TABLE OF CONTENTS: (FIRST DRAFT)

The volume will have multiple Tables of Contents, representing different "slices" through the multi-dimensional AI space. That is, a Table of Contents will represent one way of viewing the AI endeavor, and there are several such ways which are coherent and useful.

Comment:

There will probably have to be a primary ordering, however. The particular organization given in this draft is an attempt at one.

Comment:

The bibliographic citations in brackets link to the Carnegie-Mellon AI Study Guide Bibliography.

I. PROBLEM SOLVING AND THE SEARCH FOR GENERALITY

1. Ernst and Newell, Some Issues of Representation in a General Problem Solving Program [Ernst, Newell 67]
   Comment:

2. Cordell Green, Application of Theorem Proving to Problem Solving [Green 69A] [first IJCAI paper]
   Comment:

3. Feigenbaum, On Generality and Problem Solving: A Case Study Using the DENDRAL Program [MI 6]
   Comment:

   Comment:

   Comment:

   Comment:
II. THE PROBLEM OF REPRESENTATION

1. McCarthy and Hayes, Some Philosophical Problems from the Standpoint of Artificial Intelligence [McCarthy, Hayes 69]
   Comment:

   Comment:

3. Amarel, paper on representations (perhaps paper in Cleveland volume)
   Comment:

III. SEMANTIC INFORMATION PROCESSING, UNDERSTANDING, AND NATURAL LANGUAGE

1. Minsky, Introduction to Semantic Information Processing
   Comment:

2. Winograd, writeup of first Computers and Thought lecture
   Comment:

3. One paper by Woods [Woods 68, 70, or 70A]
   Comment:

4. Schank

IV. THEOREM PROVING

1. Introductory or survey paper on theorem proving (perhaps Loveland)
   Comment:

V. PERFORMANCE IMPROVEMENT

1. Waterman, Machine Learning of Heuristics (article in Journal of AI)
   Comment:

2. Buchanan, et. al., some paper on meta-DENDRAL
   Comment:
Comment:

Comment:

VI. INTEGRATED ROBOT SYSTEMS

1. One paper from the SRI robot project
Comment:

2. Stanford Hand-Eye Project, paper on "Instant Insanity" (second IJCAI paper)
Comment:

3. One paper from the MIT vision research project
Comment: Theory of the common-sense 3D world

4. Reddy, invited paper at IFIP 71 on speech understanding
Comment: Hear-Say

VII. APPLICATIONS

1. Chemical Synthesis, something by Corey or Sridharan or both
Comment:

2. DENDRAL, some synthesis of papers (or Feigenbaum paper on Generality may suffice)
Comment:
3. Programming as a Task for A.I. (Balzer, in preparation; or Brown, to be written)
   Comment:

4. Some paper on a Management Science application of heuristic programming
   Comment:

5. Moses, et. al., some paper on SIN and the MATHLAB concept
   Comment:

VIII. CHESS PLAYING

1. Invited article summarizing the current state of chess playing programs (perhaps one written by Hans Berliner)
   Comment:

IX. INFORMATION PROCESSING PSYCHOLOGY

1. Newell, The Relationship between Artificial Intelligence and Psychology (Cleveland volume)
   Comment:

2. Frijda, Simulation of Human Long-Term Memory (Psychological Bulletin)
   Comment:

   Comment:

4. Colby, A Computer Simulation Model of Paranoia (article in Journal of AI)
   Comment:
5. Baylor, some version of thesis on imagery and problem solving in chess
   Comment:

6. Visual perception area (comment of N.S. Sutherland)

X. LANGUAGES, TOOLS, SYSTEMS

1. Planner paper (Hewitt or Winograd or both)
   Comment:

2. QA4 (some SRI paper)
   Comment:

XI. OVERVIEWS

1. Simon, survey of the current state of the theory of problem solving, perhaps a synthesis of the IFIP 71 paper and his American Psychologist paper
   Comment:

   Comment:
SECONDARY LIST OF CANDIDATES FOR INCLUSION IN COMPUTERS AND THOUGHT II

Waterman & Newell, paper on application of artificial intelligence to the analysis of human problem solving protocols (second IJCAI)
Comment:

Winston, some version of thesis on learning structural descriptions
Comment:

McCarthy, article based on ACM turing lecture
Comment:

Newell, et. al., some article on MERLIN
Comment:

Some article on artificial intelligence applied to computer-assisted instruction (perhaps Carbonell, Brown or Uttall)
Comment:

Hunt, What Kind of Computer is Man? (or perhaps some other survey article)
Comment:

Fikes-Nilsson, some paper on STRIPS
Comment:

Fikes, some article on REF-ARF
Comment:

Manna and Waldinger, short paper on automatic program synthesis
Comment:
Pohl, comments on machine learning research
Comment:

Pohl, heuristic search viewed as pathfinding in a graph (article in Journal of AI)
Comment:

Buchanan and Headrick, Some Speculations Concerning Artificial Intelligence and Legal Reasoning, Stanford Law Review
Comment:

Simon and Feigenbaum, EPAM III article on similarity, familiarity and meaningfulness (in Journal of Verbal Learning and Verbal Behavior)
Comment:

Abelson, some article on belief structures
Comment:

Some article on semantic net models of memory (perhaps Anderson or Rumelhart)
Comment:

Guard, Oglesby, Bennett, Settle, Semi-Automated Mathematics, (in Journal of ACM) [Guard, et. al., 69]
Comment:

Amarel, On the Mechanization of Creative Processes [Amarel 66]
Comment:

Simon, Motivational and Emotional Controls of Cognition [Simon 67A]
Comment:
Slagle and Bursky, Experiments with a Multi-Purpose Theorem Proving Heuristic Program (in *Journal of ACM*) [Slagle, Bursky 68]

Comment:

Freeman and Newell, A Model for Functional Reasoning in Design (in second IJCAI)

Comment:

Bledsoe, some paper on theorem proving programs (perhaps *Journal of AI* paper)

Comment:

Minsky, article representing ACM turing lecture, "Form and Content in Computer Science"

Comment:

Simon, paper on perception of chess positions using EPAM model

Comment:

Slagle, paper on heuristic search in Cleveland volume

Comment:

Sandewall, paper on heuristic search in first IJCAI

Comment:
OTHER MATERIALS FOR POSSIBLE INCLUSION

1. a detailed verbal roadmap of the artificial intelligence community. Include major researchers, major laboratories, primary and secondary literature outlets, major conferences, newsletters, etc.
   Comment:

2. a reprinting of the tables of contents of the primary sources of AI literature over the past several years.
   Comment:

3. articles by Feigenbaum (based on existing lecture notes) concerning:
   a. the nature of an application of heuristic programming
   b. the cutting edges of artificial intelligence research
   Comment: