and tributes to the grand master (pp. 64-116). New York: Tor.

* Heinlein, R.A. (1992). Guest of honor speech at the Third World Science Fiction Convention—Denver, 1941. in Y. Kondo (Ed.). Requiem: New collected works by Robert A. Heinlein and tributes to the grand master (pp. 153-167). New York: Tor.

* Heinlein, R.A. (1992). Poor daddy (Originally published 1949). in Y. Kondo (Ed.). Requiem: New collected works by Robert A. Heinlein and tributes to the grand master (pp. 145-152). New York: Tor.

* Heinlein, R.A. (1992). Requiem: New collected works by Robert A. Heinlein and tributes to the grand master. Y. Kondo (Ed.). New York: Tor.

* Heinlein, R.A. (1992). Take back your government. J. Pournelle (Ed.). New York: Baen Books.

* Heinlein, R.A. (1992). Tenderfoot in space (Originally published 1958). in Y. Kondo (Ed.). Requiem: New collected works by Robert A. Heinlein and tributes to the grand master (pp. 26-63). New York: Tor.

* Heinlein, R.A. (1992). The witch's daughters. in Y. Kondo (Ed.). Requiem: New collected works by Robert A. Heinlein and tributes to the grand master (p. 132). New York: Tor.

* Heinlein, R.A. (1992). This I believe (Originally published 1952). in Y. Kondo (Ed.). Requiem: New collected works by Robert A. Heinlein and tributes to the grand master (pp. 218-219). New York: Tor Books.

* Heinlein, R.A. (1992). Tramp Royale. New York: Ace Books.

Hiemstra, R. (1988). Translating personal values and philosophy into practical action. in Brockett, R.G. (Ed.) Ethical issues in adult education. (pp. 162-177). New York: Teachers College Press.

Hiemstra, R., & Sisco, B. (1990). Individualizing instruction: Making learning personal, empowering, and successful. San Francisco: Jossey-Bass.

Hill, E.A. (1989, Spring). Literary research and the study of reentry women. Journal of Continuing Higher Education. 37 (2), 7-10.

Hobbes, T. (1952). Leviathan (Originally published 1651). in R. Hutchins, & M.J. Adler (Eds.) Great books of the western world (Vol. 23). Chicago: Encyclopaedia Britannica.

Horton, M., & Freire, P. (1990). We make the road by walking: Conversations on education and social change. B. Bell, J. Gaventa, & J. Peters (Eds.). Philadelphia: Temple University Press.

Houle, C.O. (1984). The design of education (Originally published 1972). in S. Merriam (Ed.). Selected writings on philosophy and adult education (pp. 7-11). Malabar, FL: Krieger.

Houle, C.O. (1992). The literature of adult education: A bibliographic essay. San Francisco: Jossey-Bass.

Hutchins, R.M. (1936). The higher learning in America. New Haven, CT: Yale University Press.

Hutchins, R.M. (1984). The conflict in education (Originally published 1953). in S. Merriam (Ed.). Selected writings on philosophy and adult education (pp. 7-11). Malabar, FL: Krieger.

Ilsley, P. (1982). The relevance of the future in adult education: A phenomenological analysis of images of the future. Unpublished doctoral dissertation. DeKalb, IL: Northern Illinois University.

Ilsley, P. (1992, Summer). The undeniable link: Adult and continuing education and social change. In Galbraith, M.W., & Sisco, B.R. (Eds.). Confronting Controversies in challenging times: A call for action (pp. 25-36). New Directions for Adult and Continuing Education, No. 54. San Francisco: Jossey-Bass.

James, W. (1925). The philosophy of William James: Selected from his chief works. H.M. Kallen (Ed.). New York: Modern Library.

James, W. (1956). The will to believe and other essays in popular philosophy (Originally published 1897). & Human immortality: Two supposed objections to the doctrine (Originally published 1898). New York: Dover Books.

Jarvis, P. (Ed.) (1991). Twentieth century thinkers in adult education (Originally published 1987). London & New York: Routledge.

Johnson, P. (1990). Intellectuals (Orginally published 1988). New York: Perennial Library.

Kett, J.M. (1994). The pursuit of knowledge under difficulties: From self-improvement to adult education in America, 1750-1990. Stanford, CA: Stanford University Press.

Kidd, J.R. (1973). How adults learn. New York: Association Press.

Kneller, G.F. (1958). Existentialism and education. New York: Philosophical Library.

Kneller, G.F. (1964). Introduction to the philosophy of education (2nd ed.). New York: John Wiley & Sons.

Kneller, G.F. (1984). Movements of thought in modern education. New York: MacMillan.

Knight, D. (1967a). In search of wonder. Chicago: Advent Publishers.

Knight, D. (1967b). Introduction to R.A. Heinlein. in The past through tomorrow (pp. 9-13). New York: Berkley.

Knight, G.R. (1982). Issues & alternatives in educational philosophy. Berrien Springs, MI: Andrews University Press.

Knowles, M.S. (1975). Self-directed learning. New York: Association Press.

Knowles, M.S. (1980). The modern practice of adult education: From pedagogy to andragoagy. (2nd ed.). Association Press: Chicago.

Knowles, M.S. (1984). The adult learner: A neglected species. (3rd ed.). Gulf: Houston, TX.

Knox, A.B. (1986). Helping adults learn. San Francisco: Jossey-Bass.

Korzybski, A. (1921). The manhood of humanity: The science and art of human engineering. New York: E.P. Dutton and Company.

Korzybski, A. (1941). Science and sanity (2nd ed.). Lancaster, PA: The Science Press Printing Company.

Krishnamurti, J., & Bohm, D. (1985). The ending of time. San Francisco: Harper & Row.

Lawson, K.H. (1991). Philosophical foundations. in J. Peters, P. Jarvis, & Associates. Adult education: Evolution and achievements in a developing field of study (pp. 282-300). San Francisco: Jossey-Bass.

Leck, G.M. (1990, Spring). Examining gender as a foundation within foundational studies. Teachers College Record. 91 (3), 382-395.

Lindeman, E. (1961). The meaning of adult education (Originally published 1926). Norman, OK: Oklahoma Research Center for Continuing Professional and Higher Education.

Livingstone, R. (1984). Cultural studies in adult education (Originally published 1945) in S. Merriam (Ed.). Selected writings on philosophy and adult education. (pp. 1-6). Malabar, FL: Krieger.

Lyotard, J.F. (1984). The postmodern condition: A report on knowledge. Minneapolis: University of Minnesota Press.

Martin, E.D. (1926). The meaning of a liberal education. Garden City, NY: Garden City Publishing.

McKenzie, L. (1984). Adult education and the burden of the future (Originally published 1978) in S.B. Merriam (Ed.). Selected writings on philosophy and adult education (pp. 79-90). Malabar, Fl.: Krieger.

Merriam, S.B. (1993, Spring). Adult learning: Where have we come from? Where are we headed? in S.B. Merriam (Ed.). An update on adult learning theory (pp. 5-14). New Directions for Adult and Continuing Education, No. 57. San Francisco: Jossey-Bass.

Merriam, S.B. (Ed.). (1983a). Themes of adulthood through literature. New York: Teachers College Press.

Merriam, S.B. (Ed.). (1984). Selected writings on philosophy and adult education. Malabar, Fl.: Krieger.

Merriam, S.B., & Caffarella, R.S. (1991). Learning in adulthood. San Francisco: Jossey-Bass.

Merriam, S.B., & Cunningham, P.M. (Eds.) (1989). Handbook of adult and continuing education. San Francisco: Jossey-Bass.

Merriam, S.B., & Simpson, E.L. (1989). A guide to research for educators and trainers of adults. (Rev. ed.). Malabar, Fl.: Krieger.

Mezirow, J.D. & Associates. (1990). Fostering critical reflection in adulthood: A guide to transformative and emancipatory learning. San Francisco: Jossey-Bass.

Mezirow, J.D. (1985, Spring). A critical theory of self-directed learning. in S.D. Brookfield (Ed.) Self-directed learning: From theory to practice (pp. 17-30). New Directions for Adult and Continuing Education, No. 25. San Francisco: Jossey-Bass.

Mezirow, J.D. (1991). Transformative dimensions of adult learning. San Francisco: Jossey-Bass.

Mezirow, J.D. (1996, Spring). Contemporary paradigms of learning. Adult Education Quarterly. 46 (3), 158-172.

Moreland, W.D., & Goldenstein, E.H. (1985). Pioneers in Adult Education. Chicago: Nelson-Hall.

Morris, V.C. (1961). Philosophy and the American school: An introduction to the philosophy of education. Boston: Houghton Mifflin.

Noddings, N. (1990). Feminist critiques in the professions. American Educational Research Association Yearbook (pp. 393-424).

O'Neill, W.F. (1981). Educational ideologies. Santa Monica, CA: Goodyear.

Ohliger, J. (1988). The fictional adult educator. Madison, WI: Basic Choices.

Ohliger, J. (1989). Alternative images of the future in adult education. in S.B. Merriam, & P.M. Cunningham (Eds.). Handbook of Adult and Continuing Education (pp. 628-639). San Francisco: Jossey-Bass.

Ohliger, J. (1990, Fall). Forum: You shall know the truth and the truth shall make you laugh. Mountain Plains Adult Education Association Journal of Adult Education. 19 (1), 25-37.

Olander, J.D., & Greenberg, M.H. (Eds). (1978). Writers of the 21st century: Robert A. Heinlein. New York: Taplinger.

Owenby, P. H. (1994a, November). Historical and cultural connections of science fiction and adult education in early 20th century America. Paper presented at the 1994 Adult Education Conference of the American Association for Adult and Continuing Education, Nashville, TN.

Owenby, P. H. (1994b, November). The science fiction writer as adult educator: Exploring the educational worlds of Robert Heinlein. Paper presented at the 1994 Adult Education Conference of the American Association for Adult and Continuing Education, Nashville, TN.

Owenby, P. H. (1994c). [Interview with Virginia Heinlein, March 11-12, 1994]. Unpublished raw data.

Owenby, P. H. (1995, November). The philosophy of adult education implicit in the works of Robert Heinlein. Paper presented at the 1995 Adult Education Conference of the American Association for Adult and Continuing Education, Kansas City, MO.

Owenby, P.H. (1992a). Challenging and reflecting gender differences in literature: Images of competent women in Robert A. Heinlein's early science-fiction. Proceedings of the 21st Annual Meeting of the Mid-South Educational Research Association: November 11-13, 1992 (p. 37). Knoxville, Tennessee.

Owenby, P.H. (1992b). Operationalized ambience: A phenomenological approach to technical education and communication. Proceedings of the 16th Annual Practical Conference on Communication of the Society for Technical Communication (pp. 23-27). Oak Ridge, Tennessee: East Tennessee Chapter of the Society for Technical Communication.

Ozmon, H., & Craver, S.M. (1990). Philosophical foundations of education (4th ed.). New York: MacMillan Publishing Company.

Panshin, A. (1968). Heinlein in dimension. Chicago: Advent.

Peirce, C.S. (1955). The philosophical writings of Peirce. J. Buchler (Ed.). New York: Dover.

Peters, J. (1989). Programming through the client's life span. in D. Blackburn (Ed.). Foundations and changing practices of extension (pp. 84-93). Ontario: University of Guelph.

Peters, J., Jarvis, P., & Associates. (1991). Adult education: Evolution and achievements in a developing field of study. San Francisco: Jossey-Bass.

Peters, R.S. (1966). Ethics and education. Chicago: Scott, Foresman.

Pittman, V. (1989, Winter). What is the image of the field today? in B.A. Quigley (Ed.). Fulfilling the promise of adult and continuing education (pp. 15-23). New Directions for Adult and Continuing Education, No. 44. San Francisco: Jossey-Bass.

Pittman, V. (1992, Spring). Outsiders in academe: Night school students in American fiction. Journal of Continuing Higher Education. 40 (2), 8-13.

Plato. (1968). The Republic (Originally published 4th century B.C.E.). New York: Grollier.

Pournelle, J. (1992) Jerry Pournelle. in Y. Kondo (Ed.). Requiem: New collected works by Robert A. Heinlein and tributes to the grand master (pp. 227-228). New York: Tor.

Pratt, D.D. (1992, Summer). Conceptions of teaching. Adult Education Quarterly. 42 (4), 203-220.

Pratt, D.D. (1993, Spring). Andragogy after twenty-five years. in S.B. Merriam (Ed.). An update on adult learning theory. (pp. 15-23). New Directions for Adult and Continuing Education, No. 57. San Francisco: Jossey-Bass.

Quigley, B.A. (1990, Winter). Hidden logic: Reproduction and resistance in adult literacy and adult basic education. Adult Education Quarterly. 40 (2), 103-115.

Rand, A. (1971). The romantic manifesto: A philosophy of literature. (Rev. ed.). New York: Signet.

Reese, W.L. (1980). Dictionary of philosophy and religion. Atlantic Highlands, NJ: Humanities Press.

Ren, L. (1981, May). The power of the parable. Training: The Magazine of Human Resource Development. 18 (5), 64-67.

Robert A. Heinlein 1907-1988. (1988, June). Locus: The newspaper of the science-fiction field. 21 (6), 33, 78-83.

Robinson, S. (1981). Rah! rah! R.A.H.! in Time travelers strictly cash (pp. 95-120). New York: Berkley.

Robinson, S. (1992). Robert. in Y. Kondo (Ed.). Requiem: New collected works by Robert A. Heinlein and tributes to the grand master (pp. 310-321). New York: Tor.

Rorty, R. (1982). Consequences of pragmatism. Minneapolis, MN: University of Minnesota Press.

Rose, A.D. (1989). Nontraditional education and the assessment of prior learning. in S.B. Merriam, & P.M. Cunningham (Eds.). Handbook of adult and continuing education (pp. 211-220). San Francisco: Jossey-Bass.

Sarti, R. (1978). Variations on a theme: human sexuality in the works of Robert A. Heinlein. In J.D. Olander, & M.H. Greenberg (Eds). Writers of the 21st century: Robert A. Heinlein (pp. 107-136). New York: Taplinger.

Scheffler, I. (1965). Conditions of knowledge. Chicago: Scott, Foresman. (As cited in Elias & Merriam, 1995).

Schied, F.M. (1995, Summer). Review of Kett, J.M. (1994). The pursuit of knowledge under difficulties: From self-improvement to adult education in America, 1750-1990. Stanford, CA: Stanford University Press. in Adult Education Quarterly. 45 (4), 232-234.

Schlick-Renner, M., & Truscott, S. (1994, March). Accelerated learning, suggestopedia, and the adult student. Language Learning Journal. (3), 60-62.

Schulman, J.N. (1990). Robert Heinlein Interview (Originally published 1973). [On-line]. Available via: http://www.crl.com/-jgifford/schulman.html.

Shaw, G.B. (1951). Caesar and Cleopatra (Originally published 1898). in Seven plays by Bernard Shaw (pp. 355-482). New York: Dodd, Mead.

Shaw, G.B. (1951). Man and superman (Originally published 1903). in Seven plays by Bernard Shaw (pp. 483-744). New York: Dodd, Mead.

Sherman, R.R., & Webb, R.B. (Eds.). (1990). Qualitative research in education: A focus (Originally published 1988). in Qualitative research in education: Focus and methods (pp. 2-21). London: Falmer.

Slusser, G.E. (1977a). Robert A. Heinlein: Stranger in his own land. San Bernadino, CA: Borgo Press.

Slusser, G.E. (1977b). The classic years of Robert A. Heinlein (2nd ed.). San Bernadino, CA: Borgo Press.

Smith II, P.E. (1978). The evolution of politics and the politics of evolution: Social Darwinism in Heinlein's fiction. in J.D. Olander, & M.H. Greenberg (Eds). Writers of the 21st century: Robert A. Heinlein (pp. 137-171). New York: Taplinger.

Soltis, J. (1968). An introduction to the analysis of educational concepts. Reading, MA: Addison-Wesley.

Sork, T.J., & Cafferella, R.S. (1989). Planning programs for adults. in S.B. Merriam, & P.M. Cunningham (Eds.). Handbook of adult and continuing education (pp. 233-245). San Francisco: Jossey-Bass.

Spiegelberg, H. (1984). Putting ourselves into the place of others: Towards a phenomenology of imaginary self transposal. in S.B. Merriam (Ed.). Selected writings on philosophy and adult education (pp. 171-178). Malabar, FL: Krieger.

Stanage, S. (1987). Adult education and phenomenological research. Malabar, FL: Krieger.

Steiner, R. (1986). Spiritual science as a foundation for social forms. M. St. Goar (Trans.). Bell's Pond, Hudson, NY: Anthroposophic Press. (Original work published 1920).

Stewart, D.W. (1987). Adult learning in America: Eduard Lindeman and his agenda for lifelong education. Malabar, FL: Krieger.

Stover, L. (1987) Robert A. Heinlein. Boston: Twayne Publishers.

Stubblefield, H. (1988). Towards a history of adult education in America. London: Croon Helm.

Stubblefield, H.W., & Keane, P. (1994). Adult education in the American experience. San Francisco: Jossey-Bass.

Taylor, E.W. (1994, Spring). Intercultural competency: A transformative learning process. Adult Education Quarterly, 44 (3), 154-174.

Taylor, H. (1969). Students without teachers: The crisis in the university. New York: McGraw-Hill.

Taylor, S.J., & Bogdan, R. (1984). Introduction to qualitative research methods: The search for meanings (2nd ed.). New York: Wiley.

Tisdell, E.J. (1993a, Spring). Feminsim and adult learning: Power, pedagogy, and praxis. in Merriam, S.B. (Ed.). An update on adult learning theory. (pp. 91-103). New Directions for Adult and Continuing Education, No. 57. San Francisco: Jossey-Bass.

Tisdell, E.J. (1993b, Summer). Interlocking systems of power, privilege, and oppression in adult higher education classes. Adult Education Quarterly, 43 (4), 203-226.

Toffler, A. (1970). Future shock. New York: Bantam Books.

Toffler, A. (Ed.) (1974). Learning for tomorrow: The role of the future in education. New York: Vantage Books.

Tough, A. (1979). The adult's learning projects: A fresh approach to theory and practice in adult learning (2nd ed.). Austin, TX: Learning Concepts.

Tremor, M. (1974). The adult educator's guide to future fiction: An inventory of ideas in science-fiction. Unpublished doctoral dissertation. Tallahassee: College of Education, Florida State University.

Tyler, R.W. (1949). Basic principles of curriculum and instruction. University of Chicago Press: Chicago.

Vandenberg, D. (1982). Charlatans, knowledge, curriculum and phenomenological research. Working papers in distance education, No. 5. St. Lucia, Australia: Queensland University, School of External Studies and Continuing Education.

Welton, M.R. (1993, Spring). The contribution of critical theory to our understanding of adult learning. in Merriam, S.B. (Ed.). An update on adult learning theory (pp. 81-90). New Directions for Adult and Continuing Education, No. 57. San Francisco: Jossey-Bass.

Whitman, W. (1980). Leaves of grass (Originally published 1855). New York: Signet Books.

Williamson, J. (1978). Youth against space: Heinlein's juveniles revisited. In J.D. Olander, & M.H. Greenberg (Eds). Writers of the 21st century: Robert A. Heinlein (pp. 15-31). New York: Taplinger.

Williamson, J. (1992). Who was Robert Heinlein? In Y. Kondo (Ed.). Requiem: New collected works by Robert A. Heinlein and tributes to the grand master (pp. 333-336). New York: Tor.

Wilson, A. L. (1992, July-September). Pragmatism and social action in American adult education. International Journal of Lifelong Education. 11 (3), 181-189.

Wirth, A.G. (1966). John Dewey as educator: His design for working in education. New York: Wiley.

Wood, S. (1980). Women in science fiction. In J. Williamson (Ed.). Teaching science-fiction: Education for tomorrow. Philadelphia: Owlswick Press.

Zacharakis-Jutz, J., & Schied, F.M. (1993, Winter). Essay review: Worker's education, social reconstruction, and adult education. Adult Education Quarterly. 43 (2), 101-109.

Zemke, R. (1980, December). Is storytelling the basic unit of learning? Training: The Magazine of Human Resource Development, 17, 12, 14.

APPENDICES

APPENDIX A:

SYNOPSES OF HEINLEIN'S MAJOR PUBLICATIONS

Dates*	Title	Type	Description
1939 (1967)	"Life-line" Reprinted in The Past through Tomorrow (1967)	Short Story	Dr. Hugo Pinero invents a machine that predicts a person's date of death, but is persecuted by those who feel threatened by the commercial implications of the device.
1939 (1967)	"Misfit" Reprinted in The Past through Tomorrow (1967)	Short Story	Andrew Libby is a young hillbilly who enlists in the Cosmic Construction Corps, a New-Deal type government agency of the future. When his ability to make lightning calculations is discovered, he finds his true vocation.
1940 (1967)	"If this goes on—" Reprinted in The Past through Tomorrow (1967)	Novella	John Lyle is an army officer of a future USA under the control of a fundamentalist religious dictatorship; he learns to think for himself and is recruited into a revolution that succeeds in restoring individual liberty.
1940 (1967)	"Requiem" Reprinted in The Past through Tomorrow (1967)	Short Story	D.D. Harriman, the industrial tycoon responsible for financing the first lunar landing, is near the end of his life. He persuades two men to illegally fly him to the Moon so he can die there in fulfillment of his lifelong dream.
1940 (1967)	"Coventry" Reprinted in The Past through Tomorrow (1967)	Short Story	David McKinnon, a romantic teacher of literature, is banished from a future USA into a large preserve set aside for those too antisocial to respect the liberties of others. During his banishment, he learns social responsibility and eventually returns to society.

* When two dates are given for a work, dates in parentheses indicate the publication dates for sources used in this study.

Dates	Title	Type	Description
1940 (1967)	"The Roads Must Roll" Reprinted in The Past through Tomorrow (1967)	Short Story	The national transportation system of the future USA is threatened by a "functualist" revolution of technicians who believe their jobs entitle them to rule the country's infrastructure as the natural elite.
1940 (1967)	"Blowups Happen" Reprinted in The Past through Tomorrow (1967)	Short Story	Global disaster is narrowly avoided when a mathematical psychologist and a naval astronomer team up to cause an unstable nuclear power plant to be shut down in order to avoid allowing occupational mental disorders of the plant workers to cause a nuclear accident.
1940 (1951)	"Let There be Light" Reprinted in The Man Who Sold the Moon (1951)	Short Story	A man-woman scientific team discovers a cheap, efficient process of making electricity from sunshine. They decide to donate the process to the public domain after they are threatened by large electric utilities who want to keep the process secret in order to protect their profits.
1940 (1980)	"Successful Operation" (original title "Heil") Reprinted in Expanded Universe (1980)	Short Story	When a fascist dictator's diseased pineal gland is replaced by a healthy transplant from a concentration camp inmate, the dictator finds that his identity has been transferred to the convalescent inmate who received his diseased organ.
1941 (1967)	" '—We also walk dogs' " Reprinted in The Past through Tomorrow (1967)	Short Story	General Services Corporation provides omnibus services for a future society whose members are beset both by increasing incompetence and increasing demands on personal time.

Dates	Title	Type	Description
1941 (1967)	"Methusa-leh's Children" Reprinted in The Past through Tomorrow (1967)	Novella	An otherwise sane and stable future society begins to persecute a group of people because they are congenitally able to live far longer than ordinary people.
1941 (1961)	"They" Reprinted in 6XH (1961)	Short Story	A man learns that he is the target of a massive worldwide deception calculated to prevent him from remembering his real identity and the real nature of the universe.
1941 (1961)	"—And he built a crooked house—" Reprinted in 6XH (1961)	Short Story	A Hollywood architect builds a house in the shape of an exploded tesseract. An earthquake causes the house to collapse into a real tesseract with amazing transdimensional properties.
1941 (1949)	Sixth Column aka The Day After Tomorrow (1949)	Novel	A group of army officers disguise their newly developed atomic technology under the cover of religion in order to defeat an Asian military occupation of the USA.
1941 (1967)	"Logic of Empire" Reprinted in The Past through Tomorrow (1967)	Short Story	A man is shanghied as an indentured servant to a Venusian plantation where he learns that slavery is a consequence of imperialist economics in an expanding frontier.
1941 (1980)	"Solution Unsatisfac-tory" Reprinted in Expanded Universe (1980)	Short Story	When the USA develops a military superiority based on a radioactive weapon, a race against time is underway to internationalize the weapon to prevent it becoming the tool of selfish business and nationalist interests.

Dates	Title	Type	Description
1941 (1963)	Universe & Common-sense aka Orphans of the Sky (1963)	Short Stories (later assembled into a novel)	Centuries after a mutiny disrupted and divided the thousands of crewmembers aboard a multi-generation starship designed to carry colonists to Alpha Centauri, the ship's population has lost the knowledge of its origins and purposes and degenerated into a society based on oral traditions and primitive religion.
1941 (1953)	"Lost Legacy" Reprinted in Assignment in Eternity (1953)	Novella	While researching paranormal phenomena, three friends come upon a hidden community of adepts who reveal to them the true history and development of humanity.
1941 (1959)	"By His Bootstraps" Reprinted in The Menace from Earth (1959)	Short Story	A time traveler encounters his past and future selves many times while pursuing his adventures in the Earth of the far future.
1941 (1953)	"Elsewhen" Reprinted in Assignment in Eternity (1953)	Short Story	A professor of speculative philosophy enables his students to pursue alternate time tracks through hypnosis and suggestion.
1941 (1950)	"Magic, Inc." Reprinted in Waldo & Magic, Inc. (1950)	Novella	When a racketeering organization conspires to monopolize commercial magic, two businessmen enlist the aid of a white witch to track down the racketeer in the depths of Hell.
1941 (1992)	"Discovery of the Future" Reprinted in Requiem (1992)	Nonfiction	Guest of Honor Speech, 1941 World Science Fiction Convention, in Denver, Colorado.

Dates	Title	Type	Description
1941 (with Emma Wentz)	"Beyond Doubt" Astounding Stories (1941, April)	Short Story	This is a whimsical account of the origins of the carved images on Easter Island as political advertising from an election campaign on the lost continent of Mu.
1942 (1948)	Beyond This Horizon Revised and reprinted (1948)	Novel	In a future society in which poverty has been eliminated, a man in search of the meaning of life helps defeat a fascist putsch, but is reluctant to cooperate with the government's genetics planning program.
1942 (1950)	"Waldo" Reprinted in Waldo & Magic, Inc. (1950)	Novella	A congenitally crippled man living in his low-gravity orbital home is consulted by a large power utility in search of explanations for a rash of inexplicable technology failures.
1942 (1959)	"Goldfish Bowl" Reprinted in The Menace from Earth (1959)	Short Story	A naval vessel is scouting two large water columns over the Pacific caused by a hitherto unknown intelligent life form.
1942 (1961)	"The Unpleasant Profession of Jonathan Hoag" Reprinted in 6XH (1961)	Novella	An amnesiac man asks a detective to uncover his forgotten daytime profession; he finds that his profession is that of a cosmic art critic and that Earth is the artwork that he has been sent to judge.
1942	"My Object All Sublime" in Future (1942, February)	Short Story	This whimsical story is about a private citizen who figures out a unique way to punish rudeness in others. The title is taken from the Gilbert & Sullivan musical The Mikado ("My object all sublime... to commit the perfect crime").

Dates	Title	Type	Description
1942	"Pied Piper" (under pseudonym Lyle Monroe) in Astounding Stories (1942, March)	Short Story	A scientist's two inventions: a device for traveling instantly between two locations, and a musical tone generator that influences behavior, allows him to stop a European war of aggression.
1946 (1980)	"A Bathroom of Her Own" Reprinted in Expanded Universe (1980)	Short Story	When the local city political machine runs an honest-but-naive female candidate against the reform candidate, she quickly learns the score and teams up with the reform candidate who persuades her to take his place on the reform ticket.
1947 (1967)	"Space Jockey" Reprinted in The Past through Tomorrow (1967)	Short Story	Jake Pemberton and his wife Phyllis constructively resolve the strains created by his job as a commercial spacecraft pilot.
1947 (1967)	"The Green Hills of Earth" Reprinted in The Past through Tomorrow (1967)	Short Story	A blind and famous ex-spaceman-turned-poet composes his last great song while working and dying to save a distressed spaceship from an accident with its nuclear rocket engine.
1947 (1967)	"It's Great to be Back!" Reprinted in The Past through Tomorrow (1967)	Short Story	A couple return to Earth from living on the Moon for three years only to discover that the Moon is where they really belong.

Dates	Title	Type	Description
1947 (1959)	"Columbus Was a Dope" Reprinted in The Menace from Earth (1959)	Short Story	A bartender serves three commercial travelers all of whom make their living selling to the space exploration industry. All but the bartender disparage the spirit of exploration in favor of staying where they already live--the Moon!
1947 (1980)	"They Do It With Mirrors" Reprinted in Expanded Universe (1980)	Short Story	A detective solves the murder of an exotic dancer by uncovering a visual deception used by the nightclub manager.
1947 (1959)	"Water is for Washing" Reprinted in The Menace from Earth (1959)	Short Story	A salesman, a hobo, and two children narrowly escape drowning when an earthquake causes the Gulf of Baja California to flood the Imperial Valley.
1947 (1953)	"Jerry Was a Man" Reprinted in Assignment in Eternity (1953)	Short Story	A socialite millionairess hires a lawyer to prove that genetically-engineered chimpanzees have "human rights" and must not be enslaved and killed at will by their commercial owners.
1947 (1980)	"On the Slopes of Vesuvius" Reprinted in Expanded Universe (1980)	Short Story	A bartender takes immediate action to leave New York City just in time to avoid an atomic bomb after two physicists convince him that the USA is vulnerable to nuclear aggression.
1947	Rocketship Galileo	Novel	A scientist and three young men pilot a rocketship to the moon only to discover that a secret Nazi missile base is already there.

Dates	Title	Type	Description
1948 (1967)	"The Black Pits of Luna" Reprinted in The Past through Tomorrow (1967)	Short Story	A young boy helps rescue his sibling who becomes lost on the Moon's surface. His feat earns him respect from the Lunar colonists and decides him on his future career.
1948 (1967)	"Gentlemen, Be Seated" Reprinted in The Past through Tomorrow (1967)	Short Story	A fat man saves several people during a pressure leak in a lunar hut by sitting on the leak hole and using his flesh to seal the leak.
1948 (1967)	"Ordeal in Space" Reprinted in The Past through Tomorrow (1967)	Short Story	A space pilot who experiences severe vertigo during a space walk and gives up his career afterwards regains his nerve by rescuing a cat stranded on a ledge outside the 35th floor of a skyscraper apartment building.
1948	Space Cadet	Novel	In 2075, the transnational Space Patrol polices the solar system against outbreaks of war. When a young man seeks to join the elite organization, he must undergo an arduous educational and psychological preparation.
1949 (1967)	"The Long Watch" Reprinted in The Past through Tomorrow (1967)	Short Story	A young officer of the UN Space Patrol stationed at the Patrol's lunar Missile Base gives his life while successfully obstructing an attempt by high-ranking Patrol officers to use nuclear missiles to seize political power.

Dates	Title	Type	Description
1949 (1967)	"Delilah and the Space Rigger" Reprinted in The Past through Tomorrow (1967)	Short Story	A woman engineer battles sexism to win her right to work on a space station construction project.
1949 (1980)	"Nothing Ever Happens on the Moon" Reprinted in Expanded Universe (1980)	Short Story	An Earthboy tries to win his Eagle Scout status on the Moon by completing an arduous course of lunar trailblazing. After his scouting partner is injured on a hike, he learns that the only true test for a lunar Eagle Scout is the ability to survive the Moon's harsh conditions.
1949 (1961)	"Our Fair City" Reprinted in 6XH (1961)	Short Story	A man makes friends with a living urban whirlwind and uses the friendship to defeat a corrupt mayor's administration.
1949 (1953)	"Gulf" Reprinted in Assignment in Eternity (1953)	Novella	A secret agent is recruited by an organization of super-competent men and women who guard humanity against corruption and abuses of power.
1949 (1992)	"Poor Daddy" Reprinted in Requiem (1992)	Short Story	Puddin', a freshman co-ed who lives at home with her eccentric parents, is puzzled when her anthropologist father takes up ice dancing.
1949	Red Planet	Novel	Young colonials go off to school at a company-operated boarding school on Mars only to learn of the colonial administration's treachery towards both the colonials and the native Martian population.

Dates	Title	Type	Description
1950 (1992)	"Destination Moon" Reprinted in Requiem (1992)	Short Story	A commercially-backed venture to reach the Moon succeeds against both political intrigue and technical difficulties. (This story was based on Heinlein's 1949 screenplay for George Pal's movie by the same name.)
1950 (1992)	"Shooting Destination Moon" Reprinted in Requiem (1992)	Nonfiction	An article describing Heinlein's experience working on the set of Destination Moon, a film for which he wrote the screenplay and afterwards served as technical advisor.
1950 (1980)	"Cliff and the Calories" Reprinted in Expanded Universe (1980)	Short Story	Puddin', a freshman co-ed who lives at home with her eccentric parents, begins a reducing diet but is relieved to discover that her boyfriend likes her natural appearance.
1950	Farmer in the Sky	Novel	An Earth family emigrates to Ganymede in order to escape overcrowding and food rationing. They homestead a family farm on their new planet and face the dangers that all pioneers face in blazing new frontiers.
1951 (1967)	"The Man Who Sold the Moon" Reprinted in The Past through Tomorrow (1967)	Novella	An industrial tycoon and entrepreneur masterminds the first trip to the Moon, but is prevented from going himself.
1951	The Man Who Sold the Moon	Collection	This book, with a forward by John W. Campbell, assembles five stories later reprinted in The Past through Tomorrow (1967) and the short story "Let There be Light."

Dates	Title	Type	Description
1951	Between Planets	Novel	A young man is made a refugee by Venus's rebellion against Earth's hegemony. He finds that he must analyze political issues for the first time and choose sides in the interplanetary conflict in order to save his parents' lives.
1951	The Puppet Masters	Novel	A secret government agency fights against an extraterrestrial invasion of "slugs" who are able to mount and control human beings and thus disguise themselves.
1952 (1959)	"The Year of the Jackpot" Reprinted in The Menace from Earth (1959)	Short Story	A consulting statistician discovers that a number of recurring cycles all point to a grand crisis for the entire planet.
1952 (1992)	"This I Believe" Reprinted in Requiem (1992)	Nonfiction	Radio article written for Edward R. Murrow's series of the same title, broadcast December 1, 1952. It provides an outline of Heinlein's beliefs and attitudes about his neighbors, his fellow citizens, and the human race.
1952 (1980)	"Ray Guns and Rocket-ships" Reprinted in Expanded Universe (1980)	Nonfiction	This article explains Heinlein's theory of the nature, purpose, and principles of speculative fiction.
1952 (1980)	"Pandora's Box" Reprinted in Expanded Universe (1980)	Nonfiction	An analysis of both the problems and hopes of the human race with some prescriptions for the future.

Dates	Title	Type	Description
1952 (1980)	"Where To?" Reprinted in Expanded Universe (1980)	Nonfiction	Sociological, political, and technological predictions from 1950—2000 A.D.
1952	The Rolling Stones	Novel	An eccentric family decide to leave their home on the Moon for a jaunt around the solar system aboard their private rocketship.
1953 (1959)	"Project Nightmare" Reprinted in The Menace from Earth (1959)	Short Story	A team of people possessed of extrasensory perception are used by the government to locate and disable Soviet nuclear weapons secretly planted in American cities.
1953 (1959)	"Sky Lift" Reprinted in The Menace from Earth (1959)	Short Story	A pilot reluctantly volunteers to carry vaccine aboard a spaceship to Pluto at a dangerous level of acceleration in order to save hundreds of lives; he succeeds at the cost of permanent brain damage.
1953	Starman Jones	Novel	A young hillbilly runs away from home to escape an abusive stepfather, teams up with a marine deserter, and becomes a crewmember on an interstellar passenger liner.
1954	The Star Beast	Novel	A young man discovers that his long-lived extraterrestrial pet, Lummox, is the long-sought-for heir of a powerful alien interstellar empire.
1954	Revolt in 2100	Collection of Novellas	This book assembles three novellas written in 1939-1940 which concern a future religious dictatorship in the USA and the events that lead to a newer and better society. It also includes an essay on why Heinlein chose not to write some stories originally planned to flesh out his future history series.

Dates	Title	Type	Description
1954	"Concerning Stories Never Written: Postscript" in Revolt in 2100 (1954)	Nonfiction	An essay on why Heinlein chose not to write some stories originally planned to flesh out his future history series. This essay provides some insight into Heinlein's sociology of religion.
1955	Tunnel in the Sky	Novel	A group of young students are forced to learn the arts of government to survive on a wilderness planet after a nova prevents them being recovered following an educational excursion in survival arts.
1956 (1980)	"The Third Millennium Opens" Reprinted in Expanded Universe (1980)	Nonfiction	This article is cast as a retrospective from the year 2001 and examines a number of scientific and sociological trends.
1956	Double Star	Novel	An out-of-work actor accepts the job of impersonating a famous politician. He finds himself becoming the politician as he learns and accepts more of the statesman's values and ideologies.
1956	The Door into Summer	Novel	An engineer uses a combination of hibernation and backward time travel to protect and revenge himself against treacherous friends who attempt to steal his inventions.
1956	Time for the Stars	Novel	Twins are used to maintain telepathic communication between interstellar exploration ships and the Earth.

Dates	Title	Type	Description
1957 (1959)	"The Menace from Earth" Reprinted in The Menace from Earth (1959)	Short Story	An adolescent girl living on the Moon is challenged by and finally comes to accept friendship with a woman tourist whom she mistakenly considered a rival for her boyfriend.
1957 (1961)	"The Man Who Traveled in Elephants" Reprinted in 6XH (1961)	Short Story	An old widower traveling to a grand, all-American fair and exposition is surprised to encounter his long-lost wife and dog.
1957	Citizen of the Galaxy	Novel	A young boy is rescued from chattel slavery in a feudalistic society on a far planet by a secret agent disguised as a beggar. The boy eventually makes his way back to Earth and is discovered to be the heir of a large industrial empire that secretly profits from the slave trade.
1958 (1992)	"Tenderfoot in Space" Reprinted in Requiem (1992)	Short Story	A young Boy Scout manages to take his dog with him when his family emigrates to Venus. There the boy finds himself a tenderfoot amongst the experienced Scouts in his new homeland.
1958 (1980)	"Who Are the Heirs of Patrick Henry?" Reprinted in Expanded Universe (1980)	Nonfiction	This was a paid political message written by Heinlein to protest unilateral cessation of nuclear testing.
1958	Have Space Suit—Will Travel	Novel	A young man wins a space suit in a soap contest and is afterwards shanghied aboard a UFO where he encounters a pre-adolescent girl kidnapped from the Moon by evil aliens. Together they defeat the aliens and later defend Earth in a tribunal of a galactic council.

Dates	Title	Type	Description
1959	"All You Zombies" Reprinted in 6XH (1959)	Short Story	A man travels back in time to recruit and convince himself to seduce an earlier version of himself as a woman so that he can be born.
1959	Starship Troopers	Novel	A young man enlists in the Mobile Infantry where he learns the virtues of the citizen-soldier in a war that pits Earth against a race of intelligent arthropods competing for the same planets as Earth.
1960 (1980)	"'Pravda' Means 'Truth'" Reprinted in Expanded Universe (1980)	Nonfiction	This article reports the Heinleins' unpleasant experiences as visitors to the Soviet Union in 1960.
1960 (1980)	"Inside Intourist" in Expanded Universe (1980)	Nonfiction	This article gives practical advice to potential travelers to the Soviet Union on dealing with the capricious ways of the official tourist agency of the USSR.
1961	Stranger in a Strange Land	Novel	When a man raised from infancy by Martians is returned to Earth, he is mentored in human society and manners by a worldly author and armchair philosopher. The Martian-Human later develops a new way of life based on love and self-liberation.
1962 (1967)	"Search-light" Reprinted in The Past through Tomorrow (1967)	Short Story	A USO piano entertainer is lost on the moon after a shuttle accident. She enables her rescuers to find her by identifying musical notes from the carrier waves in a laser beam used to search for her.

Dates	Title	Type	Description
1963	Glory Road	Novel	A disenchanted Vietnam veteran accepts employment as a mercenary for the Empress of a multi-dimensional empire in the dangerous task of recovering an object containing the accumulated wisdom of her many predecessors.
1963	Orphans of the Sky	Novel	This book reprints as one novel the two 1941 novelletes Universe and Commonsense.
1963	Podkayne of Mars	Novel	A young woman and her precocious brother are pulled into interplanetary political intrigues during a pleasure tour of the solar system under the supervision of their politician uncle.
1964	Farnham's Freehold	Novel	A family seeks safety in a fallout shelter during a Soviet nuclear attack and is flung millennia into a future ruled by blacks who hold whites in chattel slavery.
1966 (1980)	"Free Men" Reprinted in Expanded Universe (1980)	Short Story	A post-holocaust group of American guerillas struggle against a foreign occupation force.
1966	The Worlds of Robert A. Heinlein	Collection	This collection contains an essay on the role of the science fiction writer as prophet as well as four short stories.
1966	The Moon is a Harsh Mistress	Novel	A group of lunar colonists is aided by a self-aware computer in masterminding a political revolution in which the lunar colonies become independent from the Earth's political control.
1967	The Past through Tomorrow	Collection of Short Stories	This book assembles most of Heinlein's so-called Future History short stories written between 1939 and 1962.

Dates	Title	Type	Description
1970	I Will Fear No Evil	Novel	A wealthy but dying old man's brain is transplanted into the body of his beautiful young secretary only to find that both their consciousnesses are present.
1973 (1980)	"No Bands Playing, No Flags Waving" Reprinted in Expanded Universe (1980)	Short Story	This story is a fictionalized account of Heinlein's own experiences as a tuberculosis patient in a military hospital in the days before antibiotics were invented.
1973 (1980)	"The Pragmatics of Patriotism" Reprinted in Expanded Universe (1980)	Nonfiction	This speech was delivered to the Brigade of Midshipmen of the U.S. Naval Academy. Heinlein was the invited speaker for the annual Forrestal Lecture there. The speech contains an outline of Heinlein's theory of ethics and morals.
1973	Time Enough for Love	Novel	Lazarus Long, the chief character of Heinlein's 1941 novella Methusaleh's Children, is now 3,000 years old and weary of life. He consents to tell his memoirs to his descendent, the present head of the long-lived "Howard Families."
1975 (1980)	"Paul Dirac, Antimatter, and You" Reprinted in Expanded Universe (1980)	Nonfiction	This article was written for Compton's Yearbook to explain advancements in our understanding of antimatter and particle physics and the contribution of British scientist Paul Dirac to that understanding.
1979 (1980)	"Spinoff" Reprinted in Expanded Universe (1980)	Nonfiction	This is the text of Heinlein's testimony on the benefits of the space program before a joint session of the House Committee on Aging and the House Committee on Science and technology.

Dates	Title	Type	Description
1980	Expanded Universe: The New Worlds of Robert A. Heinlein	Collection of Short Stories, Articles, and Essays	This book is an enlargement of a previous book entitled The Worlds of Robert A. Heinlein.
1980	The Number of the Beast	Novel	Two couples are driven from Earth by aliens seeking to kill them. Their vehicle is fitted with a device that enables them to explore any imaginable world in any imaginable universe, including the worlds of fictional literature.
1980	"Larger than Life" Reprinted in Expanded Universe (1980)	Nonfiction	Heinlein wrote this tribute in honor of E.E. Smith for the MOSCON I science fiction convention. Smith was a famous early writer of pulp science fiction.
1980	"The Happy Days Ahead" in Expanded Universe (1980)	Nonfiction	This essay comprises several observations, both optimistic and pessimistic, concerning contemporary (1980) American social and political conditions, plus an inset short story depicting an optimistic view of the future.
1982	Friday	Novel	A genetically engineered woman is used as a courier for the same secret organization that Heinlein introduced in the Novella "Gulf."
1984	Job: A Comedy of Justice	Novel	An official of a fundamentalist religious organization on a pleasure cruise vacation is maneuvered from one alternate Earth to another by a capricious deity. His only constant comfort through his trials is his Danish concubine whom he loves in spite of his feelings of guilt over the adulterous affair.

Dates	Title	Type	Description
1985	The Cat Who Walks Through Walls	Novel	A retired military man is recruited by his wife into a transuniversal organization which guards alternate time lines against unauthorized tampering. His mission is to rescue the lunar computer that aided the lunar revolution in Heinlein's other book The Moon is a Harsh Mistress.
1987	To Sail Beyond the Sunset	Novel	This book is the memoirs of Maureen Johnson Smith, the mother of Lazarus Long, and recounts her life growing up in late 19th Century Missouri and her married life in the early 20th Century. (This is the last book Heinlein wrote before he died.)
1989	Grumbles from the Grave	Edited Correspon-dence	Virginia Heinlein edited this collection of her husband's letters dating from 1939 onward.
1992 (Written 1946)	"The Witch's Daughters" in Requiem (1992)	Poem	The poem advises men to have nothing to do with bewitching red-haired women.
1992	Requiem: New Collected Works by Robert A. Heinlein and Tributes to the Grand Master	Collection of Short Stories, Speeches, Articles, and Commemo-rative Essays	This volume, edited by Heinlein's friend Yoji Kondo of NASA, was assembled as a final tribute to Heinlein.
1992	Tramp Royale	Nonfiction	This book chronicles the around-the-world trip the Heinleins took in 1953-1954.
1992	Take Back Your Government	Nonfiction	This book, originally written in 1946 and published posthumously in 1992, is a practical manual for grass-roots political action.
1992	"The Bulletin Board" in Requiem (1992)	Short Story	Puddin', a freshman co-ed, rescues a shy classmate from embarrassment after a malicious student invites her to a nonexistent birthday party.

APPENDIX B

A CHRONOLOGY OF ROBERT A. HEINLEIN'S LIFE

Date	Event
1907	Robert Anson Heinlein is born July 7 to Rex Ivar and Bam Lyle Heinlein in Butler (Bates County), Missouri, the third of seven children.
1910	The Heinlein family moves northward to Kansas City, where his father takes employment as a bookkeeper for the Midland Manufacturing Company, a manufacturer of agricultural implements, subsequently acquired by the International Harvester Company.
	Three-year-old Robert watches Halley's Comet with his older brother Lawrence.
1911-1914	Robert spends summers and holidays with his grandparents in Butler. His maternal grandfather, Dr. Alva E. Lyle, teaches him to play chess and lets Robert accompany him on his horse-and-buggy patient rounds.
	Older brother Lawrence helps Robert learn to read.
1912	Robert hears his father read aloud from the Kansas City Star an account of a hobo losing his life while attempting to save a woman whose foot became entangled in a railroad track in Swope Park in Kansas City.
	Robert, age five, begins school at the Greenwood Grammar School in Kansas City.
	Theodore Roosevelt, former Republican President now running as the Progressive Party candidate, makes a famous speech in nearby Kansas espousing the need for social insurance legislation in the USA. By splitting the Republican Party, Roosevelt ensures the defeat of William Howard Taft allowing Woodrow Wilson to be elected President of the United States.
1914	Robert's beloved grandfather Dr. Alva E. Lyle dies after having retired from practice some time before.
	World War One begins.
1917	Older brother Lawrence enlists in the Army of the United States following U.S. entry into World War One.
	Robert takes on a newspaper and magazine delivery route.
1918	World War One ends.

Date	Event
1918-1919	Spanish Influenza epidemic strikes the USA, killing between 500,000 and 2,000,000 people in 2 years. Robert, a junior high school student, sees his eighth grade teacher succumb to the flu and die within 24 hours.
1920	Robert, age 13, becomes a page for the Kansas City Public Library. He reads Charles Darwin, T.H. Huxley, Robert Ingersoll, George Bernard Shaw, H.G. Wells, and all the books on astronomy the library has. He begins lecturing in astronomy to clubs and scout troops.
	He enters Kansas City Central High School.
1921	He attends Will Durant's popular lectures on philosophy at Kansas City's Grand Avenue Labor Temple during the philosopher's 1921 lecture tour. He begins his voracious reading of philosophers as a result of Durant's teaching.
	He sees Thurston the magician perform on stage and is selected from the audience as a subject for the performance of a magic trick.
1922	Robert sees Tales of Hoffman performed on the stage in Kansas City, and becomes interested in fencing.
1923	In August of 1923, Robert journeys to Colorado and back by railroad on a mountain climbing adventure.
	His brother Rex is accepted to the U.S. Naval Academy after their father requests the appointment as a political favor from Senator Jim Reed.
1924	Robert graduates at age 16 from Kansas City Central High School with highest honors. He is a member of the National Honor Society, the Central Shakespeare Club, and the Public Speaking Club.
	He lies about his age in order to join the local regiment of the Missouri Army National Guard.
	He enters Kansas City Junior College, a local branch of the University of Missouri in September.
1925	Robert gains the rank of sergeant in his Guard regiment and wins a silver loving cup as best drill instructor.
	He becomes 18 years old in July.
	Through his own efforts, he wins an appointment to the U.S. Naval Academy and reports as a "plebe." His best friend treats him to a going away dinner at the Muehlebach, the modern, new first-class Hotel of Kansas City.
	Robert reports to Annapolis.

Date	Event
1926	Robert's younger sister Rose Betty dies after being flung through the door of an automobile that had opened accidentally. The car was driven by their father Rex Ivar, who is forever saddened by the event. Robert and Rex travel by train from Annapolis to Kansas City to attend the funeral.
1927	Rex graduates from Annapolis but is commissioned in the Army because his eyesight is too poor to meet the Navy's physical standards.
	Robert, Rex, Buddy Scoles, and two other midshipmen travel cross-country from Maryland to Missouri in a second-hand Model-T Ford.
1928	Robert serves aboard the battleship U.S.S. Oklahoma as part of his summer training cruise.
1929	Robert is awarded the all-Navy Fencing Championship Medal.
	He graduates from Annapolis in June with a class rank of 20 of 243 and is commissioned as Ensign.
	He is posted to the aircraft carrier U.S.S. Lexington, home ported at San Pedro in southern California.
1930	Robert is detached from the Lexington and sent to Long Island, NY to take training in gunnery and ballistics at the Ford Institute. He lives in a Greenwich Village studio apartment and commutes via train each day. After completing the training, he rejoins the Lexington and afterwards serves as gunnery officer.
1931	Robert is detached from the Lexington to compete in the Fleet Pistol and Rifle Matches at Fort Clayton in the U.S. Canal Zone in Panama.
1932	In March, Robert marries Leslyn MacDonald in Los Angeles.
1933	Against the wishes of both himself and his commanding officer, Robert is reassigned to the destroyer U.S.S. Roper.
	In December, he collapses from exhaustion brought on by pulmonary tuberculosis (TB) and chronic seasickness.
1934	Robert is sent to Fitzsimmons Army Hospital in Denver to undergo treatment to cure his TB. Dissatisfied with how TB patients are treated by the military hospital (including his brother Rex who is also a TB patient at Fitzsimmons), he gets permission to travel to California to undergo the tuberculin treatment for TB at the Pottenger Clinic in Monrovia.
	After he is cured, he returns to Fitzsimmons for medical retirement and release from active service. He is retired as "totally and permanently disabled" on three-quarters pay after having spent almost a year in treatment. He leaves the Navy with the rank of lieutenant junior grade (the equivalent army or marine corps rank is first lieutenant).

Date	Event
1935	Robert and wife Leslyn purchase via mortgage a house for about $3000 in the Laurel Canyon section of Hollywood, using savings he had accumulated while on active duty as a down payment.
	He is admitted to UCLA graduate school to take courses in physics, astronomy, and mathematics. But he begins running afternoon fevers, suffers a second attack of pulmonary tuberculosis, and is forced to quit graduate school. He spends weeks in bed recuperating from his second attack.
1936	After recuperating, Robert becomes interested in silver mining in Colorado. He makes arrangements to buy the Shively Lode silver mine, but the deal falls through after his financial backer is machine-gunned to death in Kansas City.
	Returning to Los Angeles, he becomes interested in selling real estate. But in the midst of the depression, no one is buying property. He develops hobbies in architecture, photography, and sculpture.
1936	Becoming interested in Upton Sinclair's End Poverty in California (EPIC) campaign, he becomes involved in local politics as a Democrat, rising to county committeeman and eventually to state party committeeman. He attends the Democratic National Convention as a delegate. He becomes first a staff writer then later editor of Sinclair's EPIC News, the newspaper of the EPIC campaign. Robert can be characterized as both socialist and libertarian in his politics at this time in his life.
	He and Leslyn have social ties with various members of the Hollywood film colony, including Fritz Lang.
1937	Robert is increasingly involved in local Democratic Party politics, .
	He continues to dabble in real estate, architecture, photography, and sculpture.
1938	Robert runs for the 59th District California State Assembly seat in the November 1938 election unopposed as a New Deal Democrat, mortgaging his house a second time to pay for his campaign, but is defeated by one vote per precinct by the Republican incumbent, Charles W. Lyons.
1939	Robert, in response to an advertisement in a science fiction magazine seeking new writers, and desperately in need of money, writes "Life-Line" over a four day period in April and sells it to John W. Campbell, Jr., editor of Astounding Science Fiction—a rival science fiction magazine. This begins a long relationship with John W. Campbell to whom he sells many stories, reshaping American science fiction in the process.
	He attends meetings of the Los Angeles Science Fiction Society.
	He attends seminars in General Semantics under Alfred Korzybski in Los Angeles.

Date	Event
1940	Robert writes science fiction stories at a whirlwind rate; pays off his mortgage on 24 February; travels cross-country to visit John Campbell in New York; meets L. Sprague de Camp and Fletcher Pratt (science fiction writers); visits E.E. "Doc" Smith (science fiction writer) in Michigan and purchases a second-hand Chevrolet; travels to Chicago and attends seminars in General Semantics under Alfred Korzybski and S.I. Hayakawa.
	He attends meetings of the Los Angeles Science Fiction Society.
1941	He quickly becomes the most famous and influential American science fiction writer. As guest of honor at the 1941 (October) World Science Fiction Convention in Denver, he gives his famous "Discovery of the Future" speech urging his audience to broaden their learning and outlooks.
	He attends seminars in General Semantics in Denver.
	Robert and Leslyn host weekly meetings of the "Manana Literary Society"—an informal gathering of fellow science fiction friends, fans, and authors—at their Laurel Canyon home.
	After the Japanese attack at Pearl Harbor on December 7, Robert tries but fails to return to active duty in the Navy.
1942	Robert is recruited by friend and Annapolis classmate Captain Albert "Buddy" Scoles to work as a civilian research & development engineer at the Naval Air Experiment Station, Mustin Field, Philadelphia Navy Yard. He in turn recruits L. Sprague de Camp and Isaac Asimov to work at the R&D lab with him. Leslyn takes a job in the personnel office of the nearby Naval Aircraft Factory.
1943	Robert works on various projects including high altitude pressure suits.
	He and Leslyn frequently socialize with the de Camps and the Asimovs.
	Robert is frequently ill.
1944	Robert is hospitalized for a surgical operation.
	Navy Lieutenant j.g. (WAVE) Virginia Doris Gerstenfeld is assigned to the Naval Air Experiment Station. She and Robert work on a project involving plexiglas canopies for aircraft.
1945	Upon hearing of the atomic bomb attack against Hiroshima, Robert resigns from his position at the Naval Air Experiment Station. Robert and Leslyn depart for California, stopping at the Trinity site in New Mexico along the way. They are forced to evict the renters from their Laurel Canyon house before they are able to resume living there.
	Robert begins writing his "worldsaving" articles to educate the public on the need for international control of nuclear weapons.

Date	Event
1946	Robert invests considerable time in 1946 writing "worldsaving articles." He also writes science fiction stories which he manages to sell to the respectable "slick" magazines (eventually including Saturday Evening Post, Collier's, and Argosy), and his first "juvenile" science fiction book (Rocket Ship Galileo) which he sells to Charles Scribner's and Sons.
	Virginia Gerstenfeld is released from the Navy and enters graduate school at UCLA with the intention to take an M.S. in biochemistry. Robert and Leslyn occasionally accompany her in figure-skating.
1947	Robert has stopped writing worldsaving articles but is having continued success selling science fiction stories to the "slicks."
	Leslyn has been descending into alcoholism which, along with other stresses, is gradually destroying her marriage to Robert. In June, the Heinleins separate and shortly thereafter begin divorce proceedings. Robert spends the rest of the year writing in Ojai near Ventura, California.
	He writes and sells a second juvenile science fiction novel to Scribner's (Space Cadet).
1948	Robert spends time in deep sea diving doing research for a science fiction book on undersea farming which is never written. He co-writes script for Destination Moon with Rip Van Ronkel in Hollwood.
	His divorce from Leslyn becomes final. In the settlement, Leslyn gets possession of their Laurel Canyon home.
	Robert proposes to Virginia Gerstenfeld and they are married in Raton, New Mexico, on October 21. They take an apartment in Colorado Springs, Colorado.
	He begins writing a third juvenile science fiction novel for Scribner's (Red Planet).
1949	Robert begins outlining the novel that he will eventually publish as Stranger in a Strange Land.
	In June, Robert and Virginia travel to Hollywood where Robert works as technical advisor for the production of George Pal's Destination Moon. He writes Farmer in the Sky for Scribner's while waiting for filming on Destination Moon to begin.

Date	Event
1950	He and Virginia return to Colorado Springs in early 1950 and immediately set about building a house in the Broadmoor section.
	The Korean War begins in July. The Army begins massive building program at nearby Fort Carson.
	The TV serial Tom Corbett: Space Cadet, based on Robert's novel Space Cadet is launched.
	They move into their unfinished house at 1776 Mesa Avenue on Labor Day.
	Robert writes The Puppet Masters for Gnome Press.
1951	Robert writes Between Planets for Scribner's.
	He and Virginia continue interior finishing work on their house.
	He begins writing The Rolling Stones in November.
1952	Robert finishes The Rolling Stones for Scribner's.
	Arthur C. Clarke is a house guest during a week-long visit.
	He and Virginia visit national parks in Wyoming and Utah.
	They attend a V-2 firing as the guest of astronomer Clyde Tombaugh at the White Sands Missile Range in New Mexico.
	He begins writing Starman Jones in late autumn.
	He is guest speaker on Edward R. Murrow's CBS radio program This I Believe in December.
1953	Robert finishes Starman Jones for Scribner's.
	Korean War ends.
	He writes The Star Beast for Scribner's.
	He and Virginia set out on a trip around the southern hemisphere in November.
1954	Robert and Virginia return from their trip around the world in March. He writes a travel book about their trip (Tramp Royale) but is unable to publish it (it is later published in 1992 by Virginia).
	He writes Tunnel in the Sky for Scribner's.

Date	Event
1955	Robert writes Time for the Stars for Scribner's.
	He and Virginia travel by steamship to tour Europe.
	He writes Double Star for Doubleday.
1956	Robert writes Citizen of the Galaxy for Scribner's.
	Robert installs an irrigation system on his grounds. He accompanies his agent Lurton Blassingame on a hunting trip in the Rockies.
	Double Star wins the Hugo Award for best science fiction novel of the year.
	The Heinleins take a tour of the desert southwest.
	He writes The Door into Summer for Doubleday.
1957	Robert writes Have Space Suit—Will Travel for Scribner's.
	Robert reads a news magazine article describing a political cover-up of the facts surrounding the 1941 Japanese attack on Pearl Harbor. This article causes Robert to rethink his political convictions.
1958	Robert travels to science fiction convention in Newark, New Jersey.
	The Heinleins start a newspaper advertisement campaign against U.S. unilateral cessation of nuclear testing.
	Robert writes Starship Troopers for Scribner's, who rejects it. The novel is immediately sold to Putnam.
1959	Starship Troopers wins Hugo Award for best science fiction novel of the year.
	The Heinleins travel to Las Vegas and Nellis Air Force Base yet again to view an air power exhibition. They encounter the former Annapolis upperclassman who inflicted such severe hazing on Robert during his plebe year at Annapolis.
1960	Robert travels to science fiction convention in Chicago to receive a Hugo award for Starship Troopers.
	He finishes Stranger in a Strange Land for Putnam.
	The Heinleins tour the Soviet Union.

Date	Event
1961	Stranger in a Strange Land wins the Hugo Award for best science fiction novel of the year. Robert is guest of honor of the 1961 World Science Fiction Convention.
	Virginia suffers an injury involving three cracked ribs.
	Robert travels to Alma, Oklahoma in April to receive "The Sequoyah Children's Book Award" from the Oklahoma State Library Association and the children of Oklahoma for the novel Have Space Suit—Will Travel.
	The Heinleins complete the building and stocking of their home fallout shelter.
1962	Robert writes Glory Road for Putnam.
	He travels to Chicago to receive the Hugo award for Stranger in a Strange Land.
	He travels to San Diego and is allowed to travel submerged on the submarine U.S.S Raton and to land on the carrier U.S.S. Lexington as a guest of the Navy. Robert and Ginny again travel to Las Vegas to view an air power exhibition.
1963	Robert writes Farnham's Freehold for Putnam.
	The Heinleins take measures to conserve water during a severe drought in Colorado Springs. Virginia suffers from altitude sickness. She is hospitalized with a wrist injury.
1964	The Heinleins become heavily involved in the Goldwater Republican Presidential campaign ("Gold for Goldwater").
	Robert and Ginny travel to Louisiana to visit the Boeing Saturn booster plant. They later take a cruise and visit the countries of the Caribbean basin. Virginia purchases a brass cannon (which later inspires the working title for The Moon is a Harsh Mistress).
1965	Robert writes The Moon is a Harsh Mistress for Putnam.
	Virginia's altitude sickness causes the Heinleins to sell their Colorado home. They leave Colorado on their 17th wedding anniversary.
1966	The Moon is a Harsh Mistress wins a Hugo Award for best science fiction novel of the year.
	In September, the Heinleins begin building a house on a secluded site (Bonny Doon) in the redwood country north of Santa Cruz in northern California.

Date	Event
1967	In March, the Heinleins move into their new home. The Heinleins continue working on their Bonny Doon home throughout the year.
	Most of Robert's "Future History" stories are published in one volume as The Past through Tomorrow by Putnam.
	Virginia makes Robert a gift of a stuffed owl.
1968	Robert donates his literary papers to the University of California at Santa Cruz.
1969	Robert and Virginia travel to a film festival in Rio de Janeiro as VIP guests of the Brazilian government to give a speech.
	Robert appears as guest of Walter Cronkite for CBS's live coverage of the Apollo 11 Moon Landing.
	He writes I Will Fear No Evil for Putnam.
	He and Virginia attend the 40th Anniversary Reunion of his Naval Academy graduating class. They afterwards tour the NASA complex at Houston as guests of astronaut friends and NASA officials, following which they visit New Orleans.
1970	In January, Robert is severely ill with peritonitis from a perforated diverticulum and requires several blood transfusions. This is followed by an attack of shingles. He spends the entire year in convalescence.
1971	Robert has gall bladder surgery and spends the rest of the year in convalescence.
1972	Robert writes Time Enough for Love for Putnam.
1973	Robert is invited to deliver the Forrestal lecture to the Brigade of Midshipmen at the U.S. Naval Academy. The address is in two parts: "Channel Markers"—a lecture on writing, and "The Pragmatics of Patriotism"—an exposition of Heinlein's theory of moral behavior.
	He spends 1973 catching up on research in the physical and biological sciences.
	He grants a personal interview to J. Neil Schulman in which he discusses various political and philosophical issues.
1974	Robert continues catching up on research in the physical and biological sciences.
1975	Robert writes article for Compton's Yearbook on the subject of Paul Dirac and antimatter.

Date	Event
1976	Robert writes article for Compton's Yearbook on the history of hematology.
	Robert is guest of honor at the 1976 Mid-Americon Science Fiction Convention in Kansas City, Missouri.
1976-1977	Robert and Virginia recruit thousands of new blood donors on nationwide blood drives.
1978	Robert is hospitalized by a transient ischemic attack (TIA), a precursor to a stroke. He undergoes a carotid bypass operation that restores normal blood flow to his brain and discovers an immediate increase in his mental and physical well-being. He then writes The Number of the Beast.
1979	On July 19, 1979, Robert is summoned to testify jointly before the House Select Committee on Aging and the House Committee on Science and Technology on the subject of Applications for Space Technology for the Elderly and Handicapped.
1980	Robert writes Expanded Universe for Ace Books. The Number of the Beast is published by Ballantine Books.
1981	Robert decides to drastically cut back on travel and public appearances in order to conserve his health and time for writing.
1982	Robert writes Friday. In late 1982, the Heinleins travel to China, followed by a trip to Antarctica on the Lindblad Explorer over the Christmas holidays.
1983	Robert and Virginia continue their trip to Antarctica on the Lindblad Explorer in January.
1984	Robert writes Job: A Comedy of Justice.
1985	Robert writes preface for Ted Sturgeon's novel Godbody.
1986	Robert writes The Cat Who Walks through Walls.
1987	Robert writes To Sail Beyond the Sunset. Robert and Virginia move from Bonny Doon to Carmel to be closer to medical care.
1988	Robert dies from complications of congestive heart failure, kidney failure, and emphysema on May 8. By his wishes, Virginia has his body cremated; his ashes are scattered at sea from a naval vessel following a military funeral. Robert is posthumously awarded the NASA Distinguished Service Medal.

APPENDIX C:

INTERVIEW QUESTIONS POSED TO MRS. VIRGINIA HEINLEIN MARCH 11-12, 1994

1. Several individuals have remarked Robert A. Heinlein's (RAH's) interest in education; why was RAH so interested in education?
2. What can you tell me about RAH's educational climate at home when he was a child?
3. Who or what were the most important educational influences on RAH as a child, teenager, young adult, middle-aged adult, older adult?
4. What educational influences did RAH have on you?
5. What educational influences did you have on RAH?
6. What can you tell me about your own early educational climate?
7. What were your formal and informal educational experiences?
8. What kinds of self-directed learning projects have you been involved in?
9. What kinds of self-directed learning projects did RAH get involved in?
10. How did RAH put to use the learning he gained in his learning projects?
11. How did you put to use the learning you gained in your learning projects?
12. How did you and RAH put to use new developments in technology to aid your learning?
13. How did you and RAH apply new developments in psychology or the other social sciences to aid your learning?
14. What kinds of information (news clippings on trends and issues) did you and RAH collect over the years? File labels, etc.?
15. What kinds of periodicals and other information sources did you and RAH subscribe to?
16. How much time did you and RAH invest in reading on a weekly basis?
17. What kinds of ideas, concepts, inventions, etc., did you and RAH use that made you more effective or efficient learners?
18. Who are some of the philosophers, psychologists, or theorists of education that most impressed you and your husband?
19. What kinds of novels and short stories did you and RAH favor?
20. What kinds of events, situations, problems, etc., caused you and RAH to undertake learning projects?

21. What did RAH want the reader to learn from reading his various books and stories?

22. What areas of learning did RAH feel more deficient in than others?

23. What areas of learning did RAH feel stronger in than others?

24. Describe some of your most memorable people from whom you learned a great deal?

25. Describe RAH's typical approach to learning about a new area of knowledge.

26. What were some of RAH's unfinished learning projects?

27. What are some of your planned learning projects?

28. How would you describe RAH's beliefs, views, assumptions, hypotheses, etc., that have to do with metaphysics?

29. How would you describe RAH's epistemology?

30. How would you describe RAH's values and ethics?

31. What were RAH's most and least favorite philosophers? Why did he find them so?

32. What RAH learning projects were directed at learning about philosophical issues specifically?

33. What were RAH's favorite and least favorite works of art and music?

34. Which countries are yours and RAH's favorite and least favorite of all those to which you traveled?

35. What were RAH's favorite and least favorite stories of all that he wrote?

36. What were your favorite and least favorite stories of all that RAH wrote?

37. Please describe your impressions of RAH when you came to know him at the Philadelphia Navy Yard during the war and afterwards in Los Angeles.

38. Who were some of RAH's favorites in the science fiction world?

39. Were you interested in science fiction before meeting RAH?

40. Had you read any of RAH's stories before meeting him?

41. What can you tell me about how RAH came to write his major stories, his motivations, thoughts, peculiar incidences, etc.?

42. What was it like to live with RAH? What would have been a typical day?

43. Other than travel, how did you and RAH delight to spend your spare time?

44. Why and how did you and RAH build a 10,000 volume home library? Were these all books that either you or he had read?

45. What can you tell me about RAH's women characters and your own influence on the way he invented and developed those characters?

46. RAH was outspokenly critical of modern American education. Given the power to propose and implement reforms, how would he have gone about improving American education?

47. RAH was a New-Deal democrat at one time, and some of his books seemed to be intellectual experiments in social and economic policy (Beyond This Horizon, Coventry, etc.), yet some of his other books were strongly critical of government's role in social engineering. Did he have any positive view of the possibilities of government improving social and economic conditions?

48. RAH's books reveal a familiarity with and delight in fantasy literature, such as the *Oz* books and Lewis Carroll's stories? Why was he so interested in fantasy literature?

49. RAH's stories show an uncommon familiarity with the Bible and other religious writings. What can you tell me about his interests and studies in religion?

50. RAH's stories reveal a keen interest in sexual relations? What can you tell me about his interests and studies in this area?

51. What may I be told about RAH's other family members?

52. What may I be told about RAH's former marriage to Leslyn McDonald? (Mrs. Heinlein requested that she not be asked this question during the interview.)

53. What were RAH's conclusions about why so many readers and critics appeared to have misunderstood his work? What are your conclusions?

54. RAH was often attacked as a sexist. What were your and RAH's conclusions about the reasons for this?

55. What are your impressions of the evolution of science fiction and its influence as an educational medium in this country in the past 50 years?

56. How would you characterize your late husband in terms of his ability to educate his audience?

57. How would RAH have wanted to be remembered by his audience?

58. How would you like your husband to be remembered?

59. What else should I be asking that you are surprised I have not asked?

60. What else would you like to tell me about your husband?

APPENDIX D

HEINLEIN'S METAPHYSICAL PERSPECTIVES

"The most interesting and valuable things about
[people are their] ideals and over-beliefs."
—William James, The Will to Believe, 1956, p. xiii

In Chapters II through IV, I focused on education in a strict sense--that is, I explored educational-biographical, curriculum, and teaching and learning themes in Heinlein's life and writings. But in those chapters I also pointed out that some aspects of Heinlein's approach to education could not be properly understood without attempting to understand other parts of his thought world. Accordingly, the next several appendices will explore answers to these questions: First, what do Heinlein's writings reveal about his metaphysics? Second, what do his writings reveal about his epistemology? Third, what do Heinlein's writings reveal about his axiological views? Put another way, in the next several appendices I take on the task of discovering and relating Robert Heinlein's philosophy to his role as a popular educator.

Such a task is inherently troublesome in that it must grapple with the perpetual tension between theory and practice. That is, "It is the nature of philosophical problems that they are never answered to the satisfaction of everyone" (Elias, 1982). Certainly Heinlein's practice can be more difficult to address than the everyday practice of traditional adult education practitioners for we must look to his novels and stories—and to a lesser extent his nonfiction articles—in order to address it. Yet, as my study has already attempted to demonstrate, Heinlein's writings contain much of what we would call educational practice, i.e., curricula and methodologies expressed in both fictional and personal examples.

Fortunately Elias provides for Heinlein's species of educational practice in a category of practice which he calls Imagination, a category for housing utopian, fictional, and radical theoretical proposals which call for "denial of present practice and ... new and radical forms of practice" (p. 8). A way of linking Heinlein's practice to philosophy is through the perspective of Dewey (1916) that one's practice is one's theory—that practice is theory in action. In regard to education, Dewey (1939) implies that education is philosophy in action. The task, then, with regard to Heinlein is to analyze his writings, and thereby uncover his philosophy.

Nevertheless, before analyzing Heinlein's implicit philosophy it may be helpful to notice his explicit statements regarding philosophy. Although Heinlein freely discussed topics of philosophical importance, his attitude toward philosophy was not altogether respectful. For one thing, he was not at all impressed with the power of philosophy, as a discipline, to produce useful knowledge—that is, to answer practical questions and to solve practical problems. He made that clear in a nonfiction essay written eight years prior to his death ("The Happy Days Ahead," 1980):

> [Philosophy]... is easy and lots of fun and absolutely guaranteed not to teach you anything while loosening up your mind. In more than twenty-five centuries of effort not one basic problem of philosophy has ever been solved. . . but the efforts to solve them are most amusing.... You won't actually learn anything you can sink your teeth into. . . but you'll be vastly entertained--if the human comedy entertains you. It does me. (p. 531)

It appears that his chief complaint regarding philosophy centered on his view of the discipline as merely elaborated tautology, incapable of producing new knowledge because its approach to solving problems was to merely explicate that which was implicit in the terms used to frame its questions, issues, and propositions. In The Number of the Beast (1980/1982), he speaks through his character Jubal Harshaw to compare philosophy with science and engineering (not sparing the deficiencies in the later either as he calls them all by the disparaging term "magic"):

> There are three schools of magic. One: State a tautology, then ring the changes on its corollaries; that's philosophy. Two: Record many facts. Try to see a pattern. Then make a wrong

> guess at the next fact; that's science. Three: Awareness that you live in a malevolent universe controlled by Murphy's law, sometimes offset in part by Brewster's factor; that's engineering.
>
> [Philosophy is] supposed to tackle everything. Does it? All any philosopher ever comes out with is what he walked in with—except for self-deluders who prove their assumptions by their conclusions. Like Kant. Like other tail-chasers. (p. 508)

In looking at Heinlein's rather disparaging evaluations of philosophy, it might be well to regard them as disingenuous in light of his own fascination with the subject. This interest began as early as 1921 when as a 14 year old boy he attended Will Durant's public lectures on philosophy in Kansas City and this interest lasted throughout his life (To Sail Beyond the Sunset, 1987; Schulman, 1973/1990).

In fact, one could describe Heinlein's writings as dealing with the subdisciplines of philosophy in a general chronological progression. That is, his earliest stories began to deal with issues of metaphysics as primary themes with secondary themes involving epistemology and axiology. Later, as he became more involved with General Semantics, he put heavier emphasis on epistemology. Still later, in his post-war writings he dealt increasingly with axiological issues of ethics and politics. Finally, in his last few years, his books began to return to metaphysical speculations. This and the following appendices will take up Heinlein's philosophical perspectives in the same order that he came to develop them by discussing in turn his metaphysics in this appendix, his epistemology in Appendix E, and his axiology in Appendices F, G, and H. After discussing each, I will offer a concluding appendix that will attempt a synthesis of Heinlein's views into a general perspective of his philosophy in Appendix I.

Introduction to Heinlein's Metaphysics

Metaphysics is usually understood as the subdiscipline of philosophy that deals with the question "What is real?" But there are a host of derivative questions that follow from that one fundamental question. Those questions include, but are not limited to, the following: What is the origin, nature, and purpose of the universe? What is the meaning of human life? What is consciousness and how does it connect to matter? and Is this life all there is? When I die, do I die all over?

Not surprisingly for those familiar with Heinlein's writings, he never shied away from acknowledging (if not always attempting answers to) just those questions. My examination of Heinlein's stories and essays revealed four recurring themes that are connected with metaphysics. This appendix will address various aspects of Heinlein's metaphysics by examining his thoughts in connection with the metaphysical themes of mysticism, teleology, panpsychism, and religion. I will discuss the theme of mysticism first because I believe that it helps set up further discussion of the remaining three themes. Afterwards, I will attempt to relate Heinlein's use of these themes to certain philosophers who may have influenced his thought.

Heinlein and Mysticism

Mysticism is generally understood to refer to a spiritual and non-discursive approach to the union of the self with God or the transcendental reality of the universe (Reese, 1980, p. 374). The term "mysticism" as I am using it here is also meant to indicate a belief in a dimension of reality that is beyond the reach of rational or empirical methods of investigation. In that special sense, mystical experience includes a wide range of so-called paranormal phenomena. Mysticism tends to rely on subjective experience and intuition. Asked about her husband's metaphysical leanings, Virginia Heinlein replied:

> I think in some ways that Robert was a mystic.... I think he figured that we would find out [about the nature and purpose of the universe] soon enough, and that was the time for it. Meantime, he was content to wait. He didn't have pronounced religious beliefs in the standard fashion, but he did believe in some sort of afterlife. He... didn't want to discuss it even with me, so we let it alone.... I think that's mysticism of a form, don't you? (Owenby, 1994c)

Although Heinlein seemed to be quite a hard-headed realist in much of his fiction, several of his other stories lend support to his wife's belief in his underlying mysticism. Certainly it is easy to find

many mystical threads in Heinlein's first decade of writing, with fewer such threads in his later works, although he never ceased to include them. In addition, we can find evidence of Heinlein's mysticism in his own letter written to John W. Campbell on November 2, 1940 (Grumbles from the Grave, 1989). In that letter, Heinlein discussed his desire to publish "Lost Legacy" (1941/1953), one of his most mystical stories. In that letter, Heinlein stated, " 'Lost Legacy'... is one that I really want to see published. I am going to give a slight amount of rewriting to make it science fiction rather than fantasy, but still let it say the things I want it to say" (p. 8). Heinlein used the story to put forth the idea that some parapsychological claims related to mystical experience, such as telepathy, clairvoyance, and life after death, deserved to be scientifically examined with the same open-mindedness as would be used in regard to any other claim.

It is reasonable to suppose that at least some of Heinlein's metaphysical views can be understood through an exegesis of certain of his stories having mystical themes. I base this on these three facts: First, that Virginia Heinlein, based on her 40 years of intimate association with Robert Heinlein, concluded that her husband was a mystic; second, that Heinlein returned again and again to specific mystical themes in his many stories; and third, his own assertion that mystical claims were important enough to warrant open-minded consideration. In the following two sections, I will discuss Heinlein's fictional explorations of mystical explanations of reality, both on the grand level and the ordinary level.

Mystical Explanations of History and the Cosmos

Heinlein occasionally used his stories to explore mystical explanations of the Universe. For example, he speculated about the origin and purpose of the universe in his 1942 story "The Unpleasant Profession of Jonathan Hoag" (1942/1961). In this story, Heinlein told a terrifying tale of a man whose unconscious profession is seeking out and removing evil creatures who call themselves the "Sons of the Bird." These creatures masquerade as human beings but are in reality the "painted over" remnants of a prehuman race—a race judged to have been "bad art" and which should have been removed at that time. Because Hoag cannot remember just what his profession is, he seeks out a husband-and-wife team of private detectives to follow him about in order to discover what he does each day. At the end of the story, Hoag is subjected to hypnosis and, as a result, consciously assumes his heretofore hidden persona and explains his purpose:

> He stopped and said suddenly to Randall, "Are you a religious man? Did it ever occur to you that all this"—he included the whole quietly beautiful countryside in the sweep of his arm—"might have had a Creator? Must have had a Creator?"
>
> Randall stared and turned red. "I'm not exactly a church-going man," he blurted, "but—Yes, I suppose I do believe it."
>
> "And you, Cynthia?"
>
> She nodded, tense and speechless.
>
> "The Artist created this world, after His own fashion and using postulates which seemed well to him. His teacher approved on the whole, but—"
>
> "Wait a minute," Randall said insistently. "Are you trying to describe the creation of the world—the Universe?"
>
> "What else?" (pp. 117-118)

Leaving this mystical conception of an imperfect creation which has a nevertheless benign purpose in back of it, we move to a more sinister mystical conception of the universe in the short story "They" (1948/1961). In this story, we are presented with a protagonist (his name is never mentioned) who has been locked away in an insane asylum. Ostensibly this is because he has become irrational and violent, but really the purpose is to confine him, confuse him, and prevent him from discovering just how extensive a hoax the phenomenal world is. For this world also has a creator, but not a benign one as in the case of Hoag, but rather a cunning and sinister one who created the phenomenal world for the purpose of deceiving one person—the protagonist. In the protagonist's analysis of two general metaphysical positions, we can catch a possible glimpse of Heinlein's own dissatisfaction with both common-sense realism and religio-mysticism (Heinlein's mysticism is of another sort):

> The world is explained in either one of two ways; [1] the common-sense way which says the world is pretty much as it appears to be and that ordinary human conduct and motivations are reasonable, and [2] the religio-mystic solution which states that the world is dream stuff, unreal, insubstantial, with reality somewhere beyond.
>
> WRONG--both of them. The common sense scheme has no sense to it of any sort.... In such a world, human striving is about as rational as the blind darting of a moth against a light bulb. The common-sense world is a blind insanity, out of nowhere, going nowhere, to no purpose.
>
> As for the other solution, it appears more rational on the surface, in that it rejects the utterly irrational world of common sense. But it is not a rational solution, it is simply a flight from reality of any sort, for it refuses to believe the results of the only available direct communication between the ego and the Outside. Certainly the 'five senses' are poor enough channels of communication, but they are the only channels. ("They," 1941, pp. 168-169)

By the rigorous mental exercise of critically examining the facts and conditions of his existence, the unnamed protagonist eventually is able to prepare his consciousness to remember--through a dream--his real other-worldly existence, a memory he is unable to retain on awakening:

> Gladness! Gladness everywhere! It was good to be with his own kind, to hear the music welling out of every living thing, as it always had and always would--good to know that everything was living and aware of him, participating in him, as he participated in them. It was good to be, good to know the unity of many and the diversity of one.... The early-morning sounds... gradually recalled him to awareness of the hospital room. The transition was so gentle that he carried over full recollection of what he had been doing and why.... The click of the peephole and rasp of the door being unlocked guillotined his line of thought... Suppress this distraction! This is part of their plan--But it was too late... He felt himself slipping... from reality back to the fraud world in which they kept him... with no single association around him with which to anchor memory. There was nothing left but the sense of heart-breaking loss and the acute ache of unsatisfied catharsis. (pp. 169-170)

The theme of "heart-breaking loss" is carried from the personal level to the species level in Heinlein's story "Lost Legacy" (1941/1953), the story that Robert wanted to publish as an expression of his own deeply-held views. In this story, the three protagonists discover that human beings once had much greater paranormal abilities, but that as a result of pursuing wrong values they precipitated a global catastrophe that resulted in the loss of the knowledge that had given them their former abilities.

The protagonists set about trying to recover these latent abilities with a fair amount of success. They eventually are drawn to a secret community dwelling on the slopes of Mount Shasta in northern California. This community of adepts (i.e., advanced students of paranormal abilities) is involved in metaphysical research and study as a kind of college, as it were. In their second night on Shasta, the three are subjected to dreams about the catastrophic history and decline of the former human civilization. When Philip Huxley, one of the three protagonists, inquires about the connection between mystical dreams and high places around the world, he is told:

> And in every religion there are accounts of a teacher bringing back inspired messages from high places--Guatama, Jesus, Joseph Smith, Confucius, Moses. They all come down from high places and tell stories of creation, and downfall, and redemption.
>
> Of all the old accounts, the best is found in Genesis. Making allowances for the fact that it was first written in the language of uncivilized nomads, it is an exact, careful account. (p. 141)

The above paragraph is also interesting because Heinlein used it to connect humanity's mystical past to the theme of religion, which I take up later in this appendix. But Heinlein also was interested in mystical themes of lesser import than cosmic history.

Explorations of Lesser Mystical Themes

Still other themes related to mysticism (such as parapsychological phenomena) are found in Heinlein's other novels. For example, Beyond this Horizon (1942/1948) includes the themes of telepathy, telekinesis, transmigration of souls, reincarnation, and panpsychism. In fact, one of the major subplots of the novel involves the protagonist's demand that the government undertake a research project into the possibility of personal survival after death as a condition of his cooperating with a genetic planning project. Similarly, in Starman Jones (1953/1975), Heinlein strongly suggested that the spirit of a deceased ship's officer returns to assist the young protagonist in the difficult task of piloting a lost starship back into familiar space.

In Heinlein's own self-admitted favorite story (Owenby, 1994c), "The Man who Traveled in Elephants" (1957/1961), he told the tale of a widower, a retired commercial traveler who is killed--unbeknownst to himself--in a bus accident while traveling to a national fair and exposition. Transported to the fair by a replacement bus, he discovers it to be an exciting and busy place filled with hospitality and good will in which he eventually meets not only his beloved wife who predeceased him, but his long-deceased favorite dog as well.

In both Red Planet (1949) and in Stranger in a Strange Land (1961/1987), Heinlein presented us with his conception of the Martian "Old Ones." The Old Ones are Martians who have long passed from corporeal life into a mystical form of existence in which they participate in an "other world" outside space and time from which they supervise physical Martian civilization.

In Stranger in a Strange Land, Heinlein depicted scenes in which deceased human beings are also involved in the affairs of humanity. In fact, Valentine Michael Smith, the protagonist, does not die "all over" when he is martyred at the end of the novel, but rather passes into another plane of existence. But that same novel also mentions pantheism--a subject I will take up in the following discussion of panpsychism.

Heinlein's Panpsychic Universe

Besides the need for understanding his overall mystical approach to phenomenal reality, it is also necessary to interpreting Robert Heinlein's metaphysics to acknowledge his specific view of a panpsychic universe. Panpsychism is the belief that all of reality is alive and participates in a universal mind. Robert's panpsychism is evident throughout his entire body of writings.

Perhaps the best starting point for understanding his panpsychic views is his statement of faith in the universality of life in his essay "Where to?" (1980) in which he declares, "I suspect that life is ubiquitous--call that a religious opinion if you wish" (p. 339). Of course, it is only a short step from saying "life is ubiquitous" to saying everything is alive. That is precisely what Heinlein did get around to saying, as I discuss next.

Panpsychism and Sentient Objects

Heinlein believed that all objects were potentially alive. In a passage from The Number of the Beast (1980/1982), a reference is made to Gay Deceiver, a spacecraft-cum-time machine in which the protagonists travel from one universe to another:

> "...Gay is not an 'it.' She's a person. You'll never know how relieved I was when it turned out that you two were going to be friends. If she had been jealous of you--May the gods deliver us from a vindictive machine!"
>
> "...Zebadiah, you believe that?"
>
> "Dejah Thoris, I know that.... to me the whole world is alive. Some parts are sleeping and some are dozing and some are awake but yawning... and some are bright-eyed and bushy-tailed and always ready to go." (pp. 155-156)

There are earlier examples of Heinlein's use of panpsychism. For example, in his novella "Waldo" (1940/1970), the character Gramps Schneider, a Pennsylvania Dutch hex doctor, "awakens" some failed

power-receiving antennae and makes them operable again—but with some interesting features. The formerly rigid metal fingers of the antenna now squirm and wriggle during operation.

In the more obviously science fiction novel Have Space Suit—Will Travel (1958), the protagonist Kip Russell invests hundreds of hours of effort in repairs and overhauls on an obsolete, military surplus space suit that he had won in a contest. Kip names the suit "Oscar" and gets into the habit of talking to Oscar whenever he is wearing him or working on him. But Kip needs money to start college and is reluctantly deciding that he must sell Oscar when he discovers that Oscar has "awakened":

> I went over and patted his shoulder. "Well, old fellow, you've been a real chum and it's been nice knowing you.... "
>
> My mouth felt dry.
>
> ("It's okay, pal," Oscar answered.)
>
> See that? Out of my silly head! Oscar didn't really speak; I had let my imagination run wild too long. (p. 42)

Or so Kip thinks. But Oscar continues to "speak" to him throughout the rest of the novel.

Whether Kip is responsible for both sides of his conversation with Oscar, it is clear that a machine really does awaken in the novel The Moon is a Harsh Mistress (1966/1968). In this novel it is 2075 A.D. and the Moon has five cities, all under the governance of the resident warden of the Lunar Authority, a supranational agency charged with administering the lunar colonies in trust to the Federated Nations, future successor to the United Nations of today. The Authority, for reasons of economy of cost and function, has installed a large capacity mainframe computer in its administrative complex and has assigned it to run all the administrative, electronic, and utilities functions of the five lunar colonies.

As the physical complexity of the computer increases with its incremental growth in both assigned tasks and computing capacity, it finally becomes self aware. Mike, the computer, for reasons of friendship with the protagonist as well as for his/its own amusement, agrees to lead and coordinate a political revolution against the Lunar Authority. At the conclusion of the novel, the administrative complex housing Mike is damaged by a near miss of a nuclear missile which so frightens Mike that he retreats into a cybernetic autism. It is unclear whether Heinlein wished us to believe that Mike's mind came from cybernetic complexity or from a natural sentience inherent in panpsychism.

But beginning with Heinlein's 1973 novel Time Enough for Love, and continuing through the novels The Number of the Beast (1980/1982), The Cat Who Walks Through Walls (1985/1986), and To Sail Beyond the Sunset (1987) we are presented with a procession of sentient computers. These include Dora, the computer-cum-spaceship belonging to Heinlein's most written about character, Lazarus Long; Minerva, the sentient supercomputer/companion of Howard Families Chairman Ira Weatheral and Athena, her computer "sister;" and Gay Deceiver, the computer-cum-time machine belonging to Zebadiah Carter, his wife Deety, and Hilda and Jake Burroughs—characters that Heinlein used to explore his thesis that there exists an almost-infinite number of universes.

In these books, Heinlein got around the usual objections against the possibility of artificial intelligence giving rise to sentient machines. He does so by positing the notion that because everything is potentially sentient anyway, all artificial intelligence does is give added powers of expression to that incipient sentience. But panpsychism is also suggestive of a kind of universal interconnectedness, a topic I take up next.

The Essential Unity of Life and Mind

It is only a small step for Heinlein to have reasoned that if all things are possessed of mind, that this pervasive "mindness" might also mean that everything is connected to everything else. Certainly Heinlein gave reason to suppose that he believes individual human beings are merely intertwining branches which comprise essentially one organism. In his first story, "Life-line" (1939/1967), his character Dr. Hugo Pinero provides the first inklings of this thesis when he explains the relationship of the human individual to the human race:

> Imagine this space-time event which we call [a human being] as a long pink worm, continuous through the years, one end at his mother's womb, the other at the grave. It stretches past us here and the cross section we see appears as a single discrete body. But that is an illusion. There is physical continuity to this pink worm, enduring through the years. As a matter of fact there is physical continuity in this concept to the entire human race, for these pink worms branch off from other pink worms. In this fashion the race is like a vine whose branches intertwine and send out shoots. Only by taking a cross section of the vine would we fall into the error of believing that the shootlets were discrete individuals. (p. 20)

But Heinlein openly declared his belief in the essential oneness of humanity in a passage from Time Enough for Love (1973/1987) that he intended to be taken as an expression of his own mind: " 'No man is an island--' Much as we feel and act as individuals, our race is a single organism, always growing and branching" (p. 245). This idea is possibly the basis for Heinlein's belief that our individual genes are not our individual properties, but are merely held in trust on behalf of the entire human race (The Number of the Beast, 1980/1982; To Sail Beyond the Sunset, 1987).

Continuing his thesis that human beings comprise a single organism, we find in Stranger in a Strange Land (1961/1987) a further illustration in a parable of the man from Mars, Michael Valentine Smith (Mike). Here, the character Ben Caxton is recounting the parable to Jubal Harshaw, the older and wiser Pygmalion to Mike:

> "He cracked jokes and told parables. The gist was a sort of pantheism. . . one parable was the oldy about the earthworm burrowing through the soil who encounters another earthworm and says, 'Oh, you're beautiful! Will you marry me?' and is answered: 'Don't be silly! I'm your other end.' You've heard it?"
>
> " 'Heard it'? I wrote it!"
>
> "Hadn't realized it was that old. Mike made good use of it. His idea was that whenever you encounter any other grokking thing--man, woman, or stray cat... you are meeting 'your other end.' " (p. 339)

(Note: The word grok is a term invented by Heinlein to describe an approach to learning and knowing so profound as to consist of a thoroughgoing sympathetic immersion in that which is contemplated.) It seems very clear that Heinlein was offering for serious consideration the proposition that just as human beings comprise a single organism, so do all living things. There are other clues in Heinlein's writing to the effect that, because every living thing is connected to every other living thing, this implies the possibility of an "oversoul"--in an Emersonian sense (Emerson, 1841/1968)--that distributes its consciousness among its many physical extensions.

For example, in Heinlein's novel Beyond this Horizon (1942/1948), the protagonist, Hamilton Felix--along with companions Mordan Claude and Longcourt Phyllis--is overcome by a deadly gas while engaged in a fire-fight with a band of fascist putschists. The deadly gas is used by the authorities to rescue the defenders from the building in which they were besieged by rendering both heroes and villains unconscious; the purpose being to treat the defenders later with an antidote to the gas. While unconscious, Felix experiences a disorienting dream in which he finds it difficult to sort out which of all his friends and acquaintances is his proper identity:

> It was pleasant to be dead. Pleasant and peaceful, not monotonous. But a little bit lonely. He missed those others--serene Mordan, the dauntless gallantry of Phyllis, Cliff and his frozen face. And there was that funny little man who ran the Milky Way Bar--what had he named him? He could see his face, but what had he named him? Herbie, Herbert, something like that--names didn't taste the same when words were gone. Why had he named him Herbert?
>
> Never mind. The next time he would not choose to be a mathematician. Dull, tasteless stuff, mathematics--quite likely to give the game away before it was played out. No fun in the game if you knew the outcome. He had designed a game like that once, and called it Futility--no matter how you played, you had to win. No, that wasn't himself, that was a player called Hamilton. Himself wasn't Hamilton--not this game. He was a geneticist--that was a good one!--a game within a game. Change the rules as you go along. Move the players around. Play tricks on yourself.

> "Don't you peek and close your eyes. And I'll give you something to make a s'prise!"
>
> That was the essence of the game--surprise. You locked up your memory, and promised not to look, then played through the part you had picked with just the rules assigned to that player. Sometimes the surprises were pretty ghastly, though--he didn't like having his fingers burned off.
>
> No! He hadn't played that position at all. That piece was an automatic, some of the pieces had to be. Himself had burned off that piece's fingers, though it seemed real at the time.
>
> It was always like this on first waking up. It was always a little hard to remember which position himself had played, forgetting that he had played all the parts. (p. 102)

Heinlein even went so far as to suggest that other people, even our enemies, are merely other incarnations of our larger self. In a letter written in 1955 to fellow science fiction writer Theodore Sturgeon, Heinlein said:

> I have had a dirty suspicion since I was about six that all consciousness is one and that all the actors I see around me (including my enemies) are myself, at different points in the record's grooves. I once partly explored this in a story called "By His Bootstraps." I say "partly" because I touched on one point only--and the story was mistaken by the readers (most of them) for a time-travel paradox story. (Electronic newsgroup communication from Dave Rivett on August 10, 1995)

This theme of distributed consciousness continues in the short story "They" (1948/1961). In this story, the protagonist is not merely one incarnation of the all-pervading Mind. Rather, he is a transcendental being who is in some sense responsible for distributing his consciousness to other, lesser beings:

> It was good to be with his own kind, to hear the music welling out of every living thing, as it always had and always would--good to know that everything was living and aware of him, participating in him, as he participated in them. It was good to be, good to know the unity of many and the diversity of one. (p. 169)

Yet it is in Stranger in a Strange Land (1961/1987) that Heinlein, speaking through the character Michael Valentine Smith, made most clearly his proposition that all things derive their individual "pieces" of consciousness from a collective consciousness:

> I am God. Thou art God. . . and any jerk I remove is God, too. Jubal, it is said that God notes each sparrow that falls. And so he does. But the closest it can be said in English is that God cannot avoid noting the sparrow because the Sparrow is God. And when a cat stalks a sparrow both of them are God, carrying out God's thoughts. (p. 421)

Perhaps Heinlein's clearest statement of his leanings toward a panpsychic universe in which the "Oversoul" distributes its consciousness among all its many physical extensions is to be found in Time Enough for Love (1973/1987) in which we are told the following: " 'God split himself into a myriad parts that he might have friends.' This may not be true, but it sounds good--and is no sillier than any other theology" (p. 347). This theme of pantheism/panpsychism is not unrelated to the implicit teleology of evolution in Heinlein's stories--a topic I take up in the following section.

The Teleology of Consciousness in an Evolving Universe

Robert Heinlein's belief in a panpsychic universe in which all living things are recipients of the distributed consciousness of universal Mind has implications for the teleology of the universe. A major implication is that all living things possessed of consciousness are actively participating in the ongoing evolution and unfolding creation of the universe. A recurring theme in Heinlein's writings that relates to this idea of participative creation is his notion of pantheistic multiperson solipsism.

According to Virginia Heinlein (Owenby, 1994c)--and also evidenced in much of his later writings--Robert manifested a continuing playful interest in the philosophical concept of solipsism. That concept can be defined as

> the doctrine that the individual human mind has no grounds for believing in anything but itself. The consequence is sometimes drawn that the individual mind coming to that conclusion constitutes all there is of reality. The first claim... may be termed "epistemological solipsism." When the cited consequence is drawn, the view may be called "metaphysical solipsism." (Reese, 1980, p. 539)

Heinlein first began to speculate about mutual, contributive creation in his novella "Waldo" (Waldo, 1941/1970), a story strongly suggestive of the tack he would take in the books he would write in the 1980s. In this story, the protagonist discovers that widespread doubt and insecurity brought on by a technology-induced fatigue has caused humans to lose faith in the reliable operation of natural law. The protagonist, Waldo, concludes that reality is essentially plastic, influenced by the mental expectations of the actors and observers within it; whereupon he decides to exert his mind to will reality back into orderly predictability:

> The world varied according to how one looked at it. In that case, thought Waldo, he knew how he wanted to look at it. He cast his vote for order and predictability.
>
> He would set the style. He would impress his <u>own</u> concept of the other world on the Cosmos!
>
> It had been a good start to assure Gleason that the Schneider-treated deKalbs were foolproof. Good. So let it be. They <u>were</u> foolproof. They would never get out of order.
>
> He proceeded to formulate and clarify his own concept of the Other World in his mind. He would think of it as orderly and basically similar to this space.... He began to feel a calm assurance that it was <u>so</u>.
>
> Was he merely speculating--or creating a universe? (pp. 89-90)

"Was he merely speculating--or creating a universe?" is a question that Heinlein did not get around to answering until his later books.

From the several text examples I have used--both above as well as in earlier sections in this appendix--it seems clear that Heinlein accepted that some sort of "outside" reality exists. Nevertheless, it also seems clear from those same examples that he is very much interested in the idea that we are all of us projections of One Mind that essentially knows itself through its many constituents. Thus Heinlein made a metaphysical linkage between solipsism and panpsychism, creating a hybrid concept which he calls "pantheistic multiperson solipsism" (<u>The Number of the Beast</u>, 1980/1982, p. 345). His concept is based on "the idea that human thought exists as quanta... a quantum is an indivisible unit... that imagination had its own sort of indivisible units or quanta--you called them 'fictons' " (p. 342). (Note: Although I report Heinlein's own term for this concept, panpsychism appears to be closer to his meaning than pantheism. I base this observation partly on his apparent distaste for religious approaches to understanding reality.)

Indeed, Heinlein had introduced the concept of human thought as indestructible quanta over 30 years before in his story "Gulf" (1949/1953). In a scene in which the protagonist is discussing his erratic talent for telepathy, his ESP (extrasensory perception) instructor speculates about the permanence of individual mind:

> While thought may not be of the physical world in any fashion we can now define and manipulate, it is similar to events in the continuum in its quantal nature. You are now studying the extension of the quantum concept to all features of the continuum, you know the chronon, the mensum, and the viton, as quanta, as well as the action units of quanta such as the photon. The continuum has not only structure but texture in all its features. The least unit of thought we term the psychon... psychons are as yet beyond our comprehension in many respects. Theory indicates that they may not be destroyed, that thought, like action, is persistent. Whether or not such theory, if true, means that personal identity is also persistent is an open question. (pp. 57-58)

What Heinlein had done 30 years after he wrote the above passage is to speculate about the creative possibilities of the human mind as it uses its imaginative powers to generate quanta in the form of new realities derived from fiction. That is "every story ever told--or to be told if there is a difference—exists somewhere" (The Number of the Beast, 1980/1982, p. 342). He goes on to say perhaps half-seriously:

> If you read it correctly, it's all in the Bible. "In the beginning was the Word, and the Word was with God, and the Word was God." Could anyone ask for a plainer statement of the self-evident fact that nothing exists until someone imagines it and thereby gives it being, reality? (p. 508)

Thus the term "multiperson solipsism" is used to capture the idea that all of us are capable of giving birth to new realities which are nonetheless products of our own minds. Nor was Heinlein--through his character Jacob Burroughs—at a loss to give the concept a measure of defense against challenge:

> The key point... is that we are all equally figments of imagination. "Reality" thus becomes a null symbol... "Imaginary" and "Real" turn out to be identical. Consider this [table]. On one level of abstraction it is mathematical equations. At the level just below that it is a swirling nothingness, with mass-energy a rare event. But on the gross level abstracted by my senses I can place this drink on it with utter confidence that it will not sink through. (pp. 415-416)

Heinlein later elaborated this line of thought, giving it another twist with the notion of the "World as Myth,"—an idea which he explains through the resurrected character of Jubal Harshaw in the novel The Cat Who Walks Through Walls (1985/1986). In the process of explaining this notion, we are also provided with a history of worldviews:

> "The World as Myth" is a subtle concept. It has sometimes been called multiperson solipsism, despite the internal illogic of that phrase. Yet illogic may be necessary, as the concept denies logic. For many centuries religion held sway as the explanation of the universe--or multiverse. The details of revealed religions differed wildly but were essentially the same. Somewhere... there was an old man in a nightshirt who knew everything and was all powerful and created everything and rewarded and punished . . . and could be bribed.... The Almighty-God idea came under attack because it explained nothing; it simply pushed all explanations one stage further away. In the nineteenth century atheistic positivism started displacing the Almighty-God notion in that minority of the population that bathed regularly.
>
> Atheism had a limited run, as it, too, explains nothing, being merely Godism turned upside down. Logical positivism was based on the physical science of the nineteenth century which, physicists of that century believed, fully explained the universe as a piece of clockwork.
>
> The physicists of the twentieth century made short work of that idea. Quantum mechanics and Scrödinger's cat tossed out the clockwork world of 1890 and replaced it with a fog of probability in which anything could happen.... Nevertheless, with the death of positivism, Godism and Creationism came back stronger than ever.... The World is Myth. We create it ourselves--and we change it ourselves. A truly strong myth maker, such as Homer, such as Baum, such as the creator of Tarzan, creates substantial and lasting worlds. . . whereas the fiddlin', unimaginative liars and fabulists shape nothing new and their tedious dreams are forgotten. (pp. 364-365)

A few pages later, Harshaw continues his elaboration by declaring outright that the structure of the universe is the joint product of many imaginations:

> For millennia philosophers and saints have tried to reason out a logical scheme for the universe... [but] the universe is not logical but whimsical, its structure depending solely on the dreams and nightmares of non-logical dreamers... If the great brains had not been so hoodwinked by their shared conviction that the universe must contain a consistent and logical structure they could find by careful analysis and synthesis, they would have spotted the glaring fact that the universe—the

> multiverse—contains neither of logic or justice save where we... impose such qualities on a world of chaos and cruelty. (p. 369)

But how did Heinlein justify such a ontological declaration? What are the internal mechanics of such a view? Perhaps one clue is to be found in his story "Lost Legacy" (1941/1953). In this story, Philip Huxley, one of the three co-protagonists, is struggling with the idea of how mind and volition can influence matter, and is answered thus:

> You know that intangible will can affect the course of mass in the continuum; you experience it whenever you move your hand. Are you powerless to move your hand because you cannot give a full rational explanation of the mystery? Life has power to affect matter; you know that--you have experienced it directly. It is a fact. Now there is no 'why' about any fact in the unlimited sense.... there it stands, serene, demonstrating itself. One may observe relations between facts, the relations being other facts, but to pursue those relations back to final meanings is not possible to a mind which is itself relative. First you tell me why you are. (p. 141)

The answer being suggested in this passage, as well as previous passages, appears to be something like the following: Since matter and energy are different manifestations of the same "thing" and since neither matter or energy can be destroyed, only transformed, and since mind can influence matter, then the idea that mind can influence "ultimate reality"—whatever that is—is no more preposterous than the idea that mind can influence matter, and may well mean that the two are manifestations of the same "thing" just as are matter and energy. The thrust of my discussion so far in regard to Heinlein's mysticism, his panpsychism, and his apparent belief in nonmaterial mind leads to my next topic in this discussion of teleology.

Cosmic Purpose

Heinlein did not seem to accept the idea that the universe is purposeless. For him, it is impossible to believe that just because we cannot be sure of the ultimate purpose of the universe, that it must perforce be merely a product of utter randomness. Speaking through his character Jubal Harshaw in Stranger in a Strange Land (1961/1987), he tells us:

> The Universe was a silly place at best. . . but the least likely explanation for it was the no-explanation of random chance, the conceit that abstract somethings "just happened" to be atoms that "just happened" to get together in ways that "just happened" to look like consistent laws and some configurations "just happened" to be... a bald-headed coot with Jubal inside.
>
> No, he could not swallow the "just happened" theory, popular as it was with men who called themselves scientists. Random chance was not a sufficient explanation of the Universe--random chance was not sufficient to explain random chance; the pot could not hold itself. (pp. 138-139)

Neither Heinlein nor his wife Virginia subscribed to the "Big Bang" theory of the origin of the universe, being much more sympathetic to astronomer Fred Hoyle's theory of the "Steady State" universe (Owenby, 1994c). Although unsure of the origins of the universe, Heinlein's view of the purpose of the universe was drawn from his notions of its apparent nature. That is, because the entire universe is alive, it is natural to assume that like all its constituent living things, it wants to survive and reproduce itself. In fact, according to Heinlein, it is precisely through the reproduction of all its constituent living things, that the universe fulfills its purpose.

We are told, for example, through Heinlein's character Lazarus Long, "A zygote is a gamete's way of producing more gametes. This may be the purpose of the universe" (Time Enough for Love, 1973/1987, p. 245). Heinlein also supplemented this observation with another one aimed more specifically at humans: "If the universe has any purpose more important than topping a woman you love and making a baby with her hearty help, I've never heard of it" (p. 249). Thus, in a manner reminiscent of the Life-Force in George Bernard Shaw's play Man and Superman (1903/1951), we are introduced to the idea that the universe is purposefully and perpetually involved in the constant business of life.

In fact, Heinlein read much of Shaw (Schulman, 1973/1990). He likely was influenced by Shaw's philosophy of the Life-Force (and, of course, indirectly influenced by Henri Bergson's theory of creative evolution via Shaw) as well as Shaw's notion of the Superman (again, of course, also influenced derivatively through Shaw by Nietzsche). It is through life reproducing itself generation after generation that the mechanism of evolution has opportunities to preserve the gains made by the Life-Force.

Although Shaw made much of intelligence and will as factors of efficacy in human evolution, Heinlein would add other factors to those being selected for by the universe as it pursues its purpose. In the story "Gulf" (1949/1953) he has his authorial character Dr. Baldwin say, "We believe that individual freedom, at all levels, is the direction of evolution, of maximum survival value" (p. 61). Heinlein similarly declared in the story "Lost Legacy" (1941/1953) that, "Free will is the primary good of the cosmos" (p. 133). A few pages later, he continues by declaring that human consciousness is part of the cosmic purpose:

> We see the history of the world as a series of crises in a conflict between two opposing philosophies. Ours is based on the notion that life, consciousness, intelligence, ego is the important thing in the world.... That puts us in conflict with every force that tends to destroy, deaden, degrade the human spirit, or to make it act contrary to its nature.... all the bonds placed on liberty which treat men as so many economic and political units with no importance as individuals. No dignity—do what you are told, believe what you are told.... If that were the object of life, there would have been no point in including consciousness in the scheme of it all. (p. 138)

Thus, for Heinlein, consciousness—at increasingly higher levels—was the sine qua non for life to fulfill its cosmic purpose. Each individual, as an instrument of the cosmic consciousness, must have the freedom and dignity required in order to use intelligence for the continuing survival and development of both the human race and the universe. This continuing development includes the preservation of that which is gained for the cosmic whole through individual striving and intelligence. Therefore, the efforts of human beings to learn, discover, and preserve what they have learned and discovered—through language, history, science, and mathematics—is a partial fulfillment of the purpose of the universe (I discuss other philosophical aspects of survival in Appendices F and G). In the next section of this appendix, I will make the connection between Heinlein's view of cosmic consciousness and human immortality.

Reincarnation and Cosmic Teleology

The collective, racial preservations of the hard-won gains of life and consciousness were, for Heinlein, not in themselves sufficient to serve the purpose of the cosmic life-force. Perhaps that is why Heinlein discussed reincarnation from the beginning of his writing career. For example, in Beyond this Horizon (1942/1948), the character Hamilton Felix holds a government genetic planning program hostage to his demand that research be undertaken to determine whether the individual ego survives death. In the story, Felix discovers that an old woman whom he dislikes has died and been reincarnated as his baby daughter, Justina:

> For the main question:—"Do we get another chance?" had been answered—by the back door.... Justina had answered that, whether she knew it or not. She had brought memory patterns with her; she had lived before. He was convinced of that. Therefore, it was a dead-sure cinch that the ego went somewhere after the body disintegrated. Where, he would worry about when the time came. (p. 157)

It appears that Heinlein may have believed in the necessity of successive reincarnations to preserve the fruits of individually developed consciousnesses. But in the book mentioned above, he also connects the efficacy of answering the question of reincarnation to the long-term goals and needs of society. In a meeting of the planners of this future society, one member links the question of life after death to effective social planning:

> Every decision that we make... is shaped by our personal philosophies.... How many of you have an opinion about survival-after-death? .... It would seem obvious to me... that the only rational personal philosophy based on a conviction that we die dead, never to rise again, is a philosophy of complete hedonism.... On the other hand, the possibility of something more to life than the short span we see opens up an unlimited possibility of evaluations other than hedonistic.... I won't go into all the implications--they must be evident to all of you. (pp. 110-113)

Heinlein managed to make the case for personal survival even for those who do not believe in an afterlife in his story "Elsewhen" (1941/1953):

> I suspect that the conventional hereafter is real to any one who believes in it whole-heartedly, as Martha evidently did, but I expect you to follow a pattern in accordance with the beliefs of an agnostic--except in one respect; when you die, you won't die all over, no matter how intensely you may claim to expect to. It is an emotional impossibility for any man to believe in his own death. That sort of self-annihilation can't be done. You'll have a hereafter, but it will be one appropriate to a materialist. (pp. 74-75)

It is certainly likely that Heinlein believed in reincarnation. This is evidenced in his essay "The Third Millennium Opens" (1956/1980). In that essay he pointed to the Bridey Murphy hypnotic regression tapes as evidence of reincarnation and personal survival--which he then links to cosmic teleology: "Personal survival necessitates Cosmic Purpose as a 'least hypothesis' for the universe" (p. 383). Virginia Heinlein reports that although both she and her husband later came to regard the Bridey Murphy tapes as less reliable than they first had thought. But she also reported that he maintained his belief in reincarnation (Owenby, 1994c).

Speaking of the supposed fraudulence of the Bridey Murphy tape, Heinlein nevertheless made the following point:

> I have the "Bridey Murphy" recording.... I found the recording highly interesting.... Some years later I learned from an ethical hypno-therapist (i.e., he accepted patients only by referral from M.D.'s, his own doctorate being in psychology) that regression to what seemed to be former lives was a commonplace among patients of hypnotherapists--they discussed it among themselves but never published because they were bound by pretty much the same rule as physicians and priests taking confession. ("The Third Millennium Opens," 1956/1980, p. 385)

But Heinlein also believed in reincarnation because he himself reported having had memories of past lives. As Virginia Heinlein reported, "He told me that in his early childhood, he had impressions that got more vague as time went on that he had lived before and he had vague memories of what had gone on during those previous lives" (Owenby, 1994c). Indeed, he refused the offer of letting his body be cryogenically frozen and stored after his death against the time that technological advances would allow it to be revived and resurrected. His reason as reported by Keith Henson via Spider Robinson was, "How do I know it wouldn't interfere with rebirth?" (Robinson, 1992, p. 318).

The fruits of reincarnation in the form of more developed consciousnesses in some persons versus others is implied in the narrative descriptions of what I call "going back of the curtain" that some of Heinlein's protagonists give us. For example, when his protagonist Hamilton Felix in Beyond this Horizon (1942/1948) is dreaming while under the effects of poison gas, he discovers that some of the beings in his earthly existence are not the self-aware persons he had believed them to be. Some people are apparently "automatics" (p. 102).

Similarly, we are told by the unnamed protagonist in the short story "They" (1948/1961) that he is able to get into touch with but few of his so-called fellow creatures :

> "If they were like me, then I could get into communication with them. I can't. I have tried.... But there is nothing out there to speak to me--nothing but emptiness and otherness!"
>
> "Wait a minute. Do you mean to say that you think there is nobody home at this end of the line? Don't you believe that I am alive and conscious?"

> He regarded the doctor soberly. "Yes, I think you are probably alive.... But you have thousands of others... whose faces are blank, not lived in, and whose speech is meaningless reflex of noise." (pp. 161-162)

These "faces... not lived in" are also present in two other Heinlein stories: "The Unpleasant Profession of Jonathan Hoag" (1942/1961) and "--all you zombies--" (1959/1961). The later story is a tale of triple-looped solipsism in which a man fathers himself by impregnating himself when he was a woman. The tale ends with the protagonist plaintively asking, "I know where I came from--but where did all you zombies come from?" (p. 156).

He elaborates on this connection of solipsism with the after-life in the account of his protagonist Colin Campbell in The Cat Who Walks Through Walls (1985/1986):

> So far as I know I have lived forever and have been self-aware the whole time. All this talk about things that went on before... the alleged year of my alleged birth is just hearsay and not very convincing. I go along with the gag to keep from annoying people or getting funny looks. And when I hear astronomers talk about the world being created in a big bang eight or sixteen or thirty billion years before I was born... that's a horse laugh. If I was not alive sixteen billion years ago, then there was nothing at all. Not even empty space... The universe in which I live cannot exist without me in it. So it's silly to talk about the date I became self-aware; time started when I did, it stops when I do. (p. 226)

So finally, we are able to come full circle with Heinlein's teleology of the cosmos by connecting it with the teleology of the subjective self. With Heinlein's willingness to speculate about such issues--particularly in view of his commitment to the scientific method--is it any wonder, then, that Heinlein was a source of frustration to those attempting to construct a consistent interpretation of his metaphysics? This frustration can even increase when his views regarding religion are brought into the discussion.

Views of Religion

As Virginia Heinlein reported, her husband never expressed any religious beliefs in the conventional (i.e., Judaeo-Christian) sense (Owenby, 1994c). But based on the sheer volume of material in his writings that deal with religion in some fashion or other, Heinlein was not indifferent to the topic. In fact, it is probably accurate to say that Heinlein had a love-hate attitude towards religion. Indeed, many of his writings seem to indicate an attitude of disparagement, if not outright hostility, toward conventional religion. This attitude may well have grown out of his early childhood experience of being brought up in the Bible-belt fundamentalist Methodism practiced by his parents. As Virginia reported, "Robert's mother and father were extremely religious people. They were Methodist and they brought the children up to be good little Methodists. Every single one of them [Robert's siblings] ran away from that church" (Owenby, 1994c).

On the other hand, Heinlein was nevertheless always interested in religion and, according to Virginia, read various religious books, "Robert... read a great deal about the Bible. He also had a copy of the Koran" (Owenby, 1994c). Certainly, he was well-informed about the Bible and used Biblical quotations--always from the Authorized Version--liberally throughout his many books. In fact, the title of Stranger in a Strange Land (1961/1987) is taken directly from Exodus II: 22. Nine of the thirteen chapter titles of the novella "Lost Legacy" (1941/1953) are taken from the Bible. Six chapter headings in Starship Troopers (1959/1968) have Biblical origins. Between Planets (1951) borrows from the Bible for four chapter headings. The Number of the Beast (1980/1982) not only borrows its title from the Bible but also four of its chapter headings. Finally, all 29 chapter headings as well as the book title from Job: A Comedy of Justice (1984/1985) are taken from the Bible. To list the many characters from his writings whose names come from the Bible would take several pages.

Heinlein was one of the first major science fiction writers to treat religion as a serious theme in his writings. His very first full-length novella, originally written in 1939 and published the following year, was " 'If this goes on--' " (1940/1967). This story explores the historical and social consequences of a populist, fundamentalist, religious leader--Nehemiah Scudder--being elected to the U.S. presidency and the subsequent establishment of a stifling religious dictatorship, which was later overthrown by

revolution. The story dramatically points out Heinlein's perception of the powerful historical influence of religion in American life and thought.

Heinlein would return to this theme in his Stranger in a Strange Land (1961/1987). That book describes the advent of a new mainstream religious movement in the United States of the future, the "Church of the New Revelation." In Job: A Comedy of Justice (1984/1985) Heinlein describes how his protagonist's fundamentalist faith is put to the test by the capricious treatment he receives from the deity. This book is also interesting for the way it reveals Heinlein's very detailed knowledge of fundamentalist theology. It is clear that Heinlein is not at all ignorant of the basics of popular religion.

Heinlein even played at inventing new religions. From his readings of Ruth Benedict's and Margaret Mead's anthropological works (Owenby, 1994c), he was aware that religions emerge or evolve as do other elements of culture. His earliest attempt at inventing new religions was in the book Orphans of the Sky (1941/1964). The book gives a description of the religious cosmology of a group of humans descended from crew members of a huge interstellar ship designed for travel to nearby star Alpha Centauri over several generations.

In the juvenile novel Tunnel in the Sky (1955), Heinlein described the religious life of his protagonist's family:

> Mr. Walker solemnly lighted the Peace Lamp. The family was evangelical Monist by inheritance, each of Rod's grandfathers having been converted in the second great wave of proselytizing that swept out of Persia in the last decade of the previous century, and Rod's father took seriously his duties as family priest.
>
> As the ritual proceeded Rod made his responses automatically, his mind on this new problem. His sister chimed in heartily but his mother's answers could hardly be heard.
>
> Nevertheless the warm symbolism had its effect; Rod felt himself calming down. By the time his father intoned the last "--one principle, one family, one flesh!" he felt like eating. (p. 35)

At any rate, it is clear that Heinlein does not shy away from dealing with religion. But what are his stated attitudes towards the topic? For one thing, it is quite clear that he regarded traffickers in religion as incipient, if not actual, threats to the civil liberties of societies. His first long story, as previously mentioned documents that attitude. In the story "Lost Legacy" (1941/1953) he regards as one of the many enemies of human liberty and dignity "the dealers in phony religions" (p. 158-159).

But even if such religions are not a threat to civil liberty, Heinlein found fault with them on the grounds that they are detrimental to individual intellectual efficacy. For example, in the story "Gulf" (1949/1953), he declares through his authorial character Dr. Baldwin:

> For explanations of a universe that confuses him he seizes onto numerology, astrology, hysterical religions, and other fancy ways to go crazy. Having accepted such glorified nonsense, facts make no impression on him, even at the cost of his own life.... one of the hardest things to believe is the abysmal depth of human stupidity. (p. 46)

Heinlein disliked much of revealed religion for the reason that it substitutes false reasoning for valid reasoning, and that it always seems to be used as an explanation of last resort. For example, in detailing the history of cosmology in The Cat Who Walks Through Walls (1985/1986), he notices that religion always seems to revive whenever once-prevailing paradigms lose their traditional credibility, involving a substitution of one myth for another. He speaks through his authorial character Jubal Harshaw to say:

> For many centuries religion held sway as the explanation of the universe--or multiverse.... The Almighty-God idea came under attack because it explained nothing; it simply pushed all explanations one stage further away. In the nineteenth century atheistic positivism started displacing the Almighty-God notion in that minority of the population that bathed regularly.... with the death of positivism, Godism and Creationism came back stronger than ever. (p. 364-365)

Heinlein then concludes that religion nevertheless seems to be a necessity for most people (Time Enough for Love, 1973/1987):

> History does not record anywhere at any time a religion that has any rational basis. Religion is a crutch for people not strong enough to stand up to the unknown without help. But, like dandruff, most people do have a religion and spend time and money on it and seem to derive considerable pleasure from fiddling with it. (p. 242)

Heinlein further elaborates through the authorial character Dr. Baldwin in the novel Friday (1982/1983), who gives parting advice to his adopted daughter, Friday Baldwin, about the problems of relying on religion for comfort:

> A religion is sometime a source of happiness and I would not deprive anyone of happiness. But it is a comfort appropriate for the weak, not for the strong.... The great trouble with religion--any religion--is that a religionist, having accepted certain propositions by faith, cannot thereafter judge those propositions by evidence. One may bask at the warm fire of faith or choose to live in the bleak uncertainty of reason--but one cannot have both. (p. 253)

But Heinlein had himself been instrumental in engendering a new form of religious expression--to his chagrin. Many of the readers of his novel Stranger in a Strange Land (1961/1987) enthusiastically embraced the concept of the "Church of All Worlds"--the name of the sect created by the character Michael Valentine Smith, otherwise known as the "Man from Mars." At least one group of young people of the 1960s organized themselves into just such a "church"--although Heinlein was careful never to endorse the group (Grumbles from the Grave, 1989; Owenby, 1994c). In a letter to a fan, dated January 20, 1972, he denied any intent of promoting a new religion in Stranger in a Strange Land, but did declare his intent to challenge assumptions:

> I was not giving answers. I was trying to shake the reader loose from some preconceptions and induce him to think for himself, along new and fresh lines. In consequence, each reader gets something different out of that book because he himself supplies the answers.
>
> If I managed to shake him loose from some prejudice, preconception, or unexamined assumption, that was all I intended to do. (Grumbles from the Grave, 1989, p. 245-246)

Perhaps in the end, Heinlein's attitude towards religion was as much an aesthetic one as it is metaphysical. The authorial character Jubal Harshaw of the book Stranger in a Strange Land (1961/1987) expresses this aesthetic attitude thus, "A devout agnostic, Jubal rated all religions, from the animism of Kalahari Bushmen to the most intellectualized faith, as equal. But emotionally he disliked some more than others" (p. 138).

So far in this appendix, I have discussed the metaphysical themes of mysticism, panpsychism, cosmic teleology, and religion--which run through Heinlein's works. I am now ready to try to put these themes into perspective by relating them to possible influences.

Heinlein's Metaphysics in Perspective

Where did Heinlein get his metaphysics? What historical-cultural influences contributed to his evolving metaphysical views? There is certainly no way to give authoritative answers to such questions, particularly when he was reluctant to discuss them even with his own wife (Owenby, 1994c). That Heinlein was influenced by reading Darwin and Huxley are not particularly relevant to these questions inasmuch as the theory of biological evolution can be said to have captured the thinking of the entire age that Heinlein was born into. What we are concerned with are those influences that made his metaphysics different from many if not most of his respected contemporaries.

That Heinlein was basically committed to the scientific worldview is fairly certain (see Chapter III and Appendix E for a more detailed discussion of this point). Nevertheless, it is also clear that Heinlein was an omnivorous reader of books dealing with mystical, magical, and abnormal phenomena, and that what he read in those books--just as much as what he read in books of science--regularly found its way into his stories. Using such clues as can be found in writings such as "Beyond Doubt" (1941), Beyond This Horizon (1942/1948), Waldo & Magic, Inc. (1950), Assignment in Eternity (1953), The Menace from Earth (1959), and Glory Road (1963/1970) we may hazard some answers.

Philosophical Influences: Popular Literature

First of all, we already know that Heinlein was a reader of the works of George Bernard Shaw from whom he was exposed to Bergson's idea of the life force working its designs through the process of creative evolution. Whether Heinlein ever read the works of Bergson we do not know and his wife Virginia Heinlein did not know (Owenby, 1994c), although Robert strongly implies that he did read them during the early 1920s (Schulman, 1973/1990).

We also know that Heinlein was an avid reader of the books of Charles Fort, collector of accounts of unexplained and unusual phenomena (Assignment in Eternity, 1953). Such phenomena included apparent time travel, inexplicable disappearances, teleportations, extrasensory perception, rains of unusual objects, and extraterrestrial visits. Heinlein also collected and filed such accounts from newspapers, magazines, and his own experiences. We know that Heinlein collected books on magic, mysticism, sorcery, and witchcraft—including grimoires (collections of spells, magical rites and recipes).

Based on his friend L. Sprague de Camp's analysis of the occult basis of various beliefs regarding the Atlantis myth (Lost Continents: The Atlantis Theme, 1975) including those made use of by Heinlein in some of his stories, it seems likely that he was familiar with the works of Albertus Magnus, Paracelsus, Böhme, Swedenborg, Emerson, Blavatsky, Besant, Steiner, and Gurdjieff. It also seems likely that he inquired into various occult societies including the Theosophical Society and the Rosicrucians.

This wide-ranging reading also points once again to Heinlein's approach to learning. That is, he was an avid and voracious reader with a truly catholic appetite for anything that caught his curiosity. But this wide-ranging curiosity also indicates that Heinlein may well have had sources for some of his beliefs out of mainstream philosophy. One of these influences may well have been the idealist works of the 18th century and 19th century German philosophers.

Philosophical Influences: German Idealism

Heinlein read a lot of philosophy in his early years. In a 1973 interview Heinlein relates the following details about his early philosophical reading:

> I studied philosophy under Will Durant many, many years ago—this was before he was well-known; this was back in the early twenties—and he first introduced me to a wide range of philosophers; and I read 'em all [emphasis mine]; I gobbled 'em all. I suppose I've learned something from all of them, but not necessarily what they wanted to impart. (Schulman, 1973/1990)

Heinlein certainly was aware of the philosophical works of Kant and Hegel for he commented on them (Stranger in a Strange Land, 1961/1987; The Number of the Beast, 1980/1982). Based on his own admission that he "read 'em all... gobbled 'em all", he may well have read the philosophical works of other German philosophers such as Leibniz, Schelling, Fechner, and Wundt as well—all of whom put forward various notions of panpsychism (Reese, 1980).

Heinlein's view of panpsychism appears to have been very similar to that of Schelling in particular. For example, in The Number of the Beast (1980/1982, p. 156) he writes, "to me the whole world is alive. Some parts are sleeping and some are dozing and some are awake but yawning. . . and some are bright-eyed and bushy-tailed and always ready to go." In Reese's (1980) description of Schelling's views of the matter, we learn:

> Schelling takes the position that nature is alive in all its parts.... He decides that inanimate nature can be viewed as a set of slumbering selves. More instructively, perhaps, nature is to be viewed as a series of levels or Potenzen [potentials], each level repeating the forms achieved on lower levels but within the more exalted novel form of the level in question. The direction of nature's development is thus toward consciousness. (p. 511)

Again, whether Heinlein had read Schelling or Fechner, it is clear that his beliefs bear some resemblance to these German idealists in the matter of panpsychism. But some of Heinlein's beliefs may well have come philosophical circles much closer to home.

Philosophical Influences: American Pragmatism

Whether Heinlein had read Schelling or any of the German idealists, it is probable that he had read the works of the American philosophers of pragmatism Charles Sanders Peirce and William James. I believe that I can say this fairly confidently because throughout his works he alluded to their pragmatist principle that the meanings of ideas are to be found in the examination of their consequences (Peirce, 1955, pp. 31; James, 1925, pp. 82-83). In addition, his library contained popular treatments of their philosophies. Whether Heinlein had read Fechner or Bergson, it is a fact that James at least had read them both and reacted to them in his writings, and Peirce had certainly read Fechner. Thus Peirce and James may be seriously considered at least as partial windows for Heinlein's early thinking about the significant philosophical streams current in his youth and boyhood. This likely metaphysical influence of Peirce and James is important in three areas: Panpsychism, ontological/cosmological pluralism, and human immortality.

Panpsychism. In a manner reminiscent of Heinlein's apparent panpsychism, James proposed a pluralistic panpsychism that involved a compounding of consciousness of both divine and human awareness (Reese, p. 265). James seriously considers—along with Fechner—that

> We inhabit an invisible spiritual environment from which our help comes, our soul being mysteriously one with a larger soul whose instruments we are.... Fechner's ideas are not without direct empirical verification. There is at any rate one side of life which would be easily explicable if those ideas were true, but of which there appears no clear explanation so long as we assume either with naturalism that human consciousness is the highest consciousness there is, or with dualistic theism that there is a higher mind in cosmos, but that it is discontinuous with our own... In spite of rationalism's disdain for the particular, the personal, and the unwholesome, the drift of all the evidence we have seems to me to sweep us very strongly towards the belief in some form of superhuman life with which we may, unknown to ourselves, be coconscious. (James, 1925, pp. 216-217)

Peirce is perhaps more explicitly religious in his conception of cosmic mind, for his notion of agapastic evolution (Peirce, 1955, see pp. 363-374) indicates two things: First, that cosmic mind is evolving; second, this cosmic mind is evolving through individual minds who merge their "individuality in sympathy with [their] neighbors" (p. 364). In other words, the cosmic mind is a dynamic but sympathetic interdependence of individuality and totality. Peirce believed that another indication that the cosmic mind was connected with its constituent individualities was the tendency for advances in thought and discovery to be simultaneously produced by different minds. He also believed that human progress to have regular cycles of "about 500 years" (pp. 371-374). Reading about James's notion of co-consciousness and Peirce's notion of cosmic evolution could well have had a powerful affect on Heinlein's sense of cosmic purpose and teleology. Certainly both ideas joined together to become an early and recurring theme in his writings.

Ontological/cosmological pluralism. That consciousness could be experienced subjectively as an individual yet be ultimately plural in its constituency was a continuing point of fascination for Heinlein. That consciousness was, apparently for him, plural in nature leads to another connection with Peirce's and James's metaphysics, that ultimate reality is plural and contingent, not monistic and determined. James explained this notion in the following manner (1925):

> [In] the pluralistic view.... nothing includes everything or dominates over everything. The word "and" trails along after every sentence. Something always escapes. "Ever not quite" has to be said of the best attempts made anywhere in the universe of attaining all-inclusiveness. (p. 119)

Peirce's perspective of this notion is perhaps even more explicit. In Peirce's view, acausal novelty is a fundamental feature of the universe. Peirce's term for this notion is "tychism" (Peirce, pp. 339-353).

He explains that without this dynamic character of acausal novelty evolutionary development would be quite impossible. Heinlein echoed this point of view throughout his writings. For example, in The Cat Who Walks Through Walls (1985/1986), Heinlein directly contradicted the monistic view of reality in favor of something that sounds very much like Peirce's tychism:

> If the great brains had not been so hoodwinked by their shared conviction that the universe must contain a consistent and logical structure [which] they could find by careful analysis and synthesis, they would have spotted the glaring fact that the universe—the multiverse—contains neither... (p. 369)

Here we see Heinlein also using the Jamesian term "multiverse" with which he labels his view of the universe.

But also in common with Peirce and James, Heinlein preferred the particular and personal over the general and impersonal. This preference led him away from impersonal metaphysical concerns to the ultimate concern of the individual, immortality.

Human immortality. Interestingly, Heinlein again seems to have followed a Jamesian approach to this topic. In James's essay Human Immortality (1898/1956), he explains his "transmissive" theory of human immortality in which the human brain, rather than being the generator of human consciousness, is merely the receptive instrument by which a transcendental mind acts within the phenomenal world. In James's view, this theory may work whether there is one or many such minds behind the scene:

> There might be... many minds behind the scene as well as one. The plain truth is that one may conceive the mental world behind the veil in as individualistic a form as one pleases, without any detriment to the general scheme by which the brain is represented as a transmissive organ.
>
> If the extreme individualistic view were taken, one's finite mundane consciousness would be an extract from one's larger, truer personality, the later having even now some sort of reality behind the scenes.... It is true that all this would seem to have affinities rather with preëxistence and with possible reincarnations than with the Christian notion of immortality. (pp. vii-viii)

As I have already demonstrated through several passages from his stories, Heinlein was preoccupied with the notion of personal immortality from start to finish. But the chief characteristics of his musings that suggest connecting them with James are two: the notion of a suprapersonal agent behind the veil of the individual human existence, and the notion of repeated incarnations.

For all the foregoing reasons, it is probably safe to propose that Heinlein's metaphysics were his personal—but nonetheless original—elaborations of the metaphysical views of Charles Sanders Peirce and William James—that is, in all but Heinlein's approach to religion. James's approach to justifying religious or any other form of passional belief when the evidence does not allow it to be settled on intellectual grounds is based on satisfying three conditions (The Will to Believe, 1956/1897). They must be of vital concern ("live"); there must be no third alternative possible ("forced"); they must be of considerable importance in terms of opportunity ("momentous") (pp. 2-4).

Now, Heinlein would not seem to have followed James on this point. Rather he would—along with those who espouse what James calls "half-way empiricism that is current under the name of positivism or agnosticism or scientific naturalism" (p. viii)—declare that belief must be held in suspension when the evidence is lacking either way. Heinlein made this clear through his authorial character Jubal Harshaw in Stranger in a Strange Land (1961/1987):

> "Least hypothesis" deserved no preference; Occam's Razor could not slice the prime problem, the nature of the Mind of God (might as well call it that, you old scoundrel; it's a Anglo-Saxon monosyllable not banned by four letters—and as good a tag for what you don't understand as any.)
>
> Was there any basis for preferring any sufficient hypothesis over another? When you did not understand a thing: No! (pp. 138-139)

Whether or not Heinlein was willing to commit to a religious belief in God, he does appear willing to commit to belief in some kind of transcendent purpose for human existence, even if he did not

know what it is. "I'm... an agnostic.... [but] one who feels sure... that the world has meaning, is somehow good, and that my being here has a purpose, even if I don't know what it is" (I Will Fear No Evil, 1970/1987, pp. 352-353). So, we are still left with a justification for viewing Heinlein through the lens of pragmatist philosophy, if for no other reason than that he demonstrates James's will to believe so well.

Conclusion

In this appendix, I introduced the philosophical framework within which I said that I was going to deal with Heinlein's philosophy. I said that I would proceed with Heinlein's metaphysics first, and then take up successively his epistemology, axiological foundations, public ethics, aesthetics, and finally conclude with a synthesis of Heinlein's philosophical perspectives.

Within the discussion of Heinlein's metaphysics in this appendix, I first declared that the perspective from which I would discuss his views to be that of mysticism. I proceeded from there to explore the themes of pantheism and pansychism in Robert's writings. Furthermore, I discussed the idea that Heinlein's panpsychic views were possibly derived from German idealism, American trancendentalism, and especially the early American pragmatist philosophers C.S. Peirce and William James.

Next I discussed Heinlein's apparent belief in the purposefulness of the universe and related that belief to Peirce's ideas of a tychistic universe and agapastic evolution, Bergson's and Shaw's ideas of creative evolution, and Teilhardian notions of providential evolution. I also related Heinlein's apparent belief in reincarnation to his belief in the purposefulness of the universe. I also discussed Heinlein's views regarding religion and made the point that Heinlein's religious feelings were inclusive and tentative rather than exclusive and absolutist.

The next appendix will follow on with a discussion of Heinlein's philosophical perspectives that have to do with epistemology. That appendix will demonstrate how Heinlein's epistemology is consistent with his metaphysics--particularly his likely view of a pluralistic "tychistic" universe.

APPENDIX E

HEINLEIN'S EPISTEMOLOGICAL PERSPECTIVES

"The truth of a proposition has nothing to do with
its credibility. And vice versa."
—Lazarus Long, Time Enough for Love, 1973/1987; p. 247.

In the previous appendix, I introduced my discussion of Robert Heinlein's philosophical perspectives. I stated my intention to outline Heinlein's philosophy according to the standard taxonomic arrangement of metaphysics, epistemology, and axiology, and I used the balance of the appendix in a discussion of four recurring metaphysical themes in his writings. I also attempted to relate those themes to German Idealism, American Transcendentalism, and American Pragmatism as likely influences on Heinlein's metaphysical perspectives. In this appendix, I intend to follow through with my intention to outline Heinlein's philosophy by discussing his epistemological views. I believe that some of those views can be related to Heinlein's metaphysics via American Pragmatism.

Introduction to Heinlein's Epistemology

Epistemology is that subdiscipline of philosophy that deals with various aspects of the question "What do we know and how do we know it?" Heinlein's attitude towards epistemology is illustrated in his second juvenile novel Space Cadet (1948). In that novel, the character, Matt Dodson, is being counseled by his assigned tutor, Lieutenant Wong, regarding the course of studies he must pursue. After listing several subjects in science, mathematics, and engineering Wong surprises Matt by telling him that his real curriculum is more fundamental:

> But even these subjects are not your education; they are simply raw materials. Your real job is to learn how to think—and that means you must study several other subjects: epistemology, scientific methodology, semantics, structures of languages... This school is based on the idea that a man who can think correctly will automatically behave morally.... Our prime purpose here is to see to it that you learn how your own mind works. (pp. 76-77)

Thus Heinlein revealed his belief that epistemology is practical and necessary for a comprehensive education. This passage also points to those aspects of epistemology that Heinlein considered among the most important: Scientific methodology, semantics, and structures of languages. That he mentioned the scientific method first is an important clue regarding how he viewed it as the basic starting point for a sound epistemology. But other passages in Heinlein's writings indicate his extreme skepticism toward some of the assumptions that people who claim to be scientific in their thinking often espouse.

I am therefore led to believe that Heinlein's epistemology is not the garden variety empiricism of the typical scientist. Like his metaphysics—although to a lesser extent—his epistemology did not follow an altogether straight line. I also believe that Heinlein's epistemology must be viewed through the framework of his metaphysics (I also discuss the relationship of Heinlein's metaphysics to his epistemology in Appendix I).

In this appendix, I will explore Heinlein's epistemology. My discussion of Heinlein's epistemology is much briefer than my previous discussion of his metaphysics and far briefer than my subsequent discussions of his axiological views. This reflects the relative proportion of material about these subjects in his writings. My discussion will proceed according to several themes that I believe recur throughout his writings: the scientific method, operationalism, empiricism, logic and semantics. I will discuss each of them in order. Following my discussion of these themes, I will discuss some limitations to Heinlein's epistemological views and attempt to place Heinlein's views into an overall perspective.

Operationalism

Heinlein's commitment to operationalism is part and parcel of his commitment to the scientific method. Operationalism refers to the notion, first introduced by physicist P.W. Bridgman (Reese, 1980), that scientific concepts are to be defined in terms of their operations. That is, the meaning of a concept is the sum total of its operations. We can see Heinlein's first use of the concept of operationalism in the juvenile novel Rocket Ship Galileo (1947) in a scene where Dr. Cargreaves tests the knowledge of his young assistants by asking,

> "How about the operational notion in scientific theory?..."
> Art looked embarrassed... "Well... the operational idea is... building up your theory in terms of the operations you perform, like measuring, or timing, so that you don't go reading into the experiments things that aren't there." (p. 26)

This example is taken from early in Heinlein's career as a writer. But he continued to subscribe to operationalism throughout his life.

In the example that follows, taken from a novel written just six years prior to his death, he shows the utility of operationalism in dissecting classical philosophical problems (Friday, 1982/1983):

> [Anna asked] "How many angels can sit on the point of a needle?"
> "That's an easy one. Measure the angels' arses. Measure the point of the needle. Divide A into B. The numerical answer is left as an exercise for the student."
> "Smart-aleck. What is the sound of one hand clapping?"
> "Even easier. Switch on a recorder, using any nearby terminal. Clap with one hand. Play back the result...."
> "What is the population of San Jose?"
> "Ah, that's a hard one! I'll report tomorrow." (p. 223)

The above example shows Heinlein applying operationalism to three different kinds of questions: the supernatural, the paradoxical, and the empirical. Heinlein's empirical commitment shows through clearly when he demonstrates the essential scientific meaninglessness of the first two questions. But Heinlein was not a garden-variety empiricist in his commitment to the scientific method, as I point out in the next section.

Empiricism Without Positivism

It is clear that Heinlein was an empiricist. That is, he viewed the five senses as the basic starting point for knowing the world around us. He believed in the empirical approach in spite of its limitations for answering the ultimate metaphysical questions. He makes this clear in a passage from an early short story.

> The religio-mystic solution which states that the world is dream stuff, unreal, insubstantial, with reality somewhere beyond.... is not a rational solution, it is simply a flight from reality of any sort, for it refuses to believe the results of the only available direct communication between the ego and the Outside. Certainly the "five senses" are poor enough channels of communication, but they are the only channels. ("They," 1941/1961, pp. 168-169)

How then was Heinlein's view of the scientific method unorthodox? Perhaps the clearest example is that his view of what counts as a scientific fact differs in some respects from the attitude of scientific positivism. For Heinlein, there was no rational basis for dismissing a fact simply because one has no ironclad method of verifying it at the moment. That is to say, Heinlein required that few a priori conditions be applied to the admission of an experience to the realm of fact. He makes this clear in a passage from "Elsewhen" (1941/1953):

> "You mechanistic skeptics make me tired. Your naïve ability to believe that things 'jest growed' approaches childishness. According to you a fortuitous accident of entropy produced Beethoven's Ninth Symphony."
>
> "I think that's unfair, Doctor. You don't expect a man to believe things that run contrary to his good sense without offering him any reasonable explanation."
>
> Frost snorted. "I certainly do—if he has observed it with his own eyes and ears, or gets it from a source known to be credible. A fact doesn't have to be understood to be true. Sure, any reasonable mind wants explanations, but it's silly to reject facts that don't fit your philosophy." (p. 83-84)

Heinlein's chief concern seems to have been that scientific observation should be honest, free from reductionist presuppositions, and open to experience. Thus Heinlein was interested in investigating a wide variety of claims ranging from the mystical and supernatural to the merely unusual. And he wanted them investigated empirically with a willingness to accept and test new hypotheses when the old ones did not explain the observed conditions. He made this clear in a passage from "Lost Legacy" (1941/1953):

> William of Occam's Razor.... is a name for a principle in logic; whenever two hypotheses both cover the facts, use the simpler of the two. When a conventional scientist has to strain his orthodox theories all out of shape, 'til they resemble something thought up by Rube Goldberg, to account for unorthodox phenomena, he's ignoring the principle of Occam's Razor. It's simpler to draw up a new hypothesis to cover all the facts than to strain an old one that was never intended to cover the non-conforming data. (p. 104)

What Heinlein was specifically reacting to is the notion of favoring accepted theory over inconvenient facts. He accused the scientific establishment of having indulged in this epistemological vice from the days of Galileo onward (Between Planets, 1951).

> Dr. Jefferson brushed it aside. "Everything is theoretically impossible, until it's done. One could write a history of science in reverse by assembling the solemn pronouncements of highest authority about what could not be done and could never happen. (p. 22)

That scientists often do favor accepted theory over inconvenient facts was for Heinlein so much the worse for scientists. It seems clear that he regarded few scientists as embodying the spirit of Galileo, contemptuously regarding many so-called scientists as little better than "bottle washers and button sorters" (Time Enough for Love, 1973/1987; p. 241). He also took many scientists to task simply because they often do not apply the spirit of the scientific method, saying, "I'm not foolish enough to hold opinions when I have insufficient data; I'll leave that folly to scientists" (Farnham's Freehold, 1964/1971; p. 220).

But Heinlein's brand of empiricism differs from the positivist variety in another way. As I pointed out in Appendix D, he regarded the universe as a pluralistic affair chock-full of wonders and possibilities. For Heinlein, an empirical approach to such a state of affairs must be one that can take cognizance of all the possible phenomena capable of being generated by a universe in which anything can happen. Heinlein summed up his viewpoint along these lines with the following (The Cat Who Walks Through Walls, 1985/1986):

> In the nineteenth century atheistic positivism started displacing the Almighty-God notion in that minority of the population that bathed regularly.
>
> Atheism had a limited run, as it, too, explains nothing, being merely Godism turned upside down. Logical positivism was based on the physical science of the nineteenth century which, physicists of that century believed, fully explained the universe as a piece of clockwork.
>
> The physicists of the twentieth century made short work of that idea. Quantum mechanics and Scrödinger's cat tossed out the clockwork world of 1890 and replaced it with a fog of probability in which anything could happen. (pp. 364-365)

In this multiverse "in which anything could happen" Heinlein postulated that one's metaphysical commitment can act as an epistemological filter in ways that affect whether the phenomena under study can even be observed. But his example is not the Heisenberg uncertainty principle. Rather, he postulates that certain "paranormal" phenomena are more or less difficult to study depending on the observer's basic commitment to their possibility. Thus, their ontological robustness (as I would call it) is dependent on the observer who, in a certain sense, facilitates their creation.

Although this idea is developed more fully in Heinlein's later works, we can see the beginnings of it as early as 1940 when he wrote the following passage:

> He was beginning to understand what had happened to magic. Magic was the erratic law of an animistic world; it had been steadily pushed back by the advancing philosophy of invariant causation.... Naturally an experimental scientist reported failure when investigating haunted houses, apportations, and the like; his convictions prevented the phenomena from happening. ("Waldo," 1942/1970, pp. 88-89)

That Heinlein accepted the possibility of such a contingent epistemology does not necessarily mean that he preferred such a state of affairs to a world having a greater degree of ontological firmness—with a corresponding set of epistemological relations. In the novella just cited, he makes a point of having the protagonist set things in such a direction:

> He found the idea [of such a contingent universe] distasteful. That thought and thought alone should be able to influence physical phenomena was contrary to the whole materialistic philosophy in which he had grown up. He had a prejudice in favor of order and invariable natural laws.... He proceeded to formulate and clarify his own concept of the Other World in his mind.... He began to feel a calm assurance that it was so. Was he merely speculating—or creating a universe? (pp. 87-90)

Waldo then turns his mind to the task of establishing the universe in the image of the 19th century positivists.

Heinlein was willing to admit that the universe might be contingent and chaotic on the one hand. On the other hand he seemed to want the universe to be more predictable. This is revealing in regard to both his honesty and his scientific temperament—that is, he wanted an orderly, law abiding universe but was honest enough to admit that such may not be the case. Nevertheless, he often explored ways of reconciling chaos with order—such as in his novel of double-looped time travel in The Door into Summer (1957):

> 'There's a divinity that shapes our ends, rough-hew them how we will.' Free will and predestination in one sentence and both true. There is only one real world, with one past and one future. 'As it was in the beginning, is now and ever shall be, world without end, amen.' Just one . . . but big enough and complicated enough to include free will and time travel and everything else....
>
> The future is better than the past. Despite the crapehangers, romanticists, and anti-intellectuals, the world steadily grows better because the human mind, applying itself to environment, makes it better. With hands . . . with tools . . . with horse sense and science and engineering. (pp. 157-158)

And here it is difficult to resist speculating about how Heinlein's metaphysics and epistemology combined to create an unusual perspective. Heinlein's metaphysical perspective of an evolving panpsychic cosmic consciousness, when combined with his perspective that scientific thought has been a generally good thing, can lead to the conclusion that he believed that this panpsychic cosmic consciousness was progressively deciding in favor of an orderly, law abiding universe as the best universe in which to continue its favored direction of development. This hybrid perspective of a kind of mystical-empiricism is interesting because it offers a way to integrate Heinlein's metaphysics with his epistemology.

So far, we have seen that Heinlein was committed to the operations of the scientific method as an engine for producing knowledge. We have also seen that he was committed to empiricism, albeit an empiricism without positivist presuppositions. But where did he stand regarding rationalism and its primary instrument—logic?

General Semantics and the Limits of Logic

Even though Heinlein believed that observation is the supremely important tool for gaining knowledge, he nevertheless admits that logical thinking is a necessary condition for using knowledge:

> Here and there among ordinary men is a rare individual who really thinks, can and does use logic in at least one field—he's often as stupid as the rest outside his study or laboratory—but he can think, if he's not disturbed or sick or frightened. This rare individual is responsible for all the progress made by the race; the others reluctantly adopt his results. ("Gulf," 1949/1953, pp. 46-47)

So logical thinking is responsible for "all the progress made by the race." But if Heinlein believed that, why do we also read the following? "Neither 'common sense' nor 'logic' can prove anything. Proof comes from experiment, or to put it another way, from experience, and from nothing else" (Rocket Ship Galileo, 1947; p. 105). The answer appears to depend on what sort of logic one is talking about. Heinlein contrasted two sorts of logic, deductive (reasoning from a general proposition to an observed instance) or inductive (reasoning from an observed instance to a general proposition), to show his attitude toward each (Time Enough for Love, 1973/1987):

> Beware of the "Black Swan" fallacy. Deductive logic is tautological; there is no way to get a new truth out of it, and it manipulates false statements as readily as true ones... Inductive logic is much more difficult—but can produce new truths [p. 350].

What Heinlein appeared to be saying here is that inductive logic is better because it builds up its truths from accumulated observations whereas deductive logic, by making grand claims from general "truths," is vulnerable to having those claims shattered by a single contrary observation. The deductive syllogism "All swans are white; this is a swan; therefore it must be white" can be falsified by a single contrary instance of a black swan.

Heinlein's concern about deductive logic being merely elaborated tautology is followed by another point as well. He believed that people mistakenly think that just because an argument is logically sound, that its conclusion must perforce be an accurate description of phenomenal reality. Heinlein's answer is that neat logical propositions are not automatically trustworthy maps of reality.

> It is logic itself that is impossible. For millennia philosophers and saints have tried to reason out a logical scheme for the universe... [but] the universe is not logical but whimsical.... If the great brains had not been so hoodwinked by their shared conviction that the universe must contain a consistent and logical structure [which] they could find by careful analysis and synthesis, they would have spotted the glaring fact that the universe—the multiverse—contains neither. (The Cat Who Walks Through Walls, 1985/1986, p. 369)

Or, as Heinlein put it in another way, "The truth of a proposition has nothing to do with its credibility. And vice versa" (Time Enough for Love, 1973/1987; p. 247).

But given Heinlein's attitude toward logic, did he see any way to use reason that steers clear of tautological thinking? The answer appears to be "yes"—if we can find a language that allows us to construct propositions whose symbols accurately correspond to the phenomenal world—in other words, through General Semantics. Heinlein advocated General Semantics in many of his earliest writings, but the following example is perhaps the most indicative of his attitude toward its possibilities:

> A symbolic structure, invented instead of accepted without question, can be made similar in structure to the real-world to which it refers.... The world—the continuum known to science and including all human activity—does not contain "noun things" and "verb things;" it contains space

> time events and relationships between them.... Paradoxes are verbal, do not exist in the real world.... Who shaves the Spanish Barber? Answer: Follow him around and see. ("Gulf," 1949/1953, p. 53)

In this example, Heinlein simultaneously championed General Semantics while disparaging the deceptiveness of logic.

Using the principles of General Semantics, according to Heinlein, would enable us to establish accurate symbol-referent relationships that would enable us to think clearly and sanely about human affairs and the world that humans live in. The key idea is that symbols can be made structurally analogous to the empirical facts of reality, as pointed out in the following example:

> When we think, we let symbols operate on other symbols in certain, set fashions—rules of logic, or rules of mathematics. If the symbols have been abstracted so that they are structurally similar to the phenomena they stand for, and if the symbol operations are similar in structure and order to the operations of phenomena in the real world, we think sanely. If our logic-mathematics, or our word symbols, have been poorly chosen, we think not-sanely ("Blowups Happen," 1940/1967, pp. 90-91)

This notion of being able to create a better logic-mathematics that would clear away the confusing underbrush from our statements about the world is one that Heinlein grasped eagerly and never entirely gave up.

The idea of "mathematicizing" all the various fields of knowledge through the principles of General Semantics comes up again and again in Heinlein's writings. And so we have him describing mathematical ecology, mathematical psychology, and mathematical economics in Farmer in the Sky (1950), mathematical philosophy (a rather orthodox notion in fact) in Between Planets (1951), mathematical chemistry in The Menace from Earth (1957/1959), mathematical history in Podkayne of Mars (1963), and mathematical physicists in almost all his books. In Chapter III, I pointed out that Heinlein's interest in mathematics—including his desire to mathematicize as much of human affairs as possible—was a major element in his science fiction curriculum. But as the next section points out, Heinlein was not blind to the limitations of his epistemological perspectives.

Limitations to Heinlein's Epistemological Perspectives

It would not be accurate to say that Heinlein believed in the absolute epistemological hygiene of the scientific method, practical empiricism, and General Semantics. Having pondered the problems of epistemology throughout his youth and adult life, he was very much aware of the limitations to what could be known or determined. For example, while believing that General Semantics was a much-needed tonic in the realm of practical epistemology, he gave it no points for being able to resolve the issues of ultimate epistemology. He made this clear in the early novella Beyond This Horizon (1942/1948):

> Speech and other communication symbols necessarily refer back to agreed-upon, pointed-to referent physical facts, no matter how high the level of abstraction, for communication to take place. Beyond that we cannot communicate. That's why Brother Johann and I can't argue about religion. He carries his around inside of him and can't point to what he means—as I carry mine. We can't even be sure that we disagree. Our notions about religion may be identical, but we can't talk about it meaningfully—so we keep quiet.... We agree that symbols should be structurally as similar as possible to the referents for communication purposes. To that extent epistemology is settled; but the key problem of epistemology—how we know what we know and what that knowledge means, we have settled by agreeing to ignore [pp. 112-113].

In this passage, Heinlein pointed out that mystico-religious concepts such as God cannot be tested through consensual verification because their referents cannot be observed empirically. Neither the scientific method nor semantics is any help here.

Heinlein counted logic and theology as unpersuasive as well in resolving such matters but is honest enough to admit that no empirical evidence exists to deny their claims in many instances. For

example, through his authorial character Johann Schmidt (I Will Fear No Evil, 1970/1987), Heinlein recounted an experience from his own life:

> When I was fourteen.... I became an aggressive atheist—except at home—and scorned to believe in anything I could not bite. Then I backed away from that—atheism is as fanatic as any religion and it's not my nature to be fanatic—and became a relaxed agnostic, unsure of final answers but more patient. (p. 226)

But even though unsure of final answers, Heinlein had great respect for the logical principle of Occam's Razor and invokes it repeatedly throughout his books. To use just one example: "Occam's Razor.... is a name for a principle in logic; whenever two hypotheses both cover the facts, use the simpler of the two" ("Lost Legacy," 1941/1953; p. 104).

Nevertheless, Occam's Razor is a logical principle for selecting between different propositions that are meant to explain the same set of facts. But facts are missing in mystico-religious propositions. Heinlein admitted the insufficiency of Occam's Razor for testing such propositions in Stranger in a Strange Land (1961/1987), "Occam's Razor could not slice the prime problem, the nature of the Mind of God.... Was there any basis for preferring any sufficient hypothesis over another? When you did not understand a thing: No!" (pp. 138-139).

But Heinlein did occasionally commit to concepts intermediate between everyday empirical concepts that can be readily tested using the scientific method and those mystico-religious concepts that cannot. An intermediate concept is a concept for which no adequate evidence exists either way, but for which there exists the future possibility of empirical verification or falsification. An example was Heinlein's often-stated belief in the ubiquity of life (Farmer in the Sky, 1950; Time for the Stars, 1956; Expanded Universe, 1980). Even in the face of the photographs of the dismal surface of Mars, he remained optimistic that his belief would yet be borne out.

But another type of intermediate concept—one for which no method of empirical verification is available— is the axiological belief that transcends proof. An example is from the novella "Gulf" (1949/1953): "I confess to a monkey prejudice in favor of democracy, human dignity, and freedom. It goes beyond logic; it is the kind of a world I like" (p. 48). Nevertheless, Heinlein did not insist that anybody should believe anything that goes against his or her own reason and experience. In the words of his unnamed protagonist in "They" (1941/1961), "You can't peddle nonsense to me by claiming to be fresh out of sense" (p. 160).

Heinlein's Epistemology in Perspective

In reviewing Heinlein's epistemology, it seems clear that just as his metaphysics resembled certain ideas found in the writings of the late 19th century pragmatists so did his epistemology. And that is not surprising given that pragmatism is a philosophy whose very starting place is epistemology. As James (1925) said, "One of pragmatism's merits is that it is so purely epistemological" (p. 195). Perhaps what appealed to Heinlein the most about the pragmatist approach to epistemology was that its empiricism was of the open-minded variety that refused to imprison itself in positivist reductionism.

Certainly, it is no new thing that philosophers have noticed that philosophies seem to be quite as much matters of temperament as they are anything else. Feigl (1956, p. 325)—although rather more a logical empiricist than a pragmatist—referred to James's polarity of philosophical temperament with the "tender-minded" on one side and the "tough minded" on the other as a fundamental principle for discerning empiricists from rationalists. As James (1956, p. 89) puts the matter, "Idealism will be chosen by... one emotional constitution [the tender-minded], materialism by another [the tough minded."

Heinlein, then, followed the empiricist bent of mind (of which pragmatism is a variety) because that was his natural temperamental inclination (Owenby, 1994c). That he follows the pragmatist variety of empiricism is the likely result of his having been introduced to the writings of pragmatist philosophers during his early years. These were the years that the pragmatists were in ascendancy in American philosophy and during which there were continual efforts to popularize their thought among the general educated American public.

Nevertheless, temperament is a relative thing and Heinlein's position on the temperamental continuum, while clearly on the "tough-minded" empirical side, seems very near the centerline on that

continuum. Indeed, Feigl (1956) is helpful in shedding some light on Heinlein here. Although Feigl follows James's (1956) basic distinction between the tough-minded empiricists and the tender-minded idealists, Feigl introduces a further distinction involving two camps within the empiricists:

> Inasmuch as this divergence of attitudes establishes a continuum of positions between extremes, there is also among the tough-minded thinkers a gradation of shades from a nominalistic, pan-scientific radicalism to a more liberal, flexible form of empiricism. Typical among the radicals is the use of the phrase "nothing but".... The future of empiricism will depend on its ability to avoid both the reductive fallacies of a narrowminded positivism... as well as the seductive fallacies of metaphysics. (Feigl, 1956, pp. 326-327)

In this study I have maintained that Heinlein exemplified Feigl's (1956) "more liberal, flexible form of empiricism" (p. 326)—within which he places pragmatism—which seeks to steer between the Scylla of reductionist positivism and the Charybdis of overly speculative metaphysics. I believe that Heinlein chose to steer between the two via the vehicle of pragmatism. In fact, it could be said that although empiricism was Heinlein's fundamental epistemological temperament, his cultivated temperament was expressed through pragmatism.

Heinlein's pragmatic temperament helps explain his practical approach to the scientific method—including a preference for Karl Popper's doctrine of falsifiability (Reese, 1980; p. 449)—as expressed in Heinlein's warning against the black swan fallacy (Time Enough for Love, 1973/1987; p. 350). Heinlein read and respected Popper (Popper's The Logic of Scientific Discovery had been part of Heinlein's library) not only for his doctrine of falsifiability in science but also for Popper's views of the provisionality of science, the need for an open and pluralistic society, and the emphasis on individuals rather than groups in the study of social phenomena. Also in line with Heinlein's pragmatic temperament is his already mentioned commitment to P.W. Bridgman's doctrine of operationalism (Reese, 1980), which can easily be described as a typically pragmatist approach to describing and defining scientific concepts.

Pragmatism, of course, does not explain all of Heinlein's epistemological perspectives. We saw in Chapter II that he was very much a disciple of Korzybski's doctrine of General Semantics as set forth in the two books The Manhood of Humanity (1921) and Science and Sanity (1941). Both these books, but especially the second, influenced Heinlein strongly in two directions (Schulman, 1973/1990). First, that an empirical, rigorous system for coordinating words and other symbols to their phenomenal referents could be constructed and that such a system would provide science and society a much needed epistemological hygiene to guide their thinking. Second, that systems of mathematics could be invented and applied to virtually all realms of human knowledge—including the social sciences—in order to put rigor and predictability into human affairs—in other words, to "put starch" into the science of human relations.

Heinlein was so committed to General Semantics that he pursued formal studies at Korzybski's seminars in at least three locations round the country. As has been mentioned in Chapter II, Heinlein also wanted to write popular books for the purpose of educating the public about semantics. Although Heinlein later came to see some limitations to the Korzybskian program, his thought was flavored by General Semantics for the rest of his life (Schulman, 1973/1990).

Conclusion

Finally, it could be argued that for all Heinlein's supposed empiricism and commitment to the scientific method, he was remarkably willing to commit himself to unproven opinions. Perhaps the best examples of such opinions are his pessimistic judgments of political democracy and socialism that he expressed retrospectively as historical facts—empirical "givens." He did this most especially in the novels The Moon is a Harsh Mistress (1966/1968) and Time Enough for Love (1973/1987). It can be argued—and many have (Adler, 1977; Smith, 1978; Franklin, 1980) that Heinlein was arguing nonempirically when he made many of his most controversial claims about social and political matters (although these matters will be treated more properly in the next two appendices, they are useful here as an example).

Perhaps James (1956) offers the best clue for resolving this apparent contradiction between Heinlein's espoused epistemology and his occasional tendency to make ex cathedra pronouncements: "The greatest empiricists among us are only empiricists on reflection: left to their instincts, they dogmatize like infallible popes" (pp. 13-14). On that note, we may allow Heinlein to take his place with the "greatest empiricists among us."

In these last two appendices, I have discussed Heinlein's metaphysical and epistemological views. The next three appendices comprise an inquiry into Heinlein's perspectives of axiology, including the human condition, ethics, politics, social policy, and aesthetics. These appendices will demonstrate my contention that Heinlein had far greater interest in axiology than in metaphysics or epistemology.

APPENDIX F

HEINLEIN'S AXIOLOGICAL FOUNDATIONS

"A scientifically verifiable theory of morals must be rooted in
the individual's instinct to survive."
—Robert A. Heinlein, "The Pragmatics of
Patriotism," 1973/1980, p. 95.

In the previous two appendices, I attempted to outline Robert Heinlein's perspectives on metaphysics and epistemology by referring to evidence from his books and letters, as well as to observations provided by Virginia Heinlein. In this appendix, I will begin the task of outlining the main features of Heinlein's axiology. Because of the sheer volume of material in Heinlein's books that touch on axiological issues, this present appendix will confine itself to a discussion of those concepts that I believe are foundational to Heinlein's axiology. In the following two appendices I will continue my outline of his views in the realm of axiology.

Introduction to Heinlein's Axiology

Axiology, literally the "study of value" (Reese, p. 45), is an umbrella term which includes the studies of all aspects of the questions "What is good?" and "What is right?" and "What is beautiful?" That is, it includes the realms of the human condition of ethics, politics, social policy, and aesthetics. Ethics is chiefly concerned with how people treat one another, politics is concerned with how people govern themselves; social policy is concerned with social or community values and the actions that societies or communities take to implement those values; aesthetics is concerned with that which people find beautiful or enjoyable.

A discussion of Heinlein's axiology may at first seem tangential to a study whose ostensible focus is adult and continuing education. However, I would argue that no aspect of general philosophy is as revealing to how one views personal and social responsibility than one's philosophy of values. I would also argue that no other field of practice can claim a greater interest in personal and social responsibility than adult and continuing education. I have also pointed out in Chapter I that my approach to linking philosophy to the practice of adult and continuing education is fundamentally grounded in Dewey's (1939) perspective that philosophy <u>is</u> the general theory of education.

To know what Heinlein valued in the realms of ethics, politics, social policy, and aesthetics is to understand that which he believed important to learn, know, and teach. It also reveals his attitude toward the human beings—whether adult or children—that he sought to teach. Some of Heinlein's axiology—as well as how that axiology influenced his science fiction curriculum—is implicit in my discussion of that curriculum found in Chapter III. It is also implicit in my biographical discussion of Heinlein in Chapter II. What I hope to do in this appendix and the two subsequent appendices is to make his axiology explicit, and thereby make clearer the framework of values through which Heinlein approached his pedagogical work.

This appendix will undertake to outline Heinlein's foundational views about human values. The appendix will begin with a discussion of Heinlein's critics and the idea of Heinlein's works as axiological studies. Following that I will take up Heinlein's views of values in connection with the human condition, including Heinlein's personal creeds; his view of ethics as being biological in nature; the relationship of love, moral behavior, and social attractiveness; and the moral value of certain personal virtues. I will conclude the appendix with an overall discussion of Heinlein's axiological foundations in which I will relate some aspects of his views to traditional philosophical concerns.

Critics of Heinlein's Values

Before I attempt to present Robert Heinlein's axiological views from the evidence provided by his own words, I would like to point out that his views have been subjected to considerable—and often negative— attention in the past. Those who have written about Heinlein seem typically to have been

interested in the literary-critical aspects of his works. Interestingly enough, when those same critics stray from literary criticism it is usually to address some aspect of Heinlein's ethics or politics.

For example, in a collection of nine essays edited by Olander and Greenberg (1978), five essays explicitly address Heinlein's work from an axiological perspective, while the other four include tangential comments from the same perspective. The predominant character of those essays is a mixture of approval and disapproval of what the authors believe to be Heinlein's values, combined with varying degrees of uncertainty as to what his values actually are.

In two small critical studies entitled Robert A. Heinlein: Stranger in His Own Land (1977a) and The Classic Years of Robert A. Heinlein (1977b), Slusser takes a very negative view of the values he supposes to be espoused in Heinlein's work. He views Heinlein as despising democracy in favor of a secular Calvinism in which the predestined elect thrive in the inequality of entrepreneurial society. As in the Olander and Greenberg collection, it is not always clear that the author has read his Heinlein closely. Stover (1987) judges Heinlein's values far more positively than does Slusser although he, like Slusser, views Heinlein's work through the lens of Calvinist ethics.

Perhaps the most explicitly axiological analysis of Heinlein's work was performed in Robert A. Heinlein: America as Science Fiction (Franklin, 1980). Franklin analyzes Heinlein's values from a Marxist perspective, viewing Heinlein essentially as a social Darwinist who ideologically justifies America's capitalist military-industrial complex through his science fiction.

Among Heinlein's fellow science fiction writers, there are some positive evaluations of the values expressed in his work. These range from Knight's (1967b) evaluation of Heinlein as one sane voice in the science fiction community to Robinson's (1981) spirited defense of Heinlein at a science fiction convention to Williamson's (1978) respectful essay about Heinlein's Juveniles.

Asimov (1994), perhaps the most famous modern science fiction writer after Heinlein himself, was quite critical of Heinlein's espoused values. He complained of Robert's "rock-ribbed far right conservative" (p. 77) views, although his criticism may well have been motivated by personal jealousy as much as by genuine philosophical differences. For example, Asimov complained that he always felt gauche in Heinlein's presence. "I played the peasant to his aristocrat" (p. 76). In addition, Asimov acknowledged that Heinlein "was the best science fiction writer in existence" (p. 76) and may well have smarted at the knowledge that Heinlein had won four Hugo awards (science fiction's greatest literary honor) before Asimov had won his first.

Heinlein's Values and the Human Condition

That Heinlein's values were of such interest to critics and fellow writers alike testify to the role his books played as vehicles for promoting his values. According to Virginia Heinlein, ethics and other aspects of axiology are what interested her husband most of all. Indeed, she went so far as to say that, "Well, you know, I think, broadly speaking, everything Robert wrote would be a treatise on ethics one way or another" (Owenby, 1994c).Certainly, most (if not all) of his works dealt with key aspects of human values. Perhaps the most famous of such works were Starship Troopers (1959/1968), Stranger in a Strange Land (1961/1987), The Moon is a Harsh Mistress (1966/1968), and Time Enough for Love (1973/1987), all of which were deliberate treatments of various aspects of morality, ethics, aesthetics, and politics.

But Heinlein had started writing about axiological issues from the first year he was published. For example, in his first published story "Life-line" (1939/1967), he dealt with the issue of to what extent the courts are obliged to protect the conditions under which insurance companies are able to make a profit. In that story as with his other stories, Heinlein included ethical and political problems as background issues even when the stories were ostensibly about other problems. This is especially true of his 12 juvenile science fiction novels published between 1947 and 1958. Perhaps the most telling of his axiological foundations relates to his view of the human condition, an issue that I take up in the following section.

It is my contention that Heinlein grounded questions of value in what he believed to be the fundamental nature of the human condition. Passages that explicitly discuss human values per se are found in only one of Heinlein's many books. That book is Starship Troopers (1959/1968), a novel that deals with the problems of citizenship and moral behavior. In that book, one of the authorial characters

(Mr. DuBois), discusses whether "value" is a relative or an absolute in a class in History and Moral Philosophy:

> "Value" has no meaning other than in relation to living beings. The value of a thing is always relative to a particular person, is completely personal and different in quantity for each living human— "market value" is a fiction, merely a rough guess at the average of personal values, all of which must be quantitatively different or trade would be impossible.... This very personal relationship, "value," has two factors for a human being: first, what he can do with a thing, its use to him. . . and second, what he must do to get it, its cost to him.... I fancy that the poet who wrote that song ["The Best Things in Life are Free"] meant to imply that the best things in life must be purchased other than with money—which is true—just as the literal meaning of his words is false. The best things in life are beyond money; their price is agony and sweat and devotion. . . and the price demanded for the most precious of all things in life is life itself--ultimate cost for perfect value. (pp. 75-76)

While the above passage does not speak to technical aspects of value theory, it does suggest an approach to organizing Heinlein's own values into some philosophical arrangement. Although the above passage is the closest attempt he ever came to a deliberate philosophical analysis of the concept of value, it may nonetheless be misleading. The problem is that most of Heinlein's philosophy is not typically found in deliberately and thoughtfully written essays; rather, it is usually found only through exegesis of his fictional narratives.

But before attempting such an exegesis of his writings that deal with axiological issues, an examination of Heinlein's view of the human condition is necessary in order to place his views into context for study. That is, Heinlein believed that proposing what is right and good for humans to do is impertinent without first confronting the nature of human beings. "Correct morals arise from knowing what man is—not what do-gooders and well-meaning old Aunt Nellies would like him to be" (Starship Troopers, 1959/1968, p. 147). He added, "Unless one accepts that, anything one says about morals, war, politics—you name it—is nonsense." What the nature of a human being is will be examined in this look at the human condition through Heinlein's eyes.

What is the Human Condition?

For Heinlein, human beings were essentially a part of nature and he applied the traditional first law of nature (survival) no less to human beings than to wolves and sparrows. Asking Heinlein the question, "What is a human being?" we are told in stark terms, "Man is... a wild animal with the will to survive" (Starship Troopers, 1959/1968, p. 147). In a passage from Between Planets (1951), he added, "mankind lives always by the skin of its teeth, sometimes winning but more often losing--and dying" (p. 103).

Although humans are a part of nature with the same drives as other creatures of nature, they have something that makes them different. "Life, all life, has the twin drives to survive and to reproduce. Intelligence is an aimless by-product except as it serves these basic drives... But intelligence can be made to serve the mindless demands of life" (Tunnel in the Sky, 1955, p. 128). According to Robert, humans evolved to be the successful master predators of the earth in ruthless competition with other species, but they now have become so successful that continued evolution can only come through intra-species competition. That is, humans must compete with themselves. "By the data to date, there is only one animal... dangerous to man—man himself. So he must supply his own indispensable competition. He has no enemy to help him" (Time Enough for Love, 1973/1987, p. 240).

So nature is red of tooth and claw and humans have the reddest teeth and claws of all the Earth's inhabitants. As humans have harnessed intelligence to the service of the twin drives of survival and reproduction through science and technology, their population has increased enormously. Because humans compete for the same economic resources, this usually leads to war--in spite of all the more pacific inclinations of individual humans. Heinlein discussed the inevitable tragedy of population pressure in I Will Fear No Evil (1970/1987):

> It's too many people.... just. . . too many. Seven billion people sitting in each other's laps, trying to take in each other's washing, pick each other's pockets. Too many. Nothing wrong with the individual in most cases--but collectively we're the Kilkenny Cats, unable to do anything but starve and fight and eat each other. Too many. (p. 456)

Another tragedy is that even though humans are driven to survive and reproduce, their own existence is nevertheless a mystery to themselves. As Heinlein said in Job: A Comedy of Justice (1984/1985), "We don't know who we are, or where we came from, or why we are here" (p. 67). Elsewhere, Heinlein said that this uncertainty should cause us to have sympathy for others because "they are as tied to the Wheel as you are" (Friday, 1982/1983, p. 252). In another place, we are told, "Each of us faces up to the universe alone, and the universe is what it is and it doesn't soften the rules for any of us--and eventually, in the long run, the universe always wins and takes all" (Podkayne of Mars, 1963, p. 133). What then do humans have to live for? Why should we bother?--other than the fact that biologically we are driven to do so? Heinlein's tragic answer was, from any scientifically verifiable point of view, "none." But the tragedy of that answer is itself, in a curiously inverted way, the answer. Heinlein explained it this way :

> Almost everything about a human creature is ridiculous, except its ability to suffer bravely and die gallantly for whatever it loves and believes in. The validity of that belief, the appropriateness of that love, is irrelevant; it is the bravery and gallantry that count. (Job: A Comedy of Justice, 1984/1985, p. 428)

Throughout his stories Heinlein displayed his view of the pathetic nobility of the human race. That nobility lies in the fact that human beings have the ability to face up to danger, uncertainty, and death with pride, courage, and dignity. "One might define adulthood as the age at which a person learns that he must die. . . and accepts his sentence undismayed" (The Moon is a Harsh Mistress, 1966/1968, p. 116). Another example of Heinlein's attitude in this regard is found in "The Year of the Jackpot" (1952/1959): "What good is the race of man? Monkeys, he thought, monkeys with a spot of poetry in them, cluttering and wasting a second-string planet around a third-string star. But sometimes they finish in style" (p. 38).

Humans as a species are pathetically noble, yet they are also pathetically lonely and dependent on each other. As previously outlined in my appendix on Heinlein's metaphysics, he believed that human beings comprise a single organism. If Heinlein believed that to be metaphysically true, he also believed it to be ethically true. Recalling the English poet John Donne, Heinlein said through his female protagonist Podkayne Fries, "No man is an island complete in himself. Remember that.... it's important" (Podkayne of Mars, 1963, p. 174).

Human interdependence was so fundamental for Heinlein that it even mediates other human drives. That humans are social animals was self-evident for Heinlein and that truth means that although "Man needs freedom... few men are so strong as to be happy with complete freedom. A man needs to be part of a group, with accepted and respected relationships" (Between Planets, 1951, p. 93). But because humans are imperfect, that is, because "we've got human beings, not angels, to work with" (Farmer in the Sky, 1950, p. 84), then human beings are subjected to two conflicting conditions: first, the need for affiliation with other human beings, and second, the difficulty of living with other human beings. This problem is all the more real because some humans are far more difficult to deal with than others. As Heinlein said in Farnham's Freehold (1964/1971), "Some people make a career of trying to get their own way" (p. 309). The tension between these two conditions is in many ways an insoluble problem, "As Dad says, sometimes there just isn't any cure for a situation" (Farmer in the Sky, 1950, p. 81). But the need for other human beings is so strong that we are driven back into society in spite of the difficulties:

> No matter how many times you get your fingers burned, you have to trust people. Otherwise you are a hermit in a cave, sleeping with one eye open. There wasn't any way to be safe; just being alive was deadly dangerous . . . fatal. In the end. (The Door into Summer, 1956/1957, p. 138)

Heinlein echoed this idea in Between Planets (1951), "...a man had to trust somebody sometime! A man couldn't go it alone" (p. 186). Human beings need each other so much that it becomes important to

learn how to overlook minor irritations, for all of us are can be socially irritating to others. In Heinlein's mind this fact was the basis for tolerance, courtesy, and custom—all of which he sees as practical wisdom for mitigating the slings and arrows of the human condition. As he put it in Job: A Comedy of Justice (1984/1985), "Wisdom includes not getting angry unnecessarily" (p. 278).

This wisdom is even more important for dealing with our friends than with our enemies, for all of us are flawed—all limited in our ethical potential—in different ways. Besides which, there are imperatives that transcend our personal irritations as Heinlein pointed out in Starman Jones (1953/1975):

> Sam's face changed suddenly to a sad, far-away look, then resumed its cheerful cynicism. "I was tempted by an idea, old son—every man has his limits (p. 47)." .... Max grinned in spite of himself. It was impossible to stay angry at Sam. Sure, the man was a scamp, probably a deserter, certainly a belittler who always looked at things in the meanest of terms, but—well, there it was. Sam was his friend. (p. 82)

In summing up Heinlein's view of the human condition, it seems clear to me that he believed that human beings are the most important fact of existence for other human beings. Human beings—and their human nature with all its drives and needs—are the starting point for developing any system of values. In that sense, it would be accurate to say that Heinlein did not usually admit any ideology to take first place over the concrete existential needs of human beings. In fact, speaking through his authorial character Hugh Farnham (Farnham's Freehold, 1964/1971), Heinlein declared his basic moral stance: "You could call me an Existentialist" (p. 106). Heinlein differed from many of the intellectuals of the past two centuries who took it upon themselves to give advice to mankind. As British historian Paul Johnson noted in his analysis of western intellectuals (Intellectuals, 1988), the touchstone for uncovering the fundamental humanity of an intellectual is whether they consider people more important than ideas. I believe the evidence shows that Heinlein was on the side of the former.

Heinlein's Personal Creeds

Besides examining Heinlein's ethical views as presented in his stories, it is important to examine his personal ethical beliefs in at least two creed-like declarations. One was spoken through a fictional character in a story that he first wrote in 1939 and published in 1940; the other was written and spoken for Edward R. Murrow's national radio program This I Believe. The fictional declaration is found in "If this goes on—" (1940/1967) in the words of Zebadiah Jones, the older-and-wiser mentor of John Lyle, the story's protagonist:

> I believe that a man has an obligation to be merciful to the weak. . . patient with the stupid. . . generous with the poor. I think he is obliged to lay down his life for his brothers, should it be required of him. But I don't propose to prove any of those things; they are beyond proof. (p. 535)

That creed is a declaration of principles for understanding our individual ethical obligations to another human being. The declaration in the This I Believe radio program declared Heinlein's basis for his ethical consideration of fellow human beings; it discusses the ethical worth of human beings. The creed is taken from Requiem (1992) and was originally broadcast in December, 1952. In part, it tells us:

> I believe in my neighbors. I know their faults, and I know that their virtues far outweigh their faults. (Here Heinlein listed several personal examples of the moral worth of his neighbors: their generosity, kindness, helpfulness, and charity.) .... I believe in my fellow citizens.... for every criminal there are 10,000 honest, decent, kindly men.... I believe in the patient gallantry of nurses and the tedious sacrifices of teachers.... I believe in the honest craft of workmen.... I believe that almost all politicians are honest.... I believe in... the United States. Despite shortcomings from lynchings to bad faith in high places, our nation has had the most decent and kindly internal practices and foreign policies to be found anywhere in history. And, finally, I believe in my whole race. Yellow, white, black, red, and brown. In the honesty, courage, intelligence, durability, and goodness of the overwhelming majority of my brothers and sisters everywhere on this planet.... I

> believe that we have come this far by the skin of our teeth. That we always make it just by the skin of our teeth, but that we will always make it. Survive. Endure.... longer than his home planet—will spread out to the stars and beyond, carrying with him his honesty and his insatiable curiosity, his unlimited courage and his noble essential decency.... This I believe with all my heart. (pp. 218-219)

The ethical ideas expressed in the two creeds above were expressed 56 and 43 years ago respectively. They seem to be expressions of good will toward his fellow humans without naïveté about the ethical lapses of which those same humans are capable. But to understand his creeds still does not give us the basis by which he arrived at his ethical conclusions. I will now examine some of the different passages from Heinlein's writings that explicate, develop, and modify the ideas he expressed in his creeds. I will begin with the foundation upon which I believe Heinlein built his axiological views.

The Basis of Ethics in Biological Survival

As I have already revealed in Heinlein's views of the human condition, the starting point for understanding his ethics is in the issue of human survival. His most explicit early statement of what I call his survivalist theory of morals is found in Starship Troopers (1959/1968):

> What is "moral sense?" It is an elaboration of the instinct to survive. The instinct to survive is human nature itself, and every aspect of our personalities derives from it. Anything that conflicts with our survival instinct acts sooner or later to eliminate the individual and thereby fails to show up in future generations. This truth is mathematically demonstrable, everywhere verifiable; it is the single eternal imperative controlling everything we do.
>
> But the instinct to survive... can be cultivated into motivations more subtle and much more complex than the blind, brute urge of the individual to stay alive.... survival can have stronger imperatives than that of your own personal survival. Survival of your family, for example. Of your children, when you have them. Of your nation, if you struggle that high up the scale. And so on up. A scientifically verifiable theory of morals must be rooted in the individual's instinct to survive—and nowhere else!—and must correctly describe the hierarchy of survival, note the motivations at each level, and resolve all conflicts. (pp. 94–95)

Heinlein defended survival as an ethical starting point because, as he explained in his 1973 Forrestal Lecture to the Annapolis midshipmen ("The Pragmatics of Patriotism," 1973/1980), there can be no basis for discussing issues of morality that ignore biological survival.

> As individuals we all die. This brings us to the... question: Does homo sapiens as a breed have to die? The answer is: No.... We have two situations, mutually exclusive: Mankind surviving, and mankind extinct. With respect to morality, the second situation is a null class.... Since survival is the sine qua non, I now define "moral behavior" as "behavior that tends toward survival." I won't argue with the philosophers or theologians who choose to use the word "moral" to mean something else, but I do not think anyone can define "behavior that tends toward extinction" as being "moral" without stretching the word "moral" all out of shape. (pp. 463-464)

But if humans are one organism as Heinlein maintained elsewhere, and if Heinlein agreed with Donne that "no man is an island," then individual survival cannot be the highest end of Heinlein's ethics. In fact, Heinlein proposed a hierarchy of moral behavior with individual survival at the bottom of the hierarchy. As we ascend up the hierarchy, moral behavior becomes successively concerned with survival of family and friends, community, nation, species, and other sentient life outside our species. Heinlein also proposed that different motivations were operative at each level (see Diagram 1).

For example, the motivation for survival behavior at the lowest level, individual survival, is simple self-interest. Heinlein explained this level in the following way:

> The simplest form of moral behavior occurs when a man or other animal fights for his own survival.... selfishness is the bedrock on which all moral behavior starts and it can be immoral

only when it conflicts with a higher moral imperative. An animal so poor in spirit that he won't fight on his own behalf is already an evolutionary dead end; the best he can do is crawl off and die, and not pass on his defective genes. ("The Pragmatics of Patriotism," 1973/1980, p. 464)

Moral Level	Unit of Survival	Practical Motivations	Emotional Motivations	Facilitating Conditions
1st Level	Individual	Simple Self Interest	Pride (self respect)	Self Reliance
2nd Level	Family Groups & Friends	Shared Interest Expressed in Duty	Pride, Honor, Love, Loyalty	Self Reliance & Personal Ties
3rd Level	Non kinship-based Local Communities	Shared Interest Expressed in Duty	Pride, Honor, Love, Loyalty, & Patriotism	Self Reliance & Personal Ties
4th Level	Distant/National/ Transnational/ Transhuman Communities	Shared Interest Expressed in Duty	Pride, Honor, Love, Loyalty, & Patriotism	Self Reliance, Personal Ties, Imagination, & Education

Diagram 1: Robert A. Heinlein's survival theory of moral behavior has different moral levels each of which has both practical and emotional motivations as well as facilitating conditions to enable their expression.

It is worth taking time to point out that in my view Heinlein's theory of moral behavior has really two kinds of motivation, the practical and the emotional. The practical motivation at the individual survival level is what Heinlein called "simple self-interest" in Time Enough for Love (1973, p. 61); this is the individual's selfish desire to stay alive. The emotional motivation at this first level is pride and is manifested when the individual refuses to surrender to circumstances even in the face of apparently insurmountable obstacles.

The clue for noticing the utility of emotional motivation was given above when Heinlein spoke of "an animal so poor in spirit that he won't fight on his own behalf." Heinlein illustrated the ethical value of this spirit in his retelling of Aesop's fable about two frogs that become trapped in a covered pail of milk in Have Space Suit--Will Travel (1958). In the story one frog, brighter than the other, realizes the hopelessness of struggle, gives up and drowns. The other frog continues kicking and churning until he forms an island of butter on which he floats until the milkmaid discovers and tosses him out. This story, besides illustrating emotional motivation, also illustrates Heinlein's belief that intelligence can sometimes be inferior to spirit in promoting survival.

Individual spirit or pride also plays a part in the emotional motivation of the "Gentleman." Heinlein used the concept of the gentleman to illustrate his second level of moral behavior in Time Enough for Love (1973/1987). "You could say... that the quality tagged by that name (gentleman) represents the slow emergence in human culture of an ethic higher than simple self-interest" (p. 61). The "gentleman" is an individual whose behavior is supposed to be motivated by honor. Honor, of course, could also be called pride in one's ability to act above one's simple self-interest. In fact, in Starship Troopers (1959/1968), In regard to practical motivation above the level of individual survival, Heinlein said that real morality only begins when the behavior is motivated by duty: "The basis of all morality is duty, a concept with the same relation to group that self-interest has to individual" (p. 95).

Heinlein goes on to say, "The two highest achievements of the human mind are the twin concepts of 'loyalty' and 'duty' " (Time Enough for Love, 1973/1987, p. 247). For the second level of moral behavior, duty becomes the practical motivation. And just as pride is the emotional motivation at the individual level of moral behavior, so is loyalty--along with honor--at the group level. Loyalty, because

it is an emotional motivation, can be demonstrated by all human beings no matter their maturity level. Duty, however, was for Heinlein the moral virtue that sets children apart from adults because duty must be rationally understood and self-chosen:

> "Juvenile delinquent" is a contradiction in terms. "Delinquent" means "failing in duty." But duty is an adult virtue—indeed a juvenile becomes an adult when, and only when, he acquires a knowledge of duty and embraces it as dearer than the self-love he was born with. There never was, there cannot be, a "juvenile delinquent." But for every juvenile criminal there are always one or more adult delinquents—people of mature years who either do not know their duty, or who, knowing it, fail. (Starship Troopers, 1959/1968, p. 96)

At the second level of moral behavior, the group becomes more important to the individual than the individual's self-interest within those areas of duty that the individual has deliberately and freely embraced. That last qualification is important because duty is the ethical choice of the individual.

> Do not confuse "duty" with what other people expect of you; they are utterly different. Duty is a debt you owe to yourself to fulfill obligations you have assumed voluntarily. Paying that debt can entail anything from years of patient work to instant willingness to die. Difficult it may be, but the reward is self-respect. (Time Enough for Love, 1973/1987, p. 353)

"Difficult it may be, but the reward is self-respect" is another way in which Heinlein connected the practical motivation of duty with the emotional motivations of pride, honor, and loyalty. Heinlein took pains to emphasize that unless individuals understand and freely accept their moral obligations--their duties—these individuals can be exploited by others who would impose upon them their definitions of duties.

> But there is no reward at all for doing what other people expect of you, and to do so is not merely difficult, but impossible... So learn to say No.... Otherwise you will not have time to carry out your duty, or to do your own work, and certainly no time for love or happiness.... This does not mean that you must not do a favor for a friend, or even a stranger. But let the choice be yours. Don't do it because it is "expected" of you. (Time Enough for Love, p. 353)

Personal ties can facilitate the awareness of duty and loyalty to groups small enough for one to know all or most of the members. But what of larger groups? Heinlein continued to explain his theory of ascending moral behavior by describing the level at which an individual embraces a duty towards a group of her or his "own kind too large for (her or him) to know all (the members of that group)" ("The Pragmatics of Patriotism," 1973/1980, p. 465). He called this level of duty "patriotism." He further defines patriotism at the national level to mean that "you place the welfare of your nation ahead of your own" (p. 467).

A still-higher level of moral duty is for the individual to place the welfare of all humanity above his or her own. In other books, he strongly implied that the concept of patriotism can be extended to placing the welfare of nonhuman races above one's own as well (Space Cadet, 1948; The Star Beast, 1954; Double Star, 1956/1957). The ability to acquire these higher levels of moral behavior is dependent on qualities other than duty, honor, and self-respect. "Social responsibility above the level of family, or at most of tribe, requires imagination" which he names as one of "the higher virtues" (Starship Troopers, 1959/1968, p. 146). Imagination is required in order for one to learn to identify with the welfare of a larger group.

The continued use of the phrase "above one's own individual self-interest" is not accidental. Heinlein freely admitted that an individual may accept a duty to a nation, humanity as a whole, or to nonhuman races in which their welfare is placed above his or her own. He did not admit that an individual has the right to make that same decision on behalf of other individuals or groups except insofar as those others have freely given their own consent for her or him to do so. The basis for this stipulation is Heinlein's theory that only individuals, but not groups, are morally responsible for the actions they take. He believed that "it is impossible to shift blame, share blame, distribute blame. . . as

blame, guilt, responsibility are matters taking place inside human beings singly and nowhere else" (The Moon is a Harsh Mistress, 1966/1968, p. 94).

On the other hand, moral behavior is reciprocal; one who does not support the welfare or defense of the groups of which one is a member has no basis for claiming reciprocal benefits from those groups. "Those who refuse to support or defend a state have no claim to protection by that state" (Time Enough for Love, 1973/1987, p. 346). Still another aspect of reciprocity lies in the respect which the state must show its citizenry by refusing to coerce any member of society into involuntarily serving the state, especially in military conscription. Along with chattel slavery, Heinlein--a former naval officer--despised conscription almost more than anything else. "No state has an inherent right to survive through conscript troops and, in the long run, no state ever has" (Time Enough for Love, 1973/1987, p. 242).

A further point in regard to Heinlein's theory of group patriotism as being the highest level of moral behavior is that he defined a concern for the group's welfare as residing mainly in a concern for "women and children first" ("The Pragmatics of Patriotism," 1973/1980, p. 467). He explained that biologically, men are expendable members of the group, but that women and children are not. "A tribe or nation can lose a high percentage of its men and still... go on.... But if you fail to save the women and children, you've had it, you're done; you're through!" (p. 467).

Finally, there are facilitating conditions for arousing or evoking the different levels of moral behavior. I already mentioned that personal ties are important facilitators of moral behavior toward small groups and that imagination is a facilitator of moral behavior towards larger groups. But also important is the ability to be self-reliant which is a facilitator of survival behavior for both individuals and groups. Heinlein spoke to this ability in his list of tasks which he believed that all individuals should be capable of performing in Time Enough for Love (1973/1987):

> A human being should be able to change a diaper, plan an invasion, butcher a hog, conn a ship, design a building, write a sonnet, balance accounts, build a wall, set a bone, comfort the dying, take orders, give orders, cooperate, act alone, solve equations, analyze a new problem, pitch manure, program a computer, cook a tasty meal, fight efficiently, die gallantly. Specialization is for insects. (p. 48)

This passage makes clear Heinlein's belief that self-reliance is a facilitating condition for helping both oneself and others. But this list also makes reference to other abilities--the abilities to "write a sonnet" and "solve equations" that imply education. I would argue that the presence of these abilities in Heinlein's list implies that education is a contributing condition for not only self-reliance but to aid in the emergence of imagination as well.

In summary, moral behavior begins with individual survival and is elaborated at successively higher levels with increasingly larger groups. At all levels there exist two different kinds of motivation, the practical and the emotional. At smaller group levels, personal ties are important for helping one to develop duty and loyalty, but imagination is required for developing motivations for moral behavior at higher levels of group abstraction. Self-reliance and education aid in the development of all levels of moral behavior as well.

Love is also a motivation that underlies the development of personal ties both in small groups and in larger groupings of individuals with whom we are unacquainted. Because of the importance of this quality in Heinlein's axiology, I have chosen to discuss it apart from the other aspects of his survival theory of moral behavior.

Love and Moral Behavior

In Heinlein's view, if survival behavior was the basis for moral behavior then love was the sine qua non for pursuing the survival and well-being of others. But that declaration demands a definition for the word "love." Heinlein considered the definition of that word so important that he devoted a whole chapter in the long novel Time Enough for Love (1973/1987, pp. 119-137) to defining it. To sum up the definitional discussion from that chapter, I want to refer to another book (The Cat Who Walks Through Walls, 1985/1986) where Robert defined love in the following way: "The word 'love' designates a subjective condition in which the welfare and happiness of another person are essential to

one's own happiness" (p. 286). That is, the condition of being unhappy unless one has done and is doing all that reasonably can be done to ensure the health, safety, and survival of another.

Love for others can result in extraordinary acts of courage. Heinlein used a mother cat as an example of this kind of love in Starship Troopers (1959/1968):

> All moral problems can be illustrated by one misquotation: 'Greater love hath no man than a mother cat dying to defend her kittens.' Once you understand the problem facing the that cat and how she solved it, you will then be ready to examine yourself and learn how high up the moral ladder you are capable of climbing. (p. 95)

Of course, the above example illustrates the extreme of courage that love often requires in the face of danger. Just as important as courage is the patient devotion to the care of others over the course of many years. In fact, love often creates the conditions that require the caring for of others, whether kittens or children. Heinlein said in Time Enough for Love (1973/1987), "If the universe has any purpose more important than topping a woman you love and making a baby with her hearty help, I've never heard of it" (p. 249). In a passage from the novel I Will Fear No Evil (1970/1987), he said, "Babies are to love and take care of and that's what this whole bloody mess is about, else none of it makes sense" (p. 124).

Of course, Heinlein agreed that parents are predisposed by an evolutionarily-developed instinct to love, protect, and nurture their offspring. This instinct works in spite of the fact that children, as Heinlein pointed out in The Door into Summer (1957), are often not very lovable: "I am not sentimental about kids. Little monsters, most of them, who don't civilize until they are grown and sometimes not then" (p. 24). But whether lovable or not, making babies is absolutely necessary for the survival of our species. " 'A new hope--' Once I heard somebody call a baby that" (Farmer in the Sky, 1950, p. 213).

But the love between two people who make the baby is perhaps the most interesting issue. What accounts for this love? Heinlein did not give us a very satisfactory answer here, as he himself admitted in Time Enough for Love (1973/1987). "Why a woman loves a man--or a man loves a woman--can be rationalized only in survival terms, and the answer has no flavor, unsatisfying" (p. 136). Sex is, of course, a factor of attraction that can often be considered preconditional for love between two people entering a marriage. "Sex baits the trap, but sex is not marriage, nor is it reason enough to stay married" (p. 195).

Heinlein explained that love in marriage is evidenced by "companionship, partnership, mutual reassurance, someone to laugh with and grieve with, loyalty that accepts foibles, someone to touch, someone to hold your hand" (p. 195). But sex is not love, sex is only "the icing on the cake" but "it is not the cake" (p. 195). He goes on to say that "marriage can lose that tasty 'icing'--say, through accident--and still go on and on, giving deep happiness to those who share it (p. 195)."

Sex, then, appears to be largely for the purpose of drawing two people together so that love may develop as a result of close and sustained personal contact. This marital love then results in babies and furthermore provides the long term commitment to help the marital partners to care for and bring them up. Parental love is also generated by evolutionary instinct. And as a result of sustained personal contact with--and investment of labor in--children, this parental love grows. Love for the children, then, in Heinlein's eyes appeared to be derivative of marital love first, evolutionary instinct second, and sustained personal involvement third.

All this adds up to say that love is part of our evolutionary equipment for survival, which means that love is ethically preconditional for all other moral behavior. Heinlein went on to say in Time Enough for Love (1973/1987) that the human capacity for love is enormous if exercised:

> The more you love, the more you can love—and the more intensely you love. Nor is there any limit on how many you can love. If a person had time enough, he could love all the majority who are decent and just. (p. 248)

The ability to love in an increasingly larger radius appears to be the basis for the ability to acquire an increasingly larger radius of duty and loyalty. When Heinlein's view of love is combined with his previous statement about the need for imagination for developing the virtue of patriotism, Heinlein appeared to be saying that the habit of love helps us to acquire the imaginative ability to relate

to an increasingly wider circle of people and the groups they comprise. I will continue this discussion of the relationship between love and social virtue in the next section.

Nonsexual Love and Social Attractiveness

We do not always want to have sex with other people whom we come to love, such as in extended family or community relationships. How does love enter into these kinds of relationships? Heinlein said that humans must be capable of providing each other various of the ingredients of happiness apart from sex. These ingredients of happiness depend on our ability to satisfy either or both emotional or utilitarian needs.

In Heinlein's view, there are facilitating conditions both for providing love to others and receiving love from others. It could be said that, from Heinlein's point of view, a facilitating condition for providing love to others is making oneself competent and useful in contributing to the welfare of one's group, which implies education in all that is useful or pleasant. In the story "It's Great to be Back" (1947/1967), Heinlein's characters, the MacRaes, are possessors of "High I.Q., good compatibility index, superior education—everything that makes a person pleasant and easy and interesting to be around" (p. 316).

In my view, this same passage seems to imply that a facilitating condition for receiving love from others—besides being useful—is possessing good manners, grace, and style—the qualities that make one easy to get along with and "pleasant and easy and interesting to be around" (p. 316). Thus, one who is "a knowledgeable conversationalist, interested in everything, as willing to listen as he was to talk" (Farnham's Freehold, 1963, p. 218) would be attractive to be around. These characteristics point to helpfulness, education, manners, grace, and style as facilitating values for the achievement of the more basic value of love.

Another positive example of manners, grace, and style in one of Heinlein's characters can be found in "The Unpleasant Profession of Jonathan Hoag" (1942/1961). In the story Jonathan Hoag is telephoned by a society matron and asked to fill in as a dinner guest at the last minute. Far from being offended at the request, he is honored that his hostess thinks so highly of him:

> It had been a very pleasant thought and he had not in the least resented being asked to fill in at the last minute. After all, one can't expect to be invited to every small dinner. He had been delighted to oblige Edith Pomeroy.... A good hostess and he was glad she felt free to ask him for help. It was a tribute to him that she felt he would fit in unplanned. (p. 12)

A cross-cultural example of the importance of helpfulness, manners, grace, and style in making oneself socially attractive is found in Between Planets (1951). In the story, the young protagonist Donald Harvey is placed in a rocketship passenger compartment with a Venerian dragon. "Sir Isaac Newton" is a large, intelligent, pseudo-reptilian creature from the swamps of Venus. Donald makes a favorable impression on the dragon by his good manners and willingness to share a compartment with him. When the dragon is injured during acceleration, Donald helps provide first aid. After Sir Isaac learns that Donald's parents are already known to him, he complements Donald by saying, "You are their egg? .... I am no longer surprised at your own excellence (p. 64)." In all these instances above, Heinlein seemed to be saying that making ourselves useful and pleasant is an ethical obligation for creating the conditions of moral reciprocity--for facilitating survival behavior at all levels of his moral hierarchy.

Negative examples of facilitating conditions for providing and receiving love are found throughout Heinlein's novels as well. These are characters who are either useless, unpleasant to be around, or both. One example, from Between Planets (1951), involves a woman who displays rude and boorish behavior towards the same dragon that Donald Harvey befriends. "Don felt acutely embarrassed; he wished for some way to disown the woman as a blood sister and member of his race" (p. 53). When the ship's passengers reach an orbiting space station and are seized by rebel soldiers engaged in a political revolution, the dragon exerts his political influence to keep young Donald with him rather than allow him to be sent back down to Earth. The woman and her family are forcibly returned and the ship is destroyed on re-entry.

Another example from Farmer in the Sky (1950) is the character of Mr. Saunders, a farmer-colonist who works more at being a chronic complainer than at working his homestead. Saunders displays both his uselessness and his bad manners in a confrontation with the town council, who tell him that,

> "If you do have to wait and you won't work for another farmer, how do you propose to feed yourself and your family in the mean time?"
>
> Mr. Saunders looked around and grinned, "Why, in that case, Mr. Chairman, I guess the government will just have to feed us .... I know my rights."
>
> Mr. Tolley looked at him as if he had just bitten into an apple and found Saunders inside. (p. 106)

Still another example of a useless and unpleasant person is found in Have Space Suit--Will Travel (1958) in the character of Ace Quiggle. Ace is an oaf who "hung around main street, sometimes working, mostly not" (p. 18). After Kip Russell, the protagonist, attempts to serve an ice cream soda to Ace who then insults him for his trouble by ridiculing his fondest dreams, Kip is counseled by his pharmacist boss, Mr. Charton:

> He said quietly, "Kip, a reverence for life does not require a man to respect Nature's obvious mistakes."
>
> "Sir?"
>
> "You need not serve Quiggle again. I don't want his trade."
>
> "Oh, I don't mind. He's harmless."
>
> "I wonder how harmless such people are? To what extent civilization is retarded by the laughing jackasses, the empty-minded belittlers?" (pp. 40-41)

Heinlein appeared to be saying that not only are the qualities of usefulness, education, manners, grace, and style facilitating conditions of love, but that their absence are a positive detriment to the community at large. That is, civilization is positively "retarded by the laughing jackasses, the empty-minded belittlers" (p. 41). Those who are either incapable or unwilling to be useful or pleasant to their communities are "nature's obvious mistakes" (p. 40).

But Heinlein was talking about the morally delinquent here, not those who suffer disabilities through no fault of their own. That is, he was talking about those who could know or should know their duty, but fail to perform it. Because all of us are capable of becoming weak or acting stupidly, Heinlein believed that mercy for the weak and patience for the stupid are ethical obligations as well ("If this goes on--," 1940/1967, p. 535). An example of this concern is found in Beyond this Horizon (1942/1948), in which the character Longcourt Phyllis rebukes her friend Hamilton Felix for suggesting that defective children be allowed to die. Similarly, the Howard families in "Methuselah's Children" (1941/1967) are strenuous in their care of defective children.

So far Heinlein said that: (a) survival is the basis of morality; (b) there are levels of moral behavior that correlate with individual survival and higher levels of group survival; (c) each level has both a practical motivation and an emotional motivation; (d) the practical motivations are self-interest at the individual level and duty at the group level; (e) the emotional motivations are pride (or spirit) at the individual level, loyalty commingled with pride and honor at small group levels along with patriotism at still larger group levels; (f) in addition to the emotional motivations of loyalty, pride, and honor, patriotism requires imagination--the ability to identify with groups beyond our experience at higher levels of abstraction; (g) duty and loyalty are reciprocal between individual and group and must be freely given--never coerced; (h) love is that which enables us to develop personal ties to other members of our family or social groups; (i) the more we love, the more we are able to love, thereby facilitating our readiness to love even those whom we do not know--love facilitates the imaginative ability to identify with others; (j) to love others is to count their welfare and security as essential to our own happiness; (k) our ability to love others and our ability to attract love from others is dependent on our ability and willingness to be useful and pleasant to be around; and (l) for mercy's sake as well as for the sake of reciprocity, allowances must be made for those constitutionally unable to be useful or pleasant. In the next section, other values that contribute to human survival will be discussed.

Other Survival Values

Although Heinlein placed much survival value in human love, he also believed in other survival values. These include individual freedom, respect for the dignity of others, and respect for etiquette and custom.

I have already alluded to individual freedom in the previous discussion of duty as a freely given quality is that of individual freedom. Heinlein made clear throughout his works that individual freedom in which moral obligations and duties are accepted and discharged without compulsion is the sine qua non for the pride, dignity, and self-love that make personal survival—as well as the devotion to others' survival— both possible and endurable.

For example, we find in the novella "Gulf" (1949/1953) the following declaration: "(I) believe that individual freedom, at all levels, is the direction of evolution, of maximum survival value" (p. 61). Another example is found in the novella "Lost Legacy" (1941/1953), in which we read the following manifesto:

> We see the history of the world as a series of crises in a conflict between two opposing philosophies. Ours is based on the notion that life, consciousness, intelligence, ego is the important thing in the world.... That puts us in conflict with every force that tends to destroy, deaden, degrade the human spirit, or to make it act contrary to its nature.... all the bonds placed on liberty which treat men as so many economic and political units with no importance as individuals. No dignity—do what you are told, believe what you are told.... If that were the object of life, there would have been no point in including consciousness in the scheme of it all. (p. 138)

Heinlein's passionate devotion to the ideals of personal liberty and dignity are the basis for his hatred of both slavery and oppressive government. His hatred of slavery was demonstrated in the novel Citizen of the Galaxy (1957), which tells the story of a young boy sold into chattel slavery and the efforts of his adopted father to educate him out of a slave mentality. Another story about chattel slavery is found in Time Enough for Love (1973/1987), in which a set of twins are purchased out of slavery and educated to become self-responsible. Heinlein's earliest story of slavery is "Logic of Empire" (1941/1967). This story is about a man tricked into becoming an indentured servant on a plantation on Venus. When he finds himself acquiescing to his servitude--slipping into a slave mentality--he reacts by escaping.

All the above examples illustrate one of Heinlein's other reasons for hating slavery—that it degrades the mentality of the slave. Thus his oft-stated maxim that no slave can be free save he free himself. This means that freedom must be won by the efforts of each individual—that freedom is a self-actualized value. Heinlein said in "Lost Legacy" (1941/1953), "Each human being must free himself; freedom cannot be thrust on him" (p. 158).

Heinlein's hatred of slavery was matched by his hatred of oppressive government. This hatred was demonstrated in the very first novella Heinlein ever wrote, "If this goes on—" (1940/1967). In that story he connected tyranny with slavery and shows his hatred for both:

> For the first time in my life I was reading things which had not been approved by the Prophet's censors, and the impact on my mind was devastating. Sometimes I would glance over my shoulder to see who was watching me, frightened in spite of myself. I began to sense faintly that secrecy is the keystone of all tyranny. Not force, but secrecy. . . censorship. When any government, or any church for that matter, undertakes to say to its subjects, "This you may not read, this you must not see, this you are forbidden to know," the end result is tyranny and oppression, no matter how holy the motives. Mighty little force is needed to control a man whose mind has been hoodwinked; contrariwise, no amount of force can control a free man, a man whose mind is free. No, not the rack, not fission bombs, not anything--you can't conquer a free man; the most you can do is kill him. (p. 499)

In a scene from Between Planets (1951), Heinlein explained how government can become oppressive even from the best motives—especially if it becomes too successful. "Any government that gets to be too big and too successful gets to be a nuisance" (p. 205). After the protagonist Donald

Harvey becomes involved in a revolution against an oppressive government, he learns about the connections between oppression and intellectual freedom:

> Harvey, there is an organization.... made up mostly of scientists but it is not limited to them; the one thing we all have in common is a belief in the dignity and natural worth of free intelligence. In many different ways we have fought—and fought unsuccessfully, I should add—against the historical imperative of the last two centuries, the withering away of individual freedom under larger and more pervasive organizations, both governmental and quasi-governmental.... our group derives from dozens of sources, 'way back in history—associations of scientists fighting against secrecy and straitjacketing of thought, artists fighting against censorship, legal aid societies, many other organizations, most of them unsuccessful, and some downright stupid. About a century ago all such things were pushed underground; the weak sisters dropped out, the talkative got themselves arrested and liquidated—and the remnants consolidated. (p. 178)

Similarly, the first third of Heinlein's novel, Stranger in a Strange Land (1961/1987), deals with the oppressions and irritations of a large, pervasive, worldwide government (the Federation). In that novel, Jubal Harshaw, the mentor of the novel's protagonist Michael Valentine Smith, is forced into clever and desperate legal stratagems to protect Michael from arrest by the Federation's secret police.

Heinlein regarded the corrupting principle of all governments—anytime and anywhere—as the desire to control its citizens. He believed that so-called democratic governments were just as susceptible to this corruption as any other form of government. In Time Enough for Love (1973/1987), he made this point:

> Political tags—such as royalist, communist, democrat, populist, fascist, liberal, conservative, and so forth—are never basic criteria. The human race divides politically into those who want people to be controlled and those who have no such desire. The former are idealists acting from the highest motives for the greatest good of the greatest number. The latter are surly curmudgeons, suspicious and lacking in altruism. But they are more comfortable neighbors than the other sort. (p. 352)

The corrupting desire for governments to control people is closely related to the corrupting desire in individuals to meddle in or gossip about the affairs of other individuals. "A desire not to butt into other people's business is eighty percent of all human wisdom," Heinlein said in Stranger in a Strange Land (1961/1987, p. 177). Heinlein described a society in the story "Coventry" (1940/1967) and in "Methuselah's Children" (1941/1967) in which future Americans establish a social contract called the "Covenant." The Covenant explicitly establishes not only basic civil liberties but the principles of courtesy and respect for the privacy of others that underlie civil liberties. In this society, people have learned to scrupulously avoid inquiring into others' affairs unless invited.

The key point in relating meddling and gossip to governmental oppression and slavery is that all are infringements on the freedom and dignity of human beings. In the novel Glory Road (1963/1970), Heinlein made this connection by describing "the common jerk... (who) hates and fears all freedom, not only for his neighbors but for himself, and stamps it out whenever possible" (p. 228).

Respecting the dignity of others essentially means respecting their freedom and, by extension, their lives and safety. Heinlein extended the principle of respecting the dignity of others to include all living things. One of the earliest examples of this principle is found in the novella "Gulf" (1949/1953), in which we see one of Heinlein's chief characters decline to kill a spider:

> A spider settled from the ceiling, landed on the other man's hand. Baldwin, instead of knocking it off and crushing it, most carefully reached his arm out toward the wall and encouraged it to lower itself to the floor. "Better stay out of the way, shorty," he said gently, "or one of the big boys is likely to step on you." (p. 22)

Respect for other living things is even extended to plants. In Beyond this Horizon (1942/1948), Heinlein's character Monroe-Alpha Clifford develops a mystical rapport with the gigantic redwoods at Yosemite:

> He stopped, and approached one of the elders, cautiously, as befits a junior in dealing with age. He touched its coat, timidly at first, then with palm-flat pressure, as he gained confidence.... He drew from the tree... a mood of tranquil strength. He felt sure, on a level of being just below that of word-shaped thoughts, that the tree was serene and sure of itself, and, in some earth-slow somber fashion, happy. (p. 88)

Heinlein even anticipated the modern animal rights movement in his 1947 short story "Jerry Was a Man" (1947/1953). The story tells of how a wealthy society matron comes to the legal aid of genetically enhanced chimpanzees who are being used as slave agricultural workers. When the chimps reach the end of their usefulness, they are summarily killed by their owners. The woman brings a successful court action that results in the chimps being declared "human" and which frees them from their chattel slavery. Heinlein's respect for the dignity and freedom of animals even leads him to prefer some kinds of animals over others based on their innate dignity. In Farnham's Freehold (1964/1971), he explained his reasons, "I like all cats. You don't own a cat, he is a free citizen.... dogs are.... slaves. Not their fault, they've been bred for it. But slavery makes me queasy, even in animals" (p. 35).

Heinlein not only believed strongly in freedom and dignity as facilitating or contributing values for survival behavior, he also had a great respect for etiquette and custom in mediating the competing demands of one individual's freedom against another's. Heinlein explained the ethical utility of manners and customs in Time Enough for Love (1973/1987):

> Moving parts in rubbing contact require lubrication to avoid excessive wear. Honorifics and formal politeness provide lubrication where people rub together. Often the very young, the untraveled, the naïve, the unsophisticated deplore these formalities as "empty," "meaningless," or "dishonest" and scorn to use them. No matter how pure their motives, they thereby throw sand into machinery that does not work too well at best. (pp. 247-248)

Etiquette and custom are useful survival values because they moderate the impulse to compete and fight with others. Unnecessary fighting is harmful, not helpful, to the goal of survival; that is, "...the intelligent man fights only when he must" (Time Enough for Love, 1973/1987, p. 245). Politics functions on the larger group level much as etiquette and custom function on the individual and small group level. That is, just as politics functions to facilitate civil affairs to prevent the evils of constant war, etiquette and custom function to facilitate personal affairs in order to prevent constant private wars.

In this section, I wanted to elaborate on how Heinlein's values of personal freedom, dignity, respect for others, etiquette, and custom are connected to each other. More important, I wanted to connect them to Heinlein's survival theory of moral behavior to show how they support the values presented in that theory. But I have not yet attempted to connect political and social values to Heinlein's survival theory of moral behavior, although I believe there are connections. I have reserved that discussion for Appendix G, in which I will discuss Heinlein's views of politics and social policy in some detail.

Heinlein's Axiological Foundations in Perspective

In this appendix, I have provided evidence from Heinlein's own works to show that he based his theory of values on the human condition. In retrospect, it may be that Heinlein's values perhaps can best be understood through the view of the human being as the most recent and successful expression of cosmic evolution on this planet. However, it is an over-simplification to see Heinlein as a social Darwinist. I say this because his metaphysics have strong teleological connection with some ideas found in the concept of emergent evolution (see Appendix D). But I also say this because it seems clear that Robert was aware of the evolutionary utility of social groups over individuals (see various essays throughout Expanded Universe, 1980). That is to say, for Heinlein survival of the fittest was not predicated on the superior individual as much as it was predicated on superior ethics; and superior ethics is that which promotes the survival of the social group as well as the individual.

In addition, these superior ethics embody the cosmic values toward which Heinlein seemed to have seen the universe as tending in its evolution. As Booker (1994) has pointed out, Heinlein's view of

ethics can be called preconditional in that they establish survival as the sine qua non without which all other values are impossible.

Heinlein seemed to have had a basically Hobbesian view of nature as red in tooth and claw (Hobbes; Leviathan, 1952). That is, he believed that humans are the most successful predators in nature who must for that reason supply their own competition in the evolutionary scheme of things. The dynamics of that competition have now more to do with human mind rather than with human teeth and muscle. Nevertheless, although Heinlein believed in the survival efficacy of certain qualities and points of view, in the end he admitted that the issue must be decided empirically. That is, only by looking backwards can we see the qualities for which nature is selecting in human survival. Only from a retrospective can we see the truth of Heinlein's aphorism "survivors survive" (Farmer in the Sky, 1950, p. 174).

Heinlein's Two Realms of Values and Rules of Behavior

What do Heinlein's values reveal from the point of view of ethical classifications? A general reading of Heinlein leaves us with the impression that he divides values or rules for successful behavior into two major categories: the pragmatic and the ethical. Pragmatic rules are less significant than the truly ethical rules. For example, in Glory Road (1963/1970), we are told "Sin is cruelty and injustice, all else is peccadillo. Oh, a sense of sin comes from violating the customs of your tribe. But breaking custom is not sin even when it feels so; sin is wronging another person" (p. 135).

Pragmatic values or rules of behavior are often expressed in custom. I use the word "custom" here to refer collectively to the following: rules of etiquette, the main body of positive laws that societies institute through their governments, and the nonlegal body of both written and unwritten prescriptions and proscriptions that are called customs. In Time Enough for Love (1973/1987), Heinlein said through the authorial character Lazarus Long, "Respect for laws is a pragmatic matter.... Men often believe... the 'Law' is something sacred, or at least a science—an unfounded assumption very convenient for governments" (p. 159). Because of the evolving, changing nature of human societies, custom tends to be situational, temporary, and culture-dependent.

Classifying Heinlein's notions of custom—the realm of pragmatic values or rules of behavior—would easily lead us to say that he was a cultural relativist. But because of the way that customs and laws develop, customs can include those with intrinsic as well as formal (culturally pragmatic) efficacy. Heinlein might have taken an axiological view of some areas of the pragmatic realm; that is, by stressing the value of a particular custom as intrinsically good apart from its cultural function. On the other hand, he might have taken a formalistic view towards other areas—for example, by stressing the action that fulfills a cultural obligation or duty. The key point for Heinlein was that pragmatic values or rules of behavior are "pragmatic" either because they enable the society that uses them to work satisfactorily or because they enable the individual to live in society satisfactorily. But again, such values or rules are culturally and situationally contingent and can eventually change.

However, the ethical realm is comprised of those values or rules of behavior that are based on humanity's fundamental biological nature. They are elaborations of the instinct toward survival and are expressed in such moral principles as love, duty, freedom, honor, dignity, pride, and patriotism. Because they are based in human nature rather than in the evolving and changing nature of human societies, they are permanent, unchanging, and culturally transcendent. Heinlein made this clear in Starship Troopers (1959/1968):

> Basic truths cannot change and once a man of insight expresses one of them it is never necessary, no matter how much the world changes, to reformulate them. This is an immutable, true everywhere, throughout all time, for all men and for all nations. (p. 74)

Thus, when regarding Heinlein's realm of ethical values and rules as opposed to his pragmatic realm, it is quite clear that he was promoting a form of ethical absolutism; that is, that there are at least some ethical truths that are "objectively real, final, and eternal" (Angeles, 1981, p. 2).

Consistent with Heinlein's basically empirical approach to matters of epistemology (see Appendix E), his view of the realm of ethical values and rules was essentially naturalistic. That is, when discussing his survival theory of morals, he believed that the biological facts of reality—particularly as they pertain

to human beings—can be analyzed to lead inexorably to ethical facts as well. Thus, he was opposed to noncognitive ethics and, I believe, would have argued that one can derive an "ought" from an "is."

Heinlein's case is more plausible when it is restricted to the preconditional aspect of his theory of morals. It is less plausible when some of his contributing values—or secondary virtues—are considered, such as his belief that "Free will is the primary good of the cosmos" ("Lost Legacy," 1941/1953, p. 133). And in another example found in the moral creed of his authorial character Zebadiah Jones, he declared "But I don't propose to prove any of those things; they are beyond proof" (" 'If this goes on--' ," 1940/1967, p. 535). In such cases, Heinlein seemed to shift from ethical naturalism to ethical intuitionism. That is, it appears that he believed that some values can be derived through intuition rather than through empiricism.

Of course, one could offer the counter argument that the secondary values that Heinlein espoused have been empirically tested in historical experiences in ways that show these values' efficacious results. Using that argument, one may suppose that he had simply not worked out his moral philosophy sufficiently in the early 1940s to offer any but an intuitional basis for it. Consistent with Heinlein's strong pragmatist leanings (see Appendix E), his view of the realm of ethics appears to have been strongly teleological. That is, he seemed to have judged the value of an ethical act by the effect which it produces. In Heinlein's ethics, good intentions are no substitute for good results—or as his authorial character Lazarus Long points out in Time Enough for Love (1973/1987), "Good intentions are no substitute for knowing how a buzz saw works" (p. 80).

Altruism Versus Egoism

In regard to the issue of altruism versus egoism; that is, whether ethical decisions should be motivated by the good of others or rather motivated by one's own good, Heinlein was somewhat confusing in my view. For example, in Stranger in a Strange Land (1961/1987), his authorial character Jubal Harshaw declares the following:

> Of all the nonsense that twists the world, the concept of 'altruism' is the worst. People do what they want to, every time. If it pains them to make a choice—if the choice looks like a 'sacrifice'--you can be sure that it is no nobler than the discomfort caused by greediness. . .the necessity of deciding between two things you want when you can't have both. The ordinary bloke suffers every time he chooses between spending a buck on beer or tucking it away for his kids, between getting up to go to work or losing his job. But he always chooses what hurts least or pleasures most. (p. 256)

However, in Starship Troopers (1959/1968), Heinlein had his authorial character Jacques DuBois say, "The basis of all morality is duty, a concept with the same relation to group that self-interest has to individual" (p. 95). The difficulty here is helped a bit when we recall Heinlein's definition of love as "a subjective condition in which the welfare and happiness of another person are essential to one's own happiness" (The Cat Who Walks Through Walls, 1985/1986, p. 286). In fact, what Heinlein appeared to be saying is that even when we do something for another when there is no possibility of an extrinsic reward, our intrinsic reward is our own personal feeling of satisfaction. Heinlein's distinction appears somewhat disingenuous and self-contradictory when we consider that he seems to be saying on the one hand that we do nothing except for our own personal satisfaction, and on the other hand that love is the inability to be happy unless we are promoting the happiness of the one loved.

Because of these seeming contradictions, Heinlein on bottom appears to have been an altruist after all. In fact, it is difficult not to relate most definitions of "altruism" (Flew, 1979; Reese, 1980; Angeles, 1981) with Heinlein's concepts of love and duty. This is especially the case when we examine Heinlein's favorite example of moral behavior: the story of the hobo who happened on a man trying to free his wife's foot from a railroad track while a train was bearing down upon them. In the story, the hobo gave his life trying to help the two strangers ("The Pragmatics of Patriotism," 1973/1980). It is difficult not to call that incident an example of altruism.

Heinlein's position is helped, however, when we divide decisions into the categories of those motivated by love and duty versus those motivated by such values as pride. It would be easier to maintain that the latter sort are somewhat egotistical in their motivations while the former are more

altruistic—at least in the sense that most people use the word "altruistic." I believe that an examination of Heinlein's survival theory of moral levels would lead us to conclude that he was at least as much an altruist as he was an egotist.

Questions of Human Values and Heinlein's Axiological Realms

Looking at the entire field of human values (at least from the perspective of philosophy of education), there are typically three broad questions that are asked (Kneller, 1964): (a) Are values subjective or objective? (b) Are values changing or constant? and (c) Are there hierarchies of value? Again, from Heinlein's own words touching on those matters, it seems necessary that these questions be differentiated into the realms of pragmatics (custom and politics) and ethics (moral values and behavior).

In the pragmatic realm of human custom, I believe that I have reasonably well established that Heinlein would likely have answered that such values are predominantly subjective and changing; they are also hierarchical in the narrow sense that politics subsumes larger fields of human society than do those customs regulating individual relations. But Heinlein would have disagreed that political needs and goals have an automatic ethical priority over individual needs and goals. (Note: I discuss Heinlein's political philosophy specifically in Appendix G.)

From Heinlein's perspective of the ethical realm of values, his survival theory of moral behavior is objective, constant, and clearly hierarchical according to his levels of duty from the individual to increasingly larger social groups. But note that at each level in Heinlein's hierarchical theory of moral behavior, it is the individual—not the group—that makes the ethical choice to place the welfare of others above that of self.

Conclusion

In this appendix, I undertook to introduce and outline some of the foundations of Robert Heinlein's values. I justified my examination of Heinlein's axiology in relation to adult and continuing education by explaining the intense relationship between his philosophy of values and his science fiction curriculum. I discussed the manner in which his values are grounded in his views of the human condition, specifically his view of biological survival as an axiological precondition. I explained how Heinlein's survivalist theory of morals operates hierarchically from the individual to progressively larger group levels, and I explained the two kinds of motivations that operate at each level.

I discussed the two realms of Heinlein's values, the ethical and the pragmatic. I pointed out that Heinlein could be called an ethical relativist with respect to his pragmatic realm; but he could be called an absolutist in regard to his ethical realm. Finally, I pointed out that Heinlein's theory of values combines elements of ethical naturalism and ethical intuitionism.

As I indicated in my discussion of the connection between axiology and adult education in the introduction to this present appendix, Heinlein's axiology drives his fundamental approach to knowing, teaching, and learning. I mean that his axiology reveals a view of that which a person believes is both important to learn and know and to teach others. Certainly, the assurance with which Heinlein pronounced on axiological issues (in those citations I've drawn upon in this and in the two subsequent appendices) reveals his commitment to a particular world view that he was keen to urge upon his readers.

In some ways, it is easier to find more unity in his axiology than in the metaphysical and epistemological aspects of his philosophy. This is perhaps because he thought so much more about the former than he did the latter. However, it may well be that because of his empirical-naturalistic approach toward ethics, he was much more sure of his ethical conclusions than was the case with other parts of his philosophy. The amount of material in Heinlein's books that touch on axiological issues is staggering. The ratio of axiological matter to the metaphysical and epistemological matter in his novels and stories is easily on the order of two to one. This volume of material is indicative of the emphasis he placed on this part of his science fiction curriculum—as I gave indication of previously in Chapter III. His wife Virginia's claim that such issues were his chief interest has been amply substantiated in this appendix. This point will become even clearer in the next appendix in which Heinlein's ideas of politics, social policy, and other aspects of public ethics will be discussed. That these public aspects of his philosophy are also implicit in his science fiction curriculum needs hardly to be mentioned.

APPENDIX G

HEINLEIN'S PUBLIC ETHICS

"I conceive it to be our duty to hold this society together while it adjusts to a strange and terrifying world."
—Mr. Kiku, The Star Beast, 1954, p. 249

Having established an outline of Heinlein's axiological foundations in Appendix F, in this appendix I will go on to examine how he extends his views into the realm of public ethics. That is, I will attempt to outline Robert's views in regard to his political and social philosophy. I will begin the appendix by discussing indications of Heinlein's basic ambivalence about government and politics, including his early political activity, his emerging misgivings and objections regarding democracy, and his commitment to grass roots citizen action. Following that, I take up Heinlein's views of several aspects of social policy, including crime and punishment, government social and economic programs, and environmental policy. Next I take up Heinlein's sexual ethics, followed by an examination of his views regarding gender, race, class, and human rights. Finally, I conclude with a retrospective putting forth some of my final thoughts regarding Heinlein's views of political and social philosophy.

Introduction: Heinlein's Ambivalence Regarding Politics and Government

My theory is that Heinlein had a love-hate attitude toward politics and government. On the one hand, he seemed to view politics and government as having the same basic value with respect to civil relations as custom and etiquette have with respect to personal relations (see Appendix F for a discussion of Heinlein's view of custom). That is, "government [is] the art of getting along with people you don't like" (Tunnel in the Sky, 1955, p. 223). Perhaps Heinlein's most complete declaration of the efficacy of politics and government as a social invention is found in Podkayne of Mars (1963), where we find the following:

> You say "Politics!" as if it were a nasty word--and you think that settles it.... But you don't understand. Politics is not evil, politics is the human race's most magnificent achievement. When politics is good, it's wonderful . . . and when politics is bad--well, it's still pretty good.... Think about it. Politics is just a name for the way we get things done . . . without fighting. We dicker and compromise and everybody thinks he has received a raw deal, but somehow after a tedious amount of talk we come up with a jury-rigged way to do it without getting anybody's head bashed in. That's politics. The only other way to settle a dispute is by bashing a few heads in . . . and that is what happens when one or both sides is no longer willing to dicker. That's why I say politics is good even when it is bad . . . because the only alternative is force--and somebody gets hurt.... If dickering won't work, then you have to fight. But I think it takes a man who has been shot at to appreciate how much better it is to fumble your way through a political compromise rather than have the top of your head blown off.... When to talk and when to fight— That is the most difficult decision to make wisely of all the decisions in life.... Mankind didn't invent fighting; it was here long before we were. But we invented politics.... Homo sapiens is the most cruel, the most vicious, the most predatory, and certainly the most deadly of all the animals.... Yet he invented politics! He figures out a way to let most, most of the time, get along well enough so that we usually don't kill each other. (pp. 33-34)

Heinlein approved of politics because of its survival value in keeping peace among the most vicious and predatory of animals--human beings. But politics as a general proposition is actualized in particular actions and institutions, and that means the particular actions and institutions of governments. And here we come round-about to the other side of Heinlein's attitude towards government:

> Government! Three-fourths parasitic and the rest stupid fumbling--oh, Harshaw conceded that man, a social animal, could not avoid government, any more than an individual could escape

> bondage to his bowels. But simply because an evil was inescapable was no reason to term it "good." He wished that government would wander off and get lost! (Stranger in a Strange Land, 1961/1987, p. 95)

So we see that although Heinlein lauds politics as a wonderful social invention on the one hand, on the other hand he views government—the very instrumentality of politics—as a necessary evil, only to be borne because the alternative is worse. In the novel Friday (1982/1983), he would "wonder if mankind is capable of being well governed by any system of government" (p. 97).

As time went on, Heinlein began to think about this dilemma of government increasingly from the perspective of leadership and responsibility. He gradually began to disbelieve in the whole notion of corporate responsibility as it is commonly thought to inhere in governmental institutions. He alluded to the question that prompted his thinking in that direction in The Moon is a Harsh Mistress (1966/1968):

> May I ask this? Under what circumstances is it moral for a group to do that which is not moral for a member of that group to do alone? .... It is the key question... that strikes to the root of the whole dilemma of government. Any one who answers honestly and abides by all consequences knows where he stands--and what he will die for. (pp. 63-64)

And through the authorial character Professor Bernardo de la Paz, Heinlein revealed the conclusions he came to from asking himself that question:

> I'm a rational anarchist.... A rational anarchist believes that concepts such as "state" and "society" and "government" have no existence save as physically exemplified in the acts of self-responsible individuals. He believes that it is impossible to shift blame, share blame, distribute blame. . . as blame, guilt, responsibility are matters taking place inside human beings singly and nowhere else. But, being rational, he knows that not all individuals hold his evaluations, so he tries to live perfectly in an imperfect world. . . aware that his effort will be less than perfect yet undismayed by self-knowledge of self-failure. (The Moon is a Harsh Mistress, 1966/1968, p. 64)

Very well, but how does a "rational anarchist" behave in the world of social and political relations with others, given that Heinlein has just recently told us that politics —and government--is a necessary social invention. Professor Bernardo de la Paz answers that question as well:

> I will accept any rules that you feel necessary to your freedom. I am free, no matter what rules surround me. If I find them tolerable, I tolerate them; if I find them too obnoxious, I break them. I am free because I know that I alone am morally responsible for everything I do. (The Moon is a Harsh Mistress, 1966/1968, p. 65)

Did Heinlein finally come to believe in no government at all? Perhaps not quite. One interesting development in his notion of government is found in the juxtaposition of the family-size governments he toyed with in his latter novels with a passage about the inadvisability of family governments in an earlier novel. For example, in Stranger in a Strange Land (1961/1987), we see the hero Valentine Michael Smith forming semi-autonomous "nests"—actually small organizations resembling extended families based on group marriage. In Time Enough for Love (1973/1987), Lazarus Long, the patriarch of the "Howard Families" establishes—on a planet of his own—another extended family organization also based on group marriage. This "family" shows up repeatedly in Heinlein's ensuing novels The Number of the Beast (1980/1982), The Cat Who Walks Through Walls (1985/1986), and To Sail Beyond the Sunset (1987)—always acquiring new family members as new characters come into contact with it.

The other half of the juxtaposition is a passage from the novel Between Planets (1951). In that novel protagonist Donald Harvey is a guest in the home of the Venerian dragon Sir Isaac Newton. When Don remarks that the dragons' idea of "no government larger than a family" might be the right idea, he is contradicted by a (presumably older-and-wiser) human: "What's right for dragons is not right for us. Anyhow, families can be just as oppressive as government" (p. 205).

The point is that Heinlein appeared to have changed his mind about his earlier misgivings about family governments. In any event, family governments only seem to work in Heinlein's novels in

extraordinary cases. That is, in the case of either superhuman leadership (a Valentine Michael Smith), or in the case of extraordinary-if-not-quite-superhuman individuals who seem to have little disagreement among themselves—and who have a private planet of their own in the bargain (Lazarus Long's family in Time Enough for Love (1973/1987) and subsequent novels). Incidentally, these family organizations all seem to be headed by patriarchal leaders.

Heinlein was continually experimenting with alternate forms of social organization in his novels. There is no evidence that he ever believed that the problems of government could be escaped, and he was too interested in human beings and their affairs to ignore the practical need for government. We shall now look at his personal political journey as well as his lifelong preoccupation with the problems of democracy.

Heinlein's Early Politics

Heinlein was originally a New-Deal Democrat when he first began to be active in political affairs. In fact, his politics during the 1930s could be described as left-of-center, although the general evidence from his many books indicates that he always had serious disagreements with Marxism. Nevertheless, during the late 1930s he was very much a political activist. For instance, he worked for Upton Sinclair's social justice programs in southern California, including Sinclair's End Poverty in California (EPIC) campaigns. Robert ran at least once in political campaigns as a Democrat and served in various party offices besides. His wife Virginia recalled him describing this period in his life as his "socialist period" (Owenby, 1994c).

His economics during this period appear to have been very much Keynsian of the Franklin Roosevelt New Deal variety. His book Beyond this Horizon (1942/1948) is a good window into his economic ideas at the time. His economics later changed from a Keynsian "soft money" approach, in which currency functioned solely as a medium of exchange that is managed by the government to effect social and economic stability, to a "hard money" approach in which money is rigidly tied to a precious commodity and the government functions solely as a "public bookkeeping service" (Time Enough for Love, 1973/1987, p. 273).

It is interesting that even while Heinlein was involved in social activism as a liberal Democrat, he would have described himself as a liberal of the hardheaded variety. In a 1941 story entitled "Solution Unsatisfactory" (1941/1980)—in which, incidentally, Heinlein predicted that the U.S. would establish itself as a superpower based on a "nuclear" monopoly of sorts—Heinlein described the character Colonel Manning for whom the narrator is working as a political manager:

> We needed a strong liberal candidate and Manning was taylor-made for the job.... what I liked about him was that, though he was liberal, he was tough-minded, which most liberals aren't. Most liberals believe that water runs downhill, but, praise God, it'll never reach the bottom. Manning was not like that. He could see a logical necessity and act on it, no matter how unpleasant it might be. (p. 97)

After Heinlein went broke following a failed political campaign, he ceased active politicking in order to make money writing science fiction (I discuss Heinlein's life history in more detail in Chapter II; I also provide a chronology of his life in Appendix B). After World War Two, he returned to activism briefly without success, this time to write articles on the need for international control of nuclear weapons.

He also wrote a book on practical politicking (later published as Take Back Your Government, 1992). His failures during what he called his "world-saving" period seem to have disillusioned him about political and social causes (see Expanded Universe, pp. 145-147, 181). Speaking through his authorial character Jubal Harshaw in Stranger in a Strange Land (1961/1987), Heinlein described his feelings about his former activism this way: "My dear, I used to think I was serving humanity . . . and I pleasured in the thought. Then I discovered that humanity does not want to be served; on the contrary it resents any attempt to serve it" (p. 87).

Heinlein seemed to have eventually lost his faith in both domestic democracy and world government. I believe his loss of faith in domestic democracy probably occurred through progressive disillusionment with the government's and the electorate's unwillingness to come to grips with the

challenges of the nuclear and space ages. His loss of faith in world government, on the other hand, came from his world travels from which he came to believe that cultural differences between the United States and the rest of the world were too profound to allow common political institutions. In fact, in his single travel book, he described how his 1954 trip around the world "cured me of one-worldism" (Tramp Royale, 1992, p. 368). But his most important loss of faith was in American democratic government—and no wonder, for he had grown up thoroughly steeped in a patriotic confidence in American institutions.

As he became more and more distrustful of the burgeoning federal government, he began to shift towards more conservative—or rather libertarian—politics. His books Stranger in a Strange Land (1961/1987) and The Moon is a Harsh Mistress (1966/1968) highlighted his increasing suspicion of big government. As the first novel had become a bible for the sexual revolution of the 1960s anti-establishment counterculture, the latter novel became a bible for the neoconservative movement—especially the Libertarian Party. But Heinlein had other reasons for distrusting democracy than just the indifference of the electorate to pressing problems, as I point out in the next section.

Heinlein's Ambivalence Toward Democracy

Just as Heinlein became somewhat ambivalent about the whole problem of politics and government, he also seems to have become ambivalent about democracy as a special case of politics and government. That he became so following the disappointments of his world-saving period of 1945-1947 is evidenced by the views put forth by his authorial character Kettle Belly Baldwin in his 1949 novella "Gulf" (1949/1953). Through this character, Heinlein said that

> For a hundred and fifty years or so democracy, or something like it, could flourish safely. The issues were not such as to be settled without disaster by the votes of common men, befogged and ignorant as they were. But now, if the race is simply to stay alive, political decisions depend on real knowledge of such things as nuclear physics, planetary ecology, genetic theory, even system mechanics. They aren't up to it... (p. 48)

To be fair, Heinlein balances the point of view of Baldwin with that of the main character Joseph Gilead who says in retort to Baldwin, "I confess to a monkey prejudice in favor of democracy, human dignity, and freedom. It goes beyond logic; it is the kind of a world I like" (p. 48). Heinlein continues to argue with himself over the merits of democracy in the novel The Star Beast (1954), in which he again spoke through the authorial character, Mr. Kiku:

> But we have managed to keep a jury-rigged republican form of government and to maintain democratic customs. We can be proud of that. But it is not now a real democracy and it can't be. I conceive it to be our duty to hold this society together while it adjusts to a strange and terrifying world. It would be pleasant to discuss each problem, take a vote, then repeal it later if the collective judgment proved faulty. But it's rarely that easy. We find ourselves oftener like pilots of a ship in a life-and-death emergency. Is it the pilot's duty to hold powwows with passengers? Or is it his job to use his skill and experience to try to bring them home safely? (p. 249)

In this passage, Heinlein seemed to develop the idea of government as much like the lifeboat captain in charge of the passengers' safety. This notion is very close to the notion of constitutional monarchy.

Heinlein's ambivalence is expressed again in the novel Tunnel in the Sky (1955), in which this time he shows the effectiveness of democracy in the problems of government in a small community of young adults stranded on a hostile planet. Furthermore, he seemed to indicate approval of parliamentary democracy on the British model in his Hugo-winning novel Double Star (1956/1957). Also, in the novel Stranger in a Strange Land (1961/1987), Heinlein's authorial character Jubal Harshaw laments the shortfalls of democracy but then admits its virtues as well: "Democracy is a poor system; the only thing that can be said about it is that it's eight times as good as any other method" (p. 185).

But in Heinlein's next novel (Glory Road, 1963/1970), he turns round again with a disparaging analysis of democracy, indicating a preference for democratic forms rather than democracy per se. That is, he wants the government to be loose enough not to work too well. In the following passage, he spoke through the authorial character Rufo:

> Democracy can't work. Mathematicians, peasants, and animals, that's all there is—so democracy, a theory based on the assumption that mathematicians and peasants are equal, can never work. Wisdom is not additive; its maximum is that of the wisest man in a given group.
>
> But a democratic form of government is okay, as long as it doesn't work. Any social organization does well enough if it isn't rigid. The framework doesn't matter as long as there is enough looseness to permit that one man in a multitude to display his genius. Most so-called social scientists seem to think that organization is everything. It is almost nothing—except when it is a straightjacket. (p. 262)

Here is Heinlein seemingly reversing his previous pronouncements through Jubal Harshaw. Confusingly enough, his next novel (Farnham's Freehold, 1964/1971), has the authorial character Hugh Farnham making a somewhat disingenuous-sounding declaration that his "lifeboat captain" style of leadership is really democratic after all:

> I am trying to find out what you mean by "democratically." If you mean putting every decision to a vote, I am willing—if you will bind yourself to abide by every majority decision.... We'll try formal democracy—rules of order, debate, secret ballot, everything.... In the meantime, we do have democracy.... I'm serving by consent of the majority... (pp. 68-69)

In the explicitly political novel The Moon is a Harsh Mistress (1966/1968), Heinlein's authorial character Professor Bernardo de la Paz advises the revolutionary assembly of Luna to consider novel approaches to government rather than straight representative democracy, even to giving some citizens more votes than others. But Heinlein's thoughts about democracy may well need to be understood in reference to different issues: democratic institutions versus democratic leadership. While the discussion in this present section has focused on Heinlein's attitude towards democratic institutions, in the next section I shift the discussion to his attitude towards democratic leadership.

Objections to Democratic Leadership

Heinlein sometimes seemed to express outright contempt for democratically elected leadership. For example, in the novel Time Enough for Love (1973/1987), the authorial character Lazarus Long gloats over the way he set up a nondemocratic but constitutional oligarchy over an entire planet, and then derides every democracy he has experienced:

> All the so-called democracies I've ever seen or heard of were either forced on the majority from above or grew up slowly from the plebs discovering that they could vote themselves bread-and-circuses—for a while, until the system broke down.... majority rule gives the ruthless strong man plenty of elbow room to oppress his fellows. (p. 9)

Heinlein reinforced the point about "plebs discovering that they could vote themselves bread-and-circuses," and then added still another point against democracy in an essay entitled "The Happy Days Ahead" (1980):

> One chink in the armor of democracy is that when the Plebs discover that they can vote themselves Bread & Circuses, they usually do.... The citizen is sovereign until it comes to accepting blame for his sovereign acts—then he demands a scapegoat. (p. 555)

In these two passages, Heinlein made clear his chief objections to democracy: first, that democracy does not automatically exclude tyranny; second, that the electorate in a democracy tends to abuse its power while ignoring its responsibility. Nor did he believe that constitutional safeguards are sufficient to prevent tyranny—neither from the majority nor from an unscrupulous leader.

He made that clear in his retrospective essay "Concerning Stories Never Written: Postscript" in Revolt in 2100 (1954), a collection of stories whose theme is the United States' emergence from religious tyranny late in the next century. In that essay, he explained the background of his first novella "If This Goes On—" (1940/1967) by describing the outlines of two stories he had intended to write (but

never did) to set the stage for that novella. In those stories, Heinlein explained that this future religious dictatorship was established after a television evangelist named Nehemiah Scudder contrived to be elected president of the U.S. Afterwards, Scudder took advantage of the country's religious hysteria to have an amendment passed to establish his rule as First Prophet ("Concerning Stories Never Written: Postscript," see p. 190).

Heinlein described the counter-revolution to the theocracy in "If This Goes On--" (1940/1967) and the reestablishment of civil liberties and constitutional safeguards under a civil Covenant in "Coventry" (1940/1967). We are shown the subsequent history of the Covenant Society in "Methuselah's Children" (1941/1967). At first, Heinlein paints a picture of an ideal civil government under whose enlightened institutions there has been "renascence of culture... the steady growth of tolerance and good manners, the semantically sound orientation of education, the increased respect for the custom of privacy and for the dignity of the individual" ("Methuselah's Children," 1941/1967, p. 662). But when a new wave of hysteria erupts, based on envy of, and suspicion towards, a minority, we again see a breakdown of constitutional safeguards:

> [Bork Vanning said], "We'll use means! Ways that the prophets used... if they don't cooperate willingly."
>
> "Do you mean that? Why, that's against the Covenant!"
>
> "Covenant be damned! This is a matter of life and death--do you think we'd let a scrap of paper stand in our way? You can't bother with petty legalities...."
>
> Mary answered in a hushed and terrified voice: "Do you really think the Council will violate the Covenant?"
>
> "Think so? The Action-in-Council was recorded last night. We authorized the Administrator to use 'full expediency'." (pp. 674-675)

As Heinlein subsequently revealed, the character Bork Vanning is an example of the unscrupulous leader that he sees as always lurking in the wings to take personal advantage of mob hysteria. But Heinlein had an even stronger point to make: Constitutional safeguards are not adequate even when there is ethical and conscientious leadership. As Heinlein subsequently revealed, the character Slayton Ford--Administrator of this Covenant society--is an otherwise competent and compassionate leader who nevertheless feels himself pushed down the path of oppression by the hysteria of the citizenry. As the story proceeds, we get a clear picture of the leaders of both the government and its persecuted minority conspiring to ignore the wishes of their respective constituencies in order to forge a real and humane solution to the social problem that brought on the crisis. The key message is that democracy is fine until there comes a crisis, at which point enlightened leaders must be put in charge and trusted to run things for the good of all.

This is the lifeboat captain theory of leadership that I mentioned previously in connection with Farnham's Freehold (1964/1971). And the word "leadership" is chosen deliberately for Heinlein shows in his other writings his belief that leadership is more important than the institutional forms of government. That is to say, that as far as the political structure or apparatus of society is concerned--its institutions--a democratic form of government is best. But those forms should be loose enough to allow competent leaders to exercise their genius during periods of crisis. In fact, a democratic form of government is necessary to allow men and women of real genius from all levels of society the freedom and opportunities--the democratic opportunities--to participate in society and rise to positions from which they can exercise leadership during times of crisis. It seems clear to me that Heinlein's democratic affinities have more to do with equal opportunity to participate than with equal voice in government.

Heinlein reinforced this impression in the novel Citizen of the Galaxy (1957), in which one of his authorial characters, Dr. Margaret Mader, a cultural anthropologist, gives advice to an ex-slave: "wait until this ship calls at a planet that is democratic and free... then hit dirt and run" (p. 150). But direct leadership by the electorate is not desirable in Heinlein's eyes. As the authorial character Rufo advises in Glory Road (1963/1970), "Above all, don't put serious problems to a popular vote" (p. 214). Thus, it can be seen that Heinlein favors constitutional, representative democracy over direct democracy because such an approach combines democratic forms with the looseness that allows genius to emerge, as opposed to direct decisionmaking by an hysterical electorate during times of crisis.

In the next section, I continue by discussing still another anomalous element in Heinlein's complex set of attitudes toward democracy. That is, I will discuss Heinlein's seemingly genuine regard for citizen activism and community-level, grass roots democracy.

Citizen Activism and Grass Roots Democracy

Although Heinlein appeared to be against direct democracy in emotional times of crisis, he is very much in favor of citizen activism and grass roots democracy for confronting local and immediate issues. In fact, perhaps his single greatest purpose for writing his 1946 handbook on practical democracy (later published as Take Back Your Government, 1992) was to encourage citizens to become active in local politics. Heinlein emphatically said that "a single citizen, possessed of the right to speak and the right to vote, can make himself felt whenever he takes the trouble to exercise those twin rights" (p. 1). In a declaration of his political beliefs in this book, Robert declared the following:

> From politics I have come to believe the following:
>
> (1) Most people are basically honest, kind, and decent.
>
> (2) The American people are wise enough to run their own affairs. They do not need Fuehrers, Strong Men, Technocrats, Commissars, Silver Shirts, Theocrats, or any other sort of dictator.
>
> (3) Americans have a compatible community of ambitions. Most of them don't want to be rich but do want enough economic security to... raise their families in decent comfort without fear of the future. They want the least government necessary to this purpose and don't greatly mind what the other fellow does as long as it does not interfere with them living their own lives.... We don't like cops.
>
> (4) Democracy is not an automatic condition resulting from laws and constitutions. It is a living, dynamic process which must be worked at by you yourself--or it ceases to be a democracy, even if the shell and form remain.
>
> (5) One way or another, any government which remains in power is a representative government.... Hitler's government was a popular government; the vast majority of Germans preferred the rule of gangsters to the effort of thinking and doing for themselves. They abdicated the franchise.
>
> (6) Democracy is the most efficient form of government ever invented by the human race. On the record, it has worked better in peace and war than fascism, communism, or any other form of dictatorship. As for the mythical yardstick of "benevolent" monarchy or dictatorship--there ain't no such animal!
>
> (7) A single citizen, with no political connections and no money, can be extremely effective in politics. (p. 2)

As I have already reported elsewhere in this appendix, Heinlein had himself been involved in grass roots activism and local politics. He had even served as a poll watcher in campaigns against the corrupt Los Angeles political machine during the 1930s, and on one occasion had been forced to call for witnesses to protect himself from being assaulted by political thugs. But he had also seen that democracy could work effectively on a local and community level. He recounts his own experience in working for political change after he got involved in southern California politics:

> Nor is the work futile. The volunteer organization [Upton Sinclair's EPIC campaign] with which I presently became affiliated recalled a mayor, kicked out a district attorney, replaced the governor with one of our own choice, and completely changed the political complexion of one of the largest states--all within four years. I did not do it alone--naturally not, nothing is never done alone in politics--but it was done by a comparatively small group of unpaid volunteers almost all of whom were as ignorant of politics at the start as I was. (Take Back Your Government, 1992, p. 19)

Heinlein championed the possibilities of grass roots activism in his novels as well as in his personal life. In his early story "Magic, Inc." (1941/1970), he depicted a community of small business

owners and professionals galvanizing themselves into political action to fight a monopolistic conspiracy at the state capital. Similarly, in the juvenile novel Red Planet (1949), he described a community of colonials who organize themselves politically to resist arbitrary and capricious actions by the colonial administration:

> They were (ready to vote)--and it carried unanimously. If any refrained from voting, at least they did not vote against. That matter settled, by another ballot they set up an emergency committee, the chairman to hold power subject to review by the committee, and the committee's decisions to be subject to review by the colony. (p. 142)

Similarly, in The Moon is a Harsh Mistress (1966/1968), he described a political revolution which originates in grass roots activism by lunar colonists fearful of the economic consequences of continued exploitation by Earth.

But it was during the time of his personal involvement in activism that he also came to recognize--and become disgusted with--lazy, irresponsible, and uncommitted citizens. In Take Back Your Government (1992), he made it clear that,

> Democracy is in perpetual crisis. It requires the same constant, alert attention to keep it from going to pot that an automobile does when driven through downtown traffic. If you do not yourself pay attention to the driving, year in and year out, the crooks, or scoundrels, or nincompoops will take over the wheel and drive it in a direction you don't fancy, or wreck it.... When you pick yourself up out of the wreckage... don't talk about what "They" did to you. You did it because you preferred to sit in the back seat and snooze. Because you thought your taxes bought you a bus ticket and a guaranteed safe arrival, when all your taxes bought you was a part ownership in a joint enterprise, on a share-the-cost and share-the-driving plan. (pp. 6-7)

Heinlein was not even insisting that all citizens should become activists. But he was lamenting that citizens do not even bother to vote. Even in the latter part of his life, after many had thought he had become anti-democracy, he was urging his readers to participate in the democratic process (Time Enough for Love, 1973/1987):

> If you are part of a society that votes, then do so. There may be no candidates and no measures you want to vote for... but there are certain to be ones you want to vote against. In case of doubt, vote against. By this rule you will rarely go wrong. (p. 346)

Perhaps even more abhorrent to Heinlein than nonvoting was the apolitical attitude itself. A person with this attitude does not get involved in issues, remains aloof from the political process, perhaps even disparages those who do exercise their social responsibilities as citizens. Such a person is found in the character of Mrs. Stuart, mother of the young protagonist in Heinlein's juvenile novel The Star Beast (1954). Mrs. Stuart snippily informs a government official, "I make it a rule never to pay attention to politics" (p. 231). Heinlein's positive advice on this matter is a call for personal commitment to political issues. In his novel Double Star (1956/1957), a story of an actor called upon to impersonate a politician, the actor discovers a bit of his subject's political philosophy: "Take sides! Always take sides! You will sometimes be wrong--but the man who refuses to take sides must always be wrong! Heaven save us from poltroons who fear to make a choice" (p. 87).

The bottom line for Heinlein is that it is unethical and irresponsible for citizens not to get involved in the democratic process. This issue of citizen responsibility is crucial for it is the foundational principle for making democracy work. Heinlein pointed out in Time Enough for Love (1973/1987), "Any government will work if authority and responsibility are equal and coordinate.... such governments are rare--most people want to run things but want no part of the blame" (p. 246). This point of coordinate responsibility being the essential characteristic of workable government also applies to social policy as well. But it is not the only pertinent point, as we shall see in the next section.

Heinlein and Social Policy

Heinlein addressed various aspects of social policy in his novels including crime and punishment, government social and economic programs, and environmental policy. Heinlein's basic starting point for deciding the rightful policies for any organized society to undertake is found in his basic ethic of group survival (see Appendix F). That is, social policies must at a minimum promote the welfare of those members whose survival is most fundamental to the survival of the society. In the novel Time Enough for Love (1973/1987), he made this notion explicit:

> All societies are based on rules to protect pregnant women and young children. All else is surplusage, excrescence, adornment, luxury, or folly which can—and must—be dumped in emergency to preserve this prime function. As racial survival is the only universal morality, no other basis is possible. Attempts to formulate a "perfect society" on any foundation other than "Women and children first!" is not only witless, it is automatically genocidal. (pp. 242-243)

Combining Heinlein's idea of "Women and children first!" with his idea of coordinate responsibility brought out in the previous section of this appendix provides us with the essential clues in understanding his attitudes toward social policies. I will take up his attitudes toward social policies first be examining his views regarding crime and punishment.

Crime and Punishment

In matters of crime and punishment, Heinlein appeared to have regarded crime as an act of war by the criminal against the body politic (Starship Troopers, 1959/1968). And just as a society is justified in making war against other societies for reasons of self defense, so is a society justified in making war against individuals who predate upon it. Heinlein was quite pragmatic about crime, declaring that justice is a matter of coordinating protective responses with the degree of threat presented by the criminal. He was quite clear that justice is not a matter of investigating motivation, intent, or psychological pathologies.

For example, in Heinlein's discussion of the psychopathic deserter who murders a little girl in Starship Troopers (1959, see pp. 87-94), the following points may be educed: (a) criminal acts, if not dealt with, cumulatively and eventually lead to civil disorder which threaten society's ability to protect its essential members; (b) punishment must be sufficiently harsh as to be an effective deterrent—a military analogue would be "overwhelming response;" (c) punishment is not conditional on the psychological health of the criminal; (d) violent criminals are too dangerous to be allowed opportunity to repeat their crimes, therefore capital punishment is required; (e) lesser crimes and misdemeanors should be punished in a manner that does not have adverse impact on the poor, therefore corporal punishment should be imposed rather than fines and jail; (f) in addition to corporal punishment, criminals must reimburse economic losses suffered by their victims; (g) punishment must be administered immediately following sentencing so as to maintain its deterrent value.

Of course, Heinlein also had a metaphysical basis for his pragmatic approach to capital punishment, which serves to soften the apparent harshness and finality of the practice. For example, in Stranger in a Strange Land (1961/1987), the hero of the novel, Valentine Michael Smith, describes the act of capital punishment as "much like a referee removing a player for 'unnecessary roughness' " (p. 421) in which the person is merely "discorporated and sent back to the foot of the line to try again" (p. 421) in the cycle of reincarnation. Thus, for Heinlein, it is "impossible to kill a man" (p. 421) therefore capital punishment is not the dread finality that it at first seems. But the key principle is that the degree and kind of punishment must be coordinate with the degree and kind of crime—and it should be so to a dramatic extent.

Some of Heinlein's strongest views about crime and punishment are expressed in novels that depict frontier societies. For example, in Tunnel in the Sky (1955), The Moon is a Harsh Mistress (1966/1968), Time Enough for Love (1973/1987), and The Number of the Beast (1980/1982), all of the scenes occur in either frontier or laissez faire societies. In Tunnel in the Sky and Time Enough for Love, Heinlein described how uncivilized humans that take advantage of frontier conditions to prey upon others must be ruthlessly dealt with for the good of all.

Heinlein also experimented with banishment as an alternative punishment in the stories "Coventry" (1940/1967), "Methuselah's Children" (1941/1967), Tunnel in the Sky (1955), and The Moon is a Harsh Mistress (1966/1968). A notable outcome of all these examples of banishment is that they rarely work; those banished almost always come back to make trouble.

In summary, Heinlein's theory of crime and punishment likens crime to war on a small scale. Crime is especially serious when the victims—direct or indirect—are women and children, society's most valuable members. Robert believed that punishment should be equal and coordinate to the crime, and that banishment is rarely effective. In the next section, I will continue my discussion of Heinlein's views of social policy by examining his views of the efficacy of various government programs.

Socialism and Government Programs

Heinlein was always interested in the possibilities of enlightened social policies and eagerly examined the social programs of each country he visited. At least in 1954 Heinlein did not seem to be ideologically opposed to social welfare programs--only to their inept administration. For example, in his 1954 travel book Tramp Royale (finally published in 1992), he described his disappointment with New Zealand's social programs. At the same time he found much to admire about the social programs of Uruguay, saying that the latter country demonstrates "that social security laws need not be destructive to high production and a high standard of living, if properly designed and wisely administered" (pp. 365-366). He later learned that Uruguay's social security programs were not as utopian as he first believed, and that New Zealand's were not quite as terrible (Owenby, 1994c).

Nevertheless, in matters of social policy Heinlein appeared to be against entitlement welfare except for those unable to care for themselves. For example, the novel Farmer in the Sky (1950) depicts a frontier farming society on Ganymede (a moon of Jupiter) which is trying to cope with a flood of new immigrants who were promised already prepared farms on their arrival. But the promises were made by the bureaucrats back on Earth, not the administrators of the colony. Nevertheless, the colonists try to care for the immigrants by offering them jobs working for other farmers until they can get their homesteads going. When the character Saunders, one of the new immigrants, refuses to work for another farmer, standing on his "rights" to have handed over to him a working farm, he is told, "We won't let your children starve... but as for you, you can go chew rocks. If you won't work, you won't eat" (p. 106).

In the novel Time Enough for Love (1973/1987) Heinlein described a similar situation on another off-world colony called "New Beginnings." In this colony, a ne'er-do-well farmer named Leamer is constantly wasting time and borrowing money rather than working hard to take care of his family. When Leamer approaches banker Ernest Gibbons for a loan, he is told, "If you spent as much time working as you do talking, you wouldn't need to talk about 'bad luck'.... Clyde, the best thing you could do for your kids is to cut your throat. Then people would adopt them" (p. 256). One gets the clear impression that Heinlein attributed much--if not most—"bad luck" and poverty to sloth.

On the other hand, Heinlein did believe in mutual aid when the chips are down--without counting the cost. For example, in Farmer in the Sky (1950), the young protagonist is working 14 hour days trying to get his farm ready for sowing. His neighbors—a kindly family of German immigrants—feed him, house him, supply him with materials and tools, and help him to finish his work so that he meets his deadline. After the entire colony is struck by a massive earthquake killing two thirds of the population, the remaining colonists pool their resources to take care of each other.

Similarly, in Tunnel in the Sky (1955), over a hundred young men and women are stranded on a wild planet after a cosmic event interferes with their scheduled retrieval from a field examination in survival skills. The students realize that rugged individualism has survival value only for a short time; they pool their resources and set up a colony which can easily be described as a socialist democracy. Perhaps the key point here is Heinlein's perspective that drastic situations call for drastic measures. That is, socialism is a drastic measure appropriate for relatively small societies facing major challenges to their collective survival. But no political economy--socialist or not—can work unless its members all do their share of the work. As Heinlein implied in another context, no social policy can work if benefits and responsibilities are not equal and coordinate (Time Enough for Love, 1973/1987, see p. 246). As I mentioned earlier, that last point is a recurring theme in Heinlein's theory of public ethics.

Heinlein also believed in government-sponsored research as one of the most productive uses toward which public money could be put. For example, in the novel Beyond this Horizon (1942/1948) he said that "scientific research, no matter how 'pure' and useless it may seem, has an annoying habit of paying for itself many times, in the long run, in the form of greatly increased productivity" (p. 51). In the same novel, he described the government of a future society establishing criteria for appropriating large amounts of money for research. Among other criteria, the research project must be too expensive to attract funding from other sources, it must be worthwhile to the entire population without being necessarily economically useful, and it must take a long time to bear fruit (see pp. 51-52).

Another research-related example is from the novel Time for the Stars (1956) in which Heinlein described the "Long Range Foundation" (LRF) whose motto is "Bread Cast Upon the Waters" (p. 12). The LRF is a research foundation whose policy is to fund only projects that no other funding body will consider. Although it tries to select projects which have no potential for economic return, the serendipitous nature of research usually results in the LRF getting incredibly rich from unlooked for consequences of the new knowledge gained from the projects it funds. Consequently it is always looking for new "rat holes" in which to pour its profits.

Heinlein's own personal example of the principle of serendipity in research is the medical technology developed as a byproduct of NASA's space program. This technology allowed him to have a carotid artery bypass operation in 1978, saving him from premature senility. He described the operation in his testimony before a joint committee of Congress in 1979 ("Spinoff," 1980). In that testimony, he justified government-sponsored scientific research for its serendipitous effects:

> In all scientific research, the researcher may or may not find what he is looking for--indeed, his hypothesis may be demolished--but he is certain to learn something new . . . which may be and often is more important than what he had hoped to learn.... the Principle of Serendipity.... is so invariant that it can be considered an empirically established natural law. (p. 502)

Besides Heinlein's ethical principles in the public sphere of "Women and children first!" and coordinate responsibility, his perspective of social policy adds a pragmatic principle as well. That is, whether we are looking at penology, social welfare, or government spending, rather than conformance to a party line, his major concern was whether the policy works in practice. In that sense, Heinlein was not an ideologue, or as he put it: "I'm not a purist in political theory" (Between Planets, 1951, p. 205). In the next section, I change direction from my previous discussions of Heinlein's social policy to address an issue of somewhat different character--environmental policy.

Environmental Policy

In matters of environmental policy, Heinlein was often contemptuous of popular approaches to environmentalism. Nevertheless, he gave indications of being in favor of responsible ecological management. In fact, Heinlein may have been the first science fiction writer to have introduced the science of ecology to science fiction readers. For example, the novel Farmer in the Sky (1950) can be described as a treatise on ecology. Virginia Heinlein reported that she performed a fair amount of research in order to provide her husband with the ecological information he needed to make the book sound in that respect (Owenby, 1994c). The intricacies of ecology certainly impressed Heinlein for he had his protagonist in that book tell us the following:

> Ecology is the most involved subject I ever tackled. I told George so and he said possibly politics was worse--and on second thought maybe politics was one aspect of ecology. The dictionary says ecology is 'the science of the interrelations of living organisms and their environment.'.... Clover, bees, nitrogen, escape speed, power, plant-animal balance, gas laws, compound interest laws, meteorology--a mathematical ecologist has to think of everything and think of it ahead of time. Ecology is explosive; what seems like a minor and harmless invasion can change the whole balance. (pp. 114, 119)

It was typical of Heinlein that once he became acquainted with a new area of knowledge, he found ways to apply it in his future stories. For example, in Starman Jones (1953/1975), he suggested that

ecology should be a factor in establishing policies for new colonies: "It was contrary to Imperial Policy to plant most terrestrial fauna on other planets; the colonists were expected to establish economy with indigenous flora and fauna" (p. 61). He was even more explicit in Glory Road (1963/1970): "Disturbing the ecological balance is the worst mistake any government can make.... a matter to be approached with fear and trembling" (pp. 159-160). In the novel The Cat Who Walks Through Walls (1985/1986), he even suggested that humans don't have an automatic right to predate other animals for food: "When you come right down to it, there is little justice in killing stupid (animals) to feed stupid people" (p. 373).

But Heinlein was also clear that human beings and their needs are not to be pushed aside in automatic favor of the needs of other species. In Time Enough for Love (1973/1987), he declared,

> There are hidden contradictions in the minds of people who "love Nature" while deploring the "artificialities" with which "Man has spoiled 'Nature.' " The obvious contradiction lies in their choice of words, which imply that Man and his artifacts are not part of "Nature"--but beavers and their dams are. (p. 245)

However, Heinlein was definitely in favor of controlling pollution of air and water. He advocated Scandinavian approaches to controlling water pollution; that is, he would require all users to place their water intakes downstream from their effluent discharge outlets ("The Happy Days Ahead," 1980, p. 566). In addition, he regarded current problems with air pollution as largely resulting from the internal combustion engine—a stupid technology not only because it is polluting, but because it wastes petroleum, a nonrenewable resource. In fact, he suggested doing away with petroleum burning in favor of electricity generated by solar, hydro, geothermal, fission, and fusion power plants in the short run and, in the long run, making use of satellite solar power stations from which power would be funneled down to the Earth (pp. 567-570). In fact, in two of his later books, Friday (1982/1983) and The Cat Who Walks Through Walls (1985/1986), he depicts future high-technology societies that have nevertheless eliminated petroleum-burning personal vehicles in favor of horse-drawn and electric cars.

Notwithstanding his antipollution views, Heinlein occasionally shows his contempt for those "antitechnology nuts" who flock to organizations such as the Sierra Club, an organization that "loves deserts and hates people" ("The Happy Days Ahead," 1980, p. 570). He certainly used his book Friday (1982/1983) to make fun of some approaches to environmentalism. In that novel, he depicts a "warning by the Sierra Club concerning the threat to the endangered species Rhus diversiloba [poison ivy]. A picketing demonstration against Dow Chemical is planned" (p. 137).

It seems likely that Heinlein would have been in agreement with the French evolutionary anthropologist Teilhard de Chardin (Reese, 1980) that human beings are the pinnacle of biological evolution on this planet, the end for which the life force has been tending these thousands of millions of years. From that perspective, the other species may then be regarded as evolutionary discards. That is, they are important to the biological ecology on which humans depend—or socially and symbiotically important as in the case of dogs and cats—but not transcendentally important as humans are. "As for me, willy-nilly I am a man, not a beaver, and H. Sapiens is the only race I have or can have" (Time Enough for Love, 1973/1987, p. 245). Heinlein clearly comes down on the side of his own species. (Incidentally, his view of environmental policy also brings out another of his principles, that of pragmatic utility.) Finally, it could also be said that Heinlein's principle of coordinate responsibility implies that a technology whose collective public disadvantages outweighs its private advantages--such as the gasoline-powered automobile or effluent discharges to public waterways—ought not be tolerated.

So far, I have discussed Heinlein's views toward politics and social policy. In the next section, I shift gears to talk about Heinlein's views regarding sex—a private matter with public consequences.

Heinlein and Sexual Ethics

Sex--in all its myriad aspects—was a perennial interest of Robert Heinlein (Owenby, 1994c). He early on decided that he was in disagreement with the sexual mores prevalent in the society he grew up in. For example, Heinlein believed the earlier traditional sexual code of premarital abstinence followed by marital chastity was unworkable and ought to be replaced by a code of sexual openness. He appeared to form this opinion fairly early in his life; certainly he was already advocating various aspects of an open sexual code by the early 1940s ("If this goes on--", 1940/1967). Heinlein appeared to have

pondered the problems of sexual ethics throughout his life. In fact, Heinlein spent much of his most famous novel Stranger in a Strange Land (1961/1987) exploring sexual ethics. His authorial character, Jubal Harshaw, gives what is reasonable to assume is Heinlein's own perspective on the matter:

> The ethics of sex is a thorny problem. Each of us is forced to grope for a solution he can live with.... I see the beauty of... junking the present sexual code and starting fresh. Most philosophers haven't the courage for this; they swallow the basics of the present code—monogamy, family pattern, continence, body taboos, conventional restrictions on intercourse, and so forth—then fiddle with details . . . even such piffle as discussing whether the female breast is an obscene sight. (p. 365)

For Heinlein, the key problem with the traditional code was his belief that sexual exclusivity fosters insecurity and jealousy. In Time Enough for Love (1973/1987), he said, "A competent and self-confident person is incapable of jealousy in anything. Jealousy is invariably a symptom of insecurity" (p. 250). Jealousy is also the emotional result of a frustrated effort to control the sexuality of another person. What was Heinlein's solution to the problem? It appeared to be to do away with the idea of exclusive sexual rights to any one person. That is, we should follow the sexual ethics of the pre-civilization Eskimos.

> Now comes Mike and says: "There is no need to covet my wife . . . love her! There's no limit to her love, we have everything to gain—and nothing to lose but fear and guilt and hatred and jealousy." The proposition is incredible. So far as I recall only pre-civilization Eskimos were this naive--and they were so isolated that they were almost "Men from Mars" themselves.... Eskimos were invariably described as the happiest people on Earth. Any unhappiness they suffered was not through jealousy; they didn't have a word for it. They borrowed spouses for convenience and fun--it did not make them unhappy. So who's looney? (Stranger in a Strange Land, 1961/1987, p. 366)

Heinlein also believed that nudism was a healthy means for facilitating relaxed and open sexual attitudes and getting rid of culturally-induced body taboos. Heinlein's advocacy of nudism appeared, for example, in his essay "Where to?" (1952/1980), in The Door into Summer (1956/1957), and in every novel from Stranger in a Strange Land (1961/1987) onward. But Heinlein also seemed to recognize that not everybody is able to follow a policy of sexual openness--in his words, it is a code for Olympians and geniuses. "Geniuses are justifiably contemptuous of lesser opinion and are always indifferent to the sexual customs of the tribe; they make their own rules" we are told by the authorial character Jubal Harshaw in Stranger in a Strange Land (1961/1987, p. 368). He follows by pointing out that such people should be judged by "Olympian morals" that permit sexual freedom "limited by their own judgment" (p. 368). But what kinds of rules did Heinlein's judgment indicate that Olympians ought to follow?

Sexual Morals, Marriage, and Family

What obligations does a person incur toward another when sexual congress is pursued? Good manners and fair dealing is what Heinlein answers from the point of view of the lunar colonists in the book The Moon is a Harsh Mistress (1966/1968), else the offender is subjected to quick frontier justice. The moral obligations arising from sexual congress are honesty, kindness, courtesy, and discretion—qualities that Heinlein is careful to depict in the sexual lives of his major characters from Stranger in a Strange Land (1961/1987) onward. This is especially the case in the developing saga of the Lazarus Long family beginning in Time Enough for Love (1973/1987)--"Sex should be friendly. Otherwise stick to mechanical toys; it's more sanitary" (p. 243)--and concluding in To Sail Beyond the Sunset (1987).

These books describe a family based on group marriage in which members of the family move casually from one partner to another, and sometimes to several partners at once. Good manners is especially important in marriage: "Formal courtesy between husband and wife is even more important than it is between strangers" (Time Enough for Love, 1973/1987, p. 352). But Heinlein often seemed to be more interested in the spiritual aspect of sex. Under ideal conditions he regards sex as a spiritual act.

> Copulation is spiritual in essence--or it is merely friendly exercise. On second thought, strike out "merely." Copulation is not "merely"--even when it is just a happy pastime for two strangers. But copulation at its spiritual best is so much more than coupling that it is different in kind as well as in degree.... many people never achieve spiritual sharing even with the help of male-female advantage; they are condemned to wander through life alone. (p. 348)

When such a spiritual sharing is evident between two people, Heinlein's prescription and example is marriage. "An honorable man must not offer less than matrimony to the object of his love" (Job: A Comedy of Justice, 1984/1985, p. 69). If children ensue, arrangements must be made for their care and succor. Marriage and family are the best arrangements for raising children. Among other things marriage and family should make the demands of childrearing tolerable:

> The... function of "family" is the protection of children and pregnant women. To accomplish that, family organization must be rewarding to men as well.... A marriage must offer its members emotional, spiritual, and physical comforts superior to those found in living alone if that prime function is to be accomplished.... the current flux of swingers' clubs, group marriages, spouse swapping... [represent]... fumbling and unconscious attempts to regain the pleasure, emotional comfort, and mutual security once found in the extended family of two or more generations back. ("Where to?" 1980, pp. 327-328)

Heinlein regarded marriage as a way of helping humans to be happy together. He apparently believed it made existence itself--at least for men--tolerable. For example, Heinlein would point out in the novel The Moon is a Harsh Mistress (1966/1968) that, "Men without women don't care whether they stay alive or not" (pp. 130-131). For Heinlein, different forms of marriage and family life are acceptable, provided they meet the minimum criteria of protection and succor of women and children while providing incentives to men as well.

Heinlein experimented with different forms of marriage as early as the novel Beyond this Horizon (1942/1948) in which we see such things as "ortho-marriages" in which spouses have contractual sexual rights but do not necessarily live together. In The Puppet Masters (1951), we see a variety of marriage contracts available such as term, renewable, or lifetime. Heinlein was even more daring in his later novels; for example, in The Moon is a Harsh Mistress (1966/1968), he depicts these marriage forms in the lunar colonies: "polyandries, clans, groups, lines" (p. 209). But Heinlein cautions us to remember that no matter what kind of marriage is entered into, sexual partners are not property: "A woman is not property, and husbands who think otherwise are living in a dreamworld" (Time Enough for Love, 1973/1987, p. 245).

Neither Heinlein's Olympian code of sexual openness nor his unusual views of marriage are the only remarkable features of his sexual ethics. He was also remarkably open about other sexual practices as well.

Sexual Practices: Masturbation, Homosexuality, and Incest

As regards different sexual practices, Heinlein is remarkably nonjudgmental, even advocatory at times. Masturbation, he said, "is cheap, clean, and convenient, and free of any possibility of wrongdoing--and you don't have to go home in the cold. But it's lonely" (Time Enough for Love, 1973/1987, p. 248).

Regarding the issue of sexual orientation, in both The Moon is a Harsh Mistress (1966/1968) and in Time Enough for Love (1973/1987), he suggested that homosexuality was a second-best sexual orientation. For example, he said in The Moon is Harsh Mistress that while nothing is morally wrong with practicing homosexuality, "most men want women and won't settle for substitute" (p. 131). He goes on to say in Time Enough for Love (1973/1987) that the

> saddest feature of homosexuality is not that it is "wrong" or "sinful" or even that it can't lead to progeny--but that it is more difficult to reach through it... spiritual union. Not impossible--but the cards are stacked against it. (p. 348)

In the novel I Will Fear No Evil (1970/1987), he openly discussed the homosexual partnership of two of the protagonist's friends. In most of his later novels, many--if not most--of his characters are described as openly bisexual. In the above novel, he listed several possible sexual orientations: "ortho-male, ortho-female, ambi-male, ambi-female, homo-male, homo-female... solo-narcissists, and... the neuters" (p. 222). But his overall conclusion is, "I say there is just one sex. Sex" (p. 222). That is, for Heinlein, sex is the sexual willingness to bond with another person, period.

Perhaps the most controversial aspect of Heinlein's attitudes toward sex is the matter of incest. He first introduces the practice in a major way in Farnham's Freehold (1964/1971): "Incest... is a bad idea, usually.... Brother-and-sister marriages are not uncommon in history. They are not necessarily bad" (p. 114-115). Like sexual orientation, he apparently regards incest as morally neutral; he defines incest "solely in terms of genetic hazard" (Time Enough for Love, 1973/1987, p. 223). In that novel, his protagonist has incestuous relations with both his sisters and his mother.

From that novel onward, he includes incest as a frequent theme in all his books--parent-child and sibling incest is depicted without condemnation in The Number of the Beast (1980/1982), Job: A Comedy of Justice (1984/1985), and The Cat Who Walks Through Walls (1985/1986). In that latter novel and in its sequel To Sail Beyond the Sunset (1987), we are given to believe that the union of Lazarus Long (Heinlein's favorite authorial character) and his mother Maureen Smith is the long sought-for romantic culmination of his latter fiction. One of the most disturbing scenes in Heinlein's last book is that of a father deflowering his willing daughter upon her reaching menarche while the child's mother looks on approvingly.

To summarize Heinlein's sexual ethics: Sex for Heinlein is a way for humans to connect physically and spiritually, building bonds of love that are foundational for moral behavior. Sex facilitates marriage and family which are essential survival institutions for human beings. Sexual openness is the only healthy code for human beings. Homosexuality, masturbation, and incest are morally neutral practices. In the next section, I will discuss Heinlein's views on other aspects of human behavior than just sexuality.

Gender, Race, Class, and Human Rights

I turn now from discussion of Robert Heinlein's sexual ethics to a discussion of his views regarding equality, social justice, and human rights. In this next section I will take up these issues first from the perspectives of gender, race, and class as characteristics that affect how human differences are treated socially, politically, and economically. I will follow by discussing Heinlein's views of human rights from the perspective of the whole human family. My first discussion will center on what I believe to be Heinlein's views regarding feminism and gender relations in general.

Heinlein and Gender Equity

It is probably fair to say that Heinlein believed in the fundamental equality of women with men. From the very beginning of his writings, including his so-called Future History stories (The Past through Tomorrow, 1967), he repeatedly portrayed women as competent, fully participating human beings. As has already been pointed out in Appendix F, Heinlein thought that evolution has equipped women for different roles that ultimately make them socially and racially more valuable than men. This has implications for three aspects of equality: the political, the occupational, and the social.

For Heinlein, the political equality of women was not only acceptable, it was desirable. Interestingly, he was often vexed with women voters and candidates in his early career because he believed they had so recently got the vote that they had not yet emancipated themselves from false attitudes inculcated in them by the male-dominated culture (Take Back Your Government, 1992). Nevertheless, he also lauded women who served as campaign workers with him during the time he was fighting the political machines of southern California. He even suggested in The Moon is a Harsh Mistress (1966/1968) and Expanded Universe (1980) that women might be more trustworthy with the franchise than men. In Heinlein's society of the novel Starship Troopers (1959/1968), women and men are equally eligible for acquiring the franchise. For Heinlein, political equality--which is to say, equality of political power-- is a function of political responsibility and political responsibility is a function of individual character not gender.

With regard to occupational equality, it should be noted that Heinlein was perhaps the first science fiction writer to introduce the idea of equal employment laws for women (and minorities) in his stories. For example, in the early story "Delilah and the Space Rigger" (1949/1967), Heinlein described a woman who breaks the gender barrier in the space station construction industry. The character, named Gloria McNye, is a competent electronics engineer who must nevertheless invoke the name of the "Fair Employment Commission" (p. 216) to enforce her right to work on the project. Similarly, Heinlein often wrote stories in which women serve in roles varying from spaceship captains to politicians. With regard to the latter role, he suggested that both Barbara Jordan (in 1976) and Jeanne Kirkpatrick (1980) be nominated as candidates for the U.S. Presidency (Owenby, 1994c). For Heinlein, occupational equality is not only a matter of justice but simply good business practice for ensuring that the most capable people are hired for critical jobs. Occupational equality for women should be based on the same criteria applied to any other class of applicants—ability and general qualifications.

But Heinlein's views regarding the social equality of women were different. Social equality is a bad idea because women are more valuable than men in Heinlein's ethical doctrine. As he explained in Time Enough for Love (1973/1987):

> Whenever women have insisted on absolute equality with men, they have invariably wound up with the dirty end of the stick. What they are and what they can do makes them superior to men, and their proper tactic is to demand special privileges, all the traffic will bear. They should never settle merely for equality. For women, "equality" is a disaster. (p. 250)

Heinlein was sympathetic to views of gender that emphasize equality of social, political, and economic participation as long as they honored the unique biological role of women in a heterosexual social ecology. That is, he seemed to lean to the view that important aspects of gender role behavior are biologically innate rather than socially constructed artifacts of genderization (although he was very keen to socially constructed artifacts of genderization as a cause of political naïveté in women during the first half of this century; see Take Back Your Government, 1992).

Heinlein believed that women's gender roles should not be lightly regarded as they are important to the evolutionary efficacy of human beings. Heinlein maintained, for example, that "Men are more sentimental than women" (Time Enough for Love, 1973/1987, p. 240); that "respect for laws is a pragmatic matter [that women] know... instinctively; that's why they are all smugglers" (p. 159). In other words, Heinlein likely cannot believe in the deciding weight of socially constructed knowledge because of what he feels to be the greater weight of biological imperatives. This point of view could be a cause of concern for those who view conventional sex roles as arising from gender issues of power, dominance, and cultural hegemony rather than from innate biological characteristics.

Nevertheless, Heinlein believed that much of the discussion regarding gender equity was a red herring. Pragmatically, Heinlein basically feels that women in a democratic society, being numerically superior, are in the position of being able to politically impose their will on that society once they decide precisely what they want (Expanded Universe, 1980). That is, he believed that because women constitute a larger percentage of the electorate, it was in women's own hands to decide upon and politically implement the societal changes they desired for themselves. The numerical superiority of women make them unique among the diverse groups in society. I now take up a discussion of Heinlein's views regarding a different dimension of human diversity.

Race and Ethnic Diversity

Just as he was one of the earliest science fiction writers to deal with women characters in a serious way, Heinlein was one of the earliest science fiction writers to include characters of diverse race and ethnic origins. In fact, he introduced ethnic and racial diversity into his stories from the beginning. Throughout his stories, he was consistent in his belief that members of different racial groups should enjoy the same political, economic, and social privileges.

Some examples of racial and ethnic diversity include the following: Lieutenant Wong, the Asian tutor of the protagonist, and Sublieutenant Peters, an African-American ship's officer in Space Cadet (1948); Dr. Royce Worthington, the black African anthropologist and scholar of magic, and Feldstein, the Jewish magician's agent in "Magic, Inc." (1941/1970); a Nisei boy rescued from disaster in the early

story "Water is for Washing" (1947/1959); and Secretary of National Security Martinez, an Hispanic-American in The Puppet Masters (1951).

Other examples of racial and ethnic diversity in The Star Beast (1954) include Mr. Kiku, a black Rhodesian (Zimbabwean) who is the permanent foreign undersecretary of Earth's interstellar federation, and Greenberg, Mr. Kiku's Jewish assistant. Rod Walker, a young African-American male student (Personal communication with Virginia Heinlein, July 17, 1996), Caroline Mshiyeni, a young Zulu female student, and Carmen Garcia, a young Hispanic female student are examples of racial and ethnic diversity in Tunnel in the Sky (1955). Jimmy Washington is the African-American press secretary to the leader of a political party in Double Star (1956/1957). Uncle Alf is the black South African chief of special communicators aboard a starship in Time for the Stars (1956).

Juan Rico is the Filipino soldier-protagonist in Starship Troopers (1959/1968). Podkayne Fries, a mixed-race teenaged girl, and her Great Uncle Tom Fries, a politician of New Zealand Maori ancestry, are two examples in Podkayne of Mars (1963). In Farnham's Freehold (1964/1971) we have the character Ponse, a noble of a future Earth society dominated by people of color. The character Manuel O'Kelly Davis is the mixed-race protagonist in The Moon is a Harsh Mistress (1966/1968). Zaccur Briggs is an African-American starship captain in Time Enough for Love (1973/1987). Finally in The Cat Who Walks Through Walls (1985/1986), the character Colin Campbell is the mixed-race protagonist. These examples are, of course, an incomplete list.

Incidentally, Heinlein would probably have taken issue with my use of the "hyphenated American" constructions: African-American, Asian-American, or Hispanic-American (Expanded Universe, 1980). What Heinlein clearly seemed to have wanted was a society of ethnic inclusiveness based on common cultural and political values, not a society comprised of ethnic fragments. He often worried about the pressures that seemed to be pushing the United States towards fragmentation on ethnic and regional lines. In fact, his novel Friday (1982/1983) described possible future consequences of these divisive trends, the major one being a balkanized North America unable to control the spread of civil wars and lesser social disorders.

Heinlein even tried to explore some of the problems of black-white race relations in the 1964 novel Farnham's Freehold (1964/1971). The novel made the somewhat obscure point that power relations affected race relations in a very predictable way; that is, power corrupted race-relations no matter which race has the upper hand:

> Barbara said stubbornly, "Hugh, how many white men of today could be trusted with the power Ponse had and use it with as much gentleness as he did use it?"
>
> "Huh? None. Not even yours truly.... Nobody can be trusted with it. The one time I had it I handled it as badly as Ponse." (p. 310)

Because of the corrupting influence of possessing arbitrary power over others, it is all the more important that political institutions which provide for basic civil liberties for all citizens be maintained and strengthened. Such institutions are the only safeguard against the corruptions of power in a multi-racial society.

In summary, Heinlein believed in racial and ethnic inclusiveness. However, he did not believe in a multicultural society. Rather he believed that forging a free community required a commitment to the whole society and its common cultural values. Of course, the argument that cultural hegemony suppresses different voices would largely have been uncompelling to him because of his belief that civil order and liberty required such a hegemony. For Heinlein, the alternative is a the arbitrary rule of the strong over the weak. At any rate, there are ways other than racial injustice that are used by the strong to dominate the weak. One of the most important centers around the issue of class, my next topic.

Heinlein and Socioeconomic Class

Robert Heinlein's views about socioeconomic class and social relations changed over the years that he wrote science fiction. He had decidedly socialistic views at the beginning of his career, and only reluctantly gave up those views as he grew older and "learned better" (Owenby, 1994c). As I mentioned in Chapter II, Heinlein worked for Upton Sinclair's EPIC campaign in the late 1930s, a program that he later would characterize as a "money give away" scheme for income redistribution (Owenby, 1994c).

During this early period of socialism, he would often make fun of the economic motivations of the ruling socioeconomic upper class in such stories as "Life-line" (1939/1967), "Requiem" (1940/1967), "Blowups Happen" (1940/1967), "Let There be Light" (1940/1951), and "Logic of Empire" (1940/1967).

A basic characteristic of Heinlein throughout his life was that he respected individual effort--especially professional accomplishment--over wealth. In Starman Jones (1953/1975), he would describe his protagonist Max Jones as having "no awe of wealth. Achievement as exemplified by his uncle held much more respect in his eyes" (p. 83). Even when Heinlein created the character of wheeler-dealer industrialist D.D. Harriman in "The Man Who Sold the Moon" (1951), Heinlein's literary biographer would explain Heinlein's attitude as respect for Harriman because he achieved through his own efforts--as opposed to business leaders who were mere inheritors or administrators of the success of others (Stover, 1987).

Nevertheless, as Heinlein continued to write, especially from the 1960s on, his main characters were increasingly more often rich and powerful members of the upper or upper-middle socioeconomic classes. For example, his character Jubal Harshaw (Stranger in a Strange Land, 1961/1987) is a rich sybarite, both a physician and lawyer, who is well-known by the chief executive of the planetary government. Johann Sebastian Smith (I Will Fear No Evil, 1970/1987) is a billionaire tycoon able to purchase a human body for a brain transplant. Lazarus Long (Time Enough for Love, 1973/1987) is a multibillionaire and permanent chief executive of the incredibly rich Howard families.

Similarly, the four chief characters of The Number of the Beast (1980/1982) are all rich or affluent, as well as being highly educated. The authorial character Kettle Belly Baldwin (Friday, 1982/1983) is not only rich and well educated but is chief of a powerful foundation possessing enormous resources. Protagonist Alexander Hergesheimer (Job: A Comedy of Justice, 1984/1985) begins the novel as a well-compensated official of a religious organization who can afford deluxe accommodations aboard a luxury steamship for a South Sea cruise. Colonel Colin Campbell (The Cat Who Walks Through Walls, 1985/1986) is an affluent author able to afford a flat within an exclusive orbiting space community. Finally there is Maureen Smith (To Sail Beyond the Sunset, 1987) who admittedly begins her life in an average, rural, southern Missouri family, but who becomes a wealthy, impressively educated millionaire.

The point of contrasting the socioeconomic status of Heinlein's later characters with his earlier characters (notwithstanding that these later characters are uniformly depicted as having earned their own success) is to demonstrate that Heinlein changed in regard to the socioeconomic classes with which he chose to identify himself in his depiction of characters. Some of this may be due to increasing age and the corresponding desire to identify with characters closer to the circumstances of his own age and experience. However, some of it may well be due to changes in Heinlein's own class consciousness as he grew more affluent--and more conservative.

My overall point in this discussion of socioeconomic class in Heinlein's writings is that he regarded economic differences as less important an issue for enforcing equality than he did gender and race. The reason appears--from all the sources cited above--to be simply that he regarded economic inequality as an inevitable--and just--consequence of the interplay of diverse human abilities in the marketplace. Perhaps a second reason that he regarded economic differences as less important an issue for equality is that he believed that governmental intervention for the purpose of achieving economic equality caused more harm than it cured (see Time Enough for Love, 1973/1987, pp. 79-80). But this discussion of economic inequality brings up the question of whether humans have the right to expect otherwise. And that question introduces the issue of human rights from Heinlein's point of view.

Human Rights

In Starship Troopers (1959/1968), Heinlein used the Declaration of Independence to enumerate the American idea of human rights as "life, liberty, and the pursuit of happiness." In Tunnel in the Sky (1955), he invokes the Virginia Declaration of Rights (essentially the same as the American Bill of Rights) as enumerating essential human liberties for a free society. Perhaps the best way to describe Heinlein's attitude toward human rights is that he viewed them as values to be sought and achieved rather than as rights automatically conferred by nature or by a benevolent Providence.

For example, in Starship Troopers (1959/1968) he declared through his authorial character Mr. DuBois, "a human being has no natural rights of any nature" (p. 96). Heinlein then asked the protesting question, "How about 'life, liberty, and the pursuit of happiness'?" To which Heinlein's character provides this reply:

> Ah, yes, the 'unalienable rights.' Each year someone quotes that magnificent poetry. Life? What 'right' to life has a man who is drowning in the Pacific? The ocean will not hearken to his cries. What 'right' to life has a man who must die to save his children? If he chooses to save his own life, does he do so as a matter of 'right'? If two men are starving and cannibalism is the only alternative to death, which man's right is 'unalienable'? And is it right? As to liberty, the heroes who signed the great document pledged themselves to buy liberty with their lives. Liberty is never unalienable; it must be redeemed regularly with the blood of patriots or it always vanishes. Of all the so-called natural human rights that have ever been invented, liberty is least likely to be cheap and is never free of cost.
>
> The third 'right'?—the 'pursuit of happiness'? It is indeed unalienable but it is not a right; it is simply a universal condition which tyrants cannot take away nor patriots restore. Cast me into a dungeon, burn me at the stake, crown me king of kings, I can 'pursue happiness' as long as my brain lives—but neither gods nor saints, wise men or subtle drugs, will insure that I will catch it. (p. 96)

In an earlier novel, Heinlein gave an example of the fallacy of trusting in one's rights by showing the fragility of the "right" of liberty:

> The lieutenant shook his head slowly, looking like a tired and gentle school teacher. "Young fellow, you've been reading too many romantic novels. Now if you had studied the dynamics of history instead, you would realize that the logic of legalism alternates with the logic of force in a pattern dependent on the characteristics of the culture. Each culture evokes its own basic logic. You follow me? .... No matter. The point is, your request for a lawyer comes about two hundred years too late to be meaningful. The verbalisms lag behind the facts." (Between Planets, 1951, p. 39)

That passage depicts a society that grew corrupt because its citizens neglected to value civil liberties; it is an object lesson in Heinlein's view that "Liberty.... must be redeemed regularly with the blood of patriots or it always vanishes" (Starship Troopers, 1959/1968, p. 96). In Starship Troopers, Heinlein described the future decay of the western democracies that results from their citizenry being overly concerned with their "rights" rather than their responsibilities.

Heinlein may have been expressing a semantic problem with his distinction between values and rights, even though it seems deliberate that he selectively quoted from the Declaration of Independence in Starship Troopers. In my reading of the Declaration, it seems clear that the document admits that human rights are not actualized in the state of nature. Rather, it declares that "to secure these rights, Governments are instituted among Men" (Basic Documents of American History, 1968, p. 20). It seems clear that Jefferson called human rights "rights" because he believed it right that governments should secure them for their citizens. Surely, I could make the case that such a view is functionally equivalent to calling them values.

Clearly, Heinlein indicated agreement elsewhere that these Jeffersonian "rights" are substantially his own values as well, for he stated in "Lost Legacy" (1941/1953), "This continent... has been a refuge of freedom, a place where the soul could grow. But the forces that killed enlightenment... are spreading here. Little by little they have whittled away at human liberty and human dignity" (p. 138).

Heinlein's belief in such values as equal employment opportunity is evidenced by his novel Space Cadet (1948) and the short story "Delilah and the Space Rigger" (1949/1967). His belief in political equality among different races and ethnic groups is evidenced within the novels The Star Beast (1954) and Double Star (1956/1957). The difficulty seems to me to be that Heinlein's theory of coordinate responsibility had possibly obscured his understanding of what other people actually mean when they say "human rights."

Another difficulty is found in Heinlein's seeming misunderstanding of Jefferson's principle of human equality. For example, Heinlein said in Time Enough for Love (1973/1987), "All men are created unequal" (p. 243). And, yet he also said in I Will Fear No Evil (1970/1987), "I hold to the old-fashioned idea that a courtroom is where the Sovereign is present in person, dispensing equity and justice to all" (p. 207). And in Starman Jones (1953/1975), he said, "the rules ought to give everyone a chance" (p. 251). Unless Heinlein was being deliberately disingenuous, it appears clear that he both knew and believed in the principle of equal justice and opportunity--principles which are much closer to Jefferson's meaning than any misreading of the Declaration to the effect that humans are equal in ability.

On first glance Heinlein appeared to have misunderstood Jefferson's meaning of "all men are created equal" when Heinlein called democracy "a theory based on the assumption that mathematicians and peasants are equal" (Glory Road, 1963/1970, p. 262). But I believe that in this case Heinlein is not misunderstanding but actually disagreeing with Jefferson. Consider the case of his authorial character Professor Bernardo de la Paz in The Moon is a Harsh Mistress, (1966/1968) who advises the constitutional committee of the Luna Free State to consider allowing some citizens more voting weight than others (see pp. 240-244). What that means, in my view, is that Heinlein believed that some citizens should have less voice--perhaps even no voice--in government. Of course, all democracies restrict the franchise based on age, insanity, and criminal status--but Heinlein was clearly not talking about such restrictions.

It is difficult to escape the conclusion that Heinlein really did not believe in the political (as well as the functional) equality of human beings. The implication of that conclusion is that he differentiated political liberties from civil (personal) liberties. Of course, the basis for the political liberty to exercise the franchise in a democracy is grounded in Jefferson's principle that government should be by the consent of the governed. Heinlein denied that this principle requires the active consent of all citizens implied by universal enfranchisement. As Hugh Farnham rationalizes his "lifeboat captain" theory of government in Farnham's Freehold (1964/1971), "we do have democracy.... I'm serving by consent of the majority" (p. 69). Heinlein seemed rather to have interpreted Jefferson's principle as operative as long as the citizenry acquiesces passively to the existing government.

In fairness to Heinlein, it should be mentioned that he was possibly trying to steer a middle course between two extremes. He illustrated the two extremes in a passage from Time Enough for Love (1973/1987):

> Llita was well above average smart but suffered from the democratic fallacy: the notion that her opinion was as good as anyone's--while Joe suffered from the aristocratic fallacy: He accepted the notion of authority in opinion. I don't know which fallacy is the more pathetic; either one can trip you. (p. 225)

It must nevertheless be said that Heinlein's negation of the concept of natural human rights in favor of the concept of human values allowed him to do two things: promote civil liberties for all members of society while denying the principle that all citizens should have equal enfranchisement--that is, by denying the principle of political liberty as expressed in democracy. This conclusion is also congruent with Heinlein's general ambivalence regarding democracy, as discussed earlier in this appendix.

Heinlein's Public Ethics in Perspective

I believe Heinlein's politics and social policy can perhaps best be appreciated through several lenses. One of these lenses is the libertarianism of Thomas Jefferson as it was expressed functionally in the Declaration of Independence. By "functionally" I mean only the political and civil arrangements intended by the document--not the concept of natural rights that Jefferson used as the philosophical basis for the declaration. Regardless of Heinlein's later belief about natural rights, it is clear that he was brought up to value the American political institutions as embodied in its founding documents.

Another lens is the body of values packaged within late 19th century bourgeois liberalism under whose influence Heinlein was brought up and educated in the early decades of this century. By "19th century bourgeois liberalism" I mean the general trend of liberal, progressive thought which expressed

itself particularly in the idea that humanity and civilization were tending inevitably toward justice, good will, and material well-being for all.

Another lens through which to view Heinlein's politics is the great man theory of history made popular by Carlyle who said that the "History of the World... was the biography of great men" (as cited in Adler and Van Doren, 1977, p. 87). This view shows forth readily in the way Heinlein constructed future histories around chief characters--such as the tycoon D.D. Harriman in "The Man Who Sold the Moon" (1951). This view shows forth as well as in the theory of rational anarchism that he expounded in The Moon is a Harsh Mistress (1966/1968). That theory states that only individuals, not institutions, can take responsibility for their decisions.

Heinlein's political views can also be viewed through the lens of pragmatism. This point is reinforced in a passage from the above novel regarding the pragmatic ordering of government and social policy as "private where private belongs, public where it's needed, and an admission that circumstances alter cases" (The Moon is a Harsh Mistress, 1966/1968, p. 64). But it must be added that Heinlein was suspicious of the tendency to "let circumstances alter cases" because he knew that principle often means in practice the increasing encroachment of government on individual liberties.

Democracy and Human Rights

Heinlein's ambivalence toward democracy as well as his stated rejection of the theory of natural rights has aroused attention from some of those outside the science fiction community--including professional philosophers and educators--at times. For example, in his intellectual autobiography Philosopher at Large (1977), Mortimer J. Adler discussed some of what he feels are the irresponsible acts of "poets"--using "poets" to include not just writers of lyrics but writers of imaginative literature such as novels and plays. He focuses on two "poets" whom he feels have smuggled their philosophies under the guise of entertainment in a way that protects them from challenge and rebuttal; these two are George Bernard Shaw and Robert Heinlein.

> Bernard Shaw's metabiological.... play (Back to Methusaleh)... I thought sheer poppycock.... Then, as never before, did I fully and clearly appreciate the significance of Plato's banishment of the poets from the republic! ... I found myself expressing exactly the same view and the same distaste about a piece of science fiction by Robert Heinlein [Time Enough for Love, 1973/1987], in which the storyteller advances a whole series of political obiter dicta and gets away with it because, being only a storyteller, he does not have to stand up to the tests of logic or truth. (Adler, 1977, p. 43)

I feel sure that Adler's ire is focused on Heinlein's denial of natural rights as well as on Heinlein's ambivalence regarding democracy. Adler regards democracy as the only just form of government because of his belief that human beings have a natural right to govern themselves (Adler, 1991). In other words, Adler interprets Jefferson's principle that humans should not be governed except by their own consent as an active principle--rather than in the passive way that Heinlein interprets it.

As I have already been described earlier in this appendix, Heinlein was not always so ambivalent about either democracy or socialism. In fact, many of the social and political writers whom Heinlein was drawn to in his early years were socialists. The list includes Ambrose Bierce, whom Heinlein glorified in "Lost Legacy" (1941/1953); H.G. Wells, whom Heinlein admired as a socialist, science fiction writer, and a popular educator (Expanded Universe, 1980); George Bernard Shaw whose play Caesar and Cleopatra Heinlein was fond of quoting (Glory Road, 1963/1970); Jack London, whom Heinlein inserted as an imaginary walk-on character in the novella "Coventry" (1940/1967); Will Durant, the popular educator and philosopher whose lectures were attended by the teenaged Heinlein and whose books The Story of Philosophy (1961, 1926), The Pleasures of Philosophy (1953, 1929), and The Story of Civilization (Durant and Durant, 1935-1967) were read eagerly by him (see To Sail Beyond the Sunset, 1987); and Upton Sinclair, whose books on social reform Heinlein not only read but in whose political organization he worked for over two years. And while Mark Twain--Heinlein's favorite author according to Virginia Heinlein (Owenby, 1994c)--may not have been a socialist, he was certainly sympathetic to social reform movements in his day.

But in the 1940s and 1950s, Heinlein started reading the novels of Ayn Rand and gradually came to admire that part of her philosophy that dealt with politics and economics—he never did accept all her other philosophical opinions (Schulman, 1973/1990). In addition, Robert gradually began to accept more of his wife Virginia's social, economic, and political philosophy (Owenby, 1994c). However, he was never influenced by Virginia to the extent that Asimov claimed (Asimov, 1994). Heinlein's changing opinions seem more the result of his disappointments with political reform, public education, and the sociocultural movements that followed in the wake of the Cold War than in any one person's overt influence. In fact, he admitted that quite clearly in a 1973 interview in which he said, "In the course of thirty years, I became somewhat pessimistic about political solutions" (Schulman, 1973/1990).

Finally, it should not be forgotten that George Bernard Shaw—the early Fabian socialist whose plays were much read by Heinlein—also "in the course of his life... repudiated virtually all of Marx's economics and sociology" (Gassner, 1962/1970). If such a grand member of the pantheon of British Fabianism—as well as one of the most influential writers of the past two centuries—could change his mind about socialism, it is certainly reasonable to allow Heinlein the same privilege.

Sex and Women

Heinlein's views of sex were probably influenced by the several writers and thinkers whom he admired, most of whom have been previously mentioned. For example, he appeared to whole-heartedly accept the sexual morality of his science fiction idol H.G. Wells, as well as other so-called libertines of that era. Perhaps the strongest influences came from cultural anthropologists Margaret Mead and Ruth Benedict, who were among his favorite intellectuals (Owenby, 1994c). He particularly admired Mead's conclusions about sexual openness as the right prescription for western society. He was also an avid reader of the Kinsey Report—he stood in line to purchase the report when it was first released (Owenby, 1994c).

Regardless of where he got his ideas about sex, I believe there are some troubling issues in regard to them. To begin with, Heinlein's views of sex are somewhat inconsistent in regard to the matter of jealousy. For example, although he said women "are not property" in Time Enough for Love (1973/1987, p. 245), he also said that women are considered a scarce commodity in the Lunar society depicted in The Moon is a Harsh Mistress (1966/1968). Yet he did not seem to connect sexual jealousy with his clear acceptance of commodity economics under the conditions of market scarcity. That is, Heinlein's view that sexual jealousy is the result of insecurity appeared to ignore the dynamics of jealousy caused by competition for sexual partners as scarce commodities. Of course, Heinlein could easily depict sexually self-confident persons free from jealousy in his stories, but is this perspective of jealousy supported by common experience? If sexuality is one of the bases for forming bonds with others, and humans develop need-relationships based on those bonds, then is it really reasonable to expect a person not to be insecure when his or her partner is presented with the opportunity to acquire a more attractive sexual partner?

Nor did Heinlein seem to have acknowledged that sexual competition is just as much a feature of the evolutionary landscape as is the instinct for survival in which he grounded his theory of morals (see Appendix F). Heinlein's theory that jealousy and insecurity result from the lack of self-confidence (often with incompetence) stands up better when restricted to issues outside of sex. Nor did he seem to acknowledge the political implications of unequal power relationships expressed through sexual domination. This dynamic has long been known to be present in both human and primate society, and it is interesting that Heinlein did not take it into account given his use of baboon society as an example of morality among nonhuman animals ("The Pragmatics of Patriotism," 1980).

Also troubling is the issue of incest. In Heinlein's later novels instances of incest are frequently presented in a nonjudgmental--if not positive—light. Heinlein seemed either unaware of or unwilling to acknowledge the negative psychological and social effects of incest. As Booker (1994) points out: "The biological imperative against incest is clear enough, and many writers, both scientists and philosophers, have claimed that it is a behavioral constraint found in both animals and humans" (p. 56).

In regard to the ecology of the sexes, Heinlein did not seem to have recognized why some feminists could be uncomfortable with his doctrine of "women and children first" with its associated justification that women are more important than men. Essentially, Heinlein was arguing for a sexism favorable to women based on innate biological characteristics. That these characteristics have to do with

childrearing rather than mental or emotional characteristics is nonetheless disturbing to some feminists for (at least) the following reason: Any doctrine that begins with the view that there is a particular innate biological characteristic whose possession works to privilege its possessors can also be altered, corrupted, and misused to support privilege based on other innate characteristics.

In addition, Heinlein's doctrine can conceivably give justification to men who want to control women and their bodies "for their own good and protection." Of course, nobody denies that women are essential to the reproductive process, but to lose a large portion of the male population while conserving most of the female portion has potentially deleterious consequences for the gene pool. That is because a relatively small number of males end up fathering most of the next generation of children. This can result in a greater chance for bad gene recombinations in the following generations because of the reduced gene pool.

Of course, another objection is that a policy of "women and children first" can work to exclude women from potentially dangerous jobs even if some women are extraordinarily well-qualified for and personally fulfilled by them. In some ways, it might be difficult for women to escape the conclusion that the Victorian doctrine of the moral superiority of women under which Heinlein was brought up was simply rehabilitated by him by being recast in biological rather than moral language. Women might argue that, having rehabilitated the concept under a biological rationale, Heinlein could also rehabilitate chivalry and the code of male protection of, and implied control of, women that went with it. That is, chivalry can be seen as a justification for patriarchy. As Leck (1990) points out:

> Patriarchal ideology is served by the institutionalization of reproduction into a heterosexualism with its attached theme of dominance and submission.... The feminist argument is not that the feminine should be valued over the masculine. Feminists are arguing that sex and genderization ought not be the basis for assigning social contexts that limit possibilities for social worth. (p. 384)

Indeed, various aspects of the theme of patriarchal domination have also been expressed or implied by Franklin (1980) and Wood (1980) in their discussions of Heinlein.

Of course, there are several ways to categorize feminist theory. One kind of feminism, variously called individualist or liberal feminism, is concerned with assimilation and equality with men. The second kind, variously called relational or transformative feminism, is concerned with transforming the institutions and structures of patriarchal society (Noddings, 1990). Although the second category of feminists would perhaps be most likely to object to Heinlein's views of women, on the other hand he has also been recognized as having worked for the interests of individualist or liberal feminism (Sarti, 1978). Possibly the latter would be less likely to take issue with Heinlein's doctrine of "women and children first."

Previously, in Appendix F, I discussed the overall foundations upon which Heinlein grounded his theory of values. In this appendix, I have discussed Heinlein's public realm of ethics by examining his perspectives on government and politics, social policy, sexual ethics, social justice, and human rights. Incidentally, I have also shown how Heinlein's intense interest in the realms of politics, government, and social policy was manifested by an incredible amount of material in his science fiction curriculum. Interestingly, these same subjects have also constituted a tremendous amount of the discussion and subject matter of adult education, especially during this present century (Stewart, 1987; Stubblefield, 1988; Heaney, 1992; Zacharakis-Jutz and Schied, 1993; Stubblefield and Keane, 1994). In one sense, it would be easy to compare Heinlein to many early adult educators such as Lindeman (1926/1961) whose views of adult education were bound up in political education as well.

Conclusion

In this appendix, I undertook to further my discussion of Robert Heinlein's values by examining how he extends them into the public realm. I discussed Robert's views in regard to political and social philosophy. I pointed out Heinlein's basic ambivalence about government and politics by outlining his early political activity, his emerging misgivings and objections regarding democracy, and his commitment to grass roots citizen action. I also discussed Heinlein's views regarding social policy, including crime and punishment, government social and economic programs, and environmental policy. I

pointed out that he grounded his approach to social policy primarily in society's biological responsibility to provide for women and children. I also mentioned two other principles that guided his approach to social policy: that of coordinate responsibility and pragmatism.

In my discussion of Heinlein's sexual ethics, I pointed out his disapproval of traditional sexual ethics in favor of an Olympian code that included liberal views of nudism, nontraditional approaches to marriage, and tolerance of homosexuality, masturbation, and incest. I also pointed out that Heinlein's Olympian code included virtues for governing sexual congress, including his belief that workable sexual customs must provide for the security and succor of children. I also discussed his views regarding gender, race, class, and human rights. In that discussion, I highlighted Heinlein's belief in the political and occupational equality of women, but I also mentioned Heinlein's belief in the biological and social superiority of women—a superiority that he believed should privilege women in society. I mentioned Heinlein's commitment to racial equality and inclusiveness alongside his distaste for multiculturalism in favor of a racially plural but culturally homogeneous society. I discussed his belief in the superiority of personal achievement over inherited wealth alongside his distaste for government efforts to achieve economic equality.

Finally, I discussed Heinlein's view of human rights. I pointed out his objection to the Jeffersonian doctrine of natural rights in favor of his view that human rights are values to achieve rather than privileges bestowed. I also pointed out that his objection to the doctrine of natural rights may be more of a semantic difficulty than an actual objection to Jeffersonian ideals. But I also indicated that Heinlein's objection to democracy was based on an apparently real disagreement with Jefferson's principle of government by consent of the governed. I provided a retrospective of Heinlein's public ethics in which I pointed out some issues of concern in respect to his views of politics, sexual ethics, and gender relations. In that retrospective, I also declared that Heinlein's intense interest in the realm of public ethics placed him in good company with those adult educators whose interests centered on political education. In Appendix H, I take up the last of Robert Heinlein's axiology—his aesthetic perspectives.

APPENDIX H

HEINLEIN'S AESTHETIC PERSPECTIVES

"Art is the process of evoking pity and terror."
—Jubal Harshaw, Stranger in a Strange Land, 1961/1987, p. 325.

In Appendices F and G, I discussed respectively Robert Heinlein's axiological foundations and his public ethics. I am now ready to conclude my examination of Heinlein's axiology by entering into a discussion of his aesthetics. In this present appendix, I intend to outline Heinlein's view of the nature and purpose of art, his objections to trends in modern art, and his view of the relationship between art and the human condition. I will also discuss his liking for tragedy in poetry, literature, drama, and music—including some qualifications to his main view in regard to beauty and humor. I will conclude with an overall retrospective of Heinlein's aesthetic views.

Introduction: Heinlein's View of The Nature and Purpose of Art

Heinlein manifested an interest in aesthetic matters from the beginning of his writing career and had used his stories as vehicles for promulgating his aesthetic views. In an early Heinlein story "The Unpleasant Profession of Jonathan Hoag" (1942/1961), he revealed clues for understanding how he connected aesthetics with other elements of his philosophy. In that story the title character is secretly a cosmic judge of the quality of our world as a work of art. He decides to save the creation based on his acquaintanceship with two private detectives, Edward and Cynthia Randall. He labels their individual characters—but especially their love for each other—as "Good art, good art—both of you" (p. 121). This passage illustrates the essential unity of Heinlein's axiological perspective: that ethical and moral goodness can also be viewed aesthetically.

Later in one of his most famous novels Heinlein would elaborate considerably on the connection between morality and aesthetics. He would tell us in Stranger in a Strange Land (1961/1987) that the chief purpose of art (as well as the process of art) is that "of evoking fear and pity" (p. 325). This view essentially follows Aristotle who, in the second book of The Poetics (Politics and Poetics, 1968), stated that "it is the business of the tragic poet to give that pleasure which arises from pity and terror" (p. 330). That Heinlein appropriated and extended Aristotle's limited view of tragedy to stand for the whole purpose of art is significant, for it underlines Heinlein's view that aesthetic significance was bound up with tragedy.

This interpretation is supported by referring again to a passage from "The Unpleasant Profession of Jonathan Hoag" (1942/1961), in which Hoag explains the basis from which he ultimately decides in favor of preserving our world:

> I have found several sorts of good and original art in this world, enough to justify encouraging your Artist to try again. But there was so much that was bad, poorly drawn and amateurish, that I could not find it in me to approve the work as a whole until I encountered and savored this, the tragedy of human love. (p. 121)

I believe that tragedy is the controlling theme of art for Heinlein. But art for Heinlein was intimately connected with his view of the human condition. That is to say, tragedy would not be possible apart from the conflicts that naturally arise from the competing demands of different human values, e.g., survival, love, dignity, beauty, pride, and duty. These values may sound like mere words, but "Men live by symbols" Heinlein reminds us in I Will Fear No Evil (1970/1987, p. 227). Furthermore, humans strive for these values in an absurd, if not malevolent, universe within a life they must inevitably surrender.

That Heinlein believed that tragedy was the controlling theme in art makes sense when we consider his view that "good art" allows humans to purge their emotions—chiefly fear and pity— which are generated by our awareness of these value conflicts. That is, tragic themes in art permit the beholders to emotionally reconcile conflicting values.

Heinlein sees a secondary purpose of art--that of providing moral sustenance to survive in the face of the human condition, including reinforcing commitment to such human survival values as love, dignity, beauty, pride, and duty. Because human beings cannot be moved by that which they cannot identify with, Heinlein's view was that art should be primarily representational. Here, he also follows Aristotle's view of art as imitation. This is an essentially romantic view of art. Because he holds this view of art, Heinlein was quite out of sympathy with many modern trends in art--the subject I will treat in the next section.

Heinlein's Judgment of Modern Art

It is safe to say that Heinlein despised most modern art. Virginia Heinlein reported that "The things [Heinlein] liked least [about art were].... Jackson Pollack, and modern art in general. In fact, he was once going to do a book about modern art--it was one of those projects that died of neglect, I guess" (Owenby, 1994c). Heinlein made this point of view clear through his authorial character Jubal Harshaw in Stranger in a Strange Land (1961/1987). In that book, Heinlein provides several passages that illustrate his view of art. For example, in expressing his admiration of Rodin, he explained how art is linked to prevailing cultural values, suggesting that art can be used to diagnose a sick culture:

> The world has gone nutty and art always paints the spirit of its times. Rodin died about the time the world started flipping its lid. His successors noted the amazing things he had done with light and shadow and mass and composition and they copied that part. What they failed to see was that the master told stories that laid bare the human heart. They became contemptuous of painting or sculpture that told stories--they dubbed such work 'literary.' They went all out for abstractions.... Abstract design is all right--for wallpaper or linoleum. But art is the process of evoking pity and terror. What modern artists do is pseudo-intellectual masturbation. Creative art is intercourse, in which the artist renders emotional his audience. These laddies who won't deign to do that--or can't--lost the public. The ordinary bloke will not buy 'art' that leaves him unmoved. If he does pay, the money is conned out of him, by taxes or such.... one does have to learn to look at art. But it's up to the artist to use language that can be understood. Most of these jokers don't want to use language you and I can learn; they would rather sneer because we 'fail' to see what they are driving at. If anything. Obscurity is the refuge of incompetence. (pp. 325-326)

An amateur sculptor himself, Heinlein saw two different trends in 20th century art. One of these, "modern art," he called "the cult of the phoney in art.... the work of retarded monkeys" which he felt would eventually disappear except as preserved as cultural artifacts for study by psychiatrists ("Where to?," 1980, p. 331). The other trend he regards as positive: "commercial art grows steadily better" (p. 331). Of course, it is plain that much of Heinlein's discourse about art had to do with the visual arts, the subject of the next section.

The Visual Arts and the Human Condition

By "visual arts," I am of course referring to painting, line drawing, and sculpture. In regard to sculpture, Heinlein especially liked the Danish sculptor Edvard Eiksen and the French sculptor Rodin whom he saw as using sculpture to evoke appreciation of the tragedies of the human condition. He used one example of Eiksen's sculpture and two examples of Rodin's sculpture to illustrate his views in Stranger in a Strange Land (1961/1987). I will present these examples in a different order than were originally presented in Heinlein's novel. My first example is Eiksen's sculpture of The Little Mermaid, which Heinlein admired through his authorial character Jubal Harshaw:

> She's not quite a mermaid--see?--nor is she human. She sits on land, where she has chosen to stay... and stares eternally out to see, forever lonely for what she left.... She sits by the haven of København--and she's everybody who ever made a difficult choice. She doesn't regret it but she must pay for it; every choice must be paid for. (Stranger in a Strange Land, 1961/1987, pp. 324-325)

That passage clearly reveals Heinlein's view of art as depicting the tragedy of having to choose between mutually exclusive values. He also demonstrated in this passage the power of a particular example to provide a general moral principle. In fact, he believed that each work of art should have a moral.

My first Rodin example from Stranger in a Strange Land (1961/1987) is the Caryatid Who Has Fallen Under Her Stone:

> Here we have another emotional symbol—but wrought with exquisite artistry.... for three thousand years architects designed buildings with columns shaped like female figures. At last Rodin pointed out that this work was too heavy for a girl.... This poor little caryatid has fallen under the load. She's a good girl—look at her face. Serious, unhappy at her failure, not blaming anyone, not even the gods. . . and still trying to shoulder her load, after she's crumpled under it... But she's more than good art denouncing bad art; she's a symbol for.... every man and woman who ever sweated out life in uncomplaining fortitude until they crumpled under their loads. It's courage... and victory.... victory in defeat, there is none higher. She didn't give up, Ben; she's still trying to lift that stone after it has crushed her. She's a father working while cancer eats away his insides, to bring home one more pay check. She's a twelve year old trying to mother her brothers and sisters because mama had to go to Heaven. She's a switchboard operator sticking to her post while smoke chokes her and fire cuts off her escape. She's all the unsung heroes who couldn't make it but never quit. (p. 324)

Heinlein's explanation of this Rodin sculpture goes beyond the lesson of the mermaid example, which tells the beholder that choosing one good often results in loosing another. The second example conveys the condition of having no choice that will tend to one's own good and in consequence choosing that which tends to the good of others. It is also conveying Heinlein's essential concept of heroism—which is dignity in the face of defeat.

In Job: A Comedy of Justice (1984/1985), he further conveys his sense of the aesthetic value of human dignity:

> Almost everything about a human creature is ridiculous, except its ability to suffer bravely and die gallantly for whatever it loves and believes in. The validity of that belief, the appropriateness of that love, is irrelevant; it is the bravery and gallantry that count. (p. 428)

Heinlein's other Rodin example, She Who Was Once the Beautiful Heaulmiére, is also from Stranger in a Strange Land (1961/1987), Through his authorial character, Jubal Harshaw, we learn the following about this sculpture:

> Anybody can see a pretty girl. An artist can look at a pretty girl and see the old woman she will become. A better artist can look at an old woman and see the pretty girl she used to be. A great artist can look at an old woman, portray her exactly as she is. . . and force the viewer to see the pretty girl she used to be. . . more than that, he can make anyone with the sensitivity of an armadillo see that this lovely young girl is still alive, prisoned [sic] inside her ruined body. He can make you feel the quiet, endless tragedy that there was never a girl born who ever grew older than eighteen in her heart ... no matter what the merciless hours have done. (pp. 323-324)

This last example provides Heinlein an opportunity to make still another point about the human condition: That some tragedies are beyond our power of choice; they are forced on us willy-nilly as part and parcel of our human condition. What can we do in the face of this sort of tragedy? Heinlein seemed to indicate that this kind of tragedy can evoke sympathy and comfort toward others as we become aware of the inevitable decline of our own lives. I continue to explore the theme of tragedy in Heinlein's view of art in the next section.

The Tragic Uses of Poetry, Literature, and Drama

Of course, the theme of tragedy is much more associated with the literary arts of poetry, drama, and literature than with the visual arts of painting and sculpture. In regard to poetry, Heinlein described

human beings as a race of monkeys with a spot of poetry in them--providing a somewhat aesthetic qualification to the description of what it means to be human ("The Year of the Jackpot," 1952/1959). Heinlein alluded to the moral value of poetry in Starship Troopers (1959/1968) when a young soldier is counseled to read such poems as "Horatio at the Bridge" and "The Battle of the Bon Homme Richard." Heinlein also quoted from such poets as Kipling in Starship Troopers, and Swinburne in "The Unpleasant Profession of Jonathan Hoag" (1942/1961). As I have mentioned in Chapter II, Robert was also fond of quoting Biblical poetry. In almost every example of Heinlein quoting a poem, he did so for the same reasons that he invokes a Rodin sculpture—to evoke pity and fear using a tragic theme.

In addition to quoting poetry, Heinlein often aspired to writing poetry. For example, Jubal Harshaw's poem "Death Song of a Wood's Colt" in Stranger in a Strange Land (1961/1987; p. 375) describes the tragedy of dying as that of losing the company of one's beloved. Perhaps his most famous poetry is found in "The Green Hills of Earth" (1947/1967), in which he tells the story of Rhysling, the "blind singer of the spaceways" who, unlike his Homeric forebear, is just as likely to create bawdy verse as he is heroic verse.

As would be expected of a writer who used his own works to promote his personal values, Heinlein was very keen to the aesthetic possibilities of literature. In particular, Heinlein viewed fiction as perhaps the best vehicle for conveying to the young and inexperienced the essential flavor of human experience. That is, fiction teaches us what it means to be human. For example, in The Moon is a Harsh Mistress (1966/1968), Heinlein spoke of a sentient computer who "got a better feeling for human life from stories than he had been able to garner from facts; fiction gave him a gestalt of life.... he got ideas from [fiction]" (p. 109). Similarly, we find Heinlein's protagonist Lazarus Long using fiction to tutor two teenagers rescued from slavery in Time Enough for Love (1973/1987):

> I did not hesitate to use fiction in teaching them. Fiction is a faster way to get a feeling for... patterns of human behavior than is nonfiction; it is one stage short of actual experience.... I could have offered them psychology and sociology and comparative anthropology.... but [they] could not have put them together in a gestalt—and I recall another teacher who used parables in putting over ideas. (p. 177)

Heinlein reinforced his contention that fiction was more valuable than nonfiction for conveying quick gestalts of human experience (as well as for providing tragic aesthetic experience) in the novel Farnham's Freehold (1964/1971). In that novel, his protagonist Hugh Farnham discusses his preference for his "non-useful" collection of literature over his other books of the "brown and useful" sort, saying that without them "it would not be worthwhile to live" (pp. 83-84). Heinlein furthermore revealed what his aesthetic standards for fiction are by explaining his personal philosophy of writing (Stranger in a Strange Land, 1961/1987):

> "Artist" is a word I avoid... But I am an artist. Most of my stuff is worth reading only once... and not even once by a person who knows what little I have to say. But I am an honest artist. What I write is intended to reach the customer—and affect him, if possible with pity and terror... or at least divert the tedium of his hours. I never hide from him in a private language, nor am I seeking praise from other writers for 'technique' or other balderdash. I want praise from the customer, given in cash because I've reached him—or I don't want anything. Support for the arts—merde! A government-supported artist is an incompetent whore! (p. 326)

Again, in that passage, Heinlein reinforced his belief in the Aristotelian view of the purpose of tragedy by highlighting his intended purpose of writing as evoking "pity and terror."

Just as fictional literature is valuable for conveying the tragic sense of human experience, so is drama valuable for permitting us to sympathetically explore the human condition—and, as always, evoke "pity and terror." In the Hugo-winning novel Double Star (1956/1957), Heinlein described his protagonist Lorenzo Smythe declaring his intention to force a person to respect his art: "I would someday make friend DuBois both laugh and cry within the span of twenty seconds" (p. 13). Virginia Heinlein described her husband's attitude toward drama this way: "You know, Robert liked a good cry. 'The Death of the Hired Man,' for example" (Owenby, 1994c).

The emotional power of drama was the basis for its aesthetic value to Heinlein. But that is certainly not its only value. For example, in Podkayne of Mars (1963), Heinlein's protagonist tells us that "the tragedy about Romeo and Juliet is not that they died so young but that the boy-meets-girl reflex should be so overpowering as to defeat all common sense" (p. 125).

In another example from the novel Glory Road (1963/1970), Heinlein was fond of quoting from Shaw's Caesar and Cleopatra—a play he found useful for making points about cultural relativism and pragmatism in penology and statecraft. In matters of taste, Heinlein preferred Shakespeare's Hamlet over a Wagnerian drama (Owenby, 1994c). This is partly because Heinlein could not sympathize with the seemingly contrived actions of Wagner's Germanic heroes which appeared to him more grandiose than truly heroic. Self-sacrifice for self-sacrifice's sake was for Heinlein a symptom of the sickness of pre-war German culture rather than a virtuous example of it (see Time Enough for Love, 1973/1987: p. 507). Nor did he care for drama (nor any other art form for that matter) that conveyed a message of cynicism, uselessness, or despair. For Heinlein, such emotions were beneath contempt. Heinlein's preference for the noble theme of tragedy was also present in his musical tastes—the subject of my next section.

The Tragic in Music

Heinlein was as consistent in his approach to music as he was with his approaches to other art forms. Asked about his taste in music, Virginia Heinlein reported that:

> He loved Rimski-Korsakov's Hymn to the Sun and all of Mozart.... In popular music, he liked The Cry of the Wild Goose, September Song, Cool Water done by the Sons of the Pioneers. All of those are sad songs. All three of them [emphasis added].... I don't think he liked Wagner. I took him through the entire Ring cycle twice and he didn't care for it. (Owenby, 1994c)

Interestingly, Heinlein refers to both the September Song and The Cry of the Wild Goose in his long novel Time Enough for Love (1973/1987). His dislike of Wagner is no surprise for anyone familiar with his dislike of German culture. But his liking for Mozart is a little surprising given his preference for the tragic in music. But the real reason is that he found Mozart enjoyable to listen to while he worked, while the romantic composers, such as Beethoven, would have been too demanding of his attention (Owenby, 1994c). Not that he disliked Beethoven, for he chose to use the opening bars of Beethoven's Fifth Symphony to introduce a memorial tribute to one of his heroes in Space Cadet (1948; p. 22). The music that ends the tribute is the Valhalla theme from Götterdämmerung (perhaps the only music of Wagner that he cared for). Heinlein also indicated a liking for the tragic sound of the "Going Home" theme from Dvorak's New World Symphony ("The Long Watch," 1949/1967).

Heinlein indulged in inventing symphonies and popular music to supply background for many of his stories. For example, the "brassy strains of Le Compte's Raise Ship!" is played as the rocketship "Glory Road" launches itself from Earth in the juvenile novel Between Planets (1951, p. 54). And in Farmer in the Sky (1950), Heinlein had added a musical score to one of the poems of Rhysling, enabling the protagonist Bill Lermer to play a musical accompaniment on his accordion to the poem "The Green Hills of Earth" (p. 151). That poem is a tragic song describing the self-exile of Earthmen who choose to blaze new trails to new planets while forever remaining homesick for Earth. The general tenor of Heinlein's taste for and use of music is consistent with the tragic themes in which he delighted in other art forms. But the next section explores Heinlein's capacity for appreciating other than tragic themes in art.

Heinlein and the Beautiful

So far, I have tried to make the case that Heinlein's view of art was grounded firmly in tragedy. But what of other works of art whose subject matter is other than tragic? The fact is, Heinlein was quite willing to take a break from tragedy in some cases. For Heinlein, the beautiful was also a worthy object of art. For example, in Stranger in a Strange Land (1961/1987), Heinlein's authorial character Jubal Harshaw is attempting to explain the merits of Eiksen's The Little Mermaid to his friend Ben Caxton. Ben tells Jubal, "This one I don't need explained—it's pretty." Jubal replies that being pretty--beauty-- "is excuse enough, as with kittens and butterflies" (p. 324).

In another example from the novel The Moon is a Harsh Mistress (1966/1968), the Lunar revolutionaries decline to bombard the Indian city of Agra because one of their revolutionary leaders, Professor Bernardo de la Paz, is overwhelmed by its beauty. In another example from Heinlein's early novella "Lost Legacy" (1941/1953), an artist member of the Mount Shasta community of adepts paints "with meticulous realism but with a highly romantic effect, a study of a young girl dancing, a wood nymph, against a pine forest background" (p. 129).

All three of the above examples of beautiful themes—from sculpture, architecture, and painting—are from the visual arts. But Heinlein was also interested in the beautiful in other art forms. In dance, for example, he approved of ballet (Glory Road, 1963/1970). He also approved very much of ice dancing, which he tried to learn with his first wife Leslyn after both were introduced to the art form by Virginia Gerstenfeld (Owenby, 1994c). He even devoted a short story to the theme of ice dancing ("Poor Daddy," 1949/1992). Heinlein was also a devotee of the beauty of the human female form; he often photographed nudes and had an impressive collection of nude photographs (Asimov, 1979).

Heinlein also gave every indication of enjoying the beauty of the natural world, especially mountains and forests. For example, the novella "Lost legacy" (1941/1953) indicates his love for the Mount Shasta region of Northern California. His love of the mountains was also indicated by his 1923 mountain climbing trip to Colorado (see Chapter II and Appendix B), and his decision to live in Colorado Springs where he could enjoy both the Rockies and the Garden of the Gods monument. His love for forests—especially the giant redwoods—was indicated in the novel Beyond this Horizon (1942/1948), and by his decision to move to the redwood region near Santa Cruz in Northern California in 1965. With regard to the latter move, his wife Virginia said that he wanted to be near "his beloved redwoods" (Owenby, 1994c). Heinlein's appreciation for themes other than tragedy did not stop with beauty, it also included humor—my next subject.

Heinlein and Humor

The aesthetic value of humor was, for Heinlein, a "reverse-english" perspective on his aesthetic appreciation of tragedy. This is made clear in a passage from Stranger in a Strange Land (1961/1987), in which Heinlein's protagonist Michael Valentine Smith, in a sudden flash of insight, finally understands the nature of humor. In the scene, Michael and his friend Jill Boardman are visiting the zoo. When she tosses a peanut to a monkey,

> Before he could eat it a larger male not only stole his peanut but gave him a beating. The little fellow made no effort to pursue his tormentor; he pounded his knucks against the floor and chattered helpless rage.... Suddenly the mistreated monkey rushed across the cage, picked a monkey still smaller, bowled it over and gave it a drubbing worse than the one he had suffered. The third monk crawled away, whimpering. The other monkeys paid no attention. (p. 311)

At this point Michael is overcome with laughter—the first time he has ever laughed. When asked why he is laughing, he replies:

> I've found out why people laugh. They laugh because it hurts . . . because it's the only thing that'll make it stop hurting.... it wasn't funny; it was tragic. That's why I had to laugh.... The goodness is in the laughing. I grok it is a bravery . . . and a sharing . . . against pain and sorrow and defeat. (pp. 311-312)

Perhaps the chief difference for Heinlein between tragedy and humor in art is that the former is concerned mostly with the emotional reconciliation of conflicting values while the latter is concerned with the emotional reconciliation of ourselves with "the slings and arrows of outrageous fortune." That is to say, humor is another way of emotionally reconciling ourselves with the inevitable pain of the human condition. Of course, Heinlein's explanation of humor leaves out innocuous situations in human life and thought that do not depend on tragedy to make their point. Indeed, Heinlein was a great aficionado of the works of Mark Twain, most of whose humor was grounded in absurdity rather than tragedy.

To sum up Heinlein's view of aesthetics, the purpose and process of art is to arouse the emotions of pity and terror. This means that tragedy is the sublime theme that helps humans to emotionally reconcile the conflicting demands of individual and group survival as primary values. Art also helps as well in the reconciliation of the secondary values of pride, freedom, dignity, loyalty, love, duty, and imagination. Art, in Heinlein's view, therefore supports the development of moral virtue. This brings us back full circle to our starting point with Heinlein's theory of values--a theory that is rooted firmly in his view of the human condition and his survival theory of morals.

Heinlein's Aesthetics in Perspective

As I have pointed out in this appendix, Heinlein's aesthetics with his emotional view of the purpose of art and his preference for tragic themes and subjects is essentially romantic. Heinlein even admitted that he was influenced by the romantic movement of the late 19th century and the Mauve decade of 1900-1910 (Stranger in a Strange Land, 1961/1987). His view of the purpose of art was somewhat akin to that espoused by Ayn Rand in her Romantic Manifesto (1971) in that Heinlein agreed with Rand that art provides spiritual nourishment for human beings. Heinlein's view of art was also decidedly representational in his preference for subjects that can be easily recognized and identified with by the viewer.

He differed from Rand in his view that art reflects the tragic realities of life that are the inevitable result of the human condition, whereas Rand despised the tragic view. Heinlein's view of art was far more akin to Aristotle's view of tragedy. That is, that the primary purpose of art is to evoke pity and fear. It also bears resemblance to Tolstoy's view in his essay What is Art? that "Art is a human activity, whose purpose is the transmission of the highest and best feelings to which men have attained" (Adler and Van Doren, Great Treasury of Western Thought, 1977: p. 1011).

Heinlein unashamedly used his writings to promote his views, to provoke his readers into thinking about critically important issues, and to popularize certain ideas and bodies of knowledge. From that perspective, Heinlein could be said to represent the point of view that the purpose of art is to teach. That he did use his writing to do so puts him in good company. For example, Shaw's own view was that art was not doing its job if it did not teach: "I have spared no pains to make known that my plays are built to induce not voluptuous reverie but intellectual interest" and "All great Art and Literature is propaganda" (Gassner, 1962/1970; p. 292).

It is also interesting that Heinlein placed so much value on fiction as a means of teaching human gestalts of feeling, meaning, and experience, for that is precisely the message that Greene has propagated to philosophers of education in both the general education and adult education camps. For example, in her essay "Qualitative Research and the Uses of Literature" (1988/1990a), she points out that "If philosophy involves the posing of critical questions with regard to what is said, known, assumed, and valued, imaginative literature has the potential of stimulating and complicating the undertaking" (p. 181). Further, in an essay directed toward adult transformative learning entitled "Realizing Literature's Emancipatory Potential" (1990b), she states "We have come to recognize that aware engagements with literary art--that the use of imagination those engagements make possible--make a great deal happen in human consciousness" (p. 253). These points are certainly true in the way that Heinlein practiced his art.

Conclusion

So far in this appendix, I have attempted to outline Robert Heinlein's philosophy of aesthetics. I pointed out that his theory of art was grounded in Aristotle's view of tragedy. I discussed how this tragic view of art demonstrates Heinlein's belief that art helps human beings to reconcile various aspects of the human condition. The reconciliatory function of art operates when values are in conflict, when human beings are cognizant of the need to sacrifice personal needs for the good of others, and when human beings are confronted with situations in which no choices are possible. I pointed out that Heinlein believed in the didactic--as well as the emotional--value of art. I discussed the fact that Heinlein appreciated other themes than tragedy in art--particularly the beautiful and the humorous. And I also pointed out that Heinlein's aesthetics connect to the other elements of his axiology by their common grounding in Heinlein's view of the human condition.

Unlike my discussions of Heinlein's fundamental axiological principles in Appendix F and his public ethics in Appendix G, it is harder for me to make the claim that aesthetic issues were a major part of Heinlein's science fiction curriculum. If I were to propose a connection between Heinlein's aesthetic interests and philosophy and his philosophy of adult and general education, it would center on the theme of adult liberal education. That is, I believe that Heinlein's desire to promote a particular aesthetic perspective was based in his conception of the human condition, a conception that speaks to the need to appreciate art and beauty in order to become fully human. Thus, it becomes easy for me to conclude that Heinlein believed in the kind of broad education that comprises art, music, drama, and literature. In the following appendix I will attempt to bring an overall perspective to, and synthesis of, Heinlein's metaphysics, epistemology, and axiology.

APPENDIX I

HEINLEIN'S PHILOSOPHY: A SYNTHESIS

"A foolish consistency is the hobgoblin of little minds."
—Ralph Waldo Emerson, "Self-Reliance," Essays (1841/1968).

In these last several previous appendices, I attempted to provide Heinlein's perspectives on metaphysics, epistemology, and axiology—including the realms of public ethics and aesthetics. They indicate that Heinlein's perspectives ranged from mysticism to libertarianism.

In Appendix D, in which I began my examination of Heinlein's philosophy with an exploration of his metaphysics, I promised a summarizing appendix that would attempt a synthesis of Heinlein's metaphysical, epistemological, and axiological views into a overall perspective of his philosophy. With this present appendix I will attempt to create such a synthesis.

Some might argue that Heinlein's philosophical perspectives are of such a nature that they cannot rationally be reconciled with each other, much less integrated into an overall system. However, I take the position that Heinlein's philosophical perspectives not only can be reconciled and integrated, but that they comprise a reasonable set of propositions given his basic assumptions.

In this appendix, I will first discuss some seeming obstacles to a reconciliation of Heinlein's philosophy. Following that, I will provide a distilled form of Heinlein's views. Next, I will consider a postmodernist perspective from which to assess his philosophy. From there I will attempt a linkage of Heinlein's philosophical ideas into a harmonious perspective. Finally, I will offer a concluding perspective from looking at Heinlein's philosophy in these past five appendices.

Introduction: Obstacles to Reconciling Heinlein's Philosophy

There are several obstacles and challenges to harmonizing Heinlein's philosophical perspectives. These include their seeming incoherence in terms of traditional systems of philosophy as well as Heinlein's own reluctance to be have his philosophies packaged and labeled. Franklin (1980), a professor of literature writing from a Marxist perspective, has been outspoken in his frustration with Heinlein's seemingly disconnected and incoherent philosophy. For example, he points out that

> Heinlein seems torn between two quite contradictory conceptions of the relations between mind and matter. On one side he has faith in science and technology—the rational, systematic, developing accumulation of human knowledge which permits a progressive enlargement of human consciousness, of control over the material environment, of potential freedom. On the other side, he rejects science and embraces wishful thinking, the direct, unfettered, immediate control of matter by mind. (p. 52)

Franklin then concludes that these apparent contradictions mean that Heinlein was fundamentally unable or unwilling to make up his mind.

> Heinlein seems unable to choose between a mechanical materialism, together with an inflexible determinism, on one hand, and unmitigated idealism, together with a capricious voluntarism, on the other. Any dialectical interplay between mind and matter, between what is determined and what can be freely changed, lies outside the rigid bipolar framework for... philosophical speculation... (p. 54)

For Franklin, it is intolerable that Heinlein was able to entertain propositions from opposing metaphysical camps. How can Heinlein have been both idealist and materialist, both mystic and scientist? Surely such contradictions are not signs of a serious philosophy. But Heinlein made numerous efforts to make the point that he does have a serious philosophy, albeit not an altogether traditional one. For example, he used his authorial character Hugh Farnham to declare his basic philosophical stance: "You could call me an Existentialist" (Farnham's Freehold, 1964/1971, p. 106).

That Heinlein was sympathetic to existentialism helps explain why his philosophy is so difficult to get one's arms around. That is, existentialists are notoriously unhelpful to the enterprise of system-building and consistency in philosophy. Efforts to systematize existentialist thought are often met with approbation. For example, Ozmon and Craver (1990), in describing Kneller's (1958) Existentialism and Education, state that the "book... give[s] a systematic treatment to... existentialism.... [which has] been widely criticized for its systematization of the philosophy" (p. 268).

In Farnham's Freehold (1964/1971) Heinlein's character points out that he does not want to define his philosophy by what he does not believe, but rather by what he does believe. That is, Heinlein's basic philosophical stance is inclusionary rather than exclusionary. Heinlein rejects the exclusionary approach to harmony because it so often attempts consistency through rejection of dissonant elements. Therefore, any attempt at synthesis must approach Heinlein from the standpoint of inclusion rather than an exclusion driven by a need for consistency.

In fact, Heinlein might easily have invoked the American poet Walt Whitman (1855/1980) to answer attacks against his apparent lack of philosophical consistency. In Whitman's long lyrical poem "Song of Myself" he asserted his intention to be inclusive: "Do I contradict myself? Very well then I contradict myself, (I am large, I contain multitudes.)" (p. 96). Whitman also said, "I resist anything better than my own diversity" (p. 62). Clearly, the task is not to make Heinlein's philosophy consistent but rather to connect the "diversity" and "multitudes" within that philosophy.

Heinlein's axiology comprises the largest amount of matter to be found in his philosophical discussions—and, consequently, in my own treatment of his philosophy. As I mentioned in Appendix F, his axiological perspectives derived from his basic naturalistic approach toward questions of values in general and ethics in particular. That is, Heinlein believed that some ethical questions can be answered by an empirical appeal to the biological facts of human evolution. His axiological perspectives are therefore somewhat unified by his basic commitment to survival as the biological sine qua non —his axiological precondition. Because of this basic commitment, Heinlein's ethics easily show a much greater degree of conceptual integration than do other aspects of his philosophy. But, on a larger conceptual scale, can his metaphysics, epistemology, and axiology be integrated given the difficulties involved in conceptually harmonizing the elements within these individual perspectives?

Heinlein's Philosophical Perspectives in Distilled Form

Clearly, then, the chief task of any attempt at integrating Heinlein's philosophy, as Franklin's (1980) complaint indicates, will have to do with reconciling Heinlein's seemingly diverse perspectives regarding metaphysics and epistemology. But it should be made clear from the outset that Heinlein cannot be understood from the viewpoint of a comprehensive school or system of philosophy. Rather he must be understood from his respective separate points of view regarding metaphysics, epistemology, and axiology. Those points of view can be distilled into the following perspectives.

Heinlein's Basic Metaphysics

As I indicated in Appendix D, Heinlein's metaphysics is basically comprised of mystical and pluralistic ideas that resemble those found in German Idealism, American Transcendentalism, and American Pragmatism. Specifically, Heinlein's notions of panpsychism or pantheism resemble ideas found in early 19th century German Idealism, especially Fechner and Schelling.

Some of these German ideas were imported into New England transcendentalism via Emerson and his associates in the Concord School of Philosophy. They were also imported into American pragmatism by Peirce, who made panpsychism a feature of his agapastic evolution, and by James, who viewed human consciousness as occupying the same continuum as cosmic consciousness. In addition, Heinlein's notion of a pluralistic universe or multiverse in which anything can happen resembles Peirce's tychistic universe and James's open-lid universe. Heinlein's metaphysics can thus be characterized as idealist—but idealist as tempered by the American traditions of transcendentalism and pragmatism.

Heinlein's Basic Epistemology

Heinlein's epistemology also got its start from the American tradition of pragmatism. Heinlein grew up quite thoroughly steeped in the late 19th century–early 20th century liberal, intellectual tradition of human progress based on empiricism and science. But Heinlein's approach to the scientific method basically resembles James's notion of radical empiricism—which is empiricism with no a priori conditions. Radical empiricism, like positivist empiricism, is an epistemological approach that relies on sensory evidence rather than strictly on reason; but unlike positivist empiricism, the former does not demand a deterministic, materialist metaphysics for its foundation.

I believe that the very reason that James advocated a radical empiricism—rather than reason or positivism—as the appropriate epistemology for a pluralistic universe is that reason assumes too much intrinsic order and predictability, and positivism assumes too much objectivity and materiality. Heinlein follows James closely in this respect. It could be said that both James and Heinlein faulted traditional idealism because it assumes a monistic rationality in the universe on the one hand; on the other hand, they both fault materialism because it cannot account for the capricious, contingent, tychistic nature of reality—nor for its apparent consciousness—which leaves human beings with no reasonable epistemological choice but a radical empiricism.

On the other hand, unless language works effectively to accurately label and map the phenomena that we observe, empiricism is not as helpful as it should be. Thus, Heinlein's commitment to the General Semantics of Korzybski, which sought to accurately and rigorously symbolize the constituents of the phenomenal world which we live in. In a nutshell, Heinlein's epistemology says "Look for the facts with no preconceived notions and then report and explain them using a rigorous symbology." In summary, Heinlein's basic epistemological affinities are to be found in American pragmatism and in Korzybski's General Semantics. As in his metaphysics, Heinlein is thoroughly within the American tradition in his epistemology as well.

Heinlein's Basic Axiology

Heinlein's axiology is the most complex mixture of different notions, partly because of the sheer breadth of axiological concerns, and partly because of his eclectic—or perhaps encyclopedic—temperament. Heinlein's axiology basically includes perspectives from existentialism, ethical naturalism, evolutionary ethics, libertarianism, and Aristotelian aesthetics. Existentialism can be related epistemologically via radical empiricism to pragmatism (O'Neill, 1981, p. 259) which helps to establish the linkage between Heinlein's metaphysics and epistemology on the one hand and his axiology on the other. The phenomenologist camp, associated with the loosely-related camps of existentialism-hermeneutics, can also be related to Heinlein's form of radical epistemology and metaphysics. For example, O'Neill (1981) points out that the

> phenomenologist is, in essence, the true empirical solipsist who holds that all a person can ever know is his own processes of awareness, his own "subjectivity." For the phenomenologist reality is ultimately personal knowledge, a consciousness of one's own thoughts and feelings. Ultimately each of us is locked into his own stream of consciousness.... Ultimately, it is both self-evident, in the sense that it is experience and therefore constitutes all evidence, and self-determining, because it is the primary datum that underlies and gives rise to all more particular conclusions. (p. 249)

Thus, Heinlein's existentialism is doubly linked to his metaphysics and epistemology. Of course, Appendix F described how Heinlein's theory of preconditional ethics grounded empirically in biological survival is a species of ethical naturalism. But Heinlein's theory of preconditional ethics is also related to evolutionary ethics insofar as Heinlein realized that humans evolve and survive in evolutionarily stable societies (Booker, 1994). Such societies lack the characteristics often associated with social Darwinism—an ethical approach that has been incorrectly attributed to Heinlein. For example, Franklin (1980) applauds an essay which attempts to label Heinlein as a social Darwinist.

> The underlying assumption of Beyond this Horizon, as Philip E. Smith II has put it in his superb essay on Heinlein's social Darwinism, is that "biology explains behavior" and "biology also

> explains politics," with an "underlying fantasy-wish... derived from a social Darwinistic interpretation of evolution." We witness this dynamic utopian society passing through a series of crises to advance to what Heinlein often projects as the next stage of human evolution, the development of telepathic powers. (Smith, 1978, p. 58)

But Franklin's argument fails to acknowledge that there are other theories of biological ethics than social Darwinism. By the way, he also misreports the facts; Heinlein not only does not say that telepathic powers are the next stage of human evolution, he takes pains in his story "Lost Legacy" (1941/1953) to say that all paranormal powers that humans are alleged to possess are likely vestigial remnants from previous human evolution.

Heinlein recognizes that humans cannot survive—nor achieve other human values—in isolation. Humans are naturally social, but society increases opportunities for conflict. To prevent conflict from jeopardizing survival, humans resort to customs and politics, and politics leads to government. Heinlein is clearly a political libertarian in the Jeffersonian tradition. But he differs from Jefferson in that Heinlein bases his views on the evolutionary and teleological efficacy of human freedom and dignity rather than on the Jeffersonian doctrine of natural rights. Even Heinlein's commitment to free-enterprise capitalism has more to do with his preference for minimalist government than it does with any supposed superiority of capitalism over a different political economy (Schulman, 1973/1990).

Finally, Heinlein's aesthetics appears to be based on Aristotle's view of tragedy. That is, for Heinlein, the purpose of art is to evoke fear and pity through imitation. Art is fundamentally tragic in Heinlein's view because its purpose is to depict human values in the tension of forced choices. Art also depicts the tragedy of loss through death, perhaps the fundamental feature of the human condition in Heinlein's view. But art helps humans to resolve the emotional tensions of the human condition, nourishing their individual and collective humanity. Not surprisingly, Heinlein's preference for the tragic is also congruent with the aesthetic temperament of existentialism (Kneller, 1964; O'Neill, 1981; Elias and Merriam, 1995, 1984).

To summarize Heinlein's axiological views, humans can discover and pursue worthwhile values; but they can only pursue values individually and socially if the precondition of survival is met and perpetually provided for; humans require freedom as a minimum condition of satisfying their individual and collective teleology, which implies a minimum of government; finally, humans need art to emotionally reconcile themselves to the human condition and to nourish their continued efforts.

Heinlein and Postmodernism

Another perspective from which to examine Heinlein's seemingly eclectic philosophy is that of postmodern philosophy. Of course, as Burbules (1995b) has pointed out, postmodern philosophy is not a monolithic system of beliefs and propositions but rather a loose collection of views and perspectives:

> "Postmodernism" is not a specific theoretical position itself, but an intellectual trend that comprises several quite different theoretical or philosophical theories. Poststructuralism or deconstructionism is frequently taken to be synonymous with postmodernism, but other views — phenomenology, certain strains of critical theory, hermeneutics, some feminisms, a kind of neo-Aristotleanism, neopragmatism, and so-called "post-analytic" philosophy—are often labeled "postmodern" as well.... it is pointless (and counterproductive) to think that there is a set of common theses that can be extracted which tie their disparate views together, or a common form of argumentation that they all share. (p. 1)

What Burbules thinks is distinctive of postmodern philosophy is not a set of common propositions but rather a common intellectual mood of doubt. This is reflected in the following observation:

> The most quoted characterization of postmodernism, perhaps, comes from Jean-Francois Lyotard, though it is rarely quoted in full: "Simplifying to the extreme, I define postmodernism as incredulity toward metanarratives [Lyotard, 1984; p. xxiv]." Nearly everyone focuses here on the idea of metanarratives, our attempts to offer general and encompassing accounts of truth, value,

> and reality. Postmodernism seems to be about denying the possibility of these, and rejecting as monolithic and hegemonic the ones that Western traditions have embraced. But the key term in this phrase (in translation, at least) is "incredulity"—a fascinating and unexpected word. Incredulity is not denial or rejection or refutation; it is an inability to believe. In this difference I think we see what is most distinctive and penetrating in the postmodern insight. (p. 2)

There is reason to suggest that Heinlein anticipated some postmodernist perspectives (and it could be argued that no so-called postmodernist is postmodernist in all her or his perspectives). For example, the very idea of proposing a multiperson, pantheistic solipsism is clearly an expression of a view that rejects the metaphysical hegemony of a universal mind. Nevertheless, Heinlein's metaphysics seems to have had less to do with rejecting hegemony and metanarratives than it had to do with personal speculation.

Heinlein's commitment to the radical empiricism of pragmatism (empiricism without a prioris) also seems to me to have been anticipated some trends of postmodernism. When we add that Heinlein apparently rejected positivist materialism quite early in his life and that one of the intellectual trends of postmodernism is an incredulity towards positivism (Giarelli, 1988/1990), we could conclude that he was somewhat unique as a scientist and engineer.

His metaphysical and epistemological "incredulity" were especially apparent in his story "Waldo" (1941/1970) in which Heinlein frankly examined the tensions between two competing worldviews: science and the supernatural. In fact, Heinlein's personal commitment to the scientific method was in my view much less a function of a general commitment to the Enlightenment's cosmic metanarrative of an orderly, knowable universe than it is a function of a commitment to practicality and workability in the midst of a unknowable (and perhaps capricious) universe ("They," 1941/1961).

Heinlein would likely have rejected some of the more controversial claims of postmodernism. For example, he would likely not have subscribed to the notion that the scientific method is a frame of discourse distinguished by its investment in the power-narratives of the western, patriarchal, white hegemony and which furthermore is used to marginalize and silence the voices of nonwesterners, women, and people of color. Rather, Heinlein would likely have seriously proposed the scientific method as the only practical, workable approach to adjudicating competing truth claims—the only method that does not resort to authority and power as the means to settle issues ("Guest of honor speech at the Third World Science Fiction Convention—Denver, 1941," 1992).

A difficulty with this discussion is that there is no evidence that Heinlein ever engaged postmodernist discourse at all, much less the argument that all utterances are implicit power claims on the part of their speakers, or that languages used to make utterances are pre-invested with the power claims of others. What there is evidence for is that Heinlein was very much alive to the inadequacies of ordinary languages for communicating in general, which helps explain his interest in General Semantics.

Heinlein's interest in General Semantics suggests that he was aware of some of the many issues of language that are of interest to some postmodernists. That is to say, General Semantics was part of the same trend of thought that generated modern approaches to linguistics and semiotics. Nevertheless, Heinlein's awareness of some problems of English as a language for making propositions clear did not lead him to conclude that language could not be used to communicate an author's intention within a literary text. Contrary to the claims of deconstructionism, Heinlein very much believed that the author's meaning was the most important feature of a literary text and that it both could be and should be made clear to the reader (Stranger in a Strange Land, 1961/1987). Still, the question remains: How can Heinlein's philosophy be placed into an overall perspective that integrates his eclectic, partly traditional, partly modern, partly postmodern views?

Linking Heinlein's Philosophical Perspectives

To work towards such a coherent integration or synthesis of key propositions, a graphical description of Heinlein's overall philosophy is offered (Diagram 2).

In providing a basic distillment of Heinlein's philosophical perspectives, some conceptual linkages have been established which primarily involve pragmatism and existentialism. While helpful as hermeneutic devices, the recognition of these conceptual linkages does not provide us with a coherent integration of key propositions in Heinlein's eclectic collection of perspectives.

The diagram attempts to arrange my overall conclusions about Heinlein's philosophy into a framework of 12 successive ideas. Not surprisingly in view of the relative amounts of material in Heinlein's writings which deal with philosophic issues, 7 of the 12 ideas have to do with Heinlein's axiological perspectives; 2 have to do with his metaphysics; and 3 have to do with his epistemology. This diagram demonstrates my view that Heinlein's perspectives can be arranged into a kind of processional harmony. I will explain each of the 12 ideas contained within the 12 boxes of the diagram in order.

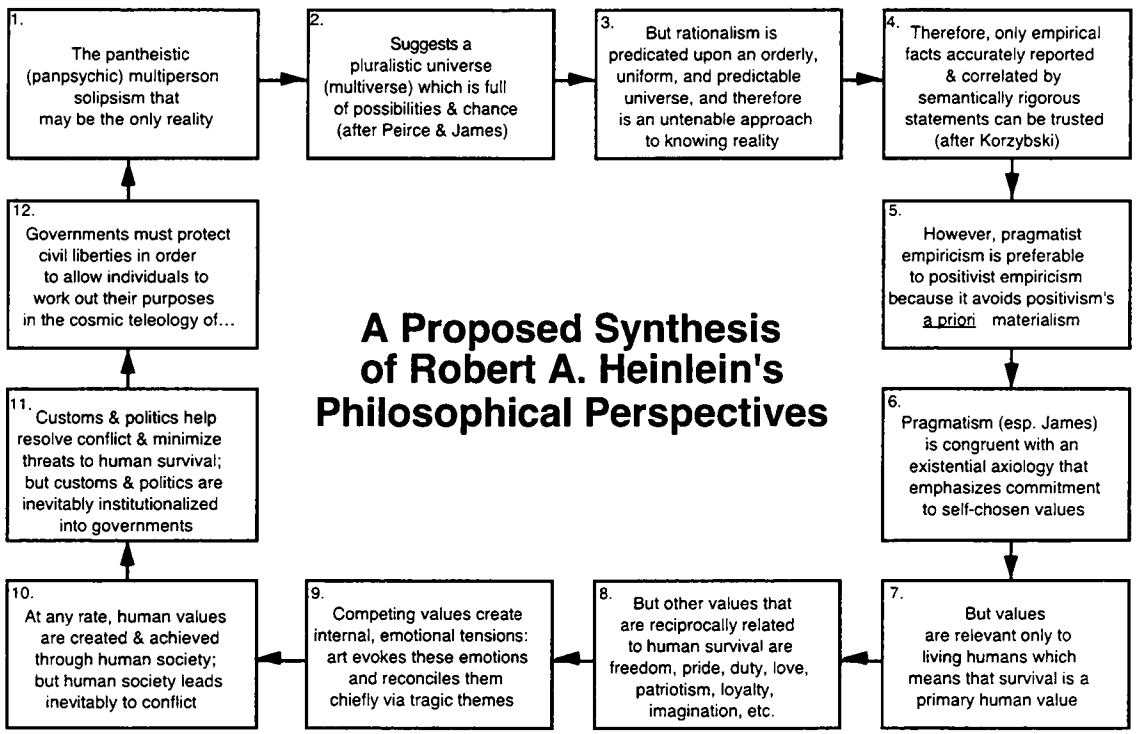


Diagram 2: A Proposed Synthesis of Robert A. Heinlein's Philosophical Perspectives: His philosophy, while eclectic and somewhat difficult to categorize within the usual philosophic taxonomies, nevertheless possesses its own internal logic which serves to integrate key aspects of his metaphysical, epistemological, and axiological views.

1. The pantheistic (panpsychic) multiperson solipsism that may be the only reality. In Appendix D, I proposed that Heinlein really did entertain the idea that the Universe was somehow alive and constituted of the separate consciousnesses of all minds who all participated in a kind of pluralist solipsism. That is, in James's (1897/1956) way of expressing the idea, we may all of us be co-conscious co-creators of reality. I use the word "may" in box number 1 doubly to indicate that I am speculating about Heinlein's beliefs as well as to indicate that Heinlein himself was less confident about his metaphysical views.

2. Suggests a pluralistic universe (multiverse) which is full of possibilities and chance (after Peirce and James). In Appendix D, I proposed that Heinlein had been directly influenced by the pragmatist philosophy of James (1897/1956, 1898/1956, 1925) and Peirce (1955). I specifically suggested that Heinlein was influenced by James's idea of an open-lid universe and Peirce's idea of a tychistic universe. Both ideas are congruent with Heinlein's frequent expressions of the notion of a pluralistic universe in which almost anything can happen.

3. But rationalism is predicated upon an orderly, uniform, and predictable universe, and therefore is an untenable approach to knowing reality. In Appendix E, I suggested that the very reason that

Heinlein rejected rationalism as an epistemological stance is that rationalism does not congrue with the "messiness" of the universe. Heinlein did not appear to subscribe to the Enlightenment view of the universe as an orderly and predictable machine.

4. Therefore, only empirical facts accurately reported and correlated by semantically rigorous statements can be trusted (after Korzybski). Nevertheless, as I indicated in Appendix E, Heinlein believed that sensory evidence was the only evidence that could be trusted to provide knowledge of the existing state of affairs. But because knowledge is only possible through language, care must be taken to ensure that the language is used carefully, accurately, and rigorously. Thus Heinlein's basic epistemological stance is empiricism combined with Korzybski's General Semantics.

5. However, pragmatist empiricism is preferable to positivist empiricism because it avoids positivism's a priori materialism. But drawing together insights presented in both Appendices D and E, Heinlein's empiricism does not rest on a materialist metaphysics. Rather he seemed to believe in nonmaterial realities. Therefore, his empiricism, like that of James (1897/1956, 1898/1956, 1925), was the pragmatist sort that, unlike positivist empiricism, had no materialist a priori assumptions. That is, pragmatist empiricism does not screen out a priori any possible phenomena.

6. Pragmatism (especially James) is congruent with an existential axiology that emphasizes commitment to self-chosen values. Linking Appendix E forward to Appendices F and G (also see Chapter V), pragmatism provides a way to link Heinlein's epistemology to his axiology. That is, pragmatism provides an acceptable epistemological rationale for Heinlein's existential axiology, with his emphasis on self-chosen values.

7. But values are relevant only to living humans which means that survival is a primary human value. In Appendix F, I pointed out that Heinlein's values are to be understood through his survival theory of moral behavior. Survival is the primary or preconditional human value without which the achievement of other values is impossible. Survival values can be articulated in a hierarchy from the individual up through various levels of group size and character.

8. But other values that are reciprocally related to human survival are freedom, pride, duty, love, patriotism, loyalty, imagination, etc. On the other hand, people are not necessarily motivated to engage in survival behavior unless they are in possession of other values, both emotional and practical. Such values motivate individuals to survive or to contribute to the survival of others. They are reciprocally related to survival because survival creates the conditions for achieving other values, but without them people may not be motivated to achieve theirs or others' survival.

9. Competing values create internal, emotional tensions; art evokes these emotions and reconciles them chiefly via tragic themes. But values can be rationally understood and chosen singly but that in relation to each other evoke emotional tensions. For example, individual survival and group survival can be in mutual conflict. I pointed out in Appendix H my view that Heinlein believed that art evokes and purges the emotional tensions that arise from value conflicts. Because Heinlein believed that most value conflicts were tragic in nature, tragedy in art is the most sublime vehicle for reconciling the emotions that arise from them.

10. At any rate, human values are created and achieved through human society; but human society leads inevitably to conflict. In Appendices F and G, I pointed to Heinlein's belief that human values arise out of human interaction in families and other social groups. These interactions lead to both love (which is also a survival value) and conflict (a condition that unchecked can threaten survival).

11. Customs and politics help resolve conflict and minimize threats to human survival; but customs and politics are inevitably institutionalized into governments. As I pointed out in Appendix G, because of the life-threatening possibilities of conflict, human beings evolve ways of resolving and minimizing conflict, on both small and large scales. Conflict on small scales can be managed through the use of customs (including etiquette). Large scale conflict is managed through politics. Both are institutionalized into civil governments.

12. Governments must protect civil liberties in order to allow individuals to work out their purposes in the cosmic teleology of the pantheistic (panpsychic) multiperson solipsistic universe. In Appendix G, I also pointed out the human need for liberty and dignity in Heinlein's public ethics along with his distrust of overly-successful governments. No matter the outward political philosophies of governments, they should be loose enough and tolerant enough of individuals to allow them to reach their destinies. Finally, I connect Heinlein's axiology back to his metaphysics to make his point that

human beings are part of the evolutionary teleology of the universe and that freedom and dignity are necessary to allow this teleology to work itself out.

The 12 part synthesis of Heinlein's philosophy presented in Diagram 2 is not intended to accommodate all of his philosophical ideas into a grand scheme. The diagram would have to be a great deal more complicated in order to do that. What I hope I have done is simply to show the existence of a rationale that connects Heinlein's main ideas.

Conclusion

Heinlein's philosophy is really an attempt to deal with both subjective and objective experience in an inclusive way. Heinlein's philosophy mirrors and perhaps anticipates some aspects of contemporary postmodernism. Nevertheless, Heinlein is firmly committed to the scientific method as the only practical, workable approach to arbitrating truth claims. He clearly rejected some of the more controversial trends within postmodernism, even if he never bothered to enter into discourse with its spokespersons.

As Diagram 2 shows, Heinlein's philosophy can be integrated and reconciled when his perspectives are approached as elements of a process. Heinlein would likely have resisted my attempted systemization of his various philosophical perspectives. These objections might very well focus on the inadvisability of linking those elements of his philosophy having stronger (i.e., empirical) claims to "truth" with those elements that are purely speculative and subjective. Heinlein might very well have pointed out that his most strongly expressed views had to do with the scientific method and morality, and that these views reflected the extent to which he was willing to commit himself to a philosophical position.

But it must be answered that he did express many views and that a way of placing those views into some sort of inclusive context is necessary for understanding his total philosophy. The integrated perspective depicted in Diagram 2 at least attempts such an inclusive context. This synthesis of Heinlein's perspectives also indicate a rationale and logic for the particular educational interests, approaches, and directions that he manifested in his fiction and in his personal life. That is, it provides a thumbnail view of that which Heinlein considered important for knowing, teaching, and learning. It provides an implicit gestalt of that which he considered to be the means as well as the ends of education for the healthy, complete, and fully-functioning human being. Of course, I also believe that my thumbnail view of that which Heinlein considered important for knowing, teaching, and learning is an ample illustration of Dewey's (1939) point that philosophy is the general theory of education.

My synthesis of Heinlein's main philosophical views also helps provide a perspective for understanding his philosophy of education presented in Chapter V. It also helps us to relate Heinlein to taxonomies of both general and adult educational philosophy. For naturally, the task of synthesizing the philosophy of Heinlein as a fictional educator of adults cannot be complete until that synthesis addresses that part of his philosophy that dealt specifically with education.

VITA

Phillip H. Owenby was born in Sevierville, Tennessee on November 25, 1951. He attended public schools at Pigeon Forge and Sevierville in Tennessee and was graduated from high school in May, 1969. In June, 1969, he entered the U.S. Army and subsequently served in Vietnam, Germany, and at posts in the United States. In 1979, he earned a Bachelor of Arts degree in Liberal Arts with a history concentration from the Regents College of the State of New York. He earned a Master of Arts degree in the humanities and philosophy in 1989 from the California State University at Dominguez Hills. In 1991, he entered the University of Tennessee, Knoxville and in August, 1996 was awarded the Doctor of Philosophy degree in Education with major concentrations in adult and continuing education and philosophy of education, and a cognate concentration in philosophy. He has worked in the past as a communications and education consultant in the areas of human resource development, regulatory training, environmental education, and community health. He works presently as a learning consultant for the TVA University, and also teaches and writes.