

COMPUTER POWER & HUMAN REASON (WEIZENBAUM, 1976)

ONLY NOMINALLY ABOUT COMPUTERS

5 ELIZA: BOOK INSPIRATION

- Colby: ψ AS INFO. PROCESSOR $\%$ HUMAN

*> 7 Public Decisions RE:TECH = PERCEPS OF WHAT IT CAN DO.

*> Computer \rightarrow MAN-AS-MACHINE VIEW

CARTESIAN

10 - COMP. = EXTREME EXAMPLE OF MORE GENERAL PHENOM.

*> 12 Religion = AUTONOMY; SCIENCE = LOGICAL NECESSITY

*> - TWISTED EQUATION OF RATIONALITY w/LOGIC

14 - CALCULATION $\%$ JUDGMENT

SCIENCE: ONLY = KNOWLEDGE OF FORMAL SYSTEMS

- NO EXPERIENCE-OBJECT / FORMALISM CORRESPON. = PROVABLE

- EVEN MATH = PERSUASION

- SCIENCE-AS- THEATRGOING

16 - VAST ARRAY OF HUMAN JUDGMENTS

1. ON TOOLS:

40 regularity, complexity, motion, power = MACHINE

- EMBODIMENT OF LAW

- TRANSFORMER (OF INFO.)

42 LAWS: MUST = CONSISTENT w/ REAL WORLD: WHEN = REAL WORLD.

DESIGN: ABSTRACT - NOT BOUND BY LAWS OF PHYSICS

44 Rules: complete + CONSISTENT

*> - LOGIC ALONE \neq JUDGMENT

*> 46 EFFECTIVE PROCEDURE: ALGORITHM

48 - problem OF AMBIGUITY

NATURAL LANGUAGES: NOTORIOUS FOR AMBIGUITY

*> FORMAL LANGUAGES: GAME

- FORMATION RULES: BEGINNING \rightarrow INITIAL STATE

- TRANSITION RULES: ADVANCE

LANGUAGE: SYMBOLS

57 MACHINE: COMPLETELY DEFINED BY THE RULES

60 Turing machine: program -> machine what to imitate

- machine accepts descrip. of machine + imitates
- transformation rules = necessary

63 EVERY MODERN COMP. = UNIVERSAL TURING MACHINE

Church's THESIS: T.M. = ANY PROCESS = EFFECTIVE PROCEDURE

66 UNDECIDABLE QUESTIONS

- EFFECTIVE PROC'S = TOO / EGNTHY (INTERMINABLE PROCEDURES)
- NO HALTING PROCEDURES (DEFECTIVE PROCEDURES)

71 AMBIGUOUS D-M

- KNOW MORE THAN CAN TELL
- rules ≠ knowledge

3. HOW COMPUTERS WORK:

Comp. = TURING MACHINES - w/ 0's + 1's - MANY STATES

74 FUNDAMENTALLY = SYMBOL MANIPULATOR

97 TURING/COMP.: LANGUAGE = GAME w/ TRANSFORM RULES (COMPUTER)

MACHINE - ASSEMBLY :

99 - PROGRAMMER NEED ≠ KNOW ACTUAL % SYMBOLIC OPERATION

Higher level languages :

- problem

Q> 102 LANGUAGE = TOOL + SHAPES WORLD VIEW.

*> HIGHER-LEVEL LANGUAGES = PUBLIC LANGUAGES

Q> DESIGN OF PUBLIC LANGUAGE = SERIOUS TASK
~ GENERAL PROGRAMMER IGNORANCE

*> 105 ∴ PROGRAMMING ~ ACT OF FAITH

107 Comp = GOVERNED BY ASSERTIONS FED

Q> PROGRAMMING = TEST OF UNDERSTANDING.

Q> PROGRAMMING = LEGISLATION

4. SCIENCE + COMPULSIVE PROGRAMMER!

112 Comp. ≠ real world

- Theatre which admits no limitations
- % ENGINEER

Q> ACTION + Comp.

*> - CORRUPTION GOES BEYOND COMPUTING

116 -> Compulsion

125 magical thought + programming
 - TEST FOR POWER = CONTROL
 - CERTAINTY

*→ 127 World Affairs: Dangerously → TECHNICIANS

Q→ SCIENCE - ONLY proceed by SIMPLIFYING REALITY

- ABSTRACTION = 1ST STEP : deleting WHAT # FIT INTO CONCEPTS
- *→ - SIMON : MAN-AS-ANT - ACCEPTS DISTORTION - AS - COMPLETE REALITY
- *→ - General neglect of \emptyset
- NO CHANCE OF FALSIFICATION - SELF-VALIDATING

130 Sci + Tech. = SUSTAINED by → power + CONTROL

*→ - COMP. = POWER TO SUSTAIN MEGALOMANIC FANTASIES

5. THEORIES + MODELS :

135 w/o INTERNAL KNOWLEDGE - COMPUTER EXPLANATION = LINGUISTIC

138 A.I. : SIMON / NEWELL

140 MAN-AS-I.P. ≠ wrong UNLESS = TOTAL

Q→ 142 THEORIES ≠ ANSWER QUESTIONS - GUIDE / STIMULATE DISCUSSION

144 COMPUTERS = POSSIBLE NEW RELATIONSHIP : THEORIES + MODELS

- *→ - THEORIES - MAY = WRITTEN IN COMPUTER LANGUAGES
- COMPUTERS - INTERPRET TEXTS

150 - V.N. : MATH = SECONDARY LANGUAGE % BRAIN

6. Comp. Models IN Ψ :

154 Complex IDEA - ENTERS SIMPLISTICALLY

E.G. RELATIVITY → cultural pluralism

= NEW METAPHORS

*→ METAPHORS : MODELS - CONTEXTS

157 COMPUTER : SOURCE OF NEW METAPHORS

- VAGUEST public UNDERSTANDING
- = ANY PROCEDURE = COMPUTER CAPABLE
- ∴ ALL = COMP. MODEL / METAPHOR
- E.G. Minsky

*→ Anything NOT = TURING-CAPABLE = % HUMAN IGNORANCE

- POSTULATORY ADMISSION OF IGNORANCE / "MYSTIC"
- Comp. = ONLY LAMPPOST TO ANSWER ALL QUESTIONS

159 Ψ = long ATTEMPTS TO = "SCIENTIFIC"

159 Comp. - AS - MERE TOOL = ESSENTIALLY ACCURATE

Q. - COMP. EXPERT W/O MORE = IDIOT

168 Polya: 1945 - heuristics + problem-solving:

- ≠ Algorithms = Approach / progress % certainty

* - INFALLIBLE RULES = BEYOND SCOPE OF SERIOUS RESEARCH
%

Simon: programmability - simplicity

175 - ASSUMES CAN ABSORB ANY SPECIFICATION

* - BASIC THEORETICAL INCONSISTENCY = SIMPLE PROCESSOR + ENVIRON.
BUT: ENTIRE MEMORY STRUCTURE MUST = REPLACED

* 179 PROGRAM ITSELF ALSO = THEORY [FEIGENBAUM]

% SIMON: ≠ THEORY + ≠ HUMAN PROBLEM-SOLVING MODEL

179 ARTIFICIAL INTELLIGENCE

7. COMPUTER + NATURAL LANGUAGE:

182 AI MODES: PERFORMANCE, SIMULATION, THEORY

COMPUTERS - THRU PROGRAMS = SPECIFIC PURPOSE MACHINES

HUMANS - GENERAL-PURPOSE

- NATURAL LANGUAGE

184 NO SINGLE NATURAL LANGUAGE PROBLEM

- SYNTACTIC STRUCTURE / SEMANTICS

- KNOWLEDGE OF REAL WORLD = ASSIST

195 WINGSRAD: SPECIFIC WORLD VIEW - SPECIFIC TASK

• ≠ GENERAL THEORY OF UNIVERSAL LAWS

* - HUBRIS OF AI: THEORIES = SLOGANS

197 - BLAME PROGRAM 'LO VISION

≠ TEMP. DIFFICULTIES

Q.P.: 1) LINGUISTIC UNDERSTANDING = ENTIRELY FORMALIZABLE

2) IDEAS WHICH COMP. ≠ UNDERSTAND

Newell + Simon: details only 3 problems → primitive

Miller: IMPARTING to machine = Absurd

Q. 200 A.I.: LIFE = ONLY WHAT = COMPUTABLE.

8. Artificial Intelligence:

202 MACHINE-AS-MAN = MOST GRANDIOSE FANTASY

- NO underlying theory OF LANGUAGE

Q> ORGANISM-DEFINED by PROBLEMS FACED

- MAN'S PROBLEMS ≠ MACHINE'S

IQ = GREAT HARM

204 ≠ CULTURE, INTUITION, WISDOM

INTEL. = MEANINGLESS IN ITSELF

Q> RECKLESS ANTHROPOMORPHIZATION OF COMPUTER

207 ASSUMPTIONS - Y/aw = COMPUTABLE

212 NECESSITY OF HUMAN METAPHOR

220 C.S. HYPHOTIZED by "FACT"

- DISREGARD GÖDEL / HEISENBERG FAVOR OF LEIBNIZ

Q> 222 WHITEHEADS FALLACY OF MISPLACED CONCIETENESS

226 JUDGES / Ψ = COMPUTABLE = OBSCENITY,

*> COMP. - OUGHT NOT = GIVEN D-M.

Q> BASIC ISSUE = ETHICAL % TECH. / MATH.

9. Incomprehensible Programs:

229 AI TRIUMPHS = TECHWAWE

- SPINOFFS +
- ~ heuristic problem-solving +

234 Program = CONNECTED COURTS OF LAW

Programmer ~ UNDERSTAND WHOLE PROGRAM ∴ ≠ help understand SUBJECT.

*> 236 RELIANCE UPON PROGRAMS w/ little understanding = problem

Q> 238 COMP. = AGENT FOR DESTRUCTION OF hx.

Y DISTANCE

LOSS OF RESPONSIBILITY

VIRTUAL ANONYMITY

Q> 241 MYTH OF TECH. INEVITABILITY = POWERFUL TRANQUILIZER

243 "ONLY IMPEDIMENT TO PROBLEM-SOLVING = TECH."

248 SCIENTIFIC ANALYSIS = ONLY "TRUE" MEANS - SKINNER, FORRESTER, ETC.

FORRESTER: Feed back loops = WHOLE WORLD

- SEE Newell + SIMON
- REDUCES REASON TO DOMINATION

Q> Concepts = STREAMLINED + PARCEL OF PRODUCTION.

Q → 250 COMPUTER ≠ CAUSE OF ANYTHING

= INSTRUMENT PRESSED INTO SERVICE

Q → CORRUPT LANGUAGE = deeply imbedded in rhetoric of TECH. ELITE

- INSTRUMENTAL REASON: all problems = calculation

- ALL INTERESTS = TECHNIQUE

* → 252 NOT CLEAR why PROPONENTS WANT TO COME ABOUT

" " " Public:

- APPEAL TO REASON

* → LIP SERVICE TO SOCIAL IMPLICATIONS

254 - APPEAL TO EXPERTISE

- DISMISSAL - AS-Ø

256 RATIONALITY ≠ SEPARATED FROM INTUITION + FEELING

INSTRUMENTAL REASON = ADDICTIVE

10. AGAINST INSTR. REASON:

258 TECH- AS- BANAL

MD's + BIOFEEDBACK

TECH. INEVITABILITY = ELEMENT OF LARGER SYNDROME

* → 261 NEW CONFORMISM

TRUSTEESHIP

263 SCIENTIFIC D-M = VALUES

SCIENCE + ANTI-ETHICS

* → 265 MUST = ANTI-NEUMAN: TECH. POSSIBILITIES = IRRESISTABLE TO MAN.

* → SCIENCE / KNOWLEDGE DETACHED FROM REAL WORLD

ANSWER = REJECT RULES OF GAME

- INDIV. = RESPON. FOR WHOLE WORLD

Jewish Theol.

267 - TEACHERS = HEAVY RESPONSIBILITY

* → CS ≠ WORK OF FORRESTER / SKINNER

CS ≠ GADGET WORSHIP

PROJECTS NOT TO BE UNDERTAKEN:

1) OBSCENE: ATTACK ON LIFE

Q → 269 - ALL PROJECTS: SUBSTITUTE COMP. FOR HUMAN FUNCTION

* → - ANCA DERIVED FROM COMPUTERS + SCIENCE

2) SIDE-EFFECTS

Q → 275 ≠ Tech. Inev. = CHOICES
 INSTRUMENTAL REASON = ETHICAL VACUUM

ON TEACHING:

Q → DEBASEMENT OF CIVIL COURAGE

* → Q → CALL TO COURAGE: TEACHERS OF C.S.

277 COMP - AS - ONLY METAPHOR = ENSLAVES MIND

- MUST TEACH MORE
- MORE THAN PROGRAMMING

UNIVERSITY: STUDENTS AS GROWTH % MARKET BASKET

C.S. - HABIT OF MERELY TRAINING

- "HARD SCIENCE" - MERELY = LESS AMBIGUOUS + LESS EXPRESSIVE OF REALITY

280 - MUST = COURAGE TO ADMIT SUBJECTIVITY

WHOLE TEACHER MUST = WHOLE PERSON ∴ EXPLORER