

11 MOST TRANS. IN COMPUTERS = MEMORY % COMPUTATION

13 \* > Phys. - AS - COMPUTATIONAL = ↑ ROLE OF SIMULATIONS  
= MASS-AS-PATTERN

OPERATIONAL ARGUMENT = TURING TEST / SIMULATION

15 . BUT SEE : SEARLE

PHYSICAL ARG. : NOT ALL PHYS. ACTION = COMPUTABLE / SIMULATION-ABLE  
. PHYSICS + COMPUTATION

\* > NON-GOFAT / NON-SPIRITUAL = SCIENTIFIC METHOD.

17 COMPUTATION = TURING MACHINE

- . TOP-DOWN: DEFINED - DATA / CHESS, ETC.
- . BOTTOM-UP: LEARNING - NEURAL NETS : REQUIRES MEMORY
- . A.I. - USE OF ONE OR BOTH

21 TURING: ALL PHYS. ACTION = REDUCIBLE

CHAOS: NO WAY TO DETERMINE ACCURACY

: ORDINARYLY = DETERMINISTIC / COMPUTATIONAL

24 ANALOG ≠ DISCRETE COMPUTATION RULES - CONTINUOUS DYNAMIC

28 PROVEN NON-COMPUTATIONAL: HILBERT'S 10<sup>th</sup> PROB. / TILING PROB.  
: HALTING PROBLEM

- . DETERMINISTIC BUT NOT COMPUTABLE
- CANNOT SIMULATE COMPUTATIONALLY

37 ~~CONSCIOUSNESS~~ + AWARENESS w/ UNDERSTANDING

- . % HEURISTIC "UNDERSTANDING"
- . INTELLIGENCE + UNDERSTANDING
- . % SIMULATION OF INTELLIGENCE

39 AWARENESS + CONSCIOUSNESS

UNDERSTANDING: MUST = PART OF ANY GENUINE INTELLIGENCE

41 . SEARLE: AGAINST SIM. EQUIVALENCE

45 MAIN A.I. FAILURES: COMMON-SENSE ACTIVITIES

- . HIGH-LEVEL: PROGRAMMER'S % COMPUTER'S UNDERSTANDING
- . TOP-DOWN RULES ≠ ACTUAL UNDERSTANDING
- . BOTTOM-UP = "LEARNING"

48 MATH UNDERSTANDING ≠ REDUCED TO COMPUTATION

Q<sup>50</sup> PHYSICISTS = < MECHANISTIC THAN BIOLOGISTS

60 CONVEN. A.I. - ALWAYS TAKING ADVANTAGE OF HUMAN UNDERSTANDING OF IDEAS  
. BOTTOM-UP: NO MEANS TO "ACQUIRE" HUMAN UNDERSTANDING

94 Gödel: BELIEF IN SOUNDNESS = BELIEF IN CONSISTENCY

112 : REQUIRES CONSTANT REF. TO REALITY

: ≠ AUTOMATED

115 COMPUTABILITY - LAZINESS FOCUS: UNNECESSARY COMPLEXITY

NON-COMPUT - STRONG STATEMENTS

- MATH. UNDERSTANDING % BLIND COMPUTATION

128 Gödel: % TURING - MIND ≠ CONSTRAINED AS COMPUTATIONAL ENTITY

≠ CONSTRAINED BY FINITE BRAIN

\* > ACCEPTS BRAIN = DIGITAL / PHYS. - REJECTS MIND = MATTER = PREJUDICE OF TIME

TURING: ERROR + INTELLIGENCE

139 MATH INSIGHTS = WHAT CAN GET AWAY WITH

152 ENVIRON. - AS-ARTIFICIAL = THEMATIC QUESTION : Ability to be SIMULATED  
· CHAOTIC

199 MATH. UNDERSTANDING ≠ COMPUTATION

Procedure FOR DOING MATH ≠ procedure FOR UNDERSTANDING MATH

bottom-up procedures ≠ UNASSAILABLE ESTAB. OF MATH. TRUTHS

UNDERSTANDING : PROVIDES RULES

201 AUTO Theorem-proving ≠ UNDERSTANDING

396 GO V. CHESS

Judgement - UNDERSTANDING

417 → math AS-product OF MIND = Kantian % PLATONIC

% P. modern

418 <sup>→</sup> Gödel : ≠ math INACCESSIBLE - human insight = BEYOND FORMAL/COMPUTABLE  
o PLATONIC / MYSTERY-laden

GENUINE CONSCIOUSNESS = AWARENESS OF QUALITATIVE DIFFERENCES