Reasoning And Decision Making: The Development Of A Short Text For The Adult Learner

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Reasoning and decision making: The development of a short text for the adult learner

Steedman, Carrol Severns, Ed.D.

University of Nevada, Las Vegas, 1987

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UMI
REASONING AND DECISION MAKING:
THE DEVELOPMENT OF A SHORT TEXT
FOR THE ADULT LEARNER

By
Carrol Severns Steedman

A dissertation submitted in partial fulfillment
of the requirements for the degree of

Doctor of Education
in
Secondary, Post-Secondary and Vocational Education

Department of Secondary, Post-Secondary
and Vocational Education
University of Nevada-Las Vegas
August 1987
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University of Nevada-Las Vegas
August 1987
Abstract

Adult learners (from high school through the late adult years) have a need for dialogical reasoning in active decision making. Therefore, it was the purpose of this developmental study to write and test a short text (a primer using an innovative design) which infused the seven steps of decision making with elements from Aristotle's rhetoric/reasoning and from informal logic. The text introduced learners to critical thinking methods in creating alternatives in arguments for decisions impacting the future.

Search of the literature included historical, political, sociological, educational, philosophical theory as it has influenced the teaching of reasoning in schools and colleges. Adult learning theory, developmental psychology, and a review of current rhetoric/reasoning/informal logic texts and theory also shaped the methods, content, and design of the text. A case-study protagonist and plot throughout the book encouraged reader participation in critical/creative thinking.

A preliminary draft was taught to two English 102 classes in six fifty-minute meetings over three weeks. (Eleven students from this group had graduated high school in the 70s, 60s, or 50s, or were juniors or seniors in college.) In posttest, all students increased their
decision-making steps; however, twenty-two of the total thirty-four students (65 percent) increased their decision-making steps (inquiry, evidence evaluation, creation of lines of arguments pro and con, causal reasoning in contingencies) by over one hundred percent. In a final 15-minute timed test of two complex argument paragraphs, eighty-three percent of the students identified at least four reasoning mistakes -- e.g., faulty assumptions, premises, inference, distorted evidence -- in one of the argument paragraphs using correct argumentation terminology. Forty-two percent of the students identified at least four errors in both paragraphs.

Evaluations of the text from students and two instructors of adults guided the revision of the text. The final draft was validated by an English professor of rhetoric and a philosophy professor of practical reasoning. Implications from the study suggest further testing of the text, *Reasoning in Decision Making*, in high school and college classes (those requiring dialogical reasoning skills), in non-credit classes for the adult learner, and in current developmental psychology and critical thinking studies.
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Reasoning and Decision Making (the text)
Acknowledgements

I thank the students who read the little book. To those some few who were not there for three weeks, I wish them well in their self-directed learning. For those who were there, thank you for being willing teachers, inventive, gracious in your comments, and always lively in your arguments. I especially thank those students who wanted a fight to the death over the syllogism which began, "Life is more valuable than property." And I thank the student who, on first hearing, "We don't know what we don't know," screamed.

I thank my committee members, Dr. Anthony Saville, Dr. John Vergiels, and Dr. Norma Engberg, who waited, and who asked good questions, and who were always willing though sometimes reluctant to give me more rope. I especially thank the committee chairman, Dr. Thomas Kirkpatrick, for his hearty confidence and help. And I thank him for his willingness to inherit this study in the first place.

I thank Dr. Leon Coburn of the Department of English and Dr. Craig Walton from the Department of Philosophy for their abundant expertise and their generosity in reviewing the book. And I thank Wendy King for giving me those revelatory class hours with the students.
I will always thank Dwight Marshall for his encouragement and inspiration and his knowledge of adult learners which was invaluable to my work--both on paper and with the greatly appreciated people in the Division of Continuing Education. They are, indeed, a fine lot.

I thank John Collins of the American Textbook Collection, Gutman Library, Harvard Graduate School of Education, who assisted my learning at a distance; and Cliff Baden and Bob Kegan of the Institute for the Management of Lifelong Education, Harvard University, for creating a program in 1985 which illuminated new possibilities for this study.

I thank Patricia Frazier Lamb for being a steadfast and hilarious friend in the pursuit of words, words, words.

And to Leslie Gorr, for all her patience in the revisions of revisions, thank you.
Chapter 1
INTRODUCTION

A number of reports assessing the quality of American public school education were released in the early 1980s. They unanimously called for a greater emphasis on teaching the students reasoning, critical thinking, and analysis. "A Nation at Risk" (National Commission, 1983), "The Educational EQuality Project" (College Board, 1983), The Paideia Proposal (Adler, 1982) name but three of these reports.

The majority of adult students currently enrolled in universities as degree-seeking students or continuing education students are products of the same educational curricula analyzed in the above reports. In addition, research has been specifically critiquing the needs of these adult learners. "Since the mid-1970s, higher education has begun to take serious interest in the adult student and the particular developmental needs such students have" (Lehmann, 1983, p. 16). In teaching and counseling these adult students, staff and faculty have begun to move away from a traditional model, where they hold ultimate authority over the student, to:

an adult development model, which incorporates and sustains the adult as an active decision maker in his/her struggle to restructure the meaning of life
events and developmental tasks... (Lehmann, 1983, p. 16).

Given insufficient secondary school training in reasoning, critical thinking, and analysis, how might these adult students be aided in learning reasoning and critical skills essential to personal and educational decision making?

Part of the answer lies in how reasoning was once taught in American schools and colleges.

During the eighteenth and nineteenth centuries, the study of logic and reasoning had a central position in American curricula. Grammar, rhetoric, "composition," and English literature were often subsumed under "Logic" (Applebee, 1974, p. 8). Grammarians and rhetoricians were prescriptive, citing firm rules that must be followed and providing abundant examples from appropriately rhetorical writers such as Alexander Pope and Jonathan Swift. Throughout the nineteenth century, "rhetoric," "analysis," and "criticism" usually indicated much the same course of study (Applebee, 1974, p. 9). As an example, a student would read a persuasive essay by Pope to find the major premise and subpremises; his use of analogy to illustrate a point of argument was analyzed as well as the use of other metaphors. But most importantly, the rhetoric of argument instructed the student in the rules of reasoning from generality and cause/effect, of inductive and deductive reasoning, and the rules for the analysis of numerous
fallacies (e.g., \textit{ad hominem}, \textit{ex post facto}) (Golden & Corbett, 1968).

Students were trained in oratory and debate, which was the medium of "reasoning-out" great issues before the public. (The Lincoln/Douglas debates are famous examples of public argument meant to clarify issues by reasoning them through.)

By 1865, schools and colleges recognized a variety of loosely related minor subjects which would eventually be designated as the discipline of "English." They were: rhetoric, oratory, spelling, grammar, literary history, and reading (Applebee, 1974, p. 13). Literature, for its own sake, had not yet gained acceptance. Shakespeare broke too many rules of rhetoric to be trustworthy. During these years, rhetoric was complex, regimented, and dogmatically prescriptive (Bain, 1980). It was not to survive in public education.

During the late 1800s, Williams James was explicating empiricism with a young Harvard student named Edward Lee Thorndike. In 1901 Thorndike published a series of articles attacking the "theory of transfer of training" (Applebee, 1974, p. 48) which in turn called into question the use of "mental discipline" as a justification for school studies (Karier, 1986; Holland, Holyoke, Nisbett, & Thagard, 1986). "If training in one area was not generalizing to others, the major justification of the classical curriculum would crumble" (Applebee, 1974, p. 48).
In 1899, John Dewey published *The School and Society*. He (and Jane Addams) found the classical curriculum to be far from the life of most students and, especially, immigrant children. Thereafter, Dewey advised that schools in a progressive society were to prepare students for the problems of living together (all people in all communities). The classical curriculum was equated with the cultural elite and was dropped from the public school system. Dewey and Thorndike held sway.

In the 1940s when the call was down with Dewey, up with academics, fragments of Classical Rhetoric returned to the classroom. But without the entire structure of rhetoric as a tool of reasoning, the fragments were ineffectual (Gage, 1984; Corbett, 1965).

What was to replace rhetoric in the twentieth century as the discipline of "thinking"?

In many cases, it was the discipline of psychology.

During the twentieth century, the study of "thinking has turned inward to cognitive processes and the affective domain." Social psychology studied the behavior of people in groups and discovered "group think." Educators promoted "problem solving," while business was interested in "decision making," and psychologists complied with studies of these processes. Students, professionals, laymen were urged to seek information before making a decision or solving a problem. But the question that remains unanswered by the psychologists is "How does one evaluate massive
amounts of 'opinion,' information, quasi and real research, in order to reason through to an acceptable degree of probability?" (Bremer, 1983, p. 449-450). Mathematicians, scientists, and logicians have their rules and methods, but can adults use these same rules to reason through and solve their personal, academic, or business dilemmas as adult students?

Thus, the question for this study arose: could the system of reasoning (argumentation) and instruction in fallacies from Classical Rhetoric be added to the process of decision making to form a more complete process which teaches reasoning as well as how to combat psychological stress inherent in the decision-making process? Would the development of a short text, specifically written for adult students, on reasoning in decision making assist in delivering needed reasoning and critical thinking skills?

Irving Janis, a professor of psychology at Yale, praised decision-making courses developed by Wheeler and Landis and stated that these courses should be an essential study for all students in schools and colleges. Decision making prepared students "both to deal more competently with their personal and work-task decisions as breadwinners and to function more effectively in their future roles as parents, voters, and members of juries, neighborhood improvement organizations, school boards, and other decision-making groups in their communities" (Janis, 1977, p. 403).
Decision making necessitated information gathering, and Janis summarized psychological research in the 1970s as it related to "information processing":

In the 1970s, a new trend seems to be emerging in psychological research on information processing as it relates to social behavior. This trend consists of making fewer attempts to test deductions from broad theoretical assumptions about man's proclivity toward maximizing the internal consistency of his cognitions and, instead, directing more effort toward elucidating hitherto unexplored flaws and limitations in human information processing, such as the propensity of decision makers to be distracted by irrelevant aspects of the alternatives, which leads to loose predictions about outcomes (Abelson, 1976); the tendency of decision makers to be swayed by the form in which information about risks is packaged and presented (Slovic et al., 1976); their reliance on faulty categories and stereotypes, which leads to erroneous decisions relating to social groups and ethnic minorities (Hamilton, 1976)...(Janis, 1977, p. 16).

Interestingly, each of these information-processing "research concepts" described a fallacy (i.e., Abelson studied "oversimplified cause and effect;" Slovic observed effects of distortion and slanting; Hamilton described the
fallacy of stereotype when it was used as a faulty premise for argument in a circle). Was information processing another term for reasoning -- as it was taught in argumentation, or more recently in informal logic?

Janis, however, did not care for some of the modern vocabulary attached to reasoning and the rational person:

Some social science theorists would describe reliance on a single decision rule as less 'rational' than the elimination-by-aspects approach, and all variants of satisfying as less "rational" than optimizing. But terms like less rational, nonrational, and irrational carry invidious connotations ('stupid', 'crazy') that often do not correspond at all to the evaluation that would be made by objective observers (Janis, 1977, p. 32).

Although Janis did not approve of the connotations of the irrational (invidious more from the tradition of scientific rationalism than from the tradition of argumentation), his outlined procedure of the steps involved in decision making was useful, and his insights into psychological conflicts which accompany decision making were based on psychological theory and would provide a more complete forewarning to an adult learner than would a simple analysis of reasoning and fallacies.

However, it was ironic that so frequently the stress/conflict/anxiety which Janis described in decision
makers was created because the person was frozen in his/her faulty reasoning and could not analyze the fallacy (e.g., Janis recounted President Harding's frenzy of seeking, *ad hominem*, "a man who knows the truth" because he was being tossed between unsatisfactory "either/or" alternatives).

Another aspect that related argumentation/reasoning favorably with decision making appeared when Janis discussed open-mindedness theory in decision making. Janis explained J.T. Klapper's hypothesis: people generally censor their intake of messages in a highly biased way to protect their current decisions and beliefs from attack (Janis, 1977, p. 203). Will the study of alternative possibilities, reasoning and fallacies assist adult students to be more objective, to see situations from new perspectives and therefore become more open-minded?

The study of reasoning (as practiced in Classical Rhetoric) received further support from Jean Piaget. Piaget described formal operational schemes as "adapted to certain demands of the environment (closely related to scientific laws) but propositional operations were extremely general and equally applicable to all forms of information" (Brainerd, 1978, p. 233). Propositional operations pervade all areas of adolescent and adult thought; formal-operational schemes (scientific) did not.

The "rules" and "behavior" of propositional logic related closely to the far simpler language and rules of argument (reasoning) as it was taught in Classical Rhetoric.
Therefore, the adult learner will find this reasoning more comprehensible and applicable to his/her decision making than formal reasoning taught in calculus, symbolic logic, or chemistry.

Thus, the development of a new text for adult students in decision making/reasoning may be a useful contribution to the literature. However, the text should be specifically written for the adult learner.

Malcolm Knowles described the adult learner as self-directed, identified by highly-valued self-experience, motivated to learn because of the developmental tasks in his/her social role, and problem-centered rather than subject centered in learning (Knowles, 1980, p. 76). The adult responsibilities of work, family, community commitments caused him/her to be time efficient, to seek classes and knowledge which address specific problems relevant to him/her. Also, there were millions of independent adult learners, those who did not study in class but by themselves (Tough, 1971). A short text devoted to reasoning/decision making (independent of a college course) would be preferable for these adult learners.

The text could also be adopted as a unit in a class (writing, business communications, public speaking, business management, political science), or it could be studied independently as a self-directed activity, when an instructor assumed that a student had had a class in argumentation or informal logic.
Statement of the Problem

The purpose of this study was to develop a short text for adult learners which described the decision-making process. This text incorporated the rules of reasoning into the information-processing stage of decision making.

With this purpose in mind, the following questions served as a basis for developing the text:

1. What were the commonalities in the decision-making process as described by researchers in the field?
2. What were the commonalities in the rules of reasoning as described in Classical Rhetoric (or argumentation or informal logic)?
3. What were the major fallacies described in informal logic texts and in texts which explain persuasion, communication, and "clear thinking"?
4. How was adult learning theory to be used to shape the text's content, presentation of information, and objectives?
5. How would Sternberg's Componential Theory of Analogical Reasoning guide the efficient selection and sequence of reasoning "rules" to be included in the text?
Significance of the Study

As stated earlier, three major studies ("Nation at Risk," "The Educational Equality Project," and The Paideia Proposal) strongly recommended greater emphasis on the teaching of reasoning and critical thinking. In addition, Irving Janis supported decision-making courses in schools and colleges as "essential study" for students preparing for adult roles (Janis, 1977, p. 403).

Malcolm Knowles, in researching the adult learner, found him/her to be strongly self-directed in selecting his/her education (Knowles, 1978, p. 199). In addition, Knowles called for more innovative theories and processes of learning in educational research (see also Kenneth Hawes, 1986). The proposed text in its systematic and sequential presentation of decision making and argumentation illustrated in a case study is an innovative design using well-established reasoning procedures for inquiry learning.

Knowles stated that after experiencing the fads of Computer Assisted Instruction, television instruction, programmed instruction, "we have finally really begun to absorb into our culture the ancient insight that the heart of education is learning, not teaching" (Knowles, 1978, p. 53). Currently the focus is on what the learner does; after the second grade, the emphasis is not on learning but on achieving through test scores, and the situation worsens, all the way through college. Knowles was hopeful that the
new self-directed inquiry learning would spread. After all, the great teachers (Confucius, Socrates, Euclid, Cicero) were teachers of adults and assumed that learning was an act of discovery achieved by the student; the teaching procedure was dialogue (reasoned discourse) and "learning by doing." In contrast, the medieval model was teaching subservient monks to teach subservient, faithful, obedient "children" of the church. Unfortunately, Western culture inherited the medieval method of teaching children (Knowles, 1978, p. 53).

It would seem that the design of a decision-making text which also taught reasoning methods would be a significant contribution to the independent thinking and discourse required in self-directed adult learning.

Assumptions

The following assumptions were made:

1. A text on decision making and reasoning could be developed.
2. The majority of adult learners in the United States were products of curricula similar to that evaluated in the recent national reports. Therefore, many adult learners were undereducated in reasoning and critical thinking skills.
3. It was assumed that adult learners can improve their reasoning, critical thinking, and decision-
making skills by reviewing the procedure of decision making and rules of reasoning.

4. It was assumed that these adult learners would have an eleventh or twelfth grade reading level or higher.

**Delimitations**

No statistical studies were conducted in this developmental research. However, the text was evaluated by adult learners and adult instructors and was validated by a review panel of persons expert in the subject areas of decision making, informal logic, reasoning, and adult learning theory.

On the basis of evaluation form responses, the text was revised. The evaluations were drawn from two classes of adult learners (minimum enrollment 16), by the instructor in that class, and by three additional instructors experienced in adult education (two of these instructors acted as the review panel for validation).

This developmental study was limited to researching published findings in adult learning theory; reasoning and intelligence theory; historical, political, and education philosophy as it related to the teaching of reasoning; an assessment of selected texts currently available in argumentation; and the research findings of current needs in American education.
Design of Research

The text was developed according to findings from a review of the literature in decision making; reasoning (as it was taught in Classical Rhetoric); reasoning and intelligence research; historical, political, education philosophy as it related to the teaching of reasoning; and adult learning theory. The current contributions of a variety of argumentation/informal logic texts for the adult learner were also researched and assessed. According to these findings, appropriate objectives for the text were developed, and an analysis of context in which the text will be used was provided.

A preliminary draft of the text was written and utilized in two intact classes with a sufficient number of adult students (minimum 16) with various occupational and academic interests. The text was evaluated by their regular instructor and the adult students.

The text was revised in accordance with the evaluative consensus.

The revised text was evaluated by another selected adult learning instructor. Further revisions were completed. The text was submitted to the validation panel, two university professors of informal logic.

A final draft of the text was developed, and recommendations were made for the text's implementation.
Implications of the study were discussed.

**Definition of Terms**

**Adult Learner:** "A person whose major social roles are characteristic of adult status and who undertakes systematic and sustained learning activities for purposes of bringing about changes in knowledge, attitudes, values or skills" (Darkenwald and Merriam, 1983, p. 19). Piaget saw formal, propositional operations (characterized by hypothetico-deductive, scientific, reflective-abstractive reasoning) introduced and made consistent in ages 11-15 as the basis of adult intelligence. This served as another definition. (See Chapter 2.)

**Classical Rhetoric:** The explication of techniques used in composition (discovery and organization of arguments, figurative speech, style, persuasion) based on systems from Aristotle, Cicero, and Quintilian which enabled a student to think, speak and write effectively (Corbett, 1965, p. vii).

**Decision making:** the process of "defining the problem, gathering information, processing the information, identifying possible solutions, evaluating solutions, reaching a decision" (Janis, 1977, p. 43).

**Argument:** "Reasoning through evidence to reach a conclusion" (McCrimmon, 1976, p. 206). "Discourses containing statements that are set forth as supporting,
proving, or making probable what is said in other statements" composed in a "certain logical structure containing reasoning" (Thomas, 1986, p. 10).

**Information processing:** Evaluating "evidence in a search through newfound knowledge and stored memory...cognitive consistency in mapping before response" (Janis, 1977, p. 43).

**Informal Logic:** In the late 1960s and '70s, the term designated a "new kind of Logic course, one whose overt purpose was to equip students to assess arguments as these are found in the pages of the mass media" (Johnson and Blair, 1985, p. 181).

**Reason:** "...the power of comprehending; to use induction or deduction; to think out systematically or logically." "Reason, Understanding, Intuition shared meaning element: the power of the intellect by which man attains to truth or knowledge" (Webster's *New Collegiate Dictionary*, 1977).

**Reasoned discourse:** "Sentences containing some statements that are set forth as making probable, proving, justifying, or explaining other statements in the same discourse" (Thomas, 1986, p. 10).

**Mapping:** "A process by which a higher-order rule is discovered that relates "A" in a problem to respond to "C" in solution response. The rule is stored in working memory" (Sternberg, 1977, p. 136).
Evaluation and validation: "Research efforts involving evaluation have examined questions pertaining to the validity, effectiveness or efficiency of...programs as indicated by student achievement and by the judgments of people who are considered to be 'expert' and qualified to judge" (Mitzel et al., 1982, p. 1137).

Reasoning: "Any discourse in which some statement is given as a reason [causal or justificative] for some conclusion" (Thomas, 1986, pp. 12-13).

Organization of the Study

Chapter One was the introduction to and stated the purpose of the research and development project. It presented the background of the study and the significance of the proposed text on decision making and reasoning for adult learners.

Chapter Two was a selected review of the literature which included Piaget and Sternberg's theories of reasoning, a historical, political, educational philosophy context for the teaching of reasoning, Malcolm Knowles' findings on adult learning theory, and a review of selected texts currently available in decision making and reasoning.

Chapter Three described the process of choosing objectives based on review of literature and an analysis of the context in which the product would be used. The
preliminary version of the text was developed in accordance with the listed objectives; the preliminary text was taught in two classes. Student performance was discussed.

Chapter Four described the text's preliminary draft, its evaluation by adult learners and two instructors of adults. Evaluation results were reported; text revisions were reported. The completed text and its review by the two-person validation panel was explicated in the context of recent critical thinking literature. Recommendations were made for the text's implementation.

Chapter Five addressed the implications of the study.
Chapter 2
REVIEW OF LITERATURE

The teaching of reasoning is a political act. It occurs (or does not occur) in certain histories and cultures with varying views of human psychology, differing assumptions on the human ability to reason (or not reason), and with differing philosophies of the political necessity of a citizenry to reason individually or as a community.

Therefore, the search of the literature presented here was selective and interdisciplinary. If the purpose of this study was to write a book illustrating decision making and reasoning (more specifically, argumentation) for the adult learner, the author should be aware of political, sociological, psychological, and argumentation theory in a historical context. It was this selected theory which dictated the purpose of the book, the content of the book, and described the contemporary educational and social paradigm in which the book would have to survive in order to succeed in its goal of independent reasoning and emancipation for the learner.

Additionally, this type of interdisciplinary research was encouraged by Walter Feinberg (1983). His theory of social reproduction held that schools were expected to serve the goals of more powerful institutions in society. They were to maintain certain children from certain social classes in specifically designed curricula which lead to specific work and life expectations. The hierarchical
character of schools represented and reproduced the social hierarchy in order to keep established wealth and established capitalistic forms of production in a secure holding pattern. Education researchers must therefore give equal study to these relationships between powerful institutions, to better see "the crucial ways in which schools are bent, shaped and molded by dominant interest groups and classes" (Feinberg, 1983, p. 2). The education researcher should realize that many idealistic plans for school reform will be impossible to bring to fruition because American society faces two paradigms in American education: (1) skills that have a marketable exchange value -- vocational education through professional programs, or (2) skills that involve the schooling of consciousness, values, interpretive understanding, normative skills -- liberal arts and general education. Where, when, by whom and for whom are these schooling options dictated? Who has the "right" or "privilege" to practice these skills? (Feinberg, 1983, p. 228). In what curriculum, training program, adult education context will an adult have an opportunity to learn reasoning and decision making for his or her own betterment?

A selective, interdisciplinary review of the literature also prevented this author from asking, as does W. Ward Fearnside in the introduction to his informal logic text About Thinking,

Though we learn something about sound reason
just by growing up, still many adults are illiterate in logic. They make glaring errors. This is because they never have examined the reasoning process at any length - a fact that I find strange considering how often we are told that 'learning to think' is the essence of education.

The review of the literature explicated what did happen to the teaching of reasoning, why the national rhetoric of "learning to think" remained, but the practice of teaching reasoning was largely absent from the public schools and adult education programs.

A review of interdisciplinary literature also explicated why Edward Corbett, in Classical Rhetoric and the Modern Student, provided a weak rationale for the disappearance of Classical Rhetoric in the late nineteenth century. He reasoned that many uneducated men became millionaires during that time, and this helped change the public consciousness about the need for a rigorous classical education. However, an interdisciplinary review revealed that many other forces gathered in American society at that time to deliberately eclipse Classical Rhetoric, and they remain to be reckoned with today should one wish to reinstitute the teaching of reasoning.

Finally, an interdisciplinary study assisted in more fully understanding adult learning. Theorist Malcolm Knowles regretted that Western civilization had the misfortune to inherit its system of education from the
medieval monestary, rather than from the Greeks who educated their youths as if they were independently-reasoning adults. However, American schooling deliberately stayed with the authoritarian model of monastic education. Why? Adult education theory gave an independent, self-directed lead to adults in determining their education. But by the adult years, the damage frequently had been done in the public system of formal education, and many adults will never return to any form of education and will never engage in the practices of lifelong learning. Educational researchers have known this for decades; still, in essence, the schools have not changed. Why?

Classical Rhetoric in the Political Context

With these questions in mind, this review of the literature began with the extensive literature that Western civilization has inherited from Greek and Roman authors of the classical period, specifically the literature which relates to rhetoric (reasoning in a political/social context). It was sufficient here to explicate two perspectives, Plato and Aristotle.

Both Plato and Aristotle saw argumentation as a search for truth and the development of belief. Plato's system was dialectic: for every question there exists a truth, and it falls to the philosopher to persist in the search by
breaking down the subject into basics, proceeding through question and answer "through definitional relationships to develop a correct understanding of complex ideas" (Rieke and Sillas, 1984, p. 13). Once the truth was found, it was communicated to others who could not perceive truth on their own. However, this communication was not an "appeal to agreement," it was a statement of truth (the truth) by a philosopher; it was instruction, and disagreement on the part of the listener equated to misunderstanding on the part of the listener. This belief persists to today (Ryle, 1949; Rorty, 1979) that there is an absolute truth apart from human judgment, and the discovery of this truth is the domain of the philosopher using specialized argumentation (or another "specialist" using another "specialized" reasoning process). For Plato, this belief culminated in his political theory of rule by the philosopher king in The Republic, or "cities will never have rest from their evils." Aristotle, however, presented another interpretation of "truthful" rule:

Plato does not envision negotiating or compromising the 'truth' in a democratic dialogue. However, Aristotle asserted that, for the most part, humans argue about their own actions which are never inevitable and therefore about which one could never have absolute truth. Aristotle's 'system' was to secure on each question all that could be persuasively said. If all competing
arguments were examined together, truth and justice would have a natural tendency to prevail. But this could occur only when all competing arguments had full and fair opportunity to be examined. This system, obviously, depends on a process of free speech within a society (Rieke and Sillars, 1984, p. 16).

There were numerous difficulties with this theory (which will be discussed below). However, Aristotle, in questioning who could publicly determine if claims were true or false, preferred to open communication, to adopt a "formula" in which all arguments of a deductive or inductive nature would be admitted to an audience, and the responsibility of the right decision rested upon the presenters of argument, because "truth and justice are by nature more powerful than their opposites." In their rhetorical forms, induction and deduction were not merely adaptations of formal logic. They gained their adherence because "they represent (to an audience) a combination of proofs...Logos (the logical nature), ethos (the character of the speaker), and pathos (the bringing of the audience to a state of emotion)" (Rieke and Sillars, 1984, p. 15). Thus, reasoning and argumentation in Aristotle's theory of rhetoric was not simply persuasion, but a means to discover numerous sources of persuasion in a given case; and if the elements of rhetoric were correctly balanced in the formula, the right decision would be made (Perelman, 1969 and 1982,
pursues this theory today). And, of course, one must realize the decision may be "right" according to the decision makers, but might be "wrong" according to those who did not participate in the decision making.

John Gage (1984) concluded that the contrast in Plato's and Aristotle's epistemology was that, for Plato, rhetoric was identical to dialectic and was therefore the presentation of the truth; for Aristotle, argument and inquiry into the probable (i.e., possible knowledge) was a legitimate activity and the rhetorical process arriving at consent could constitute legitimate knowledge. Therefore, for Plato, knowledge was; for Aristotle, knowledge was "a doing." In the "topical analysis of statement, or process of dialectical question and answer directed to clarify implications of opinions and to discover new propositions and principles," one had "the art of discourse, [and] knowledge can be created in the activity of discourse because it is potentially changed by that activity. Knowledge is something people 'do' together, rather than what a person has" (Gage, 1984, p. 156).

Aristotle described the duty, the audience, the subjects of rhetoric:

Dialectic does not construct its syllogisms out of any haphazard materials, such as the fancies of crazy people, but out of materials that call for discussion; and rhetoric, too, draws upon the regular subjects of debate. The duty of rhetoric
is to deal with such matters as we deliberate upon without arts or systems to guide us, in the hearing of persons who cannot take in at a glance a complicated argument, or follow a long chain of reasoning. The subjects of our deliberation are such as seem to present us with alternative possibilities; about things that could not have been, and cannot now nor in the future be, other than they are, nobody who takes them to be of this nature wastes his time in deliberation. (Aristotle, 1954, p. 27).

About the nature of rhetorical reasoning, human action, and those "alternative possibilities," Aristotle continued:

There are few facts of the 'necessary' type that can form the basis of rhetorical syllogisms. Most of the things about which we make decisions, and into which therefore we inquire, present us with alternative possibilities. For it is about our actions that we deliberate and inquire, and all our actions have a contingent character; hardly any of them are determined by necessity (Aristotle, 1954, p. 28).

Therefore, rhetoric was the "system" for thinking, speculating, on future human action, and for coming to the right decision. "The true answers to questions raised in rhetorical discourse are, in fact, by definition not knowable in the scientific sense; rhetoric has no business
investigating questions that are discoverable by science...but outcomes of rhetorical debate (art, politics, ethics) affect the quality of our lives, and the possibility of our being alive..." (Raymond, 1984, p. 141). Thus important questions, depending upon their subject matter, may be answered by experimentation, or by logic, or by quantification. But in "questions where the full data needed to make these methods work is unavailable" (Raymond, 1984, p. 149), one should use probabilities as premises, ethymemes (drawn from ethical and emotional proofs as well as rational proofs - which therefore gained the assent on the part of the whole person - intellect, will and emotions) as opposed to syllogisms (which derived from conclusive signs, necessary or infallible, and lead to irrefutable conclusions), and example (or paradeigma, patterns as examples, not just illustrative instances). Rhetoric differed from dialectic in two ways: first, it occurred with and in an audience "indisposed to detailed reasoning," and second, its subject matter contained no universally accepted premises to reason from (Raymond, 1984, p. 149). Audiences were persuaded by ethymemes and examples (i.e., assumptions and paradigms). Rhetoric would train listeners and readers not simply to ask "Are the arguments valid?" but rather "What would a reader have to believe in order to find the arguments persuasive?" (Raymond, 1984, p. 150. See also Perelman, 1969, 1982). This was an introduction to the systematic, rhetorical method of reasoning about basic
questions beyond science, which, Raymond believed, "may determine whether we become the masters or the victims of our other kinds of knowledge" (p. 151).

Aristotle could develop his theory of rhetoric (human reasoning investigating alternative possibilities for future action) because he held that the human soul, intellect, and psychology were comprised of a dynamic system of elements which participated in the balanced activity of decision making.

Now, there are three elements in the human soul which control action and truth: sense perception, intelligence, and desire. Of these, sense perception does not initiate any action. We can see this from the fact that animals have sense perception but have no share in action [praxis; i.e., moral action]. What affirmation and negation are in the realm of thought, pursuit and avoidance are in the realm of desire. Therefore, since moral virtue is a characteristic involving choice, and since choice is a deliberate desire, it follows that if the choice is to be good, the reasoning must be true and the desire correct; that is, reasoning must affirm what desire pursues. This then is the kind of thought and kind of truth that is practical and concerned with action. On the other hand, in the kind of thought involved in theoretical knowledge and not in action or
production, the good and the bad state are, respectively, truth and falsehood; in fact, the attainment of truth is the function of the intellectual faculty as a whole. But in intellectual activity concerned with action, the good state is truth in harmony with correct desire....Therefore, choice is either intelligence motivated by desire or desire operating through thought, and it is as a combination of these two that man is a starting point of action (Aristotle, 1962, pp. 147-149).

Aristotle continued with an explanation of practical wisdom "which deals with things that can be other than they are." Practical wisdom was not merely a trained ability or rational characteristic (one can forget training; one cannot forget practical wisdom). Practical wisdom was "a truthful rational characteristic of acting in matters involving what is good for man," it was an excellence or virtue, not an art, nor was it scientific knowledge, nor theoretical wisdom. Practical wisdom operated in deliberation, it dealt with universals and particulars (because it was concerned with action) (Aristotle, 1962, pp. 152-158.) Correct deliberation was good if it resulted in good things, and excellence in deliberation was "correctness in assessing what is beneficial, and may be directed to a general or particular end" (p. 163). Practical wisdom issued commands, "its end is to tell us what we ought to do. Understanding,
on the other hand, only passes judgment" (Aristotle, 1962, p. 164.)

...A man fulfills his proper function only by way of practical wisdom and moral excellence or virtue: virtue makes us aim at the right target, and practical wisdom makes us use the right means. The fourth part of the soul, the nutritive, does not have a virtue (which makes man fulfill his proper function), since it does not play any role in the decision to act or not to act (p. 169). Only a good man could judge a "true end" correctly because wickedness distorted and caused us to be mistaken about the fundamental principles of action. Therefore, "a man cannot have practical wisdom unless he is good" (p. 170).

...all the current definitions of virtue [referring to Plato's successors in the Academy], after naming the characteristic and its objects, add that it is a characteristic guided by 'right reason.' Now right reason is that which is determined by practical wisdom. So we see that these thinkers all have some inkling that virtue is a characteristic of this kind; namely, a characteristic guided by practical wisdom (Aristotle, 1962, p. 171).

This summation cannot do justice to Aristotle's vast literature on rhetoric, politics, logic or ethics, but the
summary was attempted here to provide a platform from which to contrast the social paradigms, psychological and educational theories, which came later and which strongly influenced the act of teaching reasoning today (see R.S. Peters, *Brett's History of Psychology*, p. 104, pp. 731-746). For example, with the waning of the Classical Rhetoric curriculum in modern Europe and the United States, one could trace the increasingly powerful influence of empirical science and the growth of the modern state.

Michael Foucault, a French philosopher who made extended studies of the state and its methods of control over individuals, wrote a discourse which springs from a brief essay by Kant, "What difference does today introduce with respect to yesterday?" Foucault selected this essay because it was a rare example of a philosopher writing to his time, at the "crossroads of critical reflection," and to his history (Foucault, 1984).

In this essay, Kant wrote of the Enlightenment as a process of a "way out" from the "status of immaturity." By immaturity, he meant a "certain state of our will that makes us accept someone else's authority to lead us in areas where the use of reason is called for" (Foucault, 1984, p. 34). Kant's "way out" was "a phenomenon, an ongoing process," but he also presented it as a task and an obligation. Man himself was responsible for his immature status. The motto - a heraldic device - of the Enlightenment was *Aude Sapere*: Dare to know. One should "have the courage, the audacity,
to know." Thus men were the actors in the process, and "the process occurs to the extent that men decide to be its voluntary actors" (Foucault, 1984, p. 35).

There were, however, conditions appropriate to reasoning. As long as one obeyed, did one's duty, one may reason "for reasoning's sake" as much as one pleased; that was a reiteration of freedom of conscience. "One has the right to think as one pleases so long as one obeys as one must." However, Kant reversed this common understanding; he stated that "reason must be free in its public use, and must be submissive in its private use." Man, according to Kant, made a private use of reason when he was a "cog in a machine," as a soldier, worker, taxpayer. In these roles reason must be "subjected to the particular ends in view." However, when one reasoned as a reasonable being (not a cog in a machine), then "the use of reason must be free and public." Thus, reason was now seen as a political problem, not just an obligation of individuals (Foucault, 1984, p. 36).

The question was that of "knowing how the use of reason can take the public form that it requires, how the audacity to know can be exercised in broad daylight, while individuals are obeying as scrupulously as possible" (Foucault, 1984, p. 37).

Kant's resolution was to propose a "contract" to Frederick II, a proposition that "the public and free use of autonomous reason will be the best guarantee of obedience,
on condition, however, that the political principle that must be obeyed itself be in conformity with universal reason" (Foucault, 1984, p. 37). Kant's critique was to define "the conditions under which the use of reason is legitimate in order to determine what can be known, what must be done, and what may be hoped. Illegitimate uses of reason were what gave rise to dogmatism and heteronomy along with illusion; on the other hand, it was when the legitimate use of reason had been clearly defined in its principles that its autonomy can be assured" (Foucault, 1984, p. 38).

In an example of startling historical contrast to Kant, Foucault depicted Baudelaire in an angled stance with modernity. For Baudelaire, modernity was struck in a certain attitude in respect to observing modernity which was defined as a paradigm of the "ephemeral, the fleeting, the contingent" (Foucault, 1984, p. 39). Capturing the eternal in the fleeting moment is the modern heroic; "modernity...is the will to 'heroize' the present" ironically (Foucault, 1984, p. 40). "Modern man, for Baudelaire, is not the man who goes off to discover himself, his secrets and hidden truth; he is the man who tries to invent himself." As a task, he did not enlighten, liberate himself; he must rather "produce" himself. This "production" did not occur in society or politics but in art (Foucault, 1984, p. 42). In contrast to the Enlightenment, modern man removed himself from the task of reasoning, liberation in the political realm, to the stance of a self-produced observer, himself an
ironic object d'art.

The development of Jeffersonian democracy was contemporary with the writings of Immanuel Kant. It too professed an obligation upon the citizen to rule and reason for himself. The schools were open to all citizens—at least for three years so that all might learn reading and ciphering, and schools could "rake through the rubble" to find those worthy and able of continuing on—in a curriculum dominated by Classical Rhetoric.

Classical in its aim to produce good citizens skilled in speaking, rhetoric in eighteenth century America synthesized material from a wide variety of fields and emphasized dialectic and enthymematic reasoning as a means of discovering knowledge. Rhetoric had discovered its classical roots and flowered in eighteenth century America as "the art of communication and the conduct of human affairs, but withered by the end of the nineteenth century" (Connors et al., 1984, pp. 2-5). By 1874, growing adherence to the methods of rationality in controlling education, produced "a rage for correctness, standardization, and uniformity in college entrance exams which undermined the traditional goals and functions of Classical Rhetoric—its interest in independent thought and a command of the English language" (Connors et al., 1984, p. 5). Classical Rhetoric had begun its metamorphosis from a system of inquiry, to mere "teaching writing as practicing different forms" (Gage, 1984, p. 156).
Empirical Science and the Decline of Classical Rhetoric

Contemporarily with the decline of Classical Rhetoric, the rise of rationality as embodied in the empirical scientific method was giving the state new methods of control in population monitoring (statistics) and industrial production. The work of psychologists such as Thorndike was seen to be "useful" in categorizing and training school children and recruits in the military. The rise of empirical "reasoning" also lead to positivism and to the discrediting of "informal" logic or argumentation as a worthy subject to be taught:

For nineteenth-century thinkers such as Mill, logic meant the general study of reasoning, using methods that are quite informal. By the twentieth century, however, logic had become a highly formal, mathematical pursuit -- a change due primarily to the dramatic advances in the study of deduction made by Gottlob Frege and Bertrand Russell...In the hands of the logical-positivist movement in philosophy, which combined employment of the precise methods of the new logic with a strict empiricism, these developments naturally lead to attempts to apply the same kind of rigor to the characterization of inductive inferences (Holland
et al. 1986, pp. 5-6).

However, today, most writers do not believe that the primarily formal and syntactic approach to induction can succeed. "The formal approach resolutely ignores the kinds of events about which the person is trying to make inferences as well as the goals that the inferences serve" (Holland et al. 1986, p. 6).

Syntactic approaches were also tried in psychology from the early twentieth century through the 1950s. Behaviorism, "an approach steeped in the logical-positivist tenet of emphasizing observation over theory," assumed that laws related to speed of learning, or laws converting previously neutral stimuli into aversive ones, "would be quite independent of the nature of the stimuli, the reinforcement, or the organism in question...These assumptions proved false" (Holland et al. 1986, p. 7; Ryle, 1949). Even cognitive psychology experimental work in induction (e.g., Briner, Goodnow, and Austin, 1956) up to the present "has focused on the learning of artificial categories in artificial contexts, with little investigation of the impact of the learner's goals or of the role played by the nature of the categories under question" (Holland et al. 1986, p. 7). The tenets of empiricism which demanded objectivity, statistical methods, certainty of proof could only succeed by turning human subjects into "experimental objects" and excluding the individual's informal/inductive reasoning processes. These methods, however, continue today in the
schools' use of standardized testing and the scant attention paid to the methods of informal and inductive reasoning, "those inferential processes that expand knowledge in the face of uncertainty" (Holland et al. 1986, p. 1).

Modernity Forges A School Curriculum

The forces of modernity and their impact on American society during the late nineteenth century have been extensively documented. Increased urbanization, a population heavily infused by immigrants, increased industrialization, the "de-skilling" of labor, a new "knowledge" of man provided by scientists, social scientists (especially empirical psychologists), combined in the traits of modernity to weaken the culture's belief in individuality and a person's competence in reasoning, or even a person's need (and far less, obligation) to reason. The classical curriculum which embodied the philosophy of Aristotle, the Enlightenment and the ideals of Jeffersonian democracy was stamped "elitist" and was soon to be abolished in the public school system and colleges.

In the early twentieth century, social reformers viewed intellectual activity in the schools as a curriculum that could deprive a child of "equal free opportunities for the kind of education which meets his needs and talents" (Violas, 1978, p. 149). Samuel Gompers, in 1916, was "in
line with the new ideology, which held that most children were incapable of intellectual training" and that working men were in favor of industrial education for their children. "The old cultural ideals of education, dealing with the abstract only, denied the great majority of children adapted to their minds and natures, and hence failed to fit them for the duties and possibilities of the work of life" (Violas, 1978, p. 149).

This ideology reduced education to processing Kant's "cogs in the machine," a heteronomy, founded on the belief that there was an inherent inability in many children to perform intellectual tasks, and therefore, if one were to have equality in educational opportunity, a "democracy" must provide "other opportunities" for these worker-cogs.

What had become of Kant's individuals whose use of reason must be free and public, who must "dare to know" as an obligation to emancipation? In the democracy being reformulated in America's early twentieth century, there would be a place for "a few" of these individuals with a curriculum to match. They too would be assured "an opportunity," just as was the worker-child.

In 1909, a Chicago superintendent supported segregation "as a means of educating the brightest for leadership and the rest for subordination. This was necessary", he maintained, "because 'individuality belongs to the genius, and when it is preached that everyone is free to exercise it, then is given expression to a high-sounding phrase which
in practice becomes a menace'. Thus educators and the emerging corporate industrial structure could dispense with the older ideal of education for self-governing individualism. Such a character trait would certainly be a defect in the industrial army where only generals could safely exercise autonomy" (Violas, 1978, p. 149).

...by 1910, the idea that inherent intellectual inequalities should be the basis for differential, i.e., unequal, education disguised as equality of educational opportunity had become the conventional wisdom in education (Violas, 1978, p. 150).

Thereafter, the first six years of schooling would cover essentials and fundamentals, the minimum "cultural and intellectual" education required for all children. Beginning in the seventh grade, a few students would pass into the traditional curriculum to be trained as professionals and leaders. The other children began their search for aptitudes best suited for the industrial world of work, and their appointed place in the nation's economic strata.

The ages of six to twelve were thus relegated to essentials and fundamentals; after that, the tracking began. The question here was what happens to schooling for children in the repertoire of reasoning?

Historically, there was much questioning about the "timing" for the commencement of vocational selection. In
1912, a NEA Committee on the Place of Industries in Public Education issued a report that concluded:

From the point of view of the development of the child, the age at which this process of experimentation toward a calling should be definitely initiated corresponds fairly well with the beginning of the seventh school year. Its external symptom is the high rate of elimination from school at that time, and its internal sign is the unrest, the questioning of values, the beginnings of 'storm and stress' that characterize the commencement of the age of independence, of adolescence...at this time the secondary phase of education should begin (Violas, 1978, p. 150).

The "commencement of the age of independence" was of course the beginning of emancipation, when individuals "dare to know," to assume the task of reasoning which is Kant's "way out" of the status of immaturity. For Piaget the ages of eleven and twelve marked the beginning of formal and propositional operations when the child was able to hypothesize, generalize, build theories, and independently set about proving them and plan an adult future (Gruber and Voneche, 1977, p. 404; Inhelder and Piaget, 1958). To remove a child from schooling in reasoning at the age of twelve was a devastatingly accurate decision if one's goal was to stunt independent thought and emancipated action.
The Teaching of Reasoning Divided

At the turn of the century, who was left to argue the cause of a classical curriculum? Empiricism in science, social-control in the interests of the state and industry, "modernizing" and continued specialization in academic departments and colleges combined to transform the American public school and college curricula. Departments of philosophy pursued formal systems, departments of rhetoric and logic wished to study literature, the Belle Lettres, and become Departments of English, rhetoricians formed Departments of Speech and Communications Arts. Informal logic, argumentation, the philosophy and methods of Aristotelian public discourse were thus removed from the center of the curriculum for all to learn, to the status of "elective," for those who were interested in "public speaking."

The Departments of English retained their responsibility to teach writing. Thus composition was sponsored, often, as the ugly-stepsister in the home of Belles Lettres and often given the short respect due to such a relative. Books on rhetoric and composition which started with their model in Campbell's or Bishop Whatley's Rhetoric soon began to merge with grammar primers, spelling manuals, and chapters describing essay "forms" -- illustration, process, cause/effect -- forms modeled on Aristotle's topics of invention, but without Aristotle's view of these forms as
a means. In composition study they became an "end" (e.g., Alexander Bain's *English Composition and Rhetoric: A Manual*, 1866).

Depending on the author, these composition books, throughout the first sixty years of the twentieth century, devoted a rigorous or casual chapter to "Argumentation," or "Decision Making" or "Deliberation." In the 1950's, authors such as James M. McGrimmon considered "Deliberation: Problem Solving" as socially the most important chapter in the book wherein deductive (four types of syllogisms) and inductive reasoning methods were explained in considerable detail. Originally written in 1950, McGrimmon's text, *Writing with a Purpose*, was revised seven times.

As an illustrative example of the weakening of composition textbooks in argumentation through the sixties and seventies, McCrimmon entitled his reasoning chapter in 1976 and 1980 editions "Persuasion," gave considerable space to discussions of "image" and "behavior," eliminated the rigorous discussions of deductive reasoning, and relied more on examples of fallacies to teach reasoning than his former explication of deductive/inductive methods. Finally, in contrast to the 1957 edition which contained 36 densely typeset pages in the "Deliberation" chapter, the 1976-80 edition contained 44 pages with generous use of white space, full-page magazine illustrations and cartoons, and many pages devoted to reprinted editorials or essays rather than his earlier detailed explication of argument. In addition,
his definitions of logic terms, such as premise and inference, had undergone considerable simplification and in the process became more vague, and therefore more difficult to teach, learn, and apply.

Another contemporary writer of composition texts, Donald Hall, simply left the traditional chapter on argumentation, or deliberation, or reasoning, to "logic classes where it belongs" (Writing Well, 1982).

This brief illustration of composition texts was recounted here as an example of the "homeless" nature of the teaching of reasoning throughout much of the twentieth century. In contrast, however, the recent (1978-1983) rekindling of interest in informal logic in college philosophy departments will be explicated later in this study, as will the rebirth of Classical Rhetoric as a method for teaching writing.

Still, when compared to the nineteenth century, the percentage of formally educated twentieth century adult students who "never have examined the reasoning process at any length" (Fearnside, 1980) was largely due to societal pressure to change the curriculum and to schisms in academic disciplines which eventually caused argumentation to be taught or not taught, at will, and to be elected, or not elected, at will, by students. Thus the slogan "the purpose of education is to learn how to think" became highly problematic in practice and in product.
Social Barriers to Adult Learning

What were the results of living in a technical, rational society (more recently labeled "the Information Age") and being schooled in a curriculum largely devoid of the systematic teaching of reasoning? The past few years have produced numerous studies of public school and college education, complete with statistical reports on the inabilities of students to draw inferences from written material and to adequately analyze problems, deliberate, and achieve well reasoned results (*A Nation at Risk*, et al.). There were statistical reports, and there were sociological studies of the impact of contemporary educational practices on the working class, and philosophical analyses of the current political and societal control over learning. It was from this body of literature that selected works were chosen to illustrate the character, ideology, life expectations, and motivation which exist in many of today's adult learners. Patricia Cross in her chapter, "Why Adults Participate - and Why Not," (1983) examined barriers to adult learning. One barrier was labeled Dispositional, "those [barriers] related to attitudes and self-perceptions about oneself as a learner...Adults with poor educational backgrounds frequently lack interest in learning or confidence in their ability to learn" (1981, p. 98). With the increase in failing public school students, educationally disadvantaged minorities, new immigrants
embedded in the social flux and economic uncertainties of the coming decades in the United States (as described by Harold Hodgkinson in All One System), adult education must pay increasing attention to the dispositional barriers to lifelong learning.

Personal character, motivation, work experience, life expectations, and education experiences were explicated in Lillian Rubin's Worlds of Pain, a portrait of "Life in the Working-Class Family" in America in the early 1970s. Through interviews of husbands and wives (100 couples), she reported the experiences and stresses of family life and explored the effects of economic hardship (or at best, confinement), meaningless, repetitious work, "disciplined" schooling, prescribed sexuality, and these people's eventual coming to the awareness that they cannot effectively change their lives (cannot indeed even modify the attitudes of their spouses). The effect of living in this societal gridlock produced a working-class consciousness of passivity, resignation, and self-blame, in which their only pride was found in their ability to survive, and their only hope was a better life for their children. This passive consciousness surviving within the American mobility ideology has produced precisely the "docile and disciplined" masses wished for by the late nineteenth century education reformers (Rubin, 1976, p. 233). It is Rubin's methodology which opened this discovery, methodology not allowed in statistical empirical studies, but supported, validated by methods of
argumentation.

In her introduction, Rubin identified herself as a "sociologist studying the family" from the perspective of and with the methodology of a marriage and family counselor. It was natural that she would value the qualitative in-depth interview with clients. It was the most effective method (possibly the only method) for her learning their perceptions of family life and explicating their experiences as a discernible class in "classless" America. She knows her method's vulnerability from the point of view of the empirical social scientists: "The small sample not randomly chosen makes generalizations suspect." "The anecdotal presentation raises the question of representativeness in the use of data." Her only "answer to these criticisms lies in the quality of the work itself...in its ability -- to borrow a phrase from psychology -- to generate an 'aha experience'" (Rubin, 1976, p. 13).

*Worlds of Pain* was research done on "the objects of society" and therefore became education research in the sense that education and these men and women became holograms of ideology. But unlike "representational studies" these objects, these holograms, spoke. What is disturbing is that Rubin had to *justify* her methodology in her introduction to justify the book's "ability to persuade by appealing to the level of 'knowing' that exists in all of us but is not very often tapped" (Rubin, 1976, p. 13). This level of knowing is reasoned discourse.
Sennett and Cobb in the introduction to *Hidden Injuries of Class*, also spoke, almost hesitantly, of their preference - indeed, necessity - for "some measure of artful freedom" to discover the "ambiguities, subtleties, and contradictions" of American working-class life in Boston (Sennett & Cobb, 1973, p. 44). They were intent on finding, via urban anthropology, "the focused points of human experience that can teach something about a more general problem of denial and frustration built into the social order" (Sennett & Cobb, 1973, p. 45). In Studs Terkel's first interview in *Working*, the angry steelworker carried a paperback book in his back pocket. He liked it there. He liked to read. But his co-worker was surprised. "What are you doing with a book?" "You read?" After all, he's a steelworker and steelworkers were "dummies" who only read the sports pages. These were examples of a societal refusal to recognize validity in personal, reasoned discourse, and four individuals' necessities to justify the need for personal discourse in their research and in personal lives.

Somehow a bar in the American ideological grid refuses to admit, or at least was suspicious of, the viability of human, first-person speech which related an individual's experience. Did this attitude go back to the refutation of moralistic, "genteel" religion and its teaching by parables? Certainly this suspicious attitude was in alliance with popularly accepted "scientific proof"; i.e., one may take an individual trait, circumstance, "freak accident" as
inspiration, insight, clue, but then the scientist must prove its universality. It was also an echo of the American teens and 1920s when criticism by intellectuals opposing American puritanism, productivity, and salesmanship had to be discredited in order for "The Business of America is Business" motto to sail forth safely in the pages of The Saturday Evening Post while the expatriates chose to live and write in France.

How was this attitude—this distrust of first-person speech as valid—perpetuated in the schools? How was it reported in Rubin? And how did it relate to the teaching of reasoning?

When Rubin's interviewed parents placed their major hope in their children and in the mobility-myth of education, yet saw their children do poorly in schools, they did not ask for more "thinking skills," or techniques of reasoned criticism based on evidence, or for a more energetic promotion of intellectual curiosity. They apparently did not press for "opening their (children's) minds to different alternatives and...developing their aesthetic and humanistic sensitivities" (Feinberg, 1983, p. 87). They called for more discipline. Rubin explained this as a reflection of the working-class experience. Their ability to survive, indeed, the necessary condition for their survival in repetitious, meaningless work and in "protective/oppressive marriages" depended on their rigid adherence to discipline (Rubin, 1976, p. 128).
The mind-set and methodologies of discipline were a major framework in the reproductive system of American education, which could ignore individual strengths, bravery, insights, and talent (unless one "tests out" in a high stanine), and subvert individual reasoning, criticism, and worth. The tenets of discipline, learned well through the schools, also ruled their marriages in which there was an inability for the husband and wife to comprehend, together, "the logic of emotions" (Rubin, 1976, p. 117). Although women sought change, more companionship, more "shared control," men listened to them as to an hysterical rant and "didn't know what they're talking about." It was, again, a societal schism between thought and feeling, a discounting of "evidence" presented in an individual's story, a lack of listening, reasoning, understanding which was not at all alleviated by the methodologies of discipline in education.

Thus working-class parents were likely to remain docile, disciplined and, ironically, strong advocates of the very education methodologies which constricted their working, parental, and married lives. And these education methodologies frequently produced the dispositional barriers described by Patricia Cross.

But it was Michel Foucault who explicated - historically, philosophically, politically - this complex grid-work of discipline, socially and historically.

Historians of ideas usually attribute the dream of a perfect society to the philosophers and
jurists of the eighteenth century; but there was also a military dream of society; its fundamental reference was not to the state of nature, but to the meticulously subordinated cogs of a machine, not to the primal social contract, but to permanent coercions, not to fundamental rights, but to indefinitely progressive forms of training, not to the general will, but to automatic docility.

'Discipline must be made national,' said Guibert. 'The state...will resemble those huge machines, which by quite uncomplicated means produce great effects...' (Sheridan, 1980, p. 152).

The implanting of discipline required, in Foucault's explication, four conditions: (1) cellular space divided and subdivided into more or less "self-contained units" (such as grading children according to age and ability), into an "educational span [which] functioned like a learning machine that also supervised, hierarchized, rewarded and punished" (Sheridan, 1980, p. 150). (2) Control of activity via the mechanism of a time-table ordering the day into "set tasks," regular, rhythmic, which essentially became poses, acts trained into the body's movements. (3) The process of training, broken down into stages "with a view to the development of even greater skills" (Sheridan, 1980, p. 151).

These three conditions had their origins in the monastery; however, the conditions of discipline no longer
work toward a "culmination in a beyond," in spiritual salvation, but in having been adopted into a "political technology of the body and of duration...tend toward a subjection that has never reached its limit" (Sheridan, 1980, p. 151).

The fourth condition was inherited from the political/military milieu as well as from the monastery; the arrangement of "tactics" in which the individual was placed and combined with others to carry out orders, to fulfill a role in carrying out an "overall strategy" (Sheridan, 1980, p. 151).

At the core of the methodology and conditions of discipline was the examination. It is the empowerment of "hierarchical observation and normalizing judgment" pressed upon the subjected student, worker, citizen. The examination was

a normalizing gaze, a surveillance that makes it possible to qualify, to classify and to punish. It establishes over individuals a visibility through which one differentiates them and judges them. That is why, in all the mechanisms of discipline, the examination is highly ritualized. In it are combined the ceremony of power and the form of the experiment, the deployment of force and the establishment of truth. At the heart
of the procedures of discipline, it manifests the subjection of those who are perceived as objects and the objectification of those who are subjected (Sheridan, 1980, pp. 154-155).

This objective, normalized examination became a paradoxical tool of democracy in contemporary American schools, and its painful effects were expressed in the rationalized acceptance of failure in school by Rubin's people, and Patricia Cross' permanent drop-outs.

After all, the adults and children reason, wasn't the normalized test "just like" democracy? There was a "top half" and a "bottom half" determined objectively, "fairly" (at least not by a capricious dictator), and therefore, what placed a person in the top or bottom half was the person himself, his will, his (or her) determination to "learn lots" and do well not only in the test but "in life."

Neither was the competition in an objectified test seen as unfair; after all, it was "standardized" among one's pals, peers, cohorts. Therefore, if one did poorly on these objective tests, it was an implied failure of one's learning, intelligence, will, and no one else was to blame because fifty percent of the children would always be "below normal."

Thus in Rubin was made manifest the objectification of those who were subjected, and the subjection of those who were perceived as objects.
When Rubin's parents saw their children failing in school, they expected it as it was an experience they had had themselves. Their first response to the schools, however, was not to question the legitimacy of the tests, not to protest the group-placement schema, or regimented, segmented learning and tracking, but to protest the failure of the school's discipline which they hoped could force their child into a higher placement.

Ironically, they are not calling for discipline in its best sense, but for obedience as practiced in the monastery or in the military. In its happiest connotation, discipline might imply to students and parents a will from within to active decision making, the empowerment of the student to achieve through the acts of reasoning and self discipline. However, the conditions of discipline as described by Foucault promote only obedience - political, social, scholastic.

Reasoning in a Child's Curriculum

In American culture, allowing a child to speak, to question, to reason and implement decisions was often seen as risky. Their parents may be docile and disciplined, but children were America's "unruly masses" and must be tended and curbed lest they grow into rowdy "insignificant wranglers" of argument, "Opinionators in Discourse" -- the dreaded failures of "Rhetorick and Logick" in John Locke's
However, in the description of a reasoning class implemented in Pennsylvania's grade schools, one was instantly aware of the contrast to the conditions and effects of discipline. Nor was there a fear of having to contend with the rowdy, insignificant wrangler of argument.

The emphasis in these classrooms was on the quality of reasoning, the worth of individuals and the ability they had to contribute solutions. Clyde Evans, the philosophy professor who developed and taught these classes, described six pre-philosophical attitudes necessary for his "community of inquiry": (1) a commitment to impartiality and objectivity; (2) a commitment to consider only relevant criteria; (3) a commitment on the part of participants to make thought and statements consistent from one time to another; (4) a commitment to be comprehensive, to apply the above characteristics to all subjects which come under their critical examination; (5) a commitment to respect each person in the discussion as a "possible source of valuable information, relevant considerations, and persuasive arguments"; each person was an equal member of the group, an equal partner in the search for a solution; (6) there was a commitment to "the search for reasons, defensible reasons, as a basis upon which to make their decisions and determine their behavior." These commitments must be presupposed for any philosophical discourse; indeed, Evans referred to them as the pre-philosophical outlook or attitude, as they
preceded actual philosophizing (Lipman & Sharp, 1978, pp. 162-165). In this there was the distinct echo of Aristotle's purpose in rhetoric.

In these classrooms children clarified issues by separating and distinguishing their elements; distinguished an exposition from an argument; separated the conclusion of an argument from its supporting reasons; distinguished inductive from deductive arguments; recognized the common fallacies (and understood why they were fallacies); and understood how language could be used to distort, oversimplify, and distract (Lipman & Sharp, 1978, p. 166).

In another example, Matthew Lipman's series of novels for grade school children served as the basis for questions, characters and varieties of thinking which could be used as a starting point for philosophical dialogue in the classroom. Lipman, a former philosophy professor at Columbia University, developed the literature and the Institute for Advancement of Philosophy for Children which provided teacher in-service. In describing the program, he suggested that only teachers who wanted to implement this study should attempt it. "Teachers who have lost their sense of wonder" should not introduce these books and this dialogue into their classrooms. Nor should school districts enforce the adoption of this program lest it be subverted by those who "wish to indoctrinate" (Johnson, 1984, p. 33).

In reasoning, there were no tests, no scores, no high-point team competitions. Arguments were evaluated on the
soundness of premise, the weight and worth of evidence and reasons, and the appropriateness of conclusions. It was not unusual for one of these classes to evolve three or four arguments in answer to an issue, and to find that they all had justification. And the discourse continued.

Reasoning in an Adult Curriculum

The habit of learning through reasoned discourse was explicated by Malcolm Knowles in his andragogical theory, and it should be the prime "method" in adult education classes. He noted that the great teachers we recall (Confucius, Socrates, Euclid, Cicero) were teachers who assumed that learning was an act of discovery achieved by the student - who was also considered to be an adult.

What the education practitioner heard, however, in Rubin's Worlds of Pain, were children. Children schooled in the methodology of authoritarian, hierarchical/democratic discipline, who grew up to achieve an adult social status, but one without the juridical empowerment of reason.

In sum, this discussion of Worlds of Pain was not meant to suggest that the implementation of reasoning or philosophy in grade school classes would dramatically revise working-class life in America. Stanley Aronowitz held that no significant change was possible in working-class culture without first altering the deadening cycle of alienating
work and the alienated worker (1973). Foucault smiled at the impossibility of changing an institution in its totality and then moving on to "revolutionalize" the next institution in the cause of "social change." He suggested, rather, change which was staggered, or a "serial" method of change with one bar or one fragment of a bar in the social grid being altered at a time, sequentially (Sheridan, 1980).

Still the learning of reasoning was meant to alter a culture. In explicating educational reform in Italy, Antonio Gramsci called for reasoned, critical dialogue in seminars, investigation and experimentation for all social classes of children. By depriving working-class children of this practice, they continued to be dissociated, childlike under the rule of intellectuals, never empowered to act in the formation of party policy nor in its juridical implementation (Gramsci, 1971, p. 40). The situation was parallel in America.

Philosophy, critical thinking, should be a natural activity for children and adults, but it was not. Gramsci commented upon a culture which had turned a philosopher into a specialist and from there a caricature.

...there is a difference between the specialized philosopher and other specialists, which is that the specialist philosopher is much more similar to the rest of mankind than are other specialists. The specialized philosopher
has been represented as a figure similar to the specialists of other branches of science and this has been responsible for his caricatured image. There can be specialists in entomology without everybody else having to be an empirical entomologist, or specialists in trigonometry without the majority of people having to be concerned with trigonometry. One can find extremely refined, extremely specialized sciences which are necessary, but are not for that reason common. But it is not possible to conceive of any man who is not also a philosopher, who doesn't think, because thought is proper to man as such, or at least to any man who is not a pathological cretin (Gramsci, 1971, p. 347).

From Kant, through modernity, through the empirical socialization/industrialization of education, the search of the literature came to the developmental psychologists. They too had an interest in emancipation, the task of attaining maturity, and it was through their research that rationale and theory would be further explicated for the teaching of a repertoire of reasoning to youth and adults.
Developmental Psychology and the Teaching of Reasoning

In examining development as an aim of education, Lawrence Kohlberg reviewed the educational ideologies of romanticism (lineage: Rousseau, Freud's and Gesell's followers, A.S. Neill); cultural transmission (of bodies of information and moral habits to society's youth); and progressivism ("knowledge acquisition is an active change in patterns of thinking by participation in problem solving"). The psychological theory underlying progressive ideology was cognitive-developmental, dialectical; it was a model of "the progression of ideas in discourse and conversation" (Kohlberg, 1972, p. 455). The lineage of this theory was from Plato to Hegel, and sans the metaphysical, Dewey and Piaget wherein it formed a psychological method.

In the dialectical metaphor, a core of universal ideas is redefined and reorganized as their implications are played out in experience and as they are confronted by their opposites in argument and discourse. These reorganizations define qualitative levels of thought, levels of increased epistemic adequacy (Kohlberg, p. 456).

The romantic ideology metaphor was child-as-flower; the cultural transmission metaphor was child-as-machine; the cognitive-developmental metaphor was child-as-philosopher, or a scientist/poet.

Piaget and Dewey disregarded the dichotomy between
maturation and environmentally determined learning. They claimed that

mature thought emerges through a process of development that is neither direct biological maturation nor direct learning, but rather a reorganization of psychological structures resulting from organism-environment interactions. Basic mental structure is the product of the patterning of interaction between the organism and the environment, rather than the direct reflection of either innate neurological patterns or external environmental patterns (Kohlberg, 1972, p. 457).

The doctrine of cognitive stages was at the center of this interactive or cognitive/developmental theory.

1. Stages imply distinct or qualitative differences in children's modes of thinking or of solving the same problem.

2. These different modes of thought form an invariant sequence, order, or succession in individual development. While cultural factors may speed up, slow down, or stop development, they do not change its sequence.

3. Each of these different and sequential modes of thought forms a "structural whole." A given stage-response on
a task does not just represent a specific response determined by knowledge and familiarity with that task or tasks similar to it; rather, it represents an underlying thought-organization.

4. Cognitive stages are hierarchical integrations. Stages form an order of increasingly differentiated and integrated structures to fulfill a common function (Kohlberg, 1972, p. 458).

Piaget, who described the above characteristics, further explicated children's progress through the stages which occur at varying speeds; children also may be found to be "half" into one stage of development, and half into another. What was important in the learning of a repertoire of reasoning was that "Individuals may stop at any given stage and at any age, but if they continue to progress they must move in accordance with these steps" (Kohlberg, 1972, p. 458).

Attainment of a high stage presupposes attainment of the prior stage and "represents a reorganization of transformation of it. Accordingly, attainment of the next stage is a valid aim of educational experience" (Kohlberg, 1972, p. 458-9).

Children can be moved along to the next stage by involvement in the next higher level of thought and conflict. Therefore "arousal of genuine cognitive and social conflict and disagreement about problematic situations (in contrast to traditional education which has
stressed adult 'right answers' and has reinforced 'behaving well')" encouraged transformation of cognitive stages (Kohlberg, 1972, p. 459).

Associated with psychological theories as parts of educational ideologies were differing epistemologies or "philosophies of science, specifying what is knowledge, i.e., what are observable facts and how can these facts be interpreted" (Kohlberg, 1972, p. 460). Differences in psychological theories, as did differences in epistemology, influenced educational ideology. For instance, romantic ideology "springs not only from maturational psychology, but from an existentialist or phenomenological epistemology, defining knowledge and reality as referring to the immediate inner experience of the self" (Kohlberg, 1972, p. 460). Cultural transmission ideologies of education side with epistemologies which stressed a knowledge that is "objective," "repetitive," identified in sense-experience, in measurement, "knowledge which can be culturally shared and tested" (Kohlberg, 1972, p. 460).

Neither inner-experience-knowledge nor outer sense-reality provided an adequate epistemological base (Peters, 1962, pp. 734-735) for progressive ideology. Here the concern was with the functional, the pragmatic epistemology identified with "an equilibrated or resolved relationship between an inquiring human actor and a problematic situation." The experience of a child did not have ultimate truth or reality. "The meaning and truth of the child's
experience depends upon its relationship to the situations in which he is acting" (Kohlberg, 1972, p. 460).

Ethical value positions were philosophically supported in developmental education by moral evaluations rooted in the realm of principle: a universalizeable, impartial mode of deciding or judging. Universal principles are not concrete cultural rules (which are often what cultural transmission ideologies teach to), they are "a guide for choosing among behaviors, not a prescription for behavior." For example, Kant's Categorical Imperative--act only as you would be willing that everyone should act in the same situation--was "free from culturally-defined content. In transcending particular social laws, it has universal applicability." In contrast, Skinner was a value relativist, who somehow makes a free, rational decision to devote himself to controlling individual behavior more effectively in the service of cultural survival. In Skinner's scheme there is no plan to make the controlled controllers, or to educate psychologist-kings (Kohlberg, 1972, p. 468-9).

The cause of the individual exercising reason to the goal of emancipation was a cause beyond the pale of behaviorism. To the romantics, the cause was also lost because they refused "to impose intellectual and ethical values of libertarianism, equal justice, intellectual inquiry, and social re-constructionism on the child"
(Kohlberg, 1972, p. 472). Romantic ideologies see education as a process which only intends the child to be happy and adjusted rather than one which confronts the child with the ethical and intellectual problems and principles which the educator himself confronts. Skinner and Neill agree it is better for the child to be a happy pig than an unhappy Socrates. We may question, however, whether they have a right to withhold that choice (Kohlberg, 1972, p. 472).

Progressive ideology, however, rested on "the value postulates of ethical liberalism" which recognized ethical principles formulated by the "method of philosophy, not simply by the method of psychology" (p. 473). "Rational ethical principles, not the values of parents and culture, are the final value-arbiters in defining educational aims."

Ethical principles determined the ends and means of education, work to make the schools more just in providing educational opportunity, to allow freedom of belief, and to educate "so that free and just people emerge from the schools" (p. 473). Recognition of concern for liberty as a principle stimulated the application of ethical principles in education, not the romantic's relaxed "everyone has his own bag" conclusion. The problem was that not everyone's bag may include liberty.

Education based on ethical and epistemological
principles follows the student's
developmentally advanced or mature stages of reasoning, judgement, and action. Because there are culturally universal stages or sequences of moral development (Kohlberg & Turiel, 1971), stimulation of the child's development to the next step in a natural direction is equivalent to a long range goal of teaching ethical principles (Kohlberg, 1972, p. 475).

Development depended upon experience; perhaps this experience will occur naturally and the child will develop reasoning, ego-development, and behaviors without planned instruction. "But the fact that only about half of the adult American population fully reaches Piaget's stage of formal operational reasoning and only five percent reach the highest moral stage demonstrates that natural or universal forms of development are not inevitable but depend on experience" (Kohlberg, 1972, p. 486-7).

"One pole of ego-development is self-awareness; the parallel pole is awareness of the world. Increasing awareness is not only 'cognitive,' it is moral, aesthetic, and metaphysical; it is the awareness of new meanings in life" (Kohlberg, 1972, p. 492). And it was maintained that virtue, considerateness, humor, and indignation can be taught and learned - because these "feelings" were "thinking" based and therefore
terminated not simply in "knowing" but in "being" (Ryle, 1972, pp. 52-54).

Therefore, the progressive view of education claimed that a set of educational goals based on a philosophical statement of ethical, scientific, or logical principles was possible, but it should also be "translated to a statement about psychological stages of development."

A notion of education as attainment of higher stages of development, involving an understanding of principles, was central to 'aristocratic' Platonic doctrines of liberal education. This conception is also central to Dewey's notion of democratic education. The democratic educational end for all humans must be 'the development of a free and powerful character'...[to] prepare free people for factual and moral choices which they will inevitably confront in society. Dewey's idealism is supported by Piaget's psychological findings that all children, not only well-bred college students, are 'philosophers' intent on organizing their lives into universal patterns of meaning (Kohlberg, 1972, pp. 493-494; Gruber and Voneche, 1977, p. 444).

Further support for this theory was explicated by
William Perry and his associates at Harvard when they derived a scheme describing the stages students advanced through which illustrated their intellectual and ethical growth, and which also described how college students approached their learning. Within these nine stages, the majority of students came increasingly to grips with the knowledge that they must reason and make decisions for themselves.

**Dualism**

Position 1. Authorities know. If we read every word, and learn Right Answers, all will be well. It is the responsibility of Authorities to teach us Right Answers. Others are wrong.

Position 2. But some Authorities say they don't have all the Right Answers, yet. There is confusion. But this confusion is so that we learn to find the Answer ourselves. Others are wrong.

**Multiplicity**

Position 3. Confusions, diversity, uncertainty are legitimate but temporary. Authority gives me good grades for "expression," but I don't have the Truth, yet.

Position 4. Where Authorities don't know the Truth, then everyone has a right to their own opinion! But sometimes I'm asked to support my opinion with facts and reasons. Is that what they grade us on? If they don't know, what right have they
to grade us? But thinking and supporting opinion with data seem to work in most courses—and even outside of them.

**Relativism**

Position 5. Then all thinking must be like this, even for Them. Everything is relative but not equally valid. You have to understand context and theories as metaphors (not Truth) to interpret data with, and think about your thinking. If everything is relative, am I relative too? I feel lost; the world is chaotic.

Position 6. I'm forced to make my own decisions in an uncertain world with no Right Authorities. I'm lost if I don't. When I decide on career or marriage, everything will straighten out.

**Commitments in Relativism**

Position 7. Well, I've made my first independent commitment! But why didn't that settle everything?

Position 8. Now I've made several commitments. I've got to balance them. How many, how deep? Who am I? The different things I believe in and want are getting contradictory. I can't make logical sense out of life. What are my responsibilities?

Position 9. This is how life will be, again and again. I must be wholehearted while tentative, fight for
my values and respect others, and be ready to learn. I shall be retracing this whole journey over and over but, I hope, more wisely (Perry, 1970, p. 9; Perry, 1981; Knefelkamp and Crawford, 1979, 1983).

The adult student needed a repertoire of reasoning skills—not just the scientific method, mathematical process, or the ability to structure a square-knot syllogism. The stuff of life, intentional actions and accidents, the gridlock of silent assumptions, were, first, possibilities that needed to be perceived by a lively consciousness. Once the possibilities of circumstance were opened in the process of decision making, dialogical reasoning could be used by the individual, always desirous of making meaning and taking action.

**National Reports**

However, in contrast to a repertoire of reasoning, national reports found mostly silence in the public schools. "A Nation at Risk: The Imperative for Educational Reform" (1983) was a report which stated the dire need for additional teaching of analytical and reasoning skills. It found many 17-year-olds lacking the higher-order intellectual skills which should be expected of them. Nearly 40 percent could not draw inferences from written material; only one-fifth could write a persuasive
essay... (National Commission on Excellence in Education, p. 12). The report made no mention, however, of our current social paradigm (see Chapter Four) and political and educational philosophy which would have to change before school "achievement" could change. In fact, the report supported, still, only career interests when it urged greater emphasis on analytical, reasoning, and problem-solving skills because, among other considerations, "...new jobs demand greater sophistication and preparation." (p. 12). A greater emphasis on reasoning skills through the teaching of English should "equip graduates to: (a) comprehend, interpret, evaluate, and use what they read; (b) write well-organized, effective papers; (c) listen effectively and discuss ideas intelligently..." (p. 14). The above skills, emphasized in the discipline of rhetoric and reasoning, should be joined with teaching the students "the methods of scientific inquiry and reasoning " (p. 14). But to what ends, other than economic?

Finally, the "Nation at Risk" report spoke supportively of university scholars and scientists collaborating with master teachers to develop textbooks which would be "upgraded and updated to assure more rigorous content... They should assist willing publishers in developing products or publish their own alternatives where there are persistent inadequacies " (p. 15) This study in the development of a textbook on reasoning in decision making would appear to respond to the National Commission on Excellence in
Education's recommendation. Further support for this study was in the Report's statement of the modern purpose of secondary education: to better equip people with skills required for "life-long learning (which) will equip them for new careers and for citizenship" (p. 14).

In the spring of 1983, the College Board issued its report, "Academic Preparation for College: What Students Need to Know and Be Able to Do" (Watkins, 1983, p. 1). Students should develop six specific intellectual skills and abilities... "reading, writing, speaking, and listening, mathematical ability, reasoning, and studying." (p. 1) This report was part of a 10-year study, The Educational Equality Project, an effort "to develop and implement a national standard for academic achievement in secondary education." The Project was to be used as a guide for high schools to evaluate and revise academic standards and curricula.

The report stressed "the arts and skills of English" as the core of college preparation. An earlier segment of the report, relating to the six essential academic skills, had been endorsed by the American Federation of Teachers, the State Higher Education Executive Officers, and education agencies in numerous states (Watkins, 1983, p. 14).

Reasoning and analysis was expected in students; they should have the ability "to read critically by asking pertinent questions about what they have read, by recognizing assumptions and implications, and by evaluating ideas. The ability to read a literary text
analytically ...the ability to engage in discussion as both speaker and listener--interpreting, analyzing, and summarizing...The ability to present an opinion persuasively...The ability to recognize the intention of a speaker and to be aware of the techniques a speaker is using to affect an audience...The ability to question inconsistency in logic and to separate fact from opinion," (p. 14) are also skills which will be addressed in the short text.

The College Board will develop a series of case studies of successful joint ventures between high schools and colleges that are working specifically to attain the broad academic goals of the project. One example of this support was a project in teaching high school students in Chicago "how to think."

The College Board and the University Urban Schools National Task Force combined efforts to develop "a program to teach the fourth R--reasoning." George Hanford, president of the College Board, stated that the program was initiated because "young people are not developing the reasoning skills necessary to meet the demands of our highly complex society " ("Teaching," 1983, p. 2B). The reasoning project in Chicago was to bring balance to education. "Content is important...Students learn a great deal about the facts, but they (educators) don't put enough emphasis on the higher-order reasoning skills within a particular subject area." Richard Bossone, chairman of the task force,
and university dean for instructional research at City College of New York, continued with a description of the program:

Students in the reasoning project are taught to identify and formulate problems, to reason inductively (from individual cases to a general conclusion) and deductively (from a known principle to an unknown or from a premise to a logical conclusion) and to distinguish between fact and opinion. Specific course and reading material is designed to reinforce reasoning in mathematics and reading. (p. 2B)

This training was designed to carry the student beyond "comprehension" to problem solving and deeper understanding. "Sloppy reasoning skills can be corrected by stressing the basics...and by introducing critical thinking which gives you more control of your life because you can recognize what is not logical or reasonable," Mary Jeanne Larrabee, associate professor in philosophy at DePaul University in Chicago, stated. She continued: "Learning (reasoning) skills overflow into...and reinforce skills across the board. The ability to reason well affects all professional fields and everyday life." (p. 2B)

During this period of reports, John Bremer also published an essay urging the return of reasoning and logic to the curriculum. The modern world, a world no longer of two-valued systems, dualities, dichotomies (life/death,
true/false, good/evil) is a world of probabilities and of opinion.

The assurance (of survival) is disappearing as our supposed control over nature is seen to be partial, incomplete, and we begin to realize that what we thought we knew was only an opinion, that what appeared certain was only probable. Instead of controlling nature, we are now faced with the problem of controlling ourselves, for some actions whose outcome is known with some confidence are so far-reaching that, if the outcome should be different, it would be better not to take the chance. The world of opinion, of the probable, requires humility and temperance as well as courage (Bremer, 1983, p. 450).

Furthermore, the conduct of human affairs, "of politics in its widest sense, has to do with probabilities, and the time-honored way of dealing with probabilities has been debate, discussion, in which the various probabilities have been presented in various opinions, represented by various speakers, and in which argument has provided a means by which a measure could be assigned. Thus speaking (rhetoric) has been an important skill of the politician, requiring the counterpart skill of listening in the audience" (p. 450).

Bremer noted that "the art of persuasion has fallen upon bad times." He named two reasons for this: the disappearance in recent decades of a public place to clearly
present complex issues, and the wish by private interests to keep the issues from the public. Second, persuasiveness has been distrusted, since it was clearly (and easily) bought in advertising. However, the survival of the future resided in the community and in the clear discussion of probabilities within the community in its problem solving and decision making. Therefore, it was necessary to train students to reason, to weigh evidence, "to judge character, to create value, and to decide accordingly" (p. 451).

As the student learned how to choose, his choices became more complex and involved more persons in the community. (See again the Perry Stages.) In maturity, the student becomes more "political" and will therefore have to learn to discuss and debate, to persuade and to be persuaded; "he will learn to live in a world of probabilities...and (learn) that certainty is chimerical, that he can only consider the probabilities, and then, living with his doubts, choose to act upon the best opinion, holding himself responsible for the outcome" (p. 451).

Thus the teaching, learning, and practicing of reasoning allowed the student to safeguard his freedom to choose, to keep it pure and uncorrupted, "lest he become a mere commodity to be bought and sold" (p. 451).

How did these contemporary reports and statements, all recommending increased teaching of reasoning skills in the secondary schools, relate to the development of a reasoning text for adult learners?
Adult Learning Theory

First, it was assumed that the adult learners of today were (as a majority) the product of similar curricula which the reports critique and urge improvement upon. Second, it was in the research of Jean Piaget that the reasoning processes of adolescents in their growth to maturity were shown to be similar to adults. Piaget provided further theoretical support for teaching reasoning (as it is taught in argumentation as opposed to scientific reasoning) to adolescents and to adult learners.

Piaget regards adolescence as perhaps the most exhilarating and productive time of life. It is the time when one plans one's future and fixes the goals for one's life; it is a time of great hopes and a time when simple answers to burning questions are not good enough. Piaget finds the thinking and reasoning of adolescents similarly praiseworthy. He believes that between 11 and 15, intelligence reaches its peak (Brainerd, 1978, p. 203).

Ages 8-11 are characterized by the concrete-operational stage (the "show-me" phase). However, ages 11-15 introduce and make consistent the formal-operational stage (p. 203) characterized by hypothetico-deductive, scientific, and
reflective-abstractive reasoning.

While concrete reasoners operated from tangible facts, not hypotheses, hypothetico-deductive reasoners can reach beyond the boundaries of perception and memory to deduce conclusions from premises, which may or may not be true, on a purely symbolic level. "Whereas children on the concrete-operational level always need some informational input from the external environment to get their mental operations going," adolescent formal-operational stage reasoners, when facing a complex problem, seemed to form hypotheses about what "may" be going on. "Their thinking focuses on the anticipation of possible facts and potential states of affairs" (p. 210). They "study" and experiment with a problem before attempting a solution. They manipulate cause/effect to discover more information about the problem, and they develop theories about religion, justice, morality, ethics, and other philosophical questions. (Piaget conjectures that these theories may be at the base of the turmoil and trouble associated with adolescents [Brainerd, p. 210]).

Adolescents developed the INRC Group of Operations, which is the basis of adult intelligence. Piaget believed the most important set of operations (there are several sets) was propositional operations. Because adolescents had mental structures which enabled them to learn propositional logic, they were therefore capable of combinatorial thinking, and were capable of structuring and organizing a
problem, of seeing potential as well as transformations, of generalizing a law to new situations, and of developing conclusions which follow from the first conclusion. Formal operational schemes "are adapted to certain demands of the environment (closely related to scientific laws), but propositional operations are extremely general and equally applicable to all forms of information" (Brainerd, p. 233). Propositional operations (and Piaget draws terminology and examples from propositional logic) pervaded all areas of adolescent and adult thought; formal-operational schemes (scientific) did not.

The "rules and behavior" of propositional logic related closely to the far simpler language and rules of argument as it was taught in Classical Rhetoric. It would seem that if Piaget were correct in his assessment of adolescent intelligence and how it operated, and if he correctly summarized the "excitement" of planning and theorizing which occurred during the adolescent era, the years 11-15 would be an excellent time to begin instruction in reasoning (which is apart from the laws of science and math).

Piaget introduced the subject of adult intelligence, but it was Malcolm Knowles who has in the past twenty years presented extensive research and theory on the practices of the adult learner. Reading Knowles in the context of Piaget provided a greater understanding of an adult's needs in education. Specifically, the adult learner was strongly self-directed, was independent because of his/her adult
roles, was identified by his/her life experience. The adult learner must feel that he/she selected the education, not the teacher or the job supervisor. (Learning contracts have been very successful with adults and educators because of the foregoing traits.) (Knowles, 1978, p. 199)

It was noted that adolescents experienced a growing need to become self-directed as they approached adulthood, and self-directed learning experiences were being increasingly used in secondary education. (Knowles cited research by Bruner, Erikson, Getzels and Jackson, and others) (1978, p. 54). Would it then follow that reasoning and decision making are equally valuable to the self-directed learner, regardless of his or her being 14 or 28 or 54 years old?

In summary, on the national level there was a stated need for instruction in reasoning and decision making, and the roles and intelligence of adolescents and adults demanded it. The literature search then turned to discovering a suitable framework which would provide the organizational outline of the proposed text.

The Outline of the Proposed Text

The process of "high quality" decision making as stated in commonalities was outlined by Irving Janis:
The decision maker, to the best of his or her ability and within his or her information-processing capabilities:

1. Thoroughly canvasses a wide range of alternative courses of action;
2. Surveys the full range of objectives to be fulfilled and the values implicated by the choice;
3. Carefully weighs whatever he knows about the costs and risks of negative consequences, as well as the positive consequences, that could flow from each alternative;
4. Intensively searches for new information relevant to further evaluation of the alternatives;
5. Correctly assimilates and takes account of any new information or expert judgment to which he is exposed, even when the information or judgment does not support the course of action he initially prefers;
6. Reexamines the positive and negative consequences of all known alternatives, including those originally regarded as unacceptable, before making a final choice;
7. Makes detailed provisions for implementing or executing the chosen course of action, with special attention to contingency plans that
might be required if various known risks were to materialize (Janus and Mann, 1977, p. 11).

Irving Janis has compiled these seven "ideal" procedural criteria from the "extensive literature on effective decision making (Etzioni, 1968; Hoffman, 1965; Janis, 1972; Katz and Kahn, 1966; Maier, 1967; Miller and Starr, 1967; Simon, 1976; Taylor, 1965; Vroom and Yetton, 1973; Wilensky, 1967; Young, 1966)" (p. 11). These criteria were used to determine "whether decision-making procedures are of high quality," because of the understandable difficulty of obtaining systematic, objective data to evaluate, after the fact, good decisions and regrettable decisions (p. 11).

This outline would serve as the outline of a text in decision making for the adult learner. Steps one through seven introduce sequential phases in decision making; each phase would be supported with related content and methods from reasoning/argumentation to assist the "information processing capabilities" of the decision maker:

1. Thoroughly canvasses a wide range of alternative courses of action.

   **Rhetorical Topics:** 1) Finding and Weighing the Evidence; 2) Judging the Source (speaker, writer, publisher, committee) for fairness, trustworthiness, knowledgeability; 3) The definition and understanding of words and terms.
Fallacies: argument ad hominem, appeal to authority, either/or (see Appendix A, commonalities in current Rhetoric/Reasoning texts).

2. Survey the full range of objectives to be fulfilled and the values implicated by the choice.


Fallacies: Faulty premise, faulty deduction, hasty generalization, stereotype, unjustifiable emotional appeal (see Appendix A).

3. Carefully weighs whatever he knows about the costs and risks of negative consequences, as well as the positive consequences, that could flow from each alternative.

Rhetorical Topics: Reasoning by cause/effect.

Fallacies: Oversimplified cause/effect, distortion, slanting, argument in a circle, unjustifiable emotional appeal (see Appendix A).

4. Intensively searches for new information relevant to further evaluation of the alternatives.
Rhetorical Topics: Research, primary and secondary sources, the use of interview. The listing of main premises, pro and con (see Appendix A).

5. Correctly assimilates and takes account of any new information relevant to further evaluation of the alternatives.


6. Reexamines the positive and negative consequences of all known alternatives, including those originally regarded as unacceptable, before making a final choice.

Rhetorical Topics: Completes the pro and con outline of premises; supplies necessary sub-premises to fully elaborate pros and cons.

7. Makes detailed provisions for implementing or executing the chosen course of action, with special attention to contingency plans that might be required if various known risks were to materialize.
Rhetorical Topics: Hypothesizes a chain of cause/effect alternatives to cover contingencies for chosen course of action.

The strength of this outline was that the two "contents" (decision making and reasoning) reinforced one another. Janis' process was clear; however, his "means" remained vague. Such words as "canvass alternative courses of action" did not indicate how or with what rules of judgment; "surveys" objectives might be read with the connotation of "skim"; "carefully weighs" meant (to a rhetorician) to put through an analytical process of argument; "evaluation" could be clearer if one knew specific fallacies, the specific mistakes in reasoning and judgment which frequently occur. Organizing the "positive and negative consequences" of a decision was more fruitfully and thoroughly accomplished if one was familiar with Aristotelian methods of inventing/discovering lengthy arguments and exploring alternative possibilities rather than writing out Janis' more casual "laundry list" or "bookkeeping" method. After all, reasoning/rhetoric was often viewed "as a means of discovering and validating knowledge" (Gage, 1984, p. 153). To ignore its usefulness was to cripple students in their decision making.

However, Janis and other psychologists contributed valuable research to decision making in their assessment of the emotional blocks and turmoil which decision making often
produced. This was an aspect of "bias" which a psychologist can analyze and for which he/she can suggest "treatment." However, an emotional bias can also be analyzed by the rules of reasoning; this double analysis may encourage greater self-knowledge in the decision maker and, therefore, encourage greater objectivity/selectivity in critical thinking.

Other psychologists who specialized in learning or intelligence theory also supported "learning the rules" which facilitated mapping and, therefore, decision making.

Robert J. Sternberg's research was intended to improve on and revise Piaget's theory that "intellectual development is largely attributable to the fittings and refittings of objects into cognitive structures that occur as a result of assimilation and accommodation. These fittings and refittings continue to occur throughout one's lifetime (Sternberg, 1979, p. 12).

Sternberg speculated on the wide difference in intellectual performance among adults and suggested that a fifth stage (after Piaget's fourth formal-operational stage) was in need of investigation. Arlin suggested that the fifth stage was a problem-finding stage (Sternberg, 1979, p. 13).

Therefore, Sternberg proposed studying intelligence development as an information-processing paradigm (Miller, Galante, and Pribram, 1960). Sternberg named a relatively small number of components which comprised intelligence in
children and adults: 1) encoding; 2) inference; 3) mapping; 4) application; 5) justification; 6) response (p. 13).

A metacomponent was a higher-order psychological process which controlled matter relating to the execution of components. There was strategy selection or planning; the use of gathered information; strategy monitoring; speed/accuracy trade-off; and solution monitoring. These metacomponents were needed in intelligent problem solving (p. 20).

Sternberg's research produced a theory that people do well or poorly in problem solving because of the components or metacomponents which they possess (p. 31). Success in problem solving equated well with their "care and systematic thinking about the problem..." Those persons who plunged into problem solving without a plan failed.

The metacomponents were common to all information-processing tasks. The components ("g" intelligence, inductive reasoning) were used in inferences, mapping, application, and justification.

The process was described more completely in a sample problem which solves an analogy: red:stop::green:go (Sternberg, 1977, p. 136).

In encoding, each of the four analogy terms was comprehended and stored in memory. (Comparable to text outline item 1: definition and understanding of terms.)

Inference was the process by which a rule, X, was discovered that related the A term of the analogy to the B
term. Inference thus occurred in the domain of the analogy, and the outcome was stored in working memory. In the example analogy, inference was the discovery of the relation between red and stop. (In the proposed text outline, items 2 and 3, inference is selecting the rules of reasoning by generalization, cause/effect, or analogy.)

Mapping was the process by which a higher-order rule, Y, was discovered that maps the domain of the analogy into the range. Mapping required discovery of a rule that related A (the first term of the domain) to C (the first term of the range). The rule was stored in working memory. In the example analogy, mapping was the discovery of the relation between red and green. (In items 2 and 3, mapping was relating the rules of reasoning to see if there was a "fit" or a fallacy in the evidence or the argument.)

Application was the process by which a rule, Z, was generated that forms D' (an image of the correct answer) and evaluates D. Application thus occurred in the range of the analogy, and the outcome was stored in working memory. In the example analogy, application was the formation of an analogous rule that enables the subject to decide that go correctly completes the analogy. (In items 2, 3, 4, and 5, application was used to approve or reject evidence and arguments on the basis of rhetorical rules.)

Justification, an optional component, was the process by which one of several answer options that were nonidentical to D' was justified as closest to D'. The
process was required only in forced-choice analogies in which none of the presented answers conformed to the visualized answer, D'. In the analogy Red:Stop::Green: (a. going, b. caution), going was initially rejected because it was the wrong part of speech, but was justified as correct because it was semantically near-correct and better than the alternative answer.

**Control.** There was one control component in the theory. This component included the processes by which subjects prepare for solving the analogy, monitor the solution process, and translate the solution into a response. The component, preparation-response, contains those operations that were not thought worthy of separate components, but were thought to be suitably represented in combination (pp. 136-137). (Control may be analogous to items 1-7, the entire decision-making process.)

Sternberg's description of components and the student's use of them related favorably to the student's process of discovering a plan for decision making (i.e., problem-solving plan), identifying the rules of reasoning, discovering the one which is appropriate for use in a given problem and monitoring its application in identifying suitable alternatives for action.

After reading additional literature on problem solving, it was confirmed that it would be best to stay with the more complex and repetitious steps of Janis' decision making. These steps would more successfully "force" a reader into
finding and evaluating numerous pro and con alternatives (crucial to building strong arguments) than would the more simplistic, linear problem-solving techniques. (See Perkins, 1986, and the need for fairness in argument.)

If the purpose of the text was determined by an analysis of contemporary education need, if the content was delineated by Janis' "archetypical" decision-making process of seven steps, if the "rules of reasoning" were delineated and arranged to reinforce the steps of decision making, then one problem remained to be researched and resolved. What would be the design and tone of the text?

The Adult Learner Redefined

The "audience" for the text has already been discussed. It was the adult learner. However, "adult learner" can be variously defined: "A person whose major social roles are characteristic of adult status and who undertakes systematic and sustained learning activities for purposes of bringing about changes in knowledge, attitudes, values, or skills" (see p. 15). This definition stressed the adult's social roles: family responsibilities, financial independence (i.e., independent of parental support), therefore employed. These social roles and responsibilities caused an adult learner to be efficient in his/her use of time, and predominantly pragmatic in his/her choice of education
activities.

However, the "intellectual" and "emotional" adult was often an adolescent in years and social roles (e.g., Piaget, Bremer, and Steinberg's "fifth stage" did not regard chronological age as a prerequisite to adult reasoning). Therefore, the "adult learner" who was the potential reader of this text was seen as a self-directed learner with the propositional skills of reasoning, who was time-efficient and predominantly problem oriented. The text's format and style should be as appropriate for secondary students at this level of responsibility and learning as it was for adults.

A search of the literature produced two notable examples of this type of text composed for the "adult" learner, rather than the "social" or "chronological year" adult. The first by Strunk and White, *The Elements of Style* (1979), was a text of succinct, select rules of English usage and composition, with a glossary of terms and expressions commonly misused, points of format and punctuation, and an essay on the definition and employment of an elusive and sophisticated trait of good writing: style.

The book in its conciseness and wisdom was an automatic choice of students, teachers, and working adults who chose one reference to help them review and remain "correct" in their daily writing. It was not written for remedial English students; it was for those who "knew the basics,"
the rules, but who tended to forget them occasionally.

The Elements of Style had the same adolescent/adult audience that might profit from the short text to be developed in decision making and reasoning. This text will not be an exhaustive rhetoric but will describe only the major rules of reasoning and fallacies. The majority of adult students are not "remedial" reasoners. Nor do they have the time or the need for an exhaustive, prescribed full course in Classical Rhetoric.

However, the text should provide a "system" of reasoning and decision making. One of the shortcomings of such texts as Rudolf Flesch's popular The Art of Clear Thinking (1951) was its "random-sampler" advice on how the mind, emotions, and language operate. If there were information, ideas, to be used later by the reader in problem solving, or decision making, or reasoning through a persuasive argument, the "rule" or idea must surely appear in random fashion, isolated from sequential steps. Therefore, the text for the adult learner should be systematic and succinct in order to be more useful.

What were additional characteristics of the adult learner to consider when writing the text?

Adults lived in a rapidly changing contemporary culture and should be prepared to learn and change throughout their lifetimes (Knox, 1977, p. 551).

Alfred North Whitehead presented the insight two generations ago that the reversal of the
relationship between two basic dynamics of civilization in this century has required the redefinition of the purpose of education. Throughout history, until the first quarter of the twentieth century, the life-span of an individual was appropriate to define education as a process of transmittal of what is known—of transmitting the culture. It was also appropriate to define the role of the teacher as that of transmitter of information and to regard education as an agency for youth.

But, Whitehead points out...in 1930, 'We are living in the first period of human history for which this assumption is false...today this timespan is considerably shorter than that of human life, and accordingly our training must prepare individuals to face a novelty of conditions.' In other words, as the time-span of major cultural change has become shorter than the life-span of the individual, it becomes necessary to redefine education as a process of continuing inquiry. The role of the teacher must shift from that of transmitter of information to facilitator and resource to self-directed inquiry, and to regard education as a lifelong process. For knowledge gained at any point of time will become increasingly obsolete in the course of time.
Malcolm Knowles concluded that education must be lifelong to avoid the catastrophe of human obsolescence. He presented a model of education as a lifelong process, and decision making, reasoning, perceiving were at the core.

**Knowles' Competency Development for Life Roles**

The first assumption was that the purpose of education was the development of competencies for performing the various roles required in human life. The first element in a new model would, therefore, be a taxonomy of those roles and their required competencies.

<table>
<thead>
<tr>
<th>Roles</th>
<th>Competencies</th>
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<tbody>
<tr>
<td>Learner</td>
<td>Reading, writing, computing,</td>
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<tr>
<td></td>
<td>perceiving, conceptualizing,</td>
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<td></td>
<td>evaluating, imagining, inquiring.</td>
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<tr>
<td>Being a self (with</td>
<td>Self-analyzing, sensing, unique</td>
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<tr>
<td>self-identity)</td>
<td>goal building, objectivizing,</td>
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<td></td>
<td>value clarifying, expressing.</td>
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</table>
Friend
Loving, empathizing, listening, collaborating, sharing, helping, giving feedback, supporting.

Citizen
Caring, participating, leading, decision making, acting, "conscientizing," discussing, having perspective (historical and cultural).

Family member
Maintaining health, planning, managing, helping, sharing, buying, saving, loving, taking responsibility.

Worker
Career planning, technical skills, using supervision, giving supervision, getting along with people, cooperating, planning, delegating, and managing.

Leisure-time user
Knowing resources, appreciating the arts and humanities, performing, playing, relaxing, reflecting, planning, risking (Knowles, 1980, p. 266-267).
These were Knowles' candidates for a taxonomic system. The objective of schooling would be: "The individual engages efficiently in collaborative self-directive inquiry in self-actualizing directions." Included here was the ability to develop curiosities, or to "engage in divergent thinking" (p. 267); the ability to formulate questions based on one's curiosities that were answerable through inquiry (in contrast to questions that were answerable by authority or faith). "Forming questions is the beginning of the ability to engage in convergent thinking or inductive-deductive reasoning." (p. 267). These skills were also confirmed in Perry's stages of development. The ability to identify data required to answer questions and the ability to locate relevant and reliable sources of data (experts, teachers, colleagues, one's own experience, media, and community) (p. 267), and the ability to select, organize, analyze, and evaluate the data to get valid answers to questions was also emphasized. Finally, the skill to "generalize, apply, and communicate the answers to the questions raised" was needed (p. 267). The proposed text on decision making and reasoning directly addressed the majority of these abilities and, through the use of case study, examples, questions, invited the reader to participate in inquiry learning.

Knowles described the first stage of lifelong learning. The listing of abilities was similar to the goals of the text on decision making and reasoning. And in this proposed
text, the language, use of examples, suggestions for "further inquiry" would relate closely to the roles, competencies, and self-directed personality of the adult learner described below.

1. "Adults are what they have done." Their experience determines their self-identity. "Adults feel rejected when they are in a situation which does not allow them to use their experience" (Knowles, 1978, p. 50). The text must involve the learner's analysis of his/her own experience, and involve him/her in current decision-making issues. Group discussion, the case method, the critical-incident process, simulation exercise, role playing, skill-practices exercises, consultation supervision, community development would be valuable suggestions for student participation in decision making and reasoning.

2. Text examples and inquiry suggestions should be aimed at the adult's "developmental tasks" ("a task which arises at or about a certain period in the life of the individual, successful achievement of which leads to his happiness and to success with later tasks..." (p. 51). Adults have phases of growth, readinesses to learn, and "teachable moments" (Knowles, 1980, p. 51). The text should address these "moments" of seeking answers and decisions.
3. The text should project a "learning climate" or "learning tone." The reader should feel accepted, respected, and supported in "a spirit of mutuality between teachers and students as joint learners" (p. 47). That is, the tone of the text should be one of discussion rather than instruction; the reader is considered to be a self-directed, independent person rather than a dependent personality in need of guidance and lecturing in "what he needs to know."

4. The reader is encouraged in self-diagnosis in order to discover what he/she wants and needs to know; e.g., the student lists the competencies of a good listener and therefore discovers his/her education goals (p. 47).

From this selected review of the literature which stated the contemporary need for the study of reasoning, the supporting theory of reasoning, intelligence, and the psychology of the adult learner, the decision-making text's objectives will be drawn in the following chapter.
Chapter 3

WRITING AND TEACHING THE TEXT

This chapter will explain the steps which led to formulating the text's objectives and to writing the first draft of the text Reasoning in Decision Making. The teaching of the first draft to two University of Nevada-Las Vegas Freshman English classes also will be described, along with evidence of student performance.

First, it was determined through the search of the literature that adult students have a need to reason critically and to make independent decisions. Irving Janis' seven steps in decision making provided the chapter framework in which to infuse reasoning methods from informal logic/argumentation/rhetoric - methods of discovering alternatives, evaluating evidence, and reasoning critically to a conclusion.

Second, an interdisciplinary selective search of the literature was conducted to determine the text's historical, political, social, educational context, in order to further define the text's purpose and to further define a variety of adult learners' needs for this text, and to determine the variety of settings in which the text might be used.

Major topics from the search are summarized here:

1. Historical precedents and purposes in the teaching
of reasoning to adults are relevant today.

2. Political, industrial, educational, and empirical philosophies which influence the schools' curricula - and which influence the types of reasoning taught and to whom reasoning will be taught - must be recognized and evaluated.

3. The usefulness of learning argumentation/reasoning for the individual and the citizen should be explicated in the text.

4. Adult learning theory and developmental psychology theory, along with Aristotle's theories of rhetoric and ethics, support the teaching of reasoning to today's adults.

5. Adult learning barriers borne by those who have been poorly educated in the present school system need to be recognized and addressed in the adult years.

6. The need in professionals for continuing education to improve their reasoning abilities in a number of academic disciplines as well as in professional problem-solving activities is being increasingly addressed in the literature. (See Chapter Four for further explication.)

7. The need for individuals, learners, workers, professionals to practice the pre-philosophical attitudes in their inquiry is recognized in the interdisciplinary literature and in the text.
8. The usefulness of the seven steps of decision making as being a systematic and practical framework which would appeal to the needs of the adult learner (pragmatic, time-efficient, problem-centered, concentrated on developmental tasks), and within which the systematic study of informal logic (reasoning/argumentation) could be organized to accomplish Aristotle's politically open presentation of all alternative possibilities in debating a question concerning future human action, appears to be a logical combination of form and content for this text's purpose and audience.

9. The critical theories of Habermas and Gramsci support reasoned discourse (i.e., the ideal speech situation, and Gramsci's support of teaching discourse to all social classes). (See Chapter Four.)

10. Jerold Apps' belief that examining the assumptions which underlie our social paradigms (so that communities can argue for change in the social system) is seen as a legitimate and needed activity in the mission of adult continuing education. (See Chapter Four.)

The complexity and interdisciplinary nature of the search of the literature arose because of the complexities of social context and the varieties of adult learners who
might use a text on reasoning.

From the above ten headings, the assumptions, purpose, organization, and objectives of the text were developed. (See page 107 for text objectives.)

Writing the Text

The instructional method of using a case study format, developing a protagonist and plot which would continue from chapter to chapter (explicating the seven steps of reasoning) was employed for several reasons: the proven success of case studies to involve a learner in investigating the ambiguities of information gathering and possible actions involved in a problem solving inquiry; an invitation to the reader to reason with the protagonist and question her choices and reasoning; a rhetorical device for retaining interest through explications of argumentation, evidence gathering and evaluation, which might appear overly abstract or pointless without a protagonist's involvement in a continuing plot of possibilities.

The risk in using a lengthy case study, however, was that the reader would not believe such an extended "study" of one decision. However, books on argumentation/informal logic are criticized if they rely too heavily on explanations of fallacies only and not enough on the diligent task of constructing a lengthy argument utilizing numerous premises, sub-premises, and counter-arguments
It was hoped that the lengthy illustrations of alternatives, pros and cons in Chapters Two and Three, as well as the review of alternatives in Chapter Six, would lead the reader in the construction of a "fair" and lengthy argument. The fallacies were deliberately placed at the end of chapters as a pedagogic (and andragogic) device to review the methods of reasoning explained in that chapter, to illustrate how particular mistakes were made in the reasoning method, and to exploit the labeling, the power of a name, in identifying a particular reasoning mistake in the position of a chapter summary. (See Finocchiaro, 1981, and Paul, 1982, on the instructive and/or destructive use of fallacies in argument textbooks.)

Through all the planning, writing, and reviewing of the text, it was kept in mind that the text was a primer, designed to assist first-time argumentation students, and would serve them in refreshing their memories of basic reasoning skills in future times, by perhaps a yearly re-reading (just as Strunk and White's Elements of Style was used). It was also designed to assist learners who will be taking classes in statistics, informal logic, communications, organizational theory, business management, political theory, or public discourse, by introducing them to basic reasoning skills, argumentation vocabulary, and decision making in a systematic way.

Argumentation techniques and vocabulary were selected
from a review of current texts in rhetoric, composition, informal logic, logic, critical thinking, and argumentation (the theory and teachings of Aristotle underlie most of the chosen content). (See Appendix A.) Steven Toulmin’s vocabulary and methods in argument, e.g., claims and warrants, were not used because terms such as premise, induction, deduction, cause/effect are more frequently employed in a variety of texts that students may be exposed to in the future.

Teaching the Text

The book was taught in six 50-minute sessions over three weeks to two University of Nevada-Las Vegas English 102 classes, reasoning and writing emphasis (these "102" classes, however, had 11 students who were either juniors or seniors in college, or had graduated from high school in the 50s, 60s, or 70s). A pretest and posttest in decision making were administered. Pretest scoring was based on the number of inquiries, alternatives, and decisions suggested by students in their written responses to a three-paragraph description of problems faced by a protagonist (in his work, a personal relationship, and a fortuitous future opportunity). The posttest consisted of a different protagonist and a three-paragraph description of her recent problems in work, a familial relationship, and a future
opportunity. The evaluation sought to determine if students used increased detail (number of steps) in seeking information, reasoning through evidence and alternatives before arriving at decisions in the posttest, when compared to their performances on the pretest (see Table 1 for scoring data which will be discussed below).

During class discussions and dialogue, the book's purpose, organization, and applicability to future studies were explored. Methods of reasoning and fallacies were illustrated with examples from current events which were used as topics for class dialogue. Occasional tests (requesting definitions of argumentation terms and decision-making steps, and calling for original examples of fallacies) were administered. In violation of adult education theory, one of the tests was graded and entered in the grade book for the English 102 classes. (See Table 2 for test points and grades.) It appeared necessary to do this to be certain that the book would be read by busy students who at that time were involved in mid-terms and research papers.

The contents of Chapters Six and Seven were explored through class argument, counter-argument, and dialogue. The final class meeting was devoted to a non-graded evaluation of the text (personal response), and a timed analysis of two one-paragraph "faulty arguments," selected from M. Beardsley's *Thinking Straight* (1976). Again, the argument-
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<tr>
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<td>4</td>
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</tbody>
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0 = Absent from test.
Scores = number of steps indicated for seeking information, weighing alternatives, coming to conclusions in decision-making process.

r = number of reasons identified by argumentation terminology

* See Appendix D for pre and post decision-making tests.
# TABLE 2

**Sample Class Quiz for Comprehension***
(18 pts possible)
Chapters 1 and 2

<table>
<thead>
<tr>
<th>Class 1</th>
<th></th>
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<th>Class 2</th>
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<tbody>
<tr>
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0 = Absent

* See Appendix F for test.
analysis test (students were told they would be graded) was evaluated on overall comprehension of what was wrong in the paragraph's major premise and argument, as well as the specific mistakes in reasoning students pointed out and described (either by fallacy label or a description of what went wrong) in a specific line(s). (See Table 3 for performance levels, which will be discussed below.) Each correctly-identified mistake in reasoning received one point; an orderly paragraph describing the argument's major flaw and "supporting" fallacies received a letter grade for explication (these orderly paragraphs were considered to be arguments).

Demographic data (year of high school graduation, degree of self-support, academic/occupation interests, former experience in a logic or reasoning class) are presented. (See Appendix G.) Demographic data indicate that these students are representative of adult learners as defined in Chapters One and Two.

Text Objectives and Test Results

Objectives

1. The adult learner will understand the steps in decision making and the rationale behind each sequential step, and will therefore be able to implement a more detailed decision-making
### TABLE 3

**End of Book Test***

Timed Analysis of Two One-Paragraph Arguments

<table>
<thead>
<tr>
<th>Class 1</th>
<th>Class 2</th>
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<tbody>
<tr>
<td><strong>Student Number</strong></td>
<td><strong>Para. #1</strong></td>
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<td>2 B+</td>
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<tr>
<td>20</td>
<td>4 A-</td>
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</tbody>
</table>

0 = Absent from test or no answer

Letter grade = overall comprehension of major flaw in argument, supported by detailed analysis

Number points = number of mistakes in reasoning identified in paragraph

* See Appendix E for two-argument-paragraphs test.
process in finding and evaluating alternative possibilities for action.

2. The adult learner will explicate the rules of reasoning as they apply to identifying the problem, evaluating evidence, creating and evaluating alternatives, setting objectives, determining sound values, speculating on positive and negative consequences, planning for contingencies in seeking alternatives for future action.

3. The adult learner will better understand the process of dialogical reasoning in making decisions in evaluating arguments, will be more aware of alternatives in decisions and arguments, and will better understand the pre-philosophical attitudes in discourse and inquiry learning.

Objective 1: Scores on the pretest and posttest in decision making indicate that this objective was successfully met by 32 of the 33 students who completed both tests. Moreover, 22 of the 32 students increased their number of decision-making steps by over 100 percent indicating their increased awareness of alternatives for action and argument.

Objective 2: Explicating the rules of reasoning
occurred in 10 student posttests in Class #1's 18 responses, and in 10 student posttests out of Class #2's 17 total responses. These identifications of rules of reasoning (by generalization, cause/effect, analogy, or by a number of fallacies) applied to reasoning they were inventing in order to make a decision.

The second test of the students' abilities to "explicate the rules of reasoning" occurred in their 15-minute timed test analysis of two one-paragraph arguments taken from M. Beardsley's Thinking Straight (see Appendix E). These paragraphs required the student to identify the problem (the major argument), evaluate evidence, evaluate and/or add alternatives to the faulty arguments, correct or set objectives for the argument, determine the soundness of values expressed in the argument, speculate on consequences, and plan for contingencies. To do this in 15 minutes was a difficult task. Obviously very few students could cover all aspects in these tangled arguments. However, in Class #1, 11 of 17 students identified four or more errors in paragraph #1, and 7 students identified 4 or more errors in paragraph #2. Moreover, 8 and 7 students (out of 17) were able to
compose an argument paragraph that succeeded in identifying the paragraphs' major faulty premises and flawed evidence and values (often identified as fallacies).

Class #2 (17 total) exceeded these scores with 12 students identifying 4 or more reasoning mistakes in paragraph #1, and 11 students identifying 4 or more reasoning mistakes in paragraph #2. Six students composed an argument paragraph identifying the major flawed premise and values in paragraph #1 (schools) and 5 students successfully composed explications of paragraph #2 (stolen cars).

Thus, of a total 34 students, 23 (83 percent) identified at least four reasoning errors (using the correct argumentation terminology) in one of two paragraphs in a fifteen-minute test. However, 13 students (41 percent) were able to identify at least four reasoning mistakes in both paragraphs. (Some students may have chosen to concentrate on one paragraph. One can only speculate if that was from lack of ideas for the alternative paragraph, or if time got away from them while writing the first response, or if they deliberately chose to do a good job on at
least one analysis and let the other one go
with only a comment or two.) The purpose of
the test was simply to measure their ability
to use argumentation vocabulary accurately
while under a time pressure in argument
analysis.

Objective 3:
These test results indicate that students can,
in a short period of time (three weeks of six
50-minute class sessions), successfully meet
the objectives of the text in understanding
the process of reasoning in decision making
which includes defining the problem,
identifying sound evidence, employing pre-
philosophical attitudes in inquiry (see
Student Evaluations, Appendices B and C, and
Chapter Four of this study for further
commentary), employ and identify methods of
reasoning (as well as fallacies) in their and
others' arguments, reason through to value
judgments, and plan for contingencies.

Certainly there was a wide range of
ability indicated in the students' use of
reasoning/argumentation terminology, but the
increase in almost all students' abilities to
see additional alternatives in decision making
and arguments (as indicated in the pre- and posttests) indicates that decision making is a successful vehicle to open students' minds to alternative possibilities in the creation of premises for a lengthy, strong argument.
Chapter Four

EVALUATION AND REVISION OF THE TEXT

Following the teaching of the preliminary text, Reasoning in Decision Making, 34 students evaluated the text (see Appendices B and C for the complete questions and student responses). Based on these evaluations, the text was revised and then evaluated by the students' English 102 instructor, Wendy King, and by a professor of adult learning, Dwight Marshall, who also administered continuing education noncredit classes, continuing professional education courses, and academic credit programs. Evaluations and descriptions of text revisions are summarized. The text was then submitted to the validation panel: Leon Coburn, Director of the Freshman English Department, and Craig Walton, Chair of the Philosophy Department at the University of Nevada-Las Vegas. Their responses to the text are reported with implications from the literature. The chapter concludes with suggestions for implementing the text.

Student Evaluations Summation

The 34 students answered four open-ended questions related to text objectives on the evaluation form (they had
access to an open book). The first question was deliberately broad in describing the purpose of the book and asking how the book might be improved to better accomplish its purpose. (Some students responded with one comment, some with several, negative and/or positive.)

The preliminary text had been taught with steps 6 and 7 only outlined and discussed in class so that students would have to participate more actively in creating the final arguments for alternatives, in making Frieda's final decision, and in planning for contingencies (each student participated in presenting an alternative and arguing for it, and then reasoned pros and cons with the entire class). Predictably, five students on their evaluations wished to have Chapters 6 and 7 "expanded" with "more" information on how to come to a conclusion and plan for contingencies.

Chapters 6 and 7 were then written (including several ideas from the class argument) as well as an Afterword which answered needs made apparent to the writer while teaching the class (i.e., the need for continued study in argumentation/informal logic, and a listing of the pre-philosophical attitudes which were discussed in class). However, teaching the text without first telling the "final decision" provided a successful method in calling forth more alternatives than were described in the book and in finally convincing students that problems (and arguments) rarely, if ever, have only one solution/conclusion (see further comments on this finding below).
Also included in the rewrite was a table of contents which answered three students' requests for a list of the seven steps early in the book.

Also added were more examples for ad hominem, hasty generalization, equivocation, and analogy (3 students). One student suggested that more examples (fallacies and the "fair-knowledgeable" section) be connected with Frieda's case study; another student suggested exercises at the end of each chapter. In a future revision of the book (designed by this writer for another market), students may be asked to create their own dilemmas, and apply the seven steps to them as an on-going exercise. That is, they will be writing their own case study.

Two students suggested that the book be longer. One student suggested a Chapter Eight - "an analysis of the outcome of the decision: whether to stay with it or not." That content is now in Chapter Seven and the Afterword. Two students, however, suggested that the book was too long: "too many steps made it boring after Chapter 2." One student thought the steps could be reduced to five or six.

One student found Chapters 6 and 7 a good time to review all the other steps; other students commented that, overall, the book was well organized, clearly written, easy to understand with a clear purpose (seven students). Two found it "worthwhile," one found it "great," and two found it good in helping to recognize fallacy from fact and to "recognize reasoning in everyday use." One student wished
The opinions on Frieda and her decision-making process were split. Some found her example extremely helpful; however, two students questioned if, as an example, she were realistic: "people don't go that far in reasoning"; "the steps are too complicated, too drawn out"; or "with too many choices, one will never find a good solution." One termed Frieda "wishy-washy." Another would have preferred a simple example from business. However, this writer preferred to stay with the strong-argument theory and illustrate argument at length in an attempt to encourage a thorough search of alternatives for the sake of fairness in argument and decision making.

Question Two asked the students to name the book's major shortcomings.

Again, four students suggested more information in Chapters 6 and 7 to better "understand the final steps." One requested an index and a glossary of terms (a useful idea). One student wished for more examples; another student thought there were too many. One student found too much emphasis on exact definition of terms; another found "some meanings unclear," and the fair-knowledgeable-trustworthy section confusing. One found the book too lengthy and hard to concentrate on; another found it easy reading. There was one suggestion to drop Chapter Six ("most people wouldn't take the time"); a second student wrote that, again, "too many steps complicated decision
making" and it "wasn't exactly true to life."

However, four people stated that there were no shortcomings; the book was good (2); well-written (1); had good humor (1); would be understandable to a person not on the college level (1); and presented interesting fallacies (1).

One student analyzed "the trouble with Frieda" as her being an exaggerated example (done to make a point, yes), but "she is a bit too askew. What does she want?" Other students, again, questioned if she were realistic (1); and complained that Frieda was in a no-win situation with "boundless choices and problems" (1). Frieda is possible (1), but to another student Frieda doesn't relate to the modern college student's life. She's not assertive, and she doesn't know what she wants. One student commented that she would prefer a world or social problem instead of Frieda's case study; a different student suggested a world or social problem be used in addition to Frieda's situation.

One student chastised the writer for getting the Army Recruiter wrong: "the army will train for anything - not just what they're [soldiers] are good at." His comment compounds the irony intended in the text.

In sum, there were 26 shortcomings listed for Question 2, and 12 positive comments.

Question 3 asked the students to describe the book's major strengths and the new insights they had gained. Could they say how they might have learned more had the book been
written differently? (A partial repeat of Question 1.)

Major strengths of the book included: clear definitions for argument terms and fallacies (5); good use of examples (4); good use of Frieda to illustrate steps and relate to the reader (6). Eight students thought the chronological order of steps and chapters was good; three students appreciated learning "the form" to take decision making through; others named the strengths of learning to weigh sources and evidence (1); learning intermediate steps to reach objectives (1); learning information you can present fairly (1); learning information helpful in writing a persuasive essay (1); and learning interesting fallacies (1).

Major insights students listed were: "I realized my own faulty reasoning" (2); how to find premises in argument and return a comment on an issue (3); better understanding of argument and fallacies (1); and realizing the importance of decision making and rational thought (1).

One student commented that he never realized there was "so much to making a decision." Two other students would like the book longer, and one student asked for more time to learn argument techniques. However, one student commented that the book tries to complicate things by making it hard to decide what to do (an echo of W. Perry's early developmental stages). Some students regarded the book as "just common sense" (2); they knew it already (1); it was basic (1); though interesting (2). One student "gained
minimal knowledge, but learned more terms." One described the text as "Freshman level for non-philosophy majors." Two students commented that it was clear, easy to read, concise; one student thought it wouldn't work for "older people, as they've already developed a decision-making process." (See the adult learning professor's comment on this topic, below.)

However, the major strength and insight most frequently mentioned (10) was that these students will now never "accept a solution to a problem as the only alternative." One student commented that it made decision making easier now in "thinking of every possible choice." Another added that the best point was, "I don't know enough, yet"; she had to find more evidence. Another student said it taught people not to be hasty. And one student named the book's major strength as "it never makes a decision."

This new patience in seeking alternatives/choices/arguments might be seen as the most important accomplishment of the text and teaching experience. Searching for numerous alternatives is a necessary procedure in developing lengthy, fair arguments and sound decisions, as well as progressing through the Perry stages of cognitive and ethical development.

Question 4 related reasoning to the pre-philosophical attitudes (objective number 3) and reasoning/decision making as a community experience. It also sought to identify if the text would have been as helpful read independently, or
if class participation, discussion, examples, tests helped in better understanding the material.

Four students indicated they would have understood the text as well simply by reading it on their own. One student in this group indicated that class discussion and examples confused him. Six other students indicated that the class participation helped because they weren't interested in the subject on their own (1); or, reading on your own is a chore (1); or, "I would have been totally lost on my own" (1); or "I was confused on my own" (2); or, the class helped "me take the book more seriously" (1).

Twelve students said class discussion of the text helped their understanding of the subject; eleven students named the examples and alternatives from the class discussion as helping them in decision making. Ten people identified realizing how "people see things differently" in decision making/argument as the most valuable element in class discussion. Two students named better understanding of induction, understanding of fallacies (8), teacher's insight and examples of reasoning from current events (7) as most important contributions from class participation. One student said he preferred class illustrations from current events more than examples from Frieda's situation, and suggested that the class should spend more time discussing students' problems.

Realizing other students' points of view was a major help to five students who said class participation had
specifically helped them learn more about argument/reasoning. Another student said she can now identify a slanted or distorted issue (or speaker); another student recounted how the class had helped her in family discussions. She is now more aware of argument and tries to "reword" what she will say.

Only four students chose to comment on the tests and assignments. One student said the tests helped him pay more attention to the text and its implications; another said the tests made her nervous and shouldn't be counted in the English 102 grades. One student was appreciative of the assignment which asked students to bring in examples of fallacies from the newspaper, TV, or personal conversations.

From the student responses to Question 4, it may be concluded that the students learned from reasoning in a community as well as having an instructor to clarify the text and provide additional examples. Class participation did help in clarifying reasoning methods, practicing the pre-philosophical attitudes, and applying inquiry learning to reasoning in decision making. Four students said they would have learned as much reading the text independently, without class participation.

Evaluations from Two Instructors

The English instructor from the two classes in which the text was taught by its author, was asked to complete an
evaluation. The questions and her responses follow:

Question 1: Is this text appropriate as an introduction to the decision-making process and reasoning (argumentation) for the adult learner that you teach in university degree programs?

Answer: Yes. For the 18-year-old freshman, it is. A different storyline might be better for the older students.

This writer specifically reviewed the comments by students in these classes who had graduated in the 70s (3), in the 60s (1), and in the 50s (1). (One might also consider the six college juniors and seniors who had graduated high school in the 80s as "older" students; they weren't included in this "older" summary, however.) Although this is a small percentage (5 high school graduates from the 70s, 60s, 50s) of the total respondents (34), their comments are revealing. These older students were all appreciative of the knowledge they had gained regarding decision making and reasoning. One student did not mention the Frieda example at all; one found her situation "boring"; one said that Frieda "got on my nerves"; she kept "going over and over her choices," but of course this is the pattern of
the book. Another "older" student found Fred and Frieda to be "oversimplified," and the last "older" student realized Frieda was exaggerated - "to make a point" - but suggested she find out what she really wanted and/or get into therapy for risk-taking.

Question 2: Would you recommend that the text be used in other credit courses that you are familiar with? With other noncredit courses?

Answer: Yes - some kind of college adjustment course.

Question 3: What are the book's strengths in purpose, design, content, presentation?

Answer: It forces the student to go through the steps of decision making and is interestingly written in the storyline.

Question 4: What are the book's shortcomings?

Answer: Parts of it are abstract and "preachy." These need to be clarified and made more exciting to 18-year-old learners. When Frieda is not discussed, the book becomes too deep and requires too much brain power from 18-year-olds. Needs to be simplified.

Question 5: What needs to be changed in the book before it is used again?

Answer: Simplify abstract concepts with more examples and more fully stress the tie-in with Frieda.

Question 6: Other comments:
Answer: As I don't have extensive teaching experience, I don't feel qualified to judge your book. You obviously know much more about it than I do.

Similar questions were asked of the UNLV professor of adult learning who also administers noncredit, continuing professional education, and credit programs in the Division of Continuing Education. He responded with seven pages of "narrative comments" which are here summarized:

First, this instructor suggested a number of continuing education classes Frieda might have registered in to aid her decision making (i.e., college preparedness or summer activities at universities for high school graduates). He also suggested a variety of personal growth courses - those concentrating on understanding yourself and others, test-taking, and teenage maturity. Did she also need a class in using the library? (How useful was reading the Department of Labor Directory of Occupations?)

He suggested additional information for an "excellent point" on p. 8 - about fairness, open-mindedness, and objectivity. He explicated a two-pronged evaluation device used by investigators (not researchers). "One rates the information on a 1-7 scale to describe its likely validity, but at the same time one rates the source on a 1-7 scale in terms of reliability." This addition might help simplify the three-pronged approach (fair, knowledgeable,
trustworthy). There is, however, little question...that the three-pronged evaluation technique "would be very valuable to the adult learner in terms of self-direction..."

The author should simplify discussion of "objectives" on p. 16, should use a lower level of distinction to determine differences between aim, goal, objectives as some adults simply won't care what the difference is, and won't need to understand the differences.

Page 23 begins a discussion of statistical sampling, and it was suggested that the readers be referred to a lower-division course in statistics in marketing or psychology to better understand these techniques, and to better understand bias and "the way other people make decisions." (This was added in the revision.)

As Chapter 2 was completed, the professor of adult learning questioned whether typical adult learners can be brought to the brink of studying the decision-making process and the reasoning process. Those interested in the process would seem well advised to study these chapters, but one wonders about those not interested in studying the process, those who are quite content in their own special form of mental gymnastics, or those who haven't any awareness that their process might be changed for the better.

However, in the next paragraph, he may have revised his doubt. (There is an interesting parallel here to certain
student comments regarding the complexity or difficulty experienced in Chapters 1 and 2, while the overall experience with the book was seen as helpful. He continued, "After finishing Chapter 3, it seems evident that the examples being used present a useful learning tool for most adults in looking at their own reasoning processes. These simple examples provide readers an opportunity to play out their own reasoning system against simple and clear alternative systems of reasoning, thereby forcing an evaluation of one's own system." (See student #9 comment, Appendix C, question 3, which speculates on older people already having a "system." However, evaluations from "older" students stated their appreciation in learning the methods of argumentation and decision making.)

This continuing education administrator/adult learning instructor concluded his evaluation by stating that, "Indeed, this little book is useful for most of us." He saw the book as applicable for those in the late high school years to early adulthood, and adds that it would also be useful to adults "of some maturity" whose education or experience "may not have exposed them to such topics."

He envisioned its use also in counseling settings (either individual or group) where emotionality is central; the book may be read by persons experiencing divorce, adjustment to widowhood, or family trauma before entering "short-term therapy using devices like rational-emotive therapy. The rationality required in such therapies is
often hard to come by, and this little book forces us into the introductory stages of rational thought."

In general, he stated, the content was very well presented, and examples displayed a wide range of human behavior, bias, and fuzzy thinking.

It is fun to read and presents an opportunity to learn about reasoning in a low-key and non-demanding way. It is distressing to have to suggest that many college and graduate students would be well advised to read this book soon, but our current education system does not make possession of simple reasoning processes a guarantee.

In discussing the literature of adult learning, he stated that learners fall on a continuum from the immature to the mature, the self-motivated to the fully dependent. This book should assist them in the "sifting of knowledge and sources," evaluating both. "Many adult learners are not well educated but have perfectly fine, mature minds." This book introduces critical thinking, "an essential part of the process of learning on one's own through self-direction and evaluation."

In marketing this book to adult learners, it might best be "attached" to another learning objective, a subject in which an introduction to reasoning would help meet the other subject's goals. "The proposed adult audience is difficult to define, leaving one to wonder if the book's usefulness
might be more appropriate for teenagers and early adult learners."

The Validation Panel

Reasoning in Decision Making, revised after student and instructor evaluations, was submitted then for validation by two professors at the University of Nevada-Las Vegas. The first professor, Dr. Leon Coburn, was the director of the Freshman English program and was experienced in teaching reasoning/argumentation in rhetoric and composition classes. He was also experienced in educating college and high school writing instructors in the methods of the Bay Area Writing Project. The second professor, Dr. Craig Walton, was from UNLV's Department of Philosophy. His area of expertise was the history of philosophy; he also was active in the critical thinking movement and was writing a text on practical reasoning. He too was experienced in teaching practical reasoning on the college level and in instructing public school teachers in the analysis and uses of argument in their classrooms. The professors were asked to validate Reasoning in Decision Making. That is, they were asked to read the manuscript critically for errors in content, organization, method, examples, definitions, explanations, and terminology.

After these two validation reports are discussed (with implications supported by the literature), this chapter will
then conclude with suggestions for the implementation of the text.

Validation Report from Rhetoric/Reasoning Professor

This professor's first sentence in his response to the book read, "This is very interesting, well written, and sure to be a best seller." After this bon voyage, he suggested points of revision:

1. Page 11, item 2, paragraph 2, "an excellent paragraph except for the phrase 'knowledge's cast shadow'." Read aloud, the rhythm goes askew, "is not very dulce."

2. "The distinction between necessary and sufficient causes is not clear to me." This author agreed. Revision was attempted (using examples that were used in the classroom dialogue), but this section of the text remains to be reworked. He also asked if the use of cause-effect and the word "event" in this section of the text might relate to Aristotle's use of "signs." It did not; the use of "event" was an attempt to find a more concrete word than simply "effect," which remains, frequently, vague to students.

In discussion following his validation, he agreed with the necessity to teach decision making to students. He
suggested this author include a "letter to readers" in the
text, asking them who was making their decisions for them.
Are they participating in their lives by making their own
decisions, or are they simply "following directions." This
researcher told him that, in her opinion, the most
gratifying student evaluations were ones which commented on
a new insight: they would never again assume there was only
one or two solutions to a problem. This writer also stated
that the decision making process was valuable in forcing
students to seek numerous alternatives in building argument.
This was an important finding in this study which identified
a method to be used by students preparing argument papers.
He agreed that students frequently conclude, immediately,
the argument's singular "rational" conclusion (decision) and
do not investigate fully other arguments. (See also
Perkins' concern with student "fairness," 1986.)

An implication of this study -- i.e., a need for full
investigation of opposing arguments -- was discussed
frequently in the critical thinking and informal logic
literature. Richard Paul, in urging the "strong" approach
to teaching of critical thinking (as opposed to "weak")
described it thus:

In place of 'atomic networks,' one
focuses on argument networks (world
views); in place of conceiving of
arguments as susceptible of atomic
evaluation, one takes a more dialectical/
dialogical approach. One is lead to see that atomic arguments are in fact a limited set of moves within a more complex set of actual or possible moves...In this 'real' world, argument exchanges are means by which contesting points of view are brought into rational conflict and in which fundamental lines of reasoning are rarely 'refuted' by an individual charge of 'fallacy.'...This approach I believe squares more closely with our own and the student's experience of argument exchange (Paul, 1982, p. 3).

Chaim Perelman's The New Rhetoric (1969, with Olbrechts-Tyteca) and The Realm of Rhetoric (1982) saw the need for a new rhetoric (in Perelman's eyes, the philosophical method), which would be a detailed study of actual argumentation from a variety of fields and contexts, to discover what actually succeeded in testing beliefs for their rationality. Theories of knowledge from Plato through Descartes and beyond which held that there was self-evident truth from which knowledge could be deduced, lowered rhetoric to the "dolling up of argumentation" (Johnson and Blair, p. 182). However, according to Perelman, since there was no "absolute" knowledge, only reasonable beliefs (backed by good arguments defended through criticism), we needed, again, the art of rhetoric to test rational beliefs.
Thus rhetoricians, such as the UNLV professor asked to validate *Reasoning in Decision Making*, were familiar with the proper uses of argumentation and the difficulty of teaching "strong" critical thinking methods to students. Rhetoricians were also familiar with Aristotle's call for argument to invent the contingencies of future human action and did not generally find fault with critical thinking (as did John McPeck in *Critical Thinking in Education*) because "critical thinking must be about some subject matter," i.e., standards for critical thinking were "subject-or-field specific." Rhetoricians such as Perelman recognized these field specific standards, recognized the domains of specialized knowledge to determine the accuracy of premises. However, he also affirmed certain methods and forms of argument which could profitably cut across "fields" and "disciplines" to establish rational beliefs and new knowledge (see also Ennis, *Forum*, 1985). McPeck also found fault with critical thinking (especially informal logic) because it did not teach universally applicable, transferable critical thinking tools. Again, rhetoricians know the "place" for specific "tools" and would not expect "all" tools to be "universally" applicable. What the student needed was a repertoire of reasoning skills and the ability to analyze the appropriate setting in which to use one or several tools. The issue of "universal" transferability was then moot.

For example, Michael Scriven grappled with critical
thinking's specific transferability in "Critical for Survival" when he urged schools to open dialogue and debate on controversial issues (drug addition, criminality) with students to "train" them for survival in "the hazardous moments of normal life" (1985, p. 9). He described training programs set in "survival training environments" (such as those designed for astronauts) which simulate, as closely as possible, the real thing and which include: "(a) careful supervision of coping efforts, so that dangers are absolutely minimal; (b) constructive demonstrations and suggestions [from coaches] of ways to handle the problems of survival; and (c) enough reality so that some transfer of coping skills to the real case - should it ever arise - can reasonably be expected" (p. 9). He called for schools to replicate all the arguments which would be brought up in the real case (drug addition, resented parenting) and to encourage "actual role-playing of the decision makers and lobbyists for special interests." This training in school could produce substantial benefits "because the research of transfer of learning makes clear that unless you deal with something very close to the real case, you do not get significant improvements in handling the real case." (See also Ennis, 1985, for a broader sense of the transferability of critical thinking, in "Critical Thinking and the Curriculum.") Therefore, he urged schools to bring in "real people who believe in what they are saying." However, the schools, for predictable reasons, shy away from serious
discussions of arguments on both sides of controversial
issues and thus turn students loose upon a hazardous normal
life, totally inexperienced in the "hard arguments" from
people who mean it, and without the coaching in argument
they might have received in a survival environment.

The above discussion of issues from the theory of
rhetoric, argument and critical thinking was summarized to
illustrate further Reasoning in Decision Making's place and
purpose in the pedagogy/andragogy literature of reasoning.
The text did attempt to teach "strong" critical thinking,
means to a "fair" argument, and a repertoire of reasoning
skills that could be identified and transferred in role
playing within the case-study and in classroom discussion.
This chapter now turns to the validation by the philosophy
professor of practical reasoning.

Validation Report from Philosophy Professor

Philosophers are often asked to make sense of the
world, and this philosopher was confused by the text's Steps
1 and 2. "How can you 'understand the question' without
first 'canvassing' the information? What does 'canvass'
mean in Chapter 1 and 'survey' mean in Chapter 2?" This
writer agreed, but explained that the text attempted to show
that information gathering and understanding the question
worked upon each other. Ultimately, however, wording in
Step #1 was revised to read "Begin to understand..." The
difference between canvass (a superficial looking at early votes) and survey (consider, inspect comprehensively) was to be better defined in the book as well.

He further suggested that Chapter Three investigate only positive alternatives, and that the writer (in a rewrite) urge students to play a vigorous devil's advocate in the negative arguments (counter argument) in Chapter Four. This writer argued that the more natural meshing of positive/negative alternatives should remain in Chapter Three - as this was how decisions/alternatives more frequently presented themselves in "real" life. (See Paul, 1982.)

Overall, the professor preferred for reasoning method and ease in language, John Dewey's *How We Think*, the direct simple words; and he preferred "hypothesizing" as a more accurate word and process, but "seeking alternatives" would do.

This writer preferred, however, the pendulum-swing of the seven steps in the method of decision making. In this method the student was forced to seek broad information, review alternatives, redefine the question, seek new information, review old information (attitudes, alternatives), in an ongoing excavation, a sifting and reconstituting of ideas and possibilities which allowed imagination to work in the recombining of ideas, purposes, questions of means and ends. This appeared a richer method in which to introduce argumentation than the more simplistic
(at least from a student's point of view) and linear approach to problem solving which *How To Think*, and other problem solving literatures, explicated.

However, Dewey's work was pertinent to the validation of the text, because he presented two accounts of reflective thinking, one for purpose and one for method. "Purpose" was the more general account. Dewey stated that reflective thinking involved "(1) a state of doubt, hesitation, perplexity, mental difficulty in which thinking originates, and (2) an act of searching, hunting, inquiring to find material that will resolve the doubt, settle and dispose of the perplexity" (1933, p. 12). Method was not elaborated here, but it was implied that a problem was solved when it was solved, and to evaluate the success of the thinking, one must know the exact problem. All too frequently, however, the "exact" problem cannot be described. (Kenneth Hawes presented a clear interpretation of this method/purpose approach in "Understanding Critical Thinking," 1986.)

Dewey's method-oriented account was consistent with his purpose-oriented description, but makes more specific the thinking stations on the trail from problem to solution: (1) problem definition, (2) elaboration of suggestions into hypotheses, (3) reasoning using observations and available knowledge, and (4) testing of hypotheses (1933, pp. 106-118).

The philosophy professor, at the conclusion of the validation discussion, agreed that the more complex methods
of decision making may be a more fruitful method for what the book was attempting to do, i.e., in the author's phrase, its dialogical purpose.

Implementation of the Text

In concluding this study, the writer was grateful for the professor's questions on purpose and method because they lead to concerns in the implementation of the text. Did this text, as it existed at the end of the study, present a contribution in method and purpose to the literature in reasoning and decision making for adolescents and adults? If so, how should the text be implemented?

Richard Paul presented another theory of critical thinking which may partially answer the above questions. In the question of critical thinking methods and purpose, Paul contrasted "the logic of technical problems and those of a dialectical nature" (1984, p. 10). Technical problems could be solved within one discipline, one framework of ideas. However, "the most vexing and significant real life problems are logically messy." (Please see, again, William Perry, position 8, "I can't make sense of life.") These messy problems leap across disciplines, attitudes, time spans. What was needed in these "nontechnical" problems was "dialogical reasoning," "argument for and argument against," moving "back and forth between opposing points of view," asking how decisions might be made when considering
different ways of looking at the situation (1984, p. 11). Paul concluded that dialectical thought "cultivates the mind and orients the person as technical training cannot," and is the "master-principle of all rational experience."

Reasoning in Decision Making was an attempt to provide a systematic framework and method for dialogical reasoning in a text designed for adult learners in college or high school classes or as independent reading.

Donald Schön corroborated Paul's theory when he wrote extensively on the problems of educating adults, professionals specifically, in their need to be "reflective." Professionals were traditionally educated "technically" from bodies of knowledge accrued through empirical research in academic disciplines. However, the problems and decisions which professionals must face in practice can best be described as "messes" and professionals need, according to Schön, to develop an "art" to define and solve problems, to learn from each other, and to better manage "messes." (The Reflective Practitioner: How Professionals Think in Action, 1983.) Schön quotes Russell Ackoff, who writes from the discipline of Operations Research:

Managers are not confronted with problems that are independent of each other, but with dynamic situations that consist of complex systems of changing problems that interact with each other. I call such
situations messes. Problems are abstractions extracted from messes by analysis; they are to messes as atoms are to tables and charts...Managers do not solve problems; they manage messes. (p. 16)

In the professions, these conditions call for analytic techniques, mathematical models, as well as "the active, synthetic skill" of "designing a desirable future and inventing ways of bringing it about" (1983, p. 16). Unique cases in the practitioner's life call for an epistemology and art of practice which "might be taught, if it were constant and known, but it is not constant" (p. 17). School superintendents, social workers, architects, doctors, teachers - all experience conflicts in professional codes, governing bureaucracies, personal ethics and goals in confronting the pressures to become more efficient and productive. Schön addressed solutions to this situation in *Educating the Reflective Practitioner* (1987) when he recommended reform in professional education. Reform would include a practitioner clinic, or studio time, in which, through dialogue and practice, mentors would guide students in the "art" of reflection, decision making, and problem solving.

A text such as a revised version of *Reasoning in Decision Making* might be an aid in assisting Schön's students and professionals in dialogical reasoning, as one
should not assume that they have previous experience in this method for the purpose of decision making. Also, the audience of professionals in continuing education courses should not be overlooked. They too need updating in skills, and advances in critical thinking and decision making methods should be designed and available for this population, just as improved critical thinking materials are made available for public school students.

In earlier parts of this study, the writer commented on another version of the text being written for another market. The professional student and continuing education adult learners (professionals or laymen) were this intended market for the new text. The new case study would have the context of a working professional in a dialogue of social and ethical decision making.

Lifelong learning is most frequently the expression we use for the continuing education experience. However, we might begin to consider, more strongly, lifelong education with an emphasis derived from Paul Hirst and Joseph Passmore when dialogical reasoning is its method and purpose.

With adults maintaining or changing careers, they are in a mode of being "re-educated," a new learning to see the world from the vantage point of coherent discipline and in an educational process "aimed at the cultivation and development of the mind in the full range of man's understanding" (Hirst, 1972). Is their education, their continuing education, "critico-creative" (in J.A. Passmore's
sense) in evaluating the worth of activities and learning that they are engaged in, as well as creative in their invention of possibilities, the combining of old/new ideas in creative acts of decision making? Is continuing education for adults as infused with "critico-creative thinking" (Passmore, 1972, p. 38) as one would wish public school and college degree education to be? The use of the learner's intelligence, "rather than the development of habits," the use of problems, the posing of dilemmas students were not even aware of, the challenging of authority, the raising of imaginative possibilities in argument and dialogue - all should have a central place in an adult's continuing education.

Continuing educators such as Knowles and Apps have long recognized this in their interest in self-directed learning, in their investigation of the applicability of emancipatory learning with its action dimension (Apps, 1985, p. 152) to examine and change the social paradigm. For instance, the current American paradigm is characterized by the public's assumptions in: 1) the importance of specialization, 2) the reverence for efficiency, 3) the reliance on the scientific method as the only valid approach to knowledge, 4) the accumulation of material goods as a symbol of personal success, and 5) the preparation for careers as the purpose of education. Many continuing education programs are based on these assumptions, but shouldn't continuing educators also program in the critico-creative dialogue to question
and change the paradigm? Thus Apps and other continuing educators have an interest in Jurgen Habermas' three categories of processes of inquiry (or teaching and learning): 1) technical, 2) practical, 3) emancipatory. Technical (as in job training) relates to how one controls or manipulates one's environment by learning tasks and skills. Practical relates, largely, to interactive or communicative meaning, "access to the facts is provided by the understanding of meaning, not observation" (Habermas, 1972, p. 309), e.g., Great Books programs, or liberal arts programs emphasizing reading and discussion. It is the third category, emancipatory learning, that creates adult awareness, and without this enriched quality of awareness, according to R.W.K. Paterson, no adult educational activity can properly be called "adult education" (Apps, 1985, p. 152).

Robert Ennis moved from a 1962 definition of critical thinking ("evaluation of the products of thought") to a creative/action (potentially emancipatory) definition in 1985: "Critical thinking is reflective and reasonable thinking that is focused on deciding what to believe or do" (p. 45). One way to view the evolution of critical thinking definitions, methods, and purpose; the return to Classical Rhetoric in the teaching of writing; the connection of dialogical reasoning to action, imagination, emancipation; the work of Piaget, Lipman, and the developmental psychologists; the reform put forth in The Paideia Proposal...
(led by Mortimer Adler, an Aristotlian philosopher and lifelong education proponent), is to see increasingly the return to Aristotlian rhetoric and reasoning principles in the belief that human minds and emotions can discover possibilities in alternatives and act upon the future through dialogical reasoning.
Chapter 5

IMPLICATIONS OF THE STUDY

The implications of this study and suggestions for future studies or classes using the text *Reasoning in Decision Making* are discussed in this chapter.

The Methodology of This Study

The adult learning theory literature used in this developmental study stressed the desirability of a non-authoritarian, democratic relationship between instructors and adult learners. The pre-philosophical attitudes corroborate this relationship as a means to encourage dialogical learning (on the part of the students and the instructor). In this setting, there are no "right" answers, only good reasons. The goal of this study was the development of a text and the improvement of the author/instructor and the students in their ability to view the book critically as an aid in their efforts to create arguments leading to well-considered decisions. Therefore, the study's methodology was supportive of class content, the book's critique, and student improvement in dialogical reasoning.

This dialogical methodology also suggested the type of
assessments that should be made. No standardized critical thinking instruments were administered; no pretest of argumentation terminology/argument analysis was given. Both of these tests were seen as unnecessary for the purposes of this study; also, they could have alienated students because standardized instruments are often associated with "Mickey Mouse high school" practices. In addition, giving an instructor-designed pretest on argument terminology before students had an opportunity to learn the subject could have been seen by the students as a typical "power play" by an instructor (i.e., "I've got the knowledge and you don't"). Both of these attitudes would have damaged the quality of dialogue in the classes.

Therefore, the pretest on decision making was directed to the student's common sense, which is where dialogue begins. Simple demographic data were gathered to determine if the members of these two intact classes might be broadly considered as adult learners, and to check variety in ages, academic interests, and previous experience with informal logic/argumentation or decision-making course work in high school or college or through some form of independent study.

The methodology suggested by adult learning theory could not remain absolutely pure, however, because these were college credit classes and a grade would be administered at the end of the semester. Students had pressures on study time from other course work, and some were asking what percentage of their grade would be
influenced by the decision-making unit. Although it had been explained that this "introduction to reasoning," this primer, would help them with the argumentation chapter coming up in their regular text book, it was decided that a graded quiz and a "graded" final test of argument analysis (the two paragraphs) should be administered to "help" these concerned students make it "worth their time" to read the book and participate in class. However, the decision-making posttest was not graded, and the students knew that it would not be. (Ms. King later speculated that perhaps she should have taught the book; the "concerned" students might have taken it more "seriously." However, that would have lost the dialogue between instructor/author and students, and it appeared to the instructor/researcher that the students were sufficiently serious and interested to satisfy the study's purposes.)

These class events and methodological decisions are recounted here because, if this book is used in other classes, similar problems of testing, class variables, and dialogical reasoning in an authoritarian setting are likely to arise. These problems will be especially important if one is attempting an experimental design in order to come to generalizable conclusions. There are many points at which dialogical reasoning and experimental design requirements are at odds, and an instructor or researcher must be inventive in his or her design not to cancel out the open, creative purpose of dialogical reasoning. On this point,
Researchers might read Chris Argyris (1982) for a description of his methodology which alters experimental design. He has devised methods to allow his clients to double-loop learn (inquiry, decision making) and freely act in complex social organizations while simultaneously allowing the researcher/consultant to gather data which may yield sound, generalizable conclusions.

Researchers might also refer to Leonard Gibbs (1985) who did a search for empirical studies investigating teaching "critical thinking on the college level." He found no studies which met the strongest standards in experimental design. On the next step down, he found only nine quasi-experimental design studies. He reviewed these nine efforts in his article and then speculated that this type of research is rare because it is rigorous, time consuming, and "it's like pulling hen's teeth to get data out of college faculty." One also might consider, however, that strong experimental design has a methodology which is simply irrelevant to the philosophy and goals of dialogical learning, and has a design methodology which often negates the possibility of alternative arguments and fair assessment.

For example, consider an "impartial" researcher at a distance from the "subject" in a "controlled" setting. To remove dialogical learners from their limitless interpretations of unpredictable social context often slants their reasoning, or the research study, or both. Or, as
another example, consider Chapter Two of Carol Gilligan's *In A Different Voice*, in which a researcher, intent on interpreting data to "fit" his study of moral development, does not recognize a "subject's" unique premise and argument which belongs to a different rationale in moral decision making, and which has in its argument a quality and worth which should be considered on the basis of its own good reasons, not just the researcher's "good" reasons.

Thus, it is the intention of these remarks to clarify the present study's methodology in developmental design, as well as refer to other methodologies which may be used in future research—either in developmental studies or in the implementation of a completed text.

**Implications for Further Studies**

The explication of this developmental study is not meant to imply that further studies utilizing *Reasoning and Decision Making* would be too complex with contradictions to attempt. On the contrary, this developmental study pointed to some promising areas for comparative research that could be conducted with intact classes, either credit or adult non-credit classes, for purposes of clarifying the following implications:

1. This study indicated that the seven steps of decision making led students to a variety of premises and
arguments, both pro and con, and led students to the insight that there are many alternatives and points of view in argument. Therefore, this book could be used as a "first" text in a writing or informal logic class to better understand if it does assist students in producing stronger and more balanced arguments. These students' arguments would be compared with argument papers produced in another section of the same class (taught by the same instructor) which would use only the regular class text.

2. The book could be tested in a similar manner for similar purposes in two sections of an adult non-credit class in writing, communications, personal growth, career change, or in a study skills class specially designed for the returning adult non-traditional student. (There could be followup studies with these adult students to measure impact in their personal development and/or course work).

3. Students increased their abilities to analyze argument and evaluate evidence, using the correct terminology. Therefore, the book could be used in one section of a social issues class, but not in the other sections (all students attend the same lecture) to compare differences in applying their critical thinking abilities to social/political problems.

4. Student posttests indicated greater care in finding evidence and evaluating a larger number of alternative arguments. This is an implication which should receive further study. For instance, Perkins (1986) and his
associates with Project Zero are engaged in ongoing research with youths and adults exploring informal reasoning, scaffolding, and epistemic values that foster responsible reasoning and "a commitment to truth and fairness." These are concerns from rhetoric, included in the book, as is dialogical reasoning which should assist in balancing points of view in argument. Reasoning in Decision Making taught at the high school or adult non-credit level should be investigated by education psychologists and critical thinking researchers to determine if there is a relationship between this study of rhetoric/reasoning, decision making, and "more responsible reasoning" in youths and adults.

5. Developmental and social psychologists (as well as organization and "action" theorists) should consider the impact of a systematic study of reasoning and decision making on their subjects and clients. For example, Nona Lyons (1983) has researched "Two Perspectives" in moral decision making directed (1) by care (a response to maintaining relationships), or (2) by rules of "rights," justice, and principles. One interesting finding has implications for developmental change in male adolescents. She found that during these years males have a "greater persistence of consideration of response" (i.e., care, empathy for others in a relationship when making moral decisions) than do adult males. Perkins has also discovered more balanced "myside"/"otherside" arguments in adolescent males than in college or adult males. Again, the high
school years, and the quality of "care for others," truth, balanced argument, and fairness in decision making would be a promising area for education and developmental psychology research utilizing the text.

6. Most teachers and instructors who expect "class participation and dialogue" have had the experience with a particular class of students who have a slight willingness or little ability in discussion or dialogue. Because of the brevity of the book, it might be taught in the early weeks of the class (along with the regular class content) to introduce students to the pre-philosophical attitudes and tactics for responding to argument, questioning issues, and evaluating information produced by the class. As the literature by Knowles, Perry, and Knefelkamp indicates, self-directed learning and independent thinking don't "naturally" happen in all adult students—the learning environment must be designed to foster inquiry, argument, and autonomous decision making. This book might assist in leading students in that direction.

In concluding this discussion of implications, one should recall the students' evaluation comments. Many high school teachers, parents, adult learners consider the study of informal logic, argumentation, rhetoric "too difficult," too abstract, too "foreign" to their specialties or too far above the intellectual abilities of themselves or their students. Student comments do not confirm this, however. Many found the book "basic" common sense, or they "knew it
already." Others found the book remarkable in bringing new insights in argument to them, or human diversity in reasoning (or points of view), or in illustrating to them their own faulty reasoning.

What this book attempts is to once again pull together the pieces of a common art and science, rhetoric and reasoning, pieces which today reside in isolated, highly specialized disciplines, but were in earlier generations assumed to be available to the majority of adult learners and citizens. The ways of reasoning should once again become more readily available to all.
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### Appendix A

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### Commonalities in Reasoning Texts

- **Premise:** | **Conclusion:** |
- **Inference:** | **Judgment:** | **Fact:** |
- **Induction (3 types):** | | |
### Appendix A (Cont.)

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### Fallacies:

- Distortion: Begging the question
- Ignoring context
- Extension
- Red Herring
- Slippery slope
- Name calling
- Argumentum ad Hominem
- Oversimplification
- Hasty generalization
- Stereotype
- Inadequate causal relations
- Either/or
- Trivial Analogies

### Assertions/Assumptions:

- The Burden of Proof
- Probability: $90\%$
- of reliability of propositions and conclusions

### Persuasion:

- Trustworthiness;
- Reliable evidence;
- Logical argument.

### Legitimate psychological and emotional appeal.

### Problem solving

- Emphasis on fallacies in problem solving.
- Emphasis on fallacies in everyday reasoning in everyday persuasion/analysis/decision making.

- Procedures (steps/model) used as the text's outline.

This text is directed to problem solving in organizations, more specifically to identifying reasoning processes used in evaluating data, values and behavior. Argyris explicates Model I (closed loop) and Model II (double loop) as models for ineffective learning and therefore behavior, or, in the facilitating of Model II, a method for facilitating effective learning and therefore productive decision making.

Double loop reasoning questions premises, assumptions, values, data behind "reasons" and actions. Argyris states that "reasoning is the same whatever the unit (interpersonal behavior, group behavior, intergroup behavior and organizational behavior). This greatly simplifies the theories that are needed, the advice, ideas, and skills that are needed by clients."

With Donald Schon, Argyris continues to investigate a theory of individual and organizational learning in which human reasoning becomes the basis for diagnosis and action in organizational problem solving.

A text which uses "ordinary language" to approach logic; it is designed as a "self-teaching text" with exercises and is restricted to deductive logic examining primarily "sentence and class reasoning." There is no psychology or persuasion in this book; rather, it explicates reasoning that can be produced in words and laid out in the form of argument. It is not concerned with the process of producing arguments.

The text's weakness (from the point of view of the adult learner) is that its "ordinary language" is at times unclear and that deductive logic is an overly restricted subject in the area of rhetoric and reasoning.


Often used in freshman composition classes, this text describes its task as mixing the techniques of persuasion and reasoning to produce an argument: a reasoned attempt to have one's opinions accepted. "Being reasonable" means 1) setting forth defensible assertions, 2) supplying evidence, 3) meeting objectives candidly.

The book's weakness is illustrated in the author's definition of logic: methods of supporting what you believe to be common sense. Logic is not so easily manipulated, and this "easy" approach will not give the student enough information for a thorough analysis of
Appendix A (Cont.)


An anthology of papers on heuristics (the art of discovery) and AI. Descriptions of Polya's four problem-solving stages explicated in his How to Solve It (1945). 1) Understand the problem, 2) Devise a plan, 3) Carry out the plan, 4) Examine the solution. Methods primarily directed to mathematics and science.


Hairston defines her purpose as "persuading with an appeal to reason." She leans heavily on "reliable evidence" rather than a thorough explication of the techniques of inductive and deductive reasoning. She also explicates Carl Roger's method of "non-threatening" argument. This emphasis plus the organization of her material might undercut the student's ability to become an "independent reasoner" by learning the ground rules of reasoning itself.


The Logic 101 student is on sure ground with this
Appendix A (Cont.)

text. Hurley explicates formal logic and informal fallacies with clear purpose. His early chapters are very similar to the better thertorlc books in their explication of "reasoning." However, this is a logic text and moves on to propositional logic, predicate logic, symbols and truth tables. These topics will not be included in the proposed text on decision making for the adult learner.


Another freshman English text with a chapter devoted to "logic" rather than persuasion or reasoning. Short descriptions of reasoning inductively by generalization, cause/effect, analogy; brief description of deductive method; short list of fallacies. Student does not receive a thorough idea of procedures and pitfalls in the different varieties of reasoning. Rather incomplete definitions. Examples must do a lot of explication.


Kahane gives enough "pure" inductive and deductive logic information to enable the student to be an independent reasoner without having to simply memorize fallacies and constantly remind himself or herself to check for "reliable evidence." There are several
Appendix A (Cont.)

chapters devoted to fallacies, a chapter devoted to explaining how the media, government, business and advertising work (complete with hilarious examples of logic and persuasion gone awry). Kahanes' approach to "psychology" and its influence on reasoning comes under the term "world view" and the individual is urged to recheck his or her world view frequently to be certain that it is consistent with the evidence and arguments the individual is receiving. Little or no practice in how to build a lengthy argument, but there is practice in how to analyze one.


This is a long-lived freshman composition text. McCrimmon, during the fifties and sixties, entitled his "reasoning" chapter "Deliberation." It is structured on six stages in problem solving and gives the student a thorough basis in inductive/deductive reasoning (with enough examination of syllogisms to alert the students to the complex problems of premises, inference, conclusion, assertions, hypotheses). A lucid writer, McCrimmon keeps "persuasion" in perspective without oversimplifying his chapter on reasoning.

The lesson to be learned from McCrimmon is that a lucid, thorough discussion of reasoning terms and procedures makes reasoning simpler for the student because he or she can then understand how it is done.
Too often authors avoid nomenclature in the fear or the guess that it will "bore" the student and really "isn't that important" -- just so the student gets a "general idea" of the process. McCrimmon's chapter is indeed a chapter on reasoned deliberation, not the easier-to-write persuasion "advice."


In this more recent edition of McCrimmon, the reasoning chapter is now entitled "Persuasion." The definitions of reasoning procedures are more ambiguous. The deductive reasoning section has been eliminated (as well as all the explication of premises which leads into examining assumptions and assertions). There are fewer fallacies, and most are there without back-up information on the reasoning process that was violated which causes them to be fallacies.


This text was developed from earlier editions entitled *Applied Logic*. "The explosion of knowledge, the increasing tendency of technical information to become obsolete, and the growing complexity of our society," convinced him that students needed more than just logic to solve problems. Among other topics, he addresses creative thinking and need-directed thinking.
Appendix A (Cont.)

(which applies the techniques of counseling in determining the emotional basis of an individual's problem solving.


This text addresses the "lapse" in reputation and research in the field of rhetoric. "If essential problems involving questions of a moral, social, political, philosophical or religious order by their very nature elude the methods of the mathematical and natural sciences, it does not seem reasonable to scorn and reject all the techniques of reasoning characteristic of deliberation and discussion--in a word, of argumentation." (p. 512).

"Only the existence of an argumentation that is neither compelling nor arbitrary can give meaning to human freedom, a state in which a reasonable choice can be exercised." (p. 514).

Common sense is defined as a "series of beliefs which are accepted within a particular society and which the members of that society suppose to be shared by every reasonable being."

The framework of argumentation, the starting point of argument, the techniques of argumentation, the interaction of arguments, the loci and hierarchy of arguments are subjects of philosophical deliberation.

To Scriven, reasoning is the process of systematically working toward the solution of a problem, the understanding of phenomenon, to the truth of the matter. He proposes 7 steps for the analysis of argument: 1) clarification of meaning (of the argument and its components); 2) identification of conclusions (stated and unstated); 3) portrayal of structure; 4) formulation of unstated assumptions (the missing premises); 5) criticism of the premises (given and missing) and inferences; 6) introduction of other relevant arguments; 7) overall evaluation of the argument (steps 1-6).

He sees the purpose of his book as helping the student analyze and evaluate arguments both practical and pedagogical as these are vital skills for professionals and citizens.

Often Scriven ignores terms (e.g., "inductive/deductive are not very important terms") and he talks at great length in the explanations of sample arguments. It would seem a more direct approach to use terms and procedures "out front" and earlier in the book so that students could apply them themselves rather than be dependent for much of the book upon Scriven's lengthy explications.
Appendix B

Student Evaluations of the Book*

Class #1

Question 1 (open book):

The purpose of this book was to teach the seven steps of decision making and methods of practical reasoning. How could the book be improved to help you learn these subjects? (Please use specific subjects, explanations, examples when possible, as well as general comments.)

Student Number:

3. Expand chapters 6 and 7.

4. Give a beginning outline of 7 steps.

7. Frieda's examples made things clearer than examples not pertaining to her (e.g., the Fair, Trustworthy, Knowledgeable section).

8. 7 steps made decision making boring after first 2 chapters. Maybe this was because there were too many terms to be memorized.

9. In places, hard to understand. Frieda should seek help from Fred, Mom, boss, etc.

10. State purposes of 7 steps at beginning and clarify

*In both classes, only the step descriptions for 6 and 7 were given in the manuscript; the steps were discussed with students arguing for their preferred final decision and contingency plans for Frieda.
11. "I thought the book was great." Easy to understand; I had low interest at first, therefore had to read material several times. Book was helpful. But so many ways to look at things is a "little unrealistic because people don't go so far."

12. No comment.

13. List 7 steps on one page.

14. Listed steps are complicated; break them down for simplification at each step.

15. Need more examples, and exercises to do along with the book.

16. Need more on coming to a conclusion (chapters 6 & 7).

17. Book's intent is clear. We needed more time in class to understand its complexities and use methods of reasoning in our lives. We needed more practice.

18. Steps too complicated, need explanations for proper perspective of steps.

20. Condense 7 steps to 5 or 6.

21. Book goes overboard in explaining hasty generalizations, cause/effect. People with good head on shoulders realize these things or were taught them in high school. Otherwise, clearly written, easy to read. Very worthwhile to discuss for future decisions.

22. Perhaps have students choose situations that gave them difficulty in past - find alternatives, solutions; this would be more productive in decision making because
situation would be more personal and important to the student.

Question 2:
What are the book's major shortcomings, as far as you are concerned?

7. Fair, Knowledgeable and Trustworthy section is confusing. Chapters 6 & 7 confusing.
8. Too much emphasis on exact definition of terms.
9. Book is very short on side of army recruiter. Recruiter says army will train people at what they're good at; no, army will train for anything.
10. State the purpose of 7 steps at beginning.
11. I didn't feel there were any shortcomings.
12. Too many examples. "Enough is enough."
13. The example of Frieda is very possible, but she doesn't relate to a modern college student's life.
14. Some points go on and on; others pass over my head.
15. Book is good but it lacks examples. Step #1 is confusing. Explain it better. Does this book apply for all occasions?
16. It gave some insight to decision making, but didn't really help me.
17. Frieda's problem is boring. Would prefer up-to-date world problem, or social problem, or our own problem class could help out on.

18. Many points are well stated. Some too short. Go into a deeper explanation.

20. Don't know how fallacies fit in. Discussions of Frieda and fallacies can stand alone; together it was confusing in their relationship. But fallacies were really interesting.

21. Too complicated, too many steps in decision making. Not exactly true to life.

22. I didn't think there were shortcomings. But it was bothersome that Frieda seemed to be in a no-win situation. There continues to be boundless choices and problems for her.

Question 3:

What do you see as the book's major strengths? What new insights did you gain? Can you say how you could have learned more if the book had been done differently?

3. Likes how all the terms and fallacies were clearly defined and how examples were used. Example of Frieda should extend into chapters 6 and 7.

4. Likes examples that relate to the reader - for instance, Frieda's predicament. Maybe exercises after each step would clear up for reader what was meant by
7. Best is it shows actual form to take a decision through if you're having a hard time. Most of this is common sense.

8. Learning what kind of information one can present fairly should help in writing a persuasive essay.

9. Book didn't teach me anything I didn't already know. It does try to complicate things by making it hard to decide what to do.

10. The book was very basic. I gained little.

11. The chronological order of book was good. I never realized there was so much to making a decision; on other hand, I feel I do these steps, but not in such depth.

12. Major strengths: steps were in one chapter at a time. Made it easier to understand. New insights helped me realize types of things I do (hasty generalization, etc.) and made me stop and think before saying or thinking them. Book is organized well; language is easy.

13. Clearly explains decision-making steps, how to ask oneself the premises of argument situations, and how to return a comment on that issue. Make Frieda's story more continuous.

14. A real life situation, Frieda's problem, is presented, and makes it easier to understand material when you can refer to specific example. New insights: never accept
a solution to a problem as the only alternative.

15. Book is well organized. I feel more capable of understanding argument better and recognizing its fallacies.

16. Strengths: gave definitions on many ideas in argumentation and decision making. Don't think I learned too much I didn't know. It was interesting, though.

17. Learning this reasoning technique is very important. However, time too short to soak it all up and apply it.

18. Good organization. Book kept to a specific order throughout.

20. Fallacies were really interesting. Discussing "every day" examples of fallacious reasoning made it really simple to see how we all have faults in our reasoning.

21. Gives good examples - especially Frieda. Since we are college students, I think we can all look back and feel the way Frieda felt in planning her life.

22. Book is concise and easy to read and understand. I'm now more aware that there is always a choice and never just one easy solution. There is a way out of a problem, even if a final solution demands some sacrifices. (Book would have better perspective for me if I'd been able to work on my own dilemmas and then used the 7 steps.)

Question 4:
Reasoning is often a community event - we do it with other people. Please say if you would have learned the subject just as well by reading the book on your own, or if class participation helped in your understanding of the decision-making and reasoning material.

If class participation helped, how did this happen? (Questions? Examples from class members? Discussion of text? Assignments? Tests? Other events?)

3. Discussion of text and examples from class members (fallacies and alternatives for Frieda) helped the most.

4. Class participation definitely helped. Having the reader interact with teacher and class made items clearer. Especially inductive reasoning. Teacher's ability to relate book to current events [War on Drugs; recent 60 Minutes broadcast with George Bush/Contras; and story of child prodigy] not only made book more interesting but also enlightened us.

7. Class participation helped because people saw things differently than I did. Class questions helped my understanding. Tests and assignments made me pay more attention to the text and its application. Examples, statements from other class members helped me see how other people decided on things or interpreted things.

8. Class participation by examples, questions, discussion made it easier to understand; however, the tests made
me nervous and they shouldn't influence our grade in Eng. 102.

9. Class participation helped me get full effect of the book, especially when classmates gave their different interpretations and decisions on different parts of the book.

10. Class participation always helps give different outlooks and better understanding.

11. Probably would not have read the book on my own, as it's not a subject I'm interested in. Discussion showed me different ideas, points of view. Instructor added new insights and alternatives none of us thought of.

12. Class participation helped greatly. Reading and learning on your own is such a chore. Talking about the subject clarifies it quicker.

13. I have learned more about arguing through the text and explanation of the types of arguing and other examples people use when arguing; i.e., hasty generalization, faulty deduction.

14. Class participation was a great help. Couldn't have gained the decision-making knowledge simply through the text. The examples of fallacies given by the instructor were of great value to me in becoming aware of everyday fallacies and that I simply accepted as "That's just the way it is!"

15. Class participation helped a little, but not much. I
understood the material pretty much on my own.

16. I'd rather have had the teacher give examples and answers than classmates, because we're all learning this at the same time. The teacher helped and gave a better understanding of it. I wouldn't have learned as much if I had read it by myself.

17. No, I couldn't have learned it as well by only reading the book. Teacher writing on board and asking questions was helpful. I received a new understanding of tactics humans use in argument - sometimes without realizing it.

18. Discussing the steps made them seem clear and easy.

20. Class participation helped. Having 20 different opinions from which to choose (as opposed to one opinion) gives greater chance of becoming aware of all the alternatives in a situation.

21. I would have done OK on my own, but excess of information and in-depth steps confused me. By discussing it in class and with other students' examples, I learned the subject matter better.

22. Class participation helped, but the book is written clearly enough to understand on your own. Class participation helped me be aware of some of my shortcomings in decision making, and they brought up good suggestions, suggestions I had not otherwise considered.
Appendix C

Student Evaluations of the Book

Class #2

Question 1 (open book):

The purpose of this book was to teach the seven steps of decision making and methods of practical reasoning. How could the book be improved to help you learn these subjects? (Please use specific subjects, explanations, examples when possible, as well as general comments.)

Student Number:

2. Could use a more realistic dilemma (and better names for credibility.) Give examples of ad hominem, hasty generalizations, and fallacies.

3. Book is well written. Don't know enough to say how to improve book.

4. "The book was good, it gave good examples."

6. Frieda-example was most helpful in seeing "process in action." Maybe more examples with explanations.

7. Improve the book by making it longer. Decision making was "only briefly touched upon." Frieda as an example "was fabulous." Gave personal view. Need examples for "equivocation, analogy, ad hominem."

9. Need more examples, pg. 29, fallacies.

10. Chapters 6 & 7 need to be expanded.

11. "Book has helped me be aware of how fallacy is taken as
an everyday fact, and has helped me to look for it."

12. Learned a great deal from book. But use examples in addition to Frieda. "Equivocation" needs examples.

13. Frieda example is poor – use a simplistic business situation instead. Final decision should have been made rather than "have us guess." Would have made final steps clearer.

14. Good 7 steps. Definitions of some words could be clearer.

15. Recommends an 8th chapter. "Analyzing the outcome of your decision – deciding whether to stay with it or change it."

16. Clear steps, good examples; 6 & 7 good to recall steps; more needed on contingencies.

17. Need more conclusive ending. Also with too many choices, "one will never find a good solution."

18. Book was well organized. Should give last two chapters for total comprehension.

19. 7 steps too drawn out in discussion. The rest was good. "I enjoyed recognizing reasoning in everyday use."

20. Frieda is wishy-washy – most students can't relate to her. "Most students are more assertive – they wouldn't be here otherwise."

Question 2:

What are the book's major shortcomings, as far as you
are concerned?

2. Characters not too realistic.

3. Some meanings not clearly stated.

4. Frieda - lack of info. Why does she want to go to college? What does she want to do?

6. Some parts "too deep;" some sentences hard to understand.

7. Use more examples. Book is understandable; it's not written in technical big words. Could be read by someone not on college level.

9. Frieda needs to make a decision. A conclusion is needed.

10. Chapters 6 & 7 too short.

11. Book's one simple question becomes "soul-searching" exercise. Use other decision-making examples besides Frieda's college example. Eliminate step #6. "Most people would not take this much time to answer one simple question."

12. Well written book with "a touch of humor" and easy reading. But Frieda situation (exaggerated to make a point) is a bit too askew. She needs to know at least one thing she wants or doesn't want.

13. No shortcomings in book, except Frieda doesn't make a decision and class is asked to make one. Need to see a decision to apply final steps (Chap. 6 & 7).

14. Frieda got on my nerves. She couldn't make up her
mind, she kept going over and over her choices.

15. No comment.

16. Sometimes Frieda and Fred too simplified. Sometimes terminologies confusing - or was it learning new terms for old?

17. Needs conclusive ending.

18. Very lengthy - hard to concentrate.

19. Didn't have any shortcomings.

20. Index is needed to help study - Also a glossary for definitions.

Question 3:

What do you see as the book's major strengths? What new insights did you gain? Can you say how you could have learned more if the book had been done differently?

2. More terms taught - that's helpful. However, already has taken two logic/reasoning courses and "gained minimal knowledge regarding decision-making process."

3. Major strength: Book's examples. "I gained a better understanding of how to make the right decision using a formal pattern to reach my decision."

4. Examples clear. Steps taken clearly and slowly.

6. Good organization of decision-making process. Each chapter broken down and explained well.

7. "I love 'the more evidence'." This month I had to make a decision on moving out. All the while, finding
Appendix C (Cont.)

information, "I kept telling myself 'I don't know enough yet'." I don't know the right answer, but more evidence aids in making the right decision. ("I would like the book to have been longer.")

9. Book shows "the many alternatives we should consider." Book is Freshman level. Older people probably found it boring because they already have developed a decision-making process.

10. Book helped me "to think things out."

11. Strong examples of fallacies. I learned that there's more to decision making than "either-or" approach. "The book is set up for a non-philosophy student type to understand what is being said."

12. Definitions and their presentations are the major strength. Lucid enough to learn - complex enough to question (Bookkeeper's lists need lines to separate issues.)

13. No comment.

14. The book showed we make a lot of major decisions, and "we really aren't as limited as we think." I can make decisions easier now (without being pressured) by sitting down and thinking of every possible choice and rationalizing."

15. The book's major strength is that it never really makes a decision." It teaches people not to be hasty when making decisions. (If the book were longer, I'd better understand the concepts.)
16. Setting out specific intermediate steps to reach an objective was "great" - learning to visualize alternatives, how to weigh evidence and sources was insightful.

17. Definitely shows the importance of decision making and rational thought. There's more than a limited answer, solution. You have to look for them.

18. Good use of illustration with Frieda. "I can identify with her, as I'm sure many others can; book made me realize I know more about decision-making process than I'd realized."

19. The way types of reasoning are put together - gives the reader more understanding.

20. Easily comprehensible, for the most part.

Question 4:

Reasoning is often a community event - we do it with other people. Please say if you would have learned the subject just as well by reading the book on your own, or if class participation helped in your understanding of the decision-making and reasoning material.

If class participation helped, how did this happen? (Questions? Examples from class members? Discussion of text? Assignments? Tests? Other events?)

2. "The final day, where a story was made with options" [each class member presented an alternative for Frieda
Appendix C (Cont.)

and argued for it] "really enhanced understanding," sparked my interest for a little while. Also "the day with fallacies on the board was interesting."

3. Without class participation, I'd "have been at a total loss." Examples on board and discussion were major factors in my understanding the material.

4. Don't know if discussion helped that much. I just went through similar steps as Frieda.

6. Class participation helped greatly. "On the last day" [when each class member offered an alternative for Frieda and argued to support it] "I could see it work effectively. One could see how others made decisions and then evaluate each other."

7. Would have been confused on my own. Discussion, questions of examples helped my understanding and made me take the material more seriously. The assignment to bring in examples of fallacies was great. I'm more aware of fallacies in argument and how to approach a family member about a problem. "I am reminded of fallacy/argumentation and try to reword what I will say. Thank you!"

9. Class discussions brought out real-life situations (e.g., War on drug abusers, "life is more valuable than property") which were easier to relate to than Frieda's crisis. (Suggest we spend more class time on problems class members face, "then the class would be even better.")
10. Class participation helped. "Without discussion, I'd have had no idea what was going on."

11. Class discussion valuable because instructor offers new insights to what was clouded in the text. Others' questions helped answer some of mine.

12. "I am fascinated by the quality of what I've just begun to learn. I always thought I had a good sense of reasoning, but I was not aware of all the tangents of reasoning until this little book." Learned more with supervision than without. "It's incredible how much I'm beginning to realize is not only 'not factual' - but how word choice and implications can be weapons in our daily lives."

    P.S. Frieda - she'd better get into therapy. "Every action has a consequence" - she'd better take the money from the car and "learn how to take risks, deal with aloneness, and the value of making mistakes."

13. In class participation, I heard "how other people would use the decision-making process." Discussion and examples were most relevant.

14. Class participation helped - discussions and questions with other class members helped me learn decision making.

15. Would not have learned this subject well without class discussion - it brings ideas into context.

16. Class participation helped - illustrated how many views there can be on one issue; showed how easy it is to
"misconstrue something accidentally;" identify when the issue or speaker is biased, slanted, or distorted.

17. Class participation was a big help. Clarified words (e.g., ad hominem) not clear in reading. Most of the aid was "from just discussion of the text."

18. Discussions helped clarify parts of the book; examples from classmates helped too.

19. Discussion helped me understand how we look at certain subjects.

20. "Discussion and examples helped clear many terms. Repeating terms over and over is helpful."
Appendix D

Pretest - Decision Making - 20 minutes

Describe the steps you would take in determining your best course of action if you were faced with the following circumstances:

Somehow you have fallen into a comfortable but admittedly dead-end job. You could probably stay there several more years taking a class here and there until you finish your degree (in art history), but you're beginning to be aware of the boss frowning every time you come near him.

Is he going to fire you?!

At about the same time, Lena, your anti-commitment woman friend, is making more sounds like a spouse: e.g., "we should invest in some property," "we should re-think our insurance policies," and "the twentieth century has at last made a meaningful marriage possible, hasn't it?"

Does Lena want to get married?!

At the most unlikely moment, Uncle Joe dies and, surprise!, leaves you one-half ownership in a coffee plantation in the Island of Hawaii.

Suddenly you have several decisions to make. How would you do your best in reasoning to your conclusions? (It may help you if you set up a series of steps.)

Post-test - Decision Making - 20 minutes

Please read the following and describe the steps you would follow in coming to decisions if you were faced with similar circumstances. (Also, describe types of reasoning you would use, or fallacies you would avoid, during certain steps.)

Susan Hendrics has been employed as a marketing specialist with a large insurance corporation for two years.
Appendix D (Cont.)

Post-test - Decision Making - 20 minutes

A position recently became vacant in her office and she assumed that she would be appointed to it— that is, she would receive a promotion one step up in the marketing chain of command. However, today she has discovered that they have appointed a young man from the training department to the position. As far as Susan knows, she has a stronger education and work background in marketing than he, who is apparently brand new to marketing. She feels insulted. What should she do?

When Susan arrives home that evening, she finds a letter from the fifth-grade teacher of her son. She is seeking an appointment with Susan. During their meeting the next day, the teacher informs her that her son displays disturbing behavior. He has been setting fires in inappropriate places at inappropriate times (he has been suspected, but the suspicion was recently confirmed). He has lapses of attention in class, and when sent to the school psychologist/counselor, he spoke longingly of his wish to become a warlock. What should Susan do?

The next day Susan receives a phone call from a long-time friend who is chairman of the county Democratic party. The chairman asks if she is interested in running for public office in next fall's election. He says that party leadership has had their eyes on Susan for a long time in her volunteer work and they believe she has excellent organizational, "people", and leadership abilities. Susan feels good about this, but is this the time for her to commit to a rigorous political campaign?
Appendix E

End-of-Book Test

Timed analysis of Two One-Paragraph Arguments
(15 min. total)

Analyze the following arguments. Discuss assumptions, premises, the types of reasoning used, and the mistakes made in reasoning (if any).

American education is a system devised by political oligarchs and their "educator" hirelings to cope with the awkward situation posed by the mistake of throwing open the schools to all. How can you keep the mass of ordinary people ignorant and politically manageable, given that you are not allowed to keep them out of school? This was the problem set for American educators; and the solution was not to teach anything important to anybody. Even the students are now rebelling, because they are so bored and they see more clearly how they are being duped by a system that pretends to teach them but mainly babysits to keep them off the streets. The only solution is to give up compulsory universal education, put the ineducable ones back to work, and revamp the whole system so that it really gives the few elite students what they need to learn if they are to run this republic well.

A professional car thief speaks: "I do a lot more for this country than most people realize. First, I create jobs. I hire men to steal cars, repaint them, fix them up, forge new papers, drive them out of state, find customers. This takes a lot of talent that might otherwise go to waste. And it's good for the economy. Second, I help working people to get what they could otherwise never afford. Say a guy is dying to own a Cadillac, but he hasn't the income; I can get him a nice one, and save him maybe $2,000. Now he's happy. So is the guy whose car we stole; he gets a
brand new Cadillac from the insurance company, minus the scratches and dents we had to take out. The Cadillac company is happy, too, because they sell another Cadillac. Naturally, the insurance company is not happy, but it's so big that nobody cares personally. They're protected. I'm sending two kids to college, and keeping my wife happy with clothes. So what's wrong with what I'm doing?

APPENDIX F

Sample Class Quiz for Comprehension
(18 pts possible)
(Chapters 1 and 2)

1. Why is gathering information considered to be crucial for the first step in decision making?

2. What are the traits of a trustworthy source of information?

3. Define argumentation.

4. Define premise.

5. Define the fallacy of ad hominem.

6. Describe "objectives" and "values" as they relate to decision making.

7. Describe the fallacy of hasty generalization. Give an example.

8. Describe the fallacy of unjustified emotional appeal.

9. What type of reasoning is used when we do not have full data and certainty of outcome?
| MS | x | x | Yes | Yes | HS | Yes | English/German | 2 | E  | 85 | 3 | 5 | 2 |
| OH | x | x | Yes | No | No | No | Accounting | 1 | M | 84 | 3 | 0 | 2 |
| AN | x | x | Yes | HS | Yes | Yes | Comm/Undeclared | 3 | F | 84 | 3 | 9 | 3 |
| AN | x | x | Yes | No | Yes | No | Science | 1 | M | 86 | 2 | 9 | 1 |
| UT | x | No | No | Yes | HS | No | Elem. Ed./Child Psych. | 3 | F | 77 | 2 | 9 | 1 |
| AZ | x | No | No | No | No | No | Psychiatry | 2 | M | 85 | 3 | 0 | 2 |
| TX | x | No | No | No | No | No | Art or Archaeology | 1 | M | 86 | 3 | 2 | 1 |
| AN | x | No | No | Yes | HS | No | Business or Art | 1 | M | 86 | 3 | 0 | 1 |
| AR | x | No | Yes | No | No | No | Nursing | 2 | F | 74 | 3 | 8 | 2 |
| NY | x | No | No | No | No | No | Finance | 2 | M | 85 | 2 | 7 | 2 |
| MT | x | No | Yes | No | No | No | EC5 | 2 | M | 81 | 3 | 7 | 2 |
| NY | x | No | No | No | No | No | Biology | 1 | M | 86 | 3 | 0 | 1 |
| NY | x | No | No | No | No | No | Biology | 1 | M | 86 | 3 | 5 | 1 |
| NY | x | No | No | No | No | No | Elem. Ed. | 2 | M | 73 | 3 | 0 | 2 |
| CA | x | No | Yes | C | Yes | No | Hotel Mgmt. | 3 | M | 83 | 3 | 0 | 3 |
| CA | x | No | Yes | No | No | No | Eng./German | 4 | M | 81 | 3 | 5 | 4 |
| NY | x | No | No | Yes | HS | Yes | Crim. Justice | 2 | F | 86 | 3 | 2 | 2 |
| LA | x | No | Yes | No | Yes | No | Criminal Justice | 3 | M | 84 | 1 | 8 | 3 |

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Appendix G (Cont.)
Appendix H*

REASONING IN

DECISION MAKING

*Pagination remains as in original text.
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Preface

This little book is about knowledge, emancipation, and thinking. It is written for the adult learner -- who may be reading it independently or in a class -- who is specifically interested in how to reason and make good decisions.

The "ways to reason" in this book owe a great deal to Aristotle who made the assertion that many important questions cannot be answered by science, by logic, or by quantification, because the full information impacting the question is not available to us. Subject matter often dictates the method of reasoning and the nature of the "proof" or probability which is possible to arrive at in decision making. Often, subject matter dealing with important questions regarding the future which need to be resolved by humans -- questions of speculation, value judgments -- must use a systematic method of reasoning other than science and formal logic. It is this willingness of humans to speculate and reason together to a conclusion which, Aristotle states, is a legitimate activity which creates knowledge, which can affect future events, and is the type of reasoning and decision making which marks our emancipation as adults; i.e., whether we become masters or
victims of other kinds of knowledge. Thus, to Aristotle, knowledge is something that people create rather than simply have.

This book is about the "doing" of knowledge -- reasoning -- rather than the simple "having" of knowledge. It is the "doing" of knowledge which characterizes emancipation. The law may set the age of emancipation at 18 when the child lives free of the authority of the parent, but it is the individual who determines his or her own emancipation by a willingness to "do knowledge," to make decisions by reasoning through evidence, to "dare to know," and to live free of or in an enlightened cooperation with dictates from authorities -- whether these come from a parent, a spouse, the state, the school, the press, or the workplace.
A Note on the Organization of This Book

Numerous experts in problem solving, psychology, organizational behavior, argumentation, and rhetoric have studied the individual and his or her approach to decision making. Many of these experts have reached a consensus that a thorough job of decision making involves approximately seven steps. Each of these seven steps states the purpose for each of this book's seven chapters. Included within the seven steps, however, are techniques of reasoning from informal logic, communications theory, and an area of study called "practical reasoning." Where the decision-making experts use words such as "survey," "evaluate," or "weigh," we will illustrate here the specific rules and techniques of that particular reasoning activity - something which decision-making experts usually omit.

As Chris Argyris said in the preface to his fourth book on organizational behavior and decision making (Reasoning, Learning, and Action), when all is said, what complex negotiations, policy making, and organizational behavior all come down to is reasoning. So consider this little book a reasoning primer, choose a knotty problem, find a pencil, and let's begin.
Step #1: BEGIN TO UNDERSTAND THE QUESTION YOU'RE ASKING WHICH DEMANDS THE DECISION, AND THOROUGHLY CANVAS A WIDE RANGE OF ALTERNATIVE COURSES OF ACTION.

To do this, we first need to ask "what information, what data, what evidence do we have to go on?" If we are indeed to find a "wide range" of alternatives, the first thing we need in making a decision is plenty of information. And the more information or background evidence we find, the better off we are in accurately defining the question we're asking, and understanding the numerous alternatives for action.

These two items (defining the question and understanding the alternative actions) will work upon each other. The information you find on alternative actions (whether it is opinion or factual data) will help reshape and enlighten your view of the question. Look at relevant historical or contemporary events, statistics, speculations, and interpretations of human motives bearing on the question (what do your friends say?), and authoritative readings (what do the experts say?). Be slow in reaching a decision. Play for time. Keep conclusions at a distance and in the future. Continue to repeat to yourself as you gather information, "I don't know enough...yet."

Remember that reasoning and decision making is
something that we do to ourselves. It is too easy to
wrongfully persuade ourselves that such-and-such is the
case, therefore I must do such-and-such. Hold off. Keep
gathering ideas. Remember that you are still defining the
question and looking for sound alternatives, lots of them,
not a quick fix.

Let's consider, as a living example, Frieda.

Frieda is eighteen. It is the summer after her
graduation from high school. She has been thinking (sort
of) about attending classes (or a class) at a local
university in the fall to "see how it goes." She has
mentioned this possibility to her mother, stepfather, and
boyfriend Fred. In the spring, their responses were
neutral: "Think about it; we'll see how it goes." But as
the summer rolls along, the need for a decision intensifies,
and oddly enough, so does Frieda's opposition.

Frieda applied to the university in the spring. She
has been accepted and notified to make an appointment with
an advisor before registering. Should she or shouldn't she?

Fred remains neutral. If she wants to "try out"
college, she should go ahead. He isn't going to the
university because he'll be working in his father's
business, and eventually he will own part of it. Fred never
was too interested in classes and books. He likes to
"invent," solve problems, work with his hands. In his
father's garage and car dealership (where he has worked part
time since he was thirteen), he has plenty of opportunity to
learn while working and earning money. And, he certainly appears to have a secure future in the family business.

He and Frieda will probably be married in a year or so. What she does with her time during that year or so is her choice -- just so long as she is free to see him in the evenings and on the weekends.

Frieda's mother, over the summer, has moved from a neutral position to a statement of conditions: 1) If Frieda takes classes, she'll have to pay the tuition herself; 2) If she continues to live at home, she'll have to pay room and board.

Frieda has a part-time job as a runner for a travel agency. She had to borrow money from her mother in the winter to buy a car, and is still paying back the loan (and will be for another two years).

Frieda's mother is an accountant. After her divorce from Frieda's father ten years ago, she borrowed money to return to college and finish her degree. She did not find classes stimulating or even interesting. They were a chore to complete so that she could find another and better-paying job. While at the university she observed the younger students wasting their time, partying, not getting their money's worth out of an education that was handed to them on (you guessed it) a silver platter. Why should she support Frieda for a year of partying around? She says that Frieda probably won't finish a degree -- (and why start if you don't finish?). She'll run out of money and/or energy
sooner or later. Besides, she's going to marry Fred, isn't she?

Frieda looks to her stepfather. What does he think?
"You're eighteen years old only once. And you'll be working the rest of your life."

What does Frieda think? Two facts (or at least she thinks they are facts): "I don't have the money," and "You're eighteen years old only once."

Somehow her stepfather's comment seems to be more the question now, more the promise and the problem, than "Should I go to college?"

What do you think?
1. Frieda should take out a loan and go to college.
2. Frieda might as well get married -- today.
3. Frieda has a Bad Mother. She should get away.
4. We don't know enough yet to think much of anything.

Ah! How easy it is to leap to a conclusion, a decision (1-3), when we are still trying to: 1) define the question; and 2) find and look at a wide range of alternative actions. So the answer is probably number 4. But perhaps it's number 5?

At any rate, Frieda still needs a lot more information. She needs to find evidence (all she has now are opinions and clues). She will then have to weigh the evidence; i.e.,
reason through the evidence to judge its reliability and pertinence to her problem.

Finding the Evidence

She goes to see her appointed advisor. Yes, she has a good high school grade point average and would be eligible for a department or college scholarship when she declares a major. (There are more scholarship funds in specific departments than for non-declared majors.) But it's August. Too late now to apply for a general or a departmental scholarship, a grant or a government loan for fall. There are emergency student loans available, but those are for already enrolled students. They talk about classes she would take, if she does decide to register in late August. Frieda visits the book store and looks at the texts for English 101, History 101, and Economics 101. She reads some pages. Her reviews are mixed. And when she walks out onto the campus, it looks desolate, formal, forbidding. Few people are about and no one speaks to her. Her car in the parking lot is the only familiar thing she has seen for two hours.

She goes to work and asks her boss if she's ever gone to college.

"Two years. Then I took a training course to be a travel agent."

"Maybe I should take a training course."
"Go to college. Life is more than 8-to-5 and a desk."

After work, Frieda goes to the library. She reads "How to Select a College" and the Directory of Occupations. She looks at a book that debates college vs. job training, the military, community colleges, and apprentice programs. One book describes population and labor statistics: 7 percent of American families with two children in grade school have a working father and a housewife mother. Only 7 percent; that means the rest of the married women are working, or the mothers are single and working, or single and unemployed. Another chart compares average earnings of college graduates with high school graduates. On the average, the college graduates earn twice as much. But Fred will earn more than the average. And when they have two grade school age children, she and Fred won't be divorced.

She gets into her car and drives home. She is eighteen; it will happen only once. And she's glad.

Weighing the Evidence

Although Frieda may not know the word, she is in the throes of argumentation. Argumentation is the careful consideration of an issue, a gathering of evidence fairly representing the issue's pros and cons, and a reasoning through this evidence to reach a conclusion. The process and techniques of argumentation help us to make good, well-reasoned decisions. This is why finding evidence is so
important. A lack of information can distort your argument; the wrong information can bias it.

Argument begins with a simple form: a **premise** (a statement of fact, or judgment based on factual knowledge) from which one **infers** a conclusion.

**Premise:** "Frieda's job is delivering tickets for a travel agency." From this we infer or conclude that: "She needs a car to do her job."

Some premises are faulty or questionable.

**Premise:** "Frieda's only hope of employment is with the travel agency." **Conclusion:** "Therefore, she must have a car."

Jobs are difficult to find, true. But we would be reluctant to agree with this questionable premise which states an absolute.

Much of Frieda's "evidence" is coming to her in this premise-to-conclusion form.

Her boss was arguing:

**Premise:** "There is more to life than an 8-to-5 job."
**Conclusion:** "College will teach you more about life than job training."

Her mother was arguing:

**Premise:** "A student who doesn't pay for his/her own education wastes it." **Conclusion:** "Frieda should pay for her own education."
Frieda, in making her decision, has to weigh the evidence, information, opinions that she is discovering. She has to question all the premises, inferences, and conclusions. To do this she has to also "back up" and discover the speaker's assumptions, those unspoken beliefs which are the "silent" premises which underlie the spoken premises.

Her boss's assumptions are that people are citizens, learners, consumers, lovers, parents, not just workers. Her mother's assumption is that you have to work, struggle, and literally pay for something before you appreciate its value. However, another person may believe the assumption that too many hours of work will detract from a student's quality and quantity of study time, and in the extreme, this "paying" for education would render education impossible.

When you are weighing the evidence, you take apart the argument to discover the quality of reasoning and soundness of fact. You examine premises, inferences, and conclusions, and speculate on assumptions. You must also consider and judge the source of the information -- which will give you another list of questions to ask concerning the soundness of the argument.

1. Is the source of my information fair? Whether the source of your information is a friend, relative, nationally recognized expert, author, an investigative committee issuing a report, a government agency, a
newspaper columnist, a medical doctor -- how willing is this person or group to consider and balance a long list of pros and cons on the issue?

Fairness is a state of open-mindedness. It is the willingness to remain objective. Although there are philosophers who will state there is no such thing as objectivity (we are all products of our experience, our mental capacities, our specific "purpose in this moment"), we need to constantly examine our own assumptions and premises for exclusions and prejudice just as we need to examine the sources of our information for bias. Remember, argument and reasoning is something that we do to ourselves, as well as what other people do to us in their wish to enlighten or persuade us.

Ask what might bias your source. What life experience has this person had? Or ask which persons appointed that investigative committee? What were the persons' purposes in appointing the committee? Has the nationally recognized expert received government grants or a consultant's fee from industry which might bias (or reinforce) his/her point of view and findings? Are there political leanings or religious convictions which slant research and findings? A questionnaire survey of readers who subscribe to Playboy will yield certain results; the same survey sent to Ladies Home Journal readers will yield, we might assume, different results.
Both surveys may be perfectly "fair", but you must consider the source in weighing the "evidence" because source implies life experiences, assumptions, self-interest, premises, purpose, and therefore, conclusions.

2. Is the source of my information knowledgeable? If so, how knowledgeable is he or she? If we frequently sneeze, a general practitioner can tell us we have allergies, and send us to an allergist who is more expert in diagnosing the pollens or foods that make us sneeze. He or she will prescribe tests and treatment. The allergist is more expert, knowledgeable in the field, but not necessarily more knowledgeable than the general practitioner in setting a bone or delivering a baby or deciding nuclear armament issues. The policeman on the street and the neurologist both may know a great deal about drug addiction, so do some sociologists and drug addicts. Which person's expertise do you need? And what are the limits to each person's expertise?

What are the boundaries of knowledge? In seeking expert, fair knowledge from others, we increase our own depth and breadth of knowledge, and therefore create longer, stronger arguments from which to make more fully informed decisions. We need to remember, however, the common human circumstance that the innocent, the ignorant, and the expert share: we don't
know what we don't know. In seeking information, experience, sound evidence, we can only hope to increase what we do know and by knowledge's cast shadows surmise the unseen and unknown. We would hope to have the wisdom to withhold decision and judgment from those dark areas.

3. Is the source of my information trustworthy? That is, is my source fair in his/her willingness to address pros and cons in an argument; is my source willing to point out his or her own biases and limitations? Is my source legitimately knowledgeable in his or her area, and keeps his or her judgments within that domain of expertise? Does the expert fairly warn the reader when he/she is speculating with conclusions beyond the pale of his/her expertise?

If the answers are all yes, then you may deem your source trustworthy and gather his/her "sound evidence" into the argument that you are constructing. Remember, however, that what you ask of others you should also ask of yourself. Am I fair? Am I knowledgeable? Am I trustworthy?

Again, reasoning is something that we do to ourselves. And we should, at the very least, hope to treat ourselves in a fashion that is fair, knowledgeable, and trustworthy. When we have struggled to achieve trustworthy reasoning, we can then claim emancipation.
Now, where is Frieda in all of this? We left her driving home from the library, thinking that the question "to go to college or not go to college" is not really the question, but rather "I'm eighteen only once. So what's best?" All this college/Fred/no money/eighteen mess has left her on a temporary plateau of conclusions. She's glad eighteen only happens once. But that's only a temporary plateau. She has to get on with it. Finding information, evaluating her sources, reasoning through an argument of premises (lots of them) and conclusions.

In short, it's time for Frieda to get organized. And that is the subject of Chapter Two.

Fallacy Footnotes

At the end of each chapter, we'll be discussing fallacies pertinent to the chapter's stage in decision making and reasoning.

A fallacy is a mistake in reasoning. Some mistakes are repeated in such a characteristic way and with such frequency that they have acquired their own names.

During this phase of decision making (understanding the question and seeking information on alternative actions), we are vulnerable to numerous fallacies, but here are three of the most common.
Ad hominem is the practice of attacking the character of the man or woman (or group) rather than considering the quality of the argument or information he/she/it is advancing. ("Guilt by association" is another fallacy which taints the arguer by the company he/she keeps.)

"Senator Jackson supports more spending on Head Start education programs. He's just another big spender, East Coast liberal, probably in the teachers union's pocket, trying to bankrupt the country with all the other Democrats."

But what is Senator Jackson's argument for supporting Head Start? In this ad hominem attack, we don't get to find out.

Appeal to authority - the improper accepting of an authority's conclusion/evidence/opinion as being right simply because he/she/it is considered to be an authority. Some experts are untrustworthy (as discussed above). Some are speaking outside of their field of expertise, and some experts are reasoning from premises and evidence which we might consider irrelevant or faulty as it applies to our problem.

"Appeal to authority" also includes appeal to majority vote, or to popularity or tradition, as being authoritative forces which automatically provide a stamp of approval for a belief or an action.
"Our town never votes in liberal candidates. Therefore, there must be something wrong about liberal ideas." (Close to the fallacy of provincialism - whatever is closest to us is best; what is far away or of another culture is suspect or inferior.)

"Most parents want prayer in the public schools. Therefore, we should have prayer."

"Dr. Fitz, a psychiatrist, has testified that the defendant is insane. Therefore, the defendant should be sent to a mental hospital rather than a prison." (An authority has found the defendant insane. Isn't this "the end" in this discussion? No. Question the authority on his/her reasoning and include other sources of information in your final decision.)

"Freedom of speech is a tradition in America. Therefore, laws regarding libel and slander should be abolished." (Fallacies appeal to tradition for broad, undefined support. This argument also contains a questionable inference from the premise.)
The fallacy of *Either/or* prematurely narrows your alternatives for sources of information or choices for action. *Either/or* says there are only two options open -- when, upon further investigation and extended creative thinking, you may find numerous alternatives.

"Either go to college or get married."

"Either get a job and support yourself or go to college and go into debt."

"Either you go to college determined to finish or you don't go at all." (Why start if you don't finish?)

However, there are times when *either/or* is not a fallacy. If a boss says, "Either sales pick up or we'll have to lay off workers," and if the company has already reduced overhead, trimmed advertising budgets, and made other economy moves, then chances are the boss's *either/or* is not a fallacy.
Chapter Two

Step #2: SURVEY THE FULL RANGE OF OBJECTIVES TO BE FULFILLED AND VALUES IMPLICATED BY THE CHOICE.

What does Frieda want? This is what is implied by objectives and values in step 2 of the decision-making process.

She had decided that the question is not so much should she go to college this fall, but more like "What do I want in my life?" So, what are Frieda's objectives and their attendant values?

When handed a question or an argument, seek a fuller understanding of its words or terms by defining them. Do your definitions and understanding of words agree with the questioner/arguer? Because how you define "objective" will give direction, or misdirection, to your reasoning.

Is "objective" the same as expectation, or aim, or goal? What sort of expectation - unrealistic or realistic? How do you find out the difference? Is an expectation or objective a hope? Why does the military talk in terms of objectives (a place to reach) and directives. Why does business refer to long-term or short-term gains? Is a "gain" an objective? Why did Charles Dickens entitle his novel Great Expectations and not Great Objectives? (An aim or end of action, a point to be hit or reached - see Webster's Dictionary.) And what are values? A value
implies worth, importance, quality, usefulness, excellence; ("to place in a scale of values; as, to value honor above riches." - see Webster's).

Aristotle taught a method of forming definitions by declaring the thing's genus (class) and then specifying the one trait which differentiated that thing (word, human, plant) from all other things in its class. (Man is an animal [class], a rational animal [special difference].) You might also approach definition from synonyms and then consider what differences in connotations/denotations there are among the synonyms. Another technique is to state what a thing (or word) is not, or come to a definition in a lengthy descriptive prose paragraph. Or you might gain a better understanding of a word through its etymology (historical "root" words) and modern dictionary definitions.

But analyze your definitions. If you say your "objectives" are the same as "hopes," what might this do to your reasoning and plan of action in decision making?

If your values implied in your objectives all relate to making money, to getting a fair exchange for your goods (i.e., time and effort), you are saying that remuneration is the top consideration, the most prized quality, the highest value that your objectives will deliver to you. To balance this judgment of value, are there other values which will be possibly lost, displaced, or reduced by the success of the number-one value?

Frieda's definitions follow:
Objective - a hope, a desired outcome, a "place" to land by a plan of action.

Value - a belief which satisfies a person's intrinsic sense of high quality and worth. What is useful and excellent.

Frieda finds a pencil to begin listing her objectives. After sitting for one-half hour, this is what she writes:

Objectives for Life:

<table>
<thead>
<tr>
<th>Objective</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interesting life</td>
<td>Happiness (very important)</td>
</tr>
<tr>
<td>Loving life</td>
<td>Happiness</td>
</tr>
<tr>
<td>Worthwhile work</td>
<td>Satisfaction</td>
</tr>
<tr>
<td>-that's interesting</td>
<td>Satisfaction</td>
</tr>
<tr>
<td>-will help people</td>
<td>Satisfaction</td>
</tr>
<tr>
<td>-will pay &quot;decent&quot; wage</td>
<td>Enough money to be happy</td>
</tr>
<tr>
<td>Secure</td>
<td>Fewer worries than in</td>
</tr>
<tr>
<td></td>
<td>being insecure. (Is</td>
</tr>
<tr>
<td></td>
<td>&quot;fewer worries&quot; a value?)</td>
</tr>
<tr>
<td>Not lonely</td>
<td>Happy</td>
</tr>
<tr>
<td>Children (long time away)</td>
<td>---</td>
</tr>
</tbody>
</table>

She is stumped by what "value" to attach to children. She couldn't imagine her children. What would they be like?
How could she give her children a value if she didn't know anything about them?

Looking back over her list, she realizes she doesn't have any objectives, aims, "places to land by plan" in life. Where would she be in five years, ten years? She always had thought "something will turn up"...life will happen, and she'd be there to happen with it. So far, only Fred had turned up.

She feels empty, blank, purposeless, and embarrassed. She doesn't know anything. Then she thinks...

"Maybe that's why you go to college." She gets out another piece of paper. She writes:

<table>
<thead>
<tr>
<th>Objective</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Go to college!</td>
<td>Learning something - important!!</td>
</tr>
<tr>
<td>lead to work and life</td>
<td>Interesting work = satisfaction</td>
</tr>
<tr>
<td>Marry Fred:</td>
<td>Learn how to live = happy</td>
</tr>
<tr>
<td>work</td>
<td>Loving/secure</td>
</tr>
<tr>
<td>life (outside of marriage)</td>
<td>Iffy (untrained)</td>
</tr>
<tr>
<td></td>
<td>Iffy - how will it be happy other than Fred?</td>
</tr>
</tbody>
</table>

She starts again:

Go to college Lonely campus/lonely me
Go to college

No money/insecure/worries

debt = learning something now
be rich later
Happy later

She tries another objective:

Join the military

Lonely boot camp
Service to your country
Get up too early
Make money
They take care of you - security
Travel is broadening

Then she remembers the movie Private Benjamin and crosses out military.

Take a training course

Debt - but will get a job
(trained for) and pay it off
work
Will have learned something to use
life
Interesting (?)
Happy (?)

Keep working as a runner at travel agency

Retire in 47 years

Be a brain surgeon

Save lives - satisfying, interesting work
Have reponsibility for lives
(also sanity, motor
coordination, vision, sense of
smell - what else does the brain
do?)

Be a manicurist

Gossip - not interesting

She quits writing.

That night she and Fred go to a movie. While driving home in her car (Fred's car was in the shop) she says, "Maybe I'll be a movie producer."

"Why not?"

"You mean it? What does a movie producer do?"

"I don't know."

They go to her house to watch TV. Fred drinks her stepfather's beer. He is eighteen and sometimes can't buy it. Tonight he didn't want the hassle. Besides, he doesn't have any money. He is buying a carburetor.

Frieda has made a start at getting organized. Remember Chapter One: "Thoroughly canvas a wide range of alternative courses of action" and Chapter Two: "Survey the full range of objectives (brain surgeon to manicurist) to be fulfilled and values implicated by the choice." Frieda is thinking, and thinking is often chaotic - as chaotic as Frieda's lists. But bear with the chaos. Creative and critical thinking require two things, that the thinker: 1) be able to call on information learned in the past; and 2) be able
to follow through the implications of this information in a reasoning process. (Or suddenly come to a conclusion by instantaneously putting together two pieces of just-right information in a flash of brilliance. Sometimes this happens.) But while all this canvassing and surveying is going on, there's certain to be chaos. Have patience.

**Inductive/Deductive Argument**

In reasoning (or following through on the implications of your information) there are two major types of argument that you can use: deductive and inductive.

Deductive arguments are built with two premises which must be true. If indeed they are true, then the conclusion must be true.

Major premise: The military takes care of its people.
Minor premise: I am in the military.
Conclusion: I am taken care of by the military.

Deductive arguments are rather rare in everyday life simply because there isn't that much which we know is absolutely, positively true and can absolutely apply to a decision impacting the future. For instance, is the above major premise true? Is it ambiguous? Do you want to ask questions about quality and degree of military care?

If you find the premises questionable, then the conclusion will be questionable. But if the major and minor
premises are true, then the conclusion must be true if it follows logically from them.

Inductive argument is more frequently used because it investigates probability (which is where most of us live and where we must make most of our decisions). We must investigate and reason with probabilities, because most of the time full data and certainty are not available to us.

You might recall reading that reasoning deductively is reasoning (drawing inferences) from a general statement (All men are mortal) to a particular implication of the general statement (Socrates is mortal). On the other hand, induction starts with specific information and tries to see a general pattern or relationship in the information which may be useful in future decision making.

Because of the difficulty of finding a universally true pattern when considering specific examples (there's easily an exception to the rule lurking about), inductive reasoning finds itself most often investigating uncertainties and concluding with probabilities. The problems (and strengths) of inductive reasoning become clearer when considering the major types of inductive argument: reasoning by generalization, causal relation (cause/effect), and analogy.

**Inductive Inferences:**

**Generalization:** A generalization is a conclusion about a whole group or class based on a study of some of its members.
The question to ask when confronting a generalization/-
conclusion is: what is the quality of the evidence? How
many representative members of the class or group did the
writer or speaker observe or question? Not only how many,
but was the sample typical of the class or group? The
higher the numbers in the sample, and the greater the care
at typical selection, the better the chances for a
generalized conclusion of high probability.

Generalization: "Women are terrible drivers."

"What is the quality of your evidence? How many
women did you interview or observe, and how did you
choose the women to be counted in your sample?"

"I had to take my mother to traffic court. She
had her license revoked. While I was there, I saw
other women accused of traffic violations."

"Isn't traffic court a slanted sample?"

"No. It's proof they're bad drivers."

"You're concluding something about all women from
a few women in a slanted sample. What is the ratio of
women drivers in traffic court to women drivers not in
traffic court?"

"Who knows?"

"Insurance companies do. Why does car insurance
cost less for a teenage girl than for a teenage boy?"

"They're biased."
"No. Girls have fewer accidents."

"Oh."

"So you can make a fairer generalization based on your evidence by saying, some women are bad drivers and wind up in traffic court. Of course, some men wind up in traffic court, too."

"They're not terrible drivers, though. They just make an occasional mistake... and get caught."

"You're biased."

"I know."

In coming to generalizations about a class or group, look for the largest number surveyed in a fairly drawn sample group. (You will find these topics discussed more thoroughly in a beginning statistics class in psychology or marketing.)

Cause/effect is a common form of inductive reasoning which examines two events and concludes that one event is the cause of the other. According to the principle of causation, every event (or effect) has a cause, and causal reasoning seeks to find it by working either from effect (back to cause) or from cause to effect -- and possibly on to a long chain of further causes and effects.

For example:

Car won't start (cause) = dark thoughts, bad language (effect). Possible causes: dead battery? out of gas?
broken starter? All possible causes which may lead to the effect of car won't start.

Car won't start (cause) = late to work, probable expense at a garage, missing appointments (effects).

Causes are classified as necessary, sufficient, and contributory. A necessary cause must be present for the effect to occur (i.e., out of gas is a necessary cause of car won't start). However, a sufficient cause will occur with other sufficient causes which singularly or together can produce the same effect (e.g., out of gas or dead battery or broken starter may be three sufficient causes for the car not starting). A contributory cause helps to produce an effect but cannot do it by itself (e.g., running a red light may contribute to an accident but needs other factors; e.g., other cars or people in an intersection) before the contributory cause (running a red light) can cause an accident. A rear-end collision may have the contributory cause of following too closely, but other factors had to occur before there was an accident (the driver of the first car stopped abruptly, or the driver of the second car was not paying attention). However, following too closely is considered sufficient cause by a policeman to give you a ticket. The rear-ended car is never at fault as the cause of an accident.

The concern in argument is to find all possible causes (necessary, sufficient, and contributory) for an event, or
to conclude that a firm cause-effect relationship cannot be proved. Again, we look for probabilities and/or direct cause-effect by asking:

1) The cause must exist in the situation and must be sufficient to produce the effect. Causes must precede effects, but preceding events do not necessarily cause effects. For example, an alarm clock ringing does not cause (by itself) a person to get up and go to work. Eight o'clock chimes do not cause 8:00 classes to begin, although the event of chimes always precedes the beginning of class.

2) If a sufficient cause is eliminated from a situation, the effect will be eliminated unless other causes are present. Therefore, if we put gasoline into the tank and carburetor and the car still doesn't start, we look for other causes.

3) If the cause is introduced into a similar situation, it will produce a similar effect. (That is, a lack of gasoline will always produce the effect: car won't start.) But beware of settling for a simple cause/effect when the cause may be complex; i.e., when several sufficient causes may be present.

For example, when Frieda's mother stated that students who had their educations paid for did not appreciate learning and wasted their time, she was arguing cause/effect.

Do you believe this is necessary cause/effect, sufficient cause/effect, or contributory? Or is the
argument so weak that no cause/effect can be proved? As an argument of probability - is it weak or strong?

Analogy:

Analogy is reasoning that asks if two things are similar in several important aspects, will they also be similar in certain other respects? Analogy is helpful for description because it can make abstract ideas concrete and explain the strange by illustrating with the familiar. However, analogy never proves anything. It might illustrate an argument, or persuade with probability, or analogy may be useful in problem solving, but the dissimilar ties between the two figures compared in an analogy are its built-in barriers to proof.

Example: "He's fifty-two years old, and you think that you're going to retrain him out of production and into marketing. Don't you know--you can't teach an old dog new tricks?"

This analogy compares the ability to learn in humans with that of dogs. Does this analogy support the argument, is it trivial, or simply untrue?

Fallacy Footnotes

Faulty premise - a first statement in an argument which is overly general or contains false information from our observed experience or knowledge or is overly simplified.
Because of the premise's "faults," it renders conclusions inferred or deduced from it false.

**Equivocation** - use of an ambiguous term (one which has two or more meanings or references) in deductive or inductive reasoning. If the term's definition keeps shifting, no conclusion can be made from the listing of particulars.

"There's nothing like good home cooking--like the chili you get at Mike's Diner. It's even better than what my Papa used to make."

**Faulty deduction** - occurs when the premises are true but the conclusion drawn is not supported by the premises.

In America, the number of infertile couples is on the rise.

Adoption is often the solution for infertile couples.

Kidnapping is also increasing due to infertility.

**Hasty Generalization** - is a fallaceous generalization based on too little evidence provided by too few in a sample, or a slanted sample.

Two women are failing my chemistry class. Women have no knack for scientific reasoning.

**Faulty Causal-Generalization** - a combination of oversimplified causal and hasty generalization reasoning.

This lack of scientific ability in women was
illustrated by their low admission numbers in medical schools.

**Stereotype** - a succinct prejudice or bias based on insufficient evidence. Often a hasty generalization.

**Unjustifiable emotional appeal** - stirring emotional reaction with the purpose of clouding the rational argument.

Mercy killing is neither "merciful" nor mere "killing". It is first degree premeditated murder, a sin of pride committed by man taking the will of God into his own hands and robbing another man of his most sacred possession...life.

Patriotism, motherhood, nationalism, corporate Big Brotherism, or corporate philanthropy, or corporate two-fisted greed are ready-made emotional rockets which (in their assumptions that you have to agree or you're a bad or hopelessly naive person) can fire any argument off course. Unjustified emotional appeal is distraction, not support, for an argument investigating causation, generality, or analogy.

However, do not toss out an argument simply because it is emotional. Emotions have their basis in reason. Find the premise in the above mercy-killing argument and evaluate the premise. You'll have to agree with or argue against the
premise in order to further the rational argument.

For example: The will of God is sacred and should not be interfered with by man.

How would you deal with this premise in an on-going argument?
Step #3: CAREFULLY WEIGH WHATEVER IS KNOWN ABOUT THE COSTS AND RISKS OF NEGATIVE CONSEQUENCES, AS WELL AS THE POSITIVE CONSEQUENCES, THAT COULD FLOW FROM EACH ALTERNATIVE.

Well, in Chapter Two, Frieda had completed the upside of her investigation: what are her objectives and values? Now she must confront the downside: the costs and risks of negative consequences from her possible actions. Of course, these losses, costs, risks have always been in her thinking, in her evaluations of values and alternatives. But it's time now for a closer and, alas, colder look.

She takes a pencil and writes "Consequences" at the top of a page. Then (to the left): negative: costs and risks, and (to the right): positive. Down the left-hand margin she writes her alternatives:

<table>
<thead>
<tr>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative:</td>
</tr>
<tr>
<td>Alternatives</td>
</tr>
<tr>
<td>Continue working</td>
</tr>
<tr>
<td>part-time</td>
</tr>
</tbody>
</table>
at travel agency

Marry Fred in one year

Untrained for work. Fred & Frieda -
What if divorced? not lonely.
widowed? children? have purpose-
life satisfaction? marriage
Don't know Happy together
anything. Start a life!

Fred & Frieda -
not lonely.
have purpose-
mariage
Happy together
Start a life!
Be secure!

Go to college this fall and take two classes.

Go into debt. Might learn
May lose Fred. something.
Will be lonely Find a life!
on campus. May get scholar-
May flunk out. ship next year.
Embarrassing! May be bored.
Half the tuition Easier to handle
of taking full two classes &
load. $200 per part-time work.
class and cost of books. 4 mos at
$200 room/board = $800. $1200 total

retire in 47 yrs
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take four classes: (full load)</td>
<td>Whole debt. Finish a degree sooner.</td>
</tr>
<tr>
<td></td>
<td>Where to get the money? Mother loan? Bank loan?</td>
</tr>
<tr>
<td></td>
<td>$800 tuition $1200 room/board $2000 total cost</td>
</tr>
<tr>
<td>Join military</td>
<td>If don't like, can't get out. No control where live or with whom. Do you get training you want? No Fred.</td>
</tr>
<tr>
<td>Take training course</td>
<td>Train for work only. Cost-free. Travel - when? Meet new people. Train for job.</td>
</tr>
<tr>
<td>Go to college later</td>
<td>It's harder when you have children. Have even less money, less time in the future?</td>
</tr>
<tr>
<td></td>
<td>Cheaper, but what's the cost? If postpone decision, there is more time to think on the right action and save money for the &quot;cost&quot; of</td>
</tr>
</tbody>
</table>
action - college or training?

This is the "bookkeeper's" list often referred to in decision making. It's almost folkloric advice - "whenever you've a decision to make, sit down and list all the pros and cons." What is too often left out, however, is the reasoning process which examines the proposed risk-taking (or benefit reaping) contained within the list.

Remember in the introduction we discussed emancipation, reasoning, decision making regarding values and future events, and Aristotle's belief that this reasoning was the "doing of knowledge." Here we have the heart of the matter in Frieda speculating on future events and her decision which has to be made without full data being available to her. It's all well and good that Frieda studied geometry and chemistry because it would "teach her to think", but the deductive certainty of math or science proofs is not going to be a great help to Frieda in this circumstance. What she needs now is the technique of reasoning inductively (remember? reasoning by generality, cause/effect, and analogy). And when planning action and speculating on your action's future consequences, you are often reasoning in the land of cause and effect.

Causal reasoning is not new to any of us. Ever since we were toddling around reaching for hot stoves or lit candles and were warned: "Hot! Don't touch!" we've been
learning cause and effect. We all continue to search for causes so that we can better understand our physical and social environment in order to repeat happy experiences and avoid painful or disastrous consequences. A citizen attempts to understand a political candidate and how he or she will behave in public office, if elected. A doctor reasons a chain of cause/effect premises when trying to diagnose the patient's afflictions, disease, or symptoms.

Often claims of cause/effect are long and complex. They also are dependent on point of view. For instance, the question of "what causes teenage drug abuse" may be answered differently by parents, sociologists, disc jockeys, drug counselors, doctors, and teens themselves. What researchers continue to look for, however, are necessary causes, sufficient causes in order to plan prevention and cure. One must beware of making a contributory cause a sufficient cause, however (e.g., banning certain rock groups who favor certain lyrics will not solve the complex cause/effect problem of drug abuse). Remember to see all possible causes for an effect, and to carefully seek proof that a cause is necessary/sufficient, not simply contributory.

Let's begin the cause/effect speculation now in questioning Frieda's possible risks and costs or positive consequences.

Alternative #1: Keep the part-time job in the travel agency and do not take classes.
1) Difficult to live on $475 a month. (But at least she's not going into debt and she's paying off her car.) However, there is a **cost** of keeping the status quo by not setting up "gains" for the future.

2) Keep part-time job and have plenty of time for Fred. Will remain untrained for work, and uneducated in "life". The present may be pleasureable; the **cost** will come in the future.

3) May find career path eventually in contacts from her part-time job. But career path will probably require training later. But she may not find career path and will just have to look for another, probably dead-end job. She will be wasting years that could advance education. That is a **risk** that has personal and financial **cost** in the future.

Frieda concludes that #1 may be "easy" for now but it shows no future gains (except that she will own more of her car, as making car payments is the only "necessary" cause she will be engaged in that has a positive effect).

**Note:** This is Frieda's choice; another person may count time spent in an easy job and time spent pleasantly with a Fred as good-enough necessary cause for a good-enough pleasant effect; i.e., a happy life **now**. Here, one could count contributory causes as keeping peace in the family (mother won't be harping on "spoiled kids who go to
college") and Frieda could take advantage of living "free" at home. To some people, these contributory causes could become sufficient causes to create a good-life effect. But Frieda's values and objectives lead her elsewhere.

Alternative #2: Marry Fred in one year.

Happy cause (getting married) leads to happy effect (secure non-lonely life with a future!). Why? Frieda loves Fred. Marriage makes love continue? Two people can build a life together easier than one person can build a life?

Is that true?

Frieda doesn't know. So she tries to go back to cause/effect.

What are the necessary causes to a good marriage effect?

She doesn't know. She makes a guess. Love and money ("enough" money, that is, and therefore "enough" love). What's enough? For what effect? Enough money is paying the bills. (Fred would help there; she certainly doesn't earn enough money to live on her own...). Having a nice car, maybe buying a house, paying for children.

How much do children cost? She doesn't know. But Fred was having a hard time paying for a new carburetor. Of course, children are in the future. Fred and Frieda will have more money...in the future. Will they? Will she work? At what? Part-time travel agency runner? Of course not.
She'll have a better paying job by then. Why does she think that? What is going to cause it?

This marriage question was very tricky. She didn't know enough. How do married people live? What if love doesn't continue, and there's not enough money, and there's a boring job plus housework (which isn't too interesting in itself and which pays nothing)? Frieda considers a hideous cause/effect:

Marrying Fred causes a bored Frieda who works for little or no pay. But that's only if she doesn't love Fred. Right? She tries:

Loving Fred causes work to be worthwhile even if work is boring and unpaid. (Does she mean job-work or housework? Either, she decides, or both.)

Is loving Fred a necessary or contributory cause. What if Fred isn't the cause? Maybe work in itself has to be interesting. How does she find interesting work?

She doesn't know.

Frieda is feeling a little bit crazy with all this not knowing. And she's beginning to dislike cause/effect reasoning. It's making her unhappy.

Alternative #3: Take two classes and work part-time as a travel agency runner.

Feeling a bit jaded with marriage and cause/effect reasoning, Frieda goes for the negative costs/risks first.

Taking two classes may cause failure (she might flunk out) which causes embarrassment and a net loss of $1200.
Taking two classes may cause boredom and a net gain of six college credits (if she passes). But, for the rest of her life when people ask if she went to college, she could say "yes". All that for $1200.

Taking two classes and working means less time for Fred and an irritated mother nagging at her.

She'll get a check at the end of August, September, October, November, and December (semester ends). $475 x 5 = $2375 - $1200 = $1175, minus five months of $50 car payments to her mother's loan ($250) = $925 to live on for five months (Sept.-Jan.), $185 a month for gas, insurance, movies, clothes, books, meals out.

Could she do it?

Should she get a $400 loan for tuition/fees? Where? The bank? Her mother? Her stepfather?

What if she has to buy a new carburetor? What if she has to go to the dentist and her mother makes her pay the bill because she's in college now?

But what if...

She is a part-time worker and takes two classes. She likes the classes. She learns something!! She finds something she would like to study and get a real job from for the rest of her life! It would be happy, interesting work! She would know something about life and work! She would make new friends. She would learn to think on her own! She would grow up and - out!!
Well, all this is just too deliriously happy. Could she even hope that things could work out so well? How could she make all this work out so well?

And it's back to cause and effect for Frieda.

But in the meantime, practice speculating on the possible risks, costs, and positive consequences of Frieda's other four alternatives:

4) Frieda should take a full class load (4 classes) her first semester (Class fees double, but living costs remain the same.)

5) Frieda should join the military.

6) Frieda should take a training course.

7) Frieda should postpone college entrance.

Does she need more information? Should she visit 1) the Army recruiter; 2) the library; 3) the bank; 4) another college or training program advisor; 5) a psychotherapist; 6) all of the above?

Often what becomes even more apparent at this stage of decision making (or argumentation and reasoning) is that we still don't know enough to make a final decision and feel prepared for the consequences. And this means more research! As we will see in Chapter Four.
Fallacy Footnotes

Oversimplified cause and effect - this fallacy is the result of an argument which has not looked sufficiently into all the possible causes for an effect on an event, or all the possible causes of the causes for an event.

He must enjoy personal brutality and organized violence, because he is a football player.

Our national debt increases because all the current politicians (who could cure our debt problems with budget cuts) will be dead and gone before our debt destroys our economy.

Begging the question packs an assumption into a premise or a cause, and if you don't question this premise, or see the cause as oversimplified or yet unproved, then upon answering the question, you're inadvertently answering two questions falsely. The famous example is:

"Mr. Jones, when did you stop beating your wife?"

It hasn't been proved to us yet that Mr. Jones is a wife beater. We shouldn't assume that he stopped, before we know if he ever started beating his wife.

"After two to four hours of torture, most prisoners will stop lying and start telling the truth. They then cease to be prisoners and become what they are, confessed criminals."

"Any crazed burglar who comes knocking at my door at
1:00 a.m. deserves to be shot. Right?"

These two assertions assume criminality before it is proved, thus begging the question of innocence. The reasoning then moves to oversimplified cause/effect in handling out punishment to the suspected rather than the formally convicted. (The person knocking on the door at 1:00 a.m. may need help after a car accident, or he or she may be a neighbor whose house is on fire and wants to warn the people next door. Begging the question has its dangers. Again, go slowly in seeking the truth and avoid leaping to conclusions.)

Argument in a circle begins with a faulty premise or a statement that begs the question (makes an unproved assumption) or a statement of oversimplified cause/effect. The argument continues to reason oversimplified cause/effect until it completes a circle in confirming its original faulty premise.

When Frieda was trying to reason cause/effect on the question of marrying Fred, she was coming near to several arguments in a circle:

"It takes love and money to make a good marriage."

"Why?"

"Because when love goes, money keeps you comfortable and together."

"Then why have love?"
"So you'll get married in the first place."
"So why not get married when you're poor, but in love?"
"You may not get enough money fast enough to save the marriage. So you need both."

**Distortion/slanting.** Distortion misrepresents information by inaccurate "report" - by deliberately leaving out information, quoting out of context, or exaggerating the information or statement and then attacking the exaggerated statement. Distortion is a crime against fairness.

So is slanting, which takes facts favorable to an argument or opinion and suppresses facts or information which are unfavorable to the argument or opinion.

**Unjustified emotional appeal** - attempting to arouse feelings which will overrule one's rational judgment. (However, a certain amount of emotional appeal is justified because in order to act, people need most often to be both intellectually and emotionally involved in decision making. What creates the fallacy is replacing rational argument with emotion, rather than supporting rational argument with examples, illustrations of situations that can arouse an emotional response of indignation, horror, pity or charitable support.)
Step #4. INTENSIVELY SEARCH FOR NEW INFORMATION RELEVANT TO FURTHER EVALUATION OF THE ALTERNATIVES.

The Army recruiter had a nice desk. In fact, it was just like the desk her boss had in the travel agency. He also had posters - sort of science fiction-looking jets with people on the ground running computers. No one in the posters had guns, though. Frieda looked for that. She didn't like guns - they were spooky, unpredictable. They could hurt you or, for no reason, kill you. She was glad there were no guns in the room.

"The Army is very interested in education," the recruiter was saying. "We test our people to see what training they would benefit most from."

"I don't test too well," she said.

He chuckled, in command. "No. It isn't the sort of test you do 'well' on. These tests find out what your talents and abilities are, then we match the training to what you'll do well in, what you want to learn, and of course what will benefit your service to the army."

"But. For instance, I always do well in math. But I don't necessarily want to learn more math. Do I have a choice?"

He leaned forward. "We're building a career for you.
Of course you'll have a choice. But a professional career always entails learning some things which are, perhaps, not our favorite choices."

He's so positive, Frieda thought; dare I ask...? "If I don't like the Army, can I quit? I mean, I don't have to prove I'm insane, do I?"

Again, that controlled chuckle. "You've been watching M.A.S.H. reruns, haven't you? That was wartime. This is the peacetime Army. We are building careers, opportunities for professional and personal growth."

"But can I get out?"

"Keep in mind the investment the Army is putting into your education."

"What if there's ...a war?"

"Women will not go to the front. That's a strong tradition in the army. No women at the front!"

"Why not? I don't think I should get any favors just because I'm a woman. And what if it was a nuclear war? Would there be a 'front' in a nuclear war?"

"Ah...Let's consider this - take a halfway measure - if you join the Reserve National Guard, you can live at home, take university classes and get half your tuition paid. You only participate in one weekend a month training and summer camp."

"How many years in the National Guard after graduation?"

"Four for college, and six after you graduate."
I'll be 28, Frieda thought. Where will I be when I'm 28? Will I have children? Who will babysit them when I'm at summer camp? If I worked for six years after college, couldn't I pay off half of my fees (if I got a loan)?

"Of course, we also have ROTC scholarships that pay full college expenses - tuition, books, living expenses. You graduate as an officer, with four years to serve. But it takes a lot to get that scholarship, and most of our recruits, we find, are more interested in technology training - and you can't beat the Army on job training!"

"No," says Frieda. "I don't doubt the Army. I doubt myself."

She got in her car and looked at her list. The bank was next.

She drove to the bank - the same bank her mother had taken her to when she was in the fifth grade to open a savings account with her grandmother's Christmas check. How they had argued! Frieda had wanted to spend the check on a Barbie and Ken vacation house with furniture! How silly! Frieda had an idle thought; what if she now had cash for every plastic toy that she'd ever owned. How rich would she be?

Oh, well. Now she had three hundred dollars in her savings account, and used the account mainly for her signature, so that she could cash her workcheck at the bank. She knew where to go - a woman at a desk behind a short
wall.

"Who do I talk to about getting a student loan?"

"Do you have your college papers?"

"Registration forms?"

"No. You have to apply for student loans in the winter. If you're eligible, the FAF people will contact your college and the local banks which are approved to service your loan."

This was new to Frieda. She had not applied.

"Could I see someone then, about...a personal loan?"

Mr. Chauncy also had a nice desk. His, though, had pictures of children, not tanks. She told him what she needed. He asked if she had established a credit rating (charge accounts, credit cards, a previously paid loan)?

No. She had only borrowed money from her mother.

Did she have collateral? A house? A car? How much money did she have in bank accounts or stocks? Bonds?!!

Frieda thought about her record collection and graduation watch from Aunt Patricia. She thanked Mr. Chauncy for his time.

Driving to work, Frieda though about all the doors closing. How all her life she had not planned for this day in August, and how she didn't even have enough money to go into debt. She had always thought she could at least go into debt. And now the bank wouldn't even let her do that.

At a stoplight, she picked up the list she had made to carry out her "intensive search for new information relevant
to further evaluation of the alternatives." She had planned to go to the library and look up books on marriage and the family; i.e., what causes a "good" marriage? Does anybody know? She was also going back to the reference section to look at, again, the Directory of Occupations and books on apprenticeship and job training programs at community colleges. How long did they take? How much did they cost? Should she make an appointment for an interview at the State Employment Office about training/work, and at the Community College about their certificate programs?

At the stoplight, she looked at her watch - $100 resale? $25 at a pawn shop? She could add the proceeds to her savings account, but it still wouldn't qualify her for a loan.

She was going to be late for work, and a bus was in front of her, picking up passengers, and if the people didn't hurry up and get on the bus, she was going to miss the green light when it turned and... suddenly, Frieda went into shock. She gripped the steering wheel of her car and, with an idea of sheer delight, time stopped.

She was gripping the answer (part of the answer) to her problem in her hands. The steering wheel; her car! People getting on the bus. The bus was like her car. It took people places. A bus could take her places. Her problem was solved with the insight of an analogy. Bus/car = transportation. And her solution was in seeing and reasoning through the differences in the analogy. Bus =
cheap for Frieda. Car = expensive for Frieda. She would sell her car.

Someone honked behind Frieda. The bus had driven off, and Frieda was stopping traffic.

Fallacy Footnotes

In searching for information, we are mostly concerned with information that is "trustworthy"; i.e., fair and knowledgeable. Therefore, we must examine the sources of our information as was done in Chapter One when we discussed the fallacies of *ad hominem*, appeal to authority, and the concern with either/or (that as a premature conclusion it narrows your choices). As you progress further into your research, you can further refine its chances for trustworthiness by thinking in terms of primary and secondary sources.

A primary source has experienced the knowledge you're after, or a primary source is in the position of power to set the terms of a future experience. For instance, you might expect the army recruiter Frieda visited to be a primary source. In a way, he is experienced and knowledgeable about the way Frieda may experience the army. However, if she had come to the point of "signing up", the documents she signs would be primary sources and should be carefully scrutinized because they are closer to describing the "terms" of Frieda's experience than an "interpreter",
the army recruiter.

The same is true of the bank official; should Frieda have signed loan papers, those are the primary sources and require careful research in determining the impact of cause/effect on Frieda's future.

In researching job experience, interviews with a variety of workers together will be considered close to a primary source. On the other hand, the Directory of Occupations is a secondary source which compiles, generalizes, and interprets a massive amount of "primary" information. Whenever possible, seek out primary sources for careful scrutiny in the advanced stages of your search.

Prepare for interviews - make a list of questions. First, ask questions to clarify your assumptions, establish main premises, and ask the interviewee about their soundness. Ask where you can seek further information. Ask if questions arise in the future can you call the interviewee? After the interview, send a thank you note, if the person has shared his or her professional time with you by setting up an appointment.

Continue to see your search in terms of main premises, pros and cons, which should grow to a long list on both sides of the question. Being able to see and reason, at length, two sides of an argument is a trait of fairness, knowledgeability, and therefore trustworthiness.

Remember Chapter One. If we expect these traits of experts who wish to persuade us, we should also expect these
traits of ourselves when in the throes of argumentation and decision making.

Therefore, to avoid the fallacies of distortion, oversimplified cause/effect, hasty generalization, unjustified emotional appeal (which all result in poor judgment and poor decision making), be prepared to argue at length two sides of an issue by constructing a chain of major premises, pro and con.

For example, the issue: Frieda should sell her car to help finance the first year of her college education. (The facts: In January, Frieda borrowed $1600 [interest free] from her mother. Over the eight months since, she has paid her back $400, or $50 per month. She has two more years to go with $50 per month payments to finish paying off the loan.)

<table>
<thead>
<tr>
<th>Pro</th>
<th>Con</th>
</tr>
</thead>
<tbody>
<tr>
<td>By selling the car in August for $1600, Frieda will have $400 for fees and pay off her mother-debt of $1200.</td>
<td>Frieda will lose her one concrete item which is a financial investment for the future and makes her life simpler in the present.</td>
</tr>
<tr>
<td>A car is not an efficient &quot;financial investment&quot;</td>
<td>A car provides Frieda with the freedom in transport-</td>
</tr>
</tbody>
</table>
because it depreciates in value and costs money to maintain (gas, repairs, insurance).

If Frieda "unloads" her car, her financial situation will be easier and will not distract her from concentrating on studies, work, and Fred.

If Frieda decides college isn't for her, she has lost $400 and a good reliable car. It will be difficult to find another one of its value for such a low price.

She will make her schedule predictable enough to fit a bus schedule (classes in the morning, work on campus[?] in the afternoon, home at 5:00 p.m.).

Her mother will be upset. Frieda will have to find another job.

How much further can you build this argument by adding premises pro and con? Question assumptions (investments of money and time), cause/effect, and statements of generalization. What further information or evidence (of what quality) do you and Frieda need? What are arguments of emotional appeal? Frieda is excited about selling her car. She wants to do it. What does this say about her wish to go to college? Is this a "true" solution for Frieda, or does
her emotion indicate "faulty emotional appeal" that is clouding her rational argument?
Step #5: **CORRECTLY ASSIMILATE AND TAKE INTO ACCOUNT ANY NEW INFORMATION RELEVANT TO FURTHER EVALUATION OF THE ALTERNATIVES.**

"Correctly assimilates." What does it mean?
"Further evaluation." What does it mean?

Better yet, how do you "assimilate" and "evaluate"?

Remember, this book is about the "doing of knowledge," the reasoning through and building of sound arguments in decision making. Therefore, we need to define "assimilate" and "evaluate", and then learn how to do it.

*Webster's* states that "assimilate" (the transitive verb) is: "1) to make similar or alike; 2) to liken; to compare; 3) to appropriate and incorporate into the substance of the appropriating body; to absorb; as food is assimilated by the body; the community assimilated persons of many nationalities.—Syn. See *absorb*. -- v.i. To be or become assimilated. -- n. That which is assimilated."

Well. What do you make of that?

We must liken, compare(?) new information that is to be assimilated, *absorbed*, incorporated into the "body" of our argument.

"Assimilate" is a rather vague word in decision making, but the techniques and rules of reasoning have some specific
ideas on how to "assimilate" new information correctly.

The same is true with the vague "evaluate". Again, Webster's definition: "To ascertain the value or amount of; to appraise. Syn. See estimate."

In reasoning, how do you assimilate new information which will be relevant to further evaluation?

You've been doing it all along -- weighing the evidence; judging the source for fairness, trustworthiness, knowledgeability; defining, understanding words and terms; forming and testing premises; drawing inferences in deductive and inductive reasoning; reasoning by generalization, analogy, and cause/effect, and now weighing the degree of probability in conclusions that result from inductive reasoning.

Probabilities can be tested and "labeled" according to the quality and quantity of reliable information you have. For instance:

Premise: If she sells her car for $1600, Frieda will have a profit of $400.

You might infer several conclusions from this premise and, by evaluating other information, be able to label each conclusion with an appropriate "probability label."

For example:

Premise: Selling her car for $1600 will net Frieda a
profit of $400.

**Conclusion:** She will have $400 to pay fall semester fees.

What is the probability of this being true?

1) certainly true
2) true beyond reasonable doubt
3) highly probable
4) probable
5) indifferent
6) improbable
7) highly improbable
8) false beyond a reasonable doubt
9) certainly false

Given what you know now, you'll probably rate this conclusion with a certain-to-probable (1-4). However, what if you also knew that Frieda's mother would raise her room and board bill if Frieda sold her car? Would the probability rating then fall to 6-9? Or would it be "indifferent" (5) because Frieda might simply take the additional money from her monthly paycheck to pay her additional room and board, and still use the $400 profit to pay her college fees.

It depends on how much Frieda's mother raises the rent, doesn't it? (Now we know why contracts and agreements are
so popular. Firm agreements between all parties certainly assist in planning and decision making.)

The probability scale helps to evaluate conclusions while "degrees of reliability" help evaluate evidence—evidence as reported by humans placed in circumstances and, for instance, testifying about events and circumstances in a court of law. These degrees of reliability are:

1) certainly true
2) true beyond reasonable doubt
3) more probably true than not
4) indifferent
5) more probably false than not
6) false beyond reasonable doubt
7) certainly false

When humans report their observations, they are vulnerable to mistakes in inference, to poor memory, to distortion, to, perhaps, their predetermined (or improvised) decision to lie. When discrepancies are found in information or in testimony, it is best for us to simply "suspend belief" rather than throw out the entire testimony as "a lie." Remember "more probably true than not" and "false beyond a reasonable doubt" cover a wide territory which needs careful searching to determine the reliability of information.

Now, back to Frieda and Step #5 in decision making.
Frieda has uncovered new information from the army recruiter, the bank, and her own sudden insight on how to pay her first semester fees. She needs now to assimilate the new information into the arguments she is building for each of her alternatives: join the military, go to college, take a training course, etc. She then needs to check these new arguments for logical inferences from the evidence, the strength of probabilities, and if some arguments have either a positive or negative emotional appeal (the arguments make her extraordinarily happy, or distressed, or simply bored) she needs to look into the premise of the argument.

Why, for instance, does she have such hesitancy and so many questions about joining the military? Why does she always frown when she even thinks about the military argument/alternative? Is it because she's anti-gun? Or she doesn't like the regimented lifestyle? She doesn't like leaving Fred? But if she took classes at the university and joined the National Guard, she would still have home and Fred. Still, she'd have a 10-year commitment. And that may be the "premise" behind Frieda's frown.

**Premise:** Commiting to the military is a loss of freedom.

**Conclusion:** Fewer future choices make Frieda worried.

Now what is the premise behind Frieda's delight at the idea of selling her car?
1) She will unload a debt?

2) She will spite her mother (who actually went to the trouble of financing the car for Frieda)?

3) Selling the car makes the probability of taking classes stronger?

Why is she delighted with the idea of taking university classes?

When Frieda has found the true premise which explains her delight, she will know if she has an emotional appeal based on rational argument, or emotional appeal based on premises motivated by anger, revenge, or wishful thinking.
Chapter 6

Step #6. RE-EXAMINE THE POSITIVE AND NEGATIVE CONSEQUENCES OF ALL KNOWN ALTERNATIVES, INCLUDING THOSE ORIGINALLY REGARDED AS UNACCEPTABLE, BEFORE MAKING A FINAL CHOICE.

Frieda believes that she has made a final decision — and that she can at last make the final decision because she has discovered the means (get tuition money by selling her car) to carry it out.

The decision-making experts, however, would caution her to do one more review of alternatives at this point. They do this because at this stage you know more, and you can more precisely compare your "final decision" with other alternatives and see their pros and cons in a new light. Also, reviewing even the formerly unacceptable alternatives may help improve the final decision by suggesting additional goals or a new means to achieve a goal. For instance, in Frieda's review of alternatives, she reconsiders her "final" decision to sell her car to get tuition money. If "money to go to college" has become a major goal, perhaps she should reconsider selling her car, and:

**Premise:** Do not go to college this fall.
Subpremise: She should keep travel agency job and get an additional job for the morning hours.

Subpremise: She should find an occasional weekend job as well.

Subpremise: She should continue to live at home "free," and

Subpremise: She should apply for scholarships and student aid for next year.

Conclusion: Save as much money as possible and plan for college next fall.

Also, in reviewing her earlier alternatives, Frieda realizes that she never did investigate classes and certificate programs at the Community College. She gets their catalog from the library and discovers that their tuition is cheaper than university tuition, and that a number of their general education classes will transfer to the university if she decides to attend the university during her second or third year of college.

In similar fashion, Frieda works through her other alternatives -- the military's job training and Fred and marriage. Then there is the idea of becoming a manicurist or a brain surgeon. At this point Frieda can see that becoming a manicurist is "no" decision for her, and numerous other decisions will have to be made before she can even consider brain surgery or a profession.

But then that's the point, isn't it?
She cannot, and should not, plan her entire life this summer.

Frieda realizes that the purpose of the decision she is making now is to put her into a position in which she can learn more and maintain her freedom to make future decisions from the widest possible array of alternatives -- alternatives which she knows that she doesn't even know ... yet.

If she marries Fred now, or if she joins the military, these alternatives would limit future decision making, because other people will be making some of her decisions for her. If she works for a year, it will postpone her learning in an academic setting -- which is where she believes she wants and needs, eventually, to be.

She decides. Keep the possibilities alive, and don't postpone going where you can learn more about what you have to choose from. That's it.

She will sell the car and register for two classes this fall.

Looking back, it was all a simple process of gathering information, sorting out wants from possibilities, and reasons from causes. Simple, isn't it?
Step #7. MAKE DETAILED PROVISIONS FOR IMPLEMENTING OR EXECUTING THE CHOSEN COURSE OF ACTION, WITH SPECIAL ATTENTION TO CONTINGENCY PLANS THAT MIGHT BE REQUIRED IF VARIOUS KNOWN RISKS WERE TO MATERIALIZE.

Commitment now rests its chilly hand on Frieda's shoulder. What if she fails? What if she flunks out? What if the classes are boring? What if Fred finds somebody NEW, somebody who has more time for him? What if her mother raises her room and board? What if she has to go to the dentist, and can't pay the bill? What if she quits the travel agency, but can't find a job on campus? What if the bus company goes bankrupt and stops running busses, and she has sold her car, her good, reliable car, and has no money to buy another? What will she do? What if she doesn't make any friends at the University? What if no one speaks to her, and going to class is just like going to any other job?

It is at this point that a cool-headed counselor might say, "It is good to listen to your fears. Write them out and then think how you could plan for or avoid the situations. Or do some imagining...imagine yourself in each of the frightening circumstances. Imagine a variety of ways you could cope with each of them."
A manager might say, "It's time we called a meeting with all the people involved in this project. We've got to define our problem, identify a planning schedule, gather data, define realistic objectives, set a time frame, and investigate data for contingency actions."

Aristotle might say (in fact, he did) that "most of the things about which we make decisions, and into which therefore we inquire, present us with alternative possibilities. For it is about our actions that we deliberate and inquire, and all our actions have a contingent character; hardly any of them are determined by necessity." So accept it. It's our lot in life.

The future, which is always created by nature and human activity, is, of course, always uncertain. Humans can only realize that "reasoning must affirm what desire pursues," and "excellence in deliberation is correctness in assessing what is beneficial." Aristotle's concept of practical wisdom makes us use the right means, while virtue makes us aim at the right target. It is the only certainty we have for all our uncertain futures.

Fear of threatening contingencies should not, by themselves, dissuade Friea from carrying out what she sees as the best decision. It just means that she needs to do more planning -- for contingencies, and take courage.

For instance: how do you plan and learn to be a university student? You can read the college catalog for registration dates and rules for dropping a class (before a
certain date to get your money back; before another date to avoid a failing grade on your record). You can attend college orientation, learn about academic advising, personal counseling, financial aid deadlines and procedures. You can read a book on time management, find out how to get a tutor if you're having trouble in a class, and you can learn how to shop for a class:

1. Ask other students their advice.

2. Visit departmental offices, ask if they have more detailed course descriptions (what topics will be covered, what's the reading list, what exams, papers, activities are required); meet or call the professor and ask if you can visit a class. It's legitimate. Some colleges devote a week or ten days to "open" classes before a student needs to select courses and register. There is no reason to put up with a class that you see as boring or pointless. Become efficient in planning and learn to drop/add.

3. Balance "heavy reading or writing assignment" classes with activity classes, large lecture classes with small discussion classes. Try to avoid the schedule that was assigned to Frieda - three 101 classes with heavy textbook reading assignments. However, some college majors are so packed with requirements that you may not have a
great deal of choice -- but at least preview the professors.

4. Visit the bookstore. Look through the required reading. You may find more interesting classes in the bookstore than you will reading the catalog or class schedule.

Frieda also needs to plan with her mother, and experts in decision making discovered long ago that people are more willing to cooperate with you and with change in their lives if they are consulted early in the planning stages and are asked to participate in the decision making. Frieda should approach the meeting with her mother as if she were a co-planner, even though Frieda has already "made up her mind." They need to discuss Frieda's goals, her commitment, her willingness to take responsibility for her work, studies, and financial solvency. Frieda's mother needs to agree to at least give Frieda a fair chance at succeeding.

And Frieda needs to give "being a student" a fair chance. She has to be serious about learning, about making time for it, not just slipping in a little reading between work, TV, and seeing Fred. But she'll learn that as she goes along. After a semester, she may make a decision to drop out, take three jobs and save her money to attend classes full time.
It all goes back to reasoning, cause-effect, evidence, experience, making fair, generous judgments, and those abundant alternative possibilities.
Afterword

This book is a primer, an introduction to decision making and reasoning. It is also an introduction to the process of inquiry -- learning by asking questions. In inquiry, you ask questions of yourself, your reading, your interviewees, in conversations and in discussions in meetings and in classes.

It is helpful to know, when inquiring among others, the pre-philosophical attitudes which people adopt in order to have a fair, open-minded airing of information, judgments, and alternative possibilities from which to reason to conclusions together. The assumed attitudes are:

1. A commitment to impartiality and objectivity (as far as can be managed, given our imperfect knowledge);
2. A commitment to consider only relevant criteria;
3. A commitment on the part of participants to make thought and statements consistent from one time to another;
4. A commitment to be comprehensive, to apply the above characteristics to all subjects which come under their critical examination;
5. A commitment to respect each person in the discussion as a possible source of valuable
information, relevant considerations, and persuasive arguments. Each person is seen as an equal member of the group, an equal partner in the search for a solution;

6. There is a commitment by the participants to the search for reasons, defensible reasons, as a basis upon which to make their decisions and determine their behavior.

These pre-philosophical attitudes (i.e., attitudes necessary before actual philosophizing takes place) are described by Clyde Evans,* a philosophy professor, who taught philosophy classes to grade-school children in Pennsylvania. The pre-philosophical attitudes are also described by sociologists and management analysts as "advice" on how to hold a meeting that "gets something accomplished" without alienating the participants.

If you are interested in more reading in informal logic or decision making or argumentation, the following books are recommended for their interesting content, clear and lively presentations, and additional references of books to read.


Chris Argyris and Donald Schön have written several books dealing with organizational behavior, management, learning, reasoning, and decision making in the professions.