

DREAMS OF COMPUTER SCIENCE

(Response to Questions by Phil Davis)

Peter Wegner, October 31, 1978

1. Dream of the Thinking Machine (Turing)

Computers are fast, accurate morons. The dream is to coach them (program them) so that their 'intellectual' behavior as measured by verbal responses to questions is indistinguishable from that of thinking persons.

2. Dream of the Super Robot

This dream presupposes intelligent intellectual behavior and adds intelligent sensory and physical behavior. There is the Frankenstein-Golem destructive model and the superman - R2D2 constructive model. This dream conceives of computers developing their own initiative and taking over the world, or alternatively developing emotional sensitivity and a sense of humor and becoming better "lovers" than humans. This dream exhibits a degree of altruism towards the displacement of humans by computers that is probably unhealthy from the evolutionary standpoint and may contribute to the creation of a society that we cannot manage or control.

3. Dream of a Universal Programming Language

Programming languages are tools not only for problem solving but also for thinking. The dream is to develop a programming language which makes problem formulation easy because all problems can be formulated in a natural, simple manner in the language.

4. Dream of a Computer Society

The dream is to replace all intellectual labor by computers just as physical labor was replaced by machines in the industrial revolution. This would leave people free to do nothing and would probably be a disaster.

5. Dream of a Universal Theorem Prover

A computer can mechanically deduce consequences from axioms by rules of inference but may require exponential time to do so. The dream is to have a computer that is a super logician and can immediately see all consequences of a given set of assumptions, and identify the consequences likely to be relevant in a given situation.

6. Dream of the Omnipotent Computer

This is epitomized by the computer who was asked "Does God exist" and answered "Yes - now God does exist".