ARTIFICIAL INTELLIGENCE AND THE CREATOR

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SUMMARY

The struggles of our best minds to create artificial intelligence as great as that of lowly insects demonstrates that only intelligence can produce intelligence.

THE CHALLENGE OF ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) has made great strides in five decades. Some scientists believe it is merely a matter of time before AI achieves human levels of intelligence. They base their argument on the fact that any human act which can be reduced to algorithms (there are theorists who argue that this includes everything) can be emulated by a computer program. An algorithm is a step by step procedure for solving a problem.

Science fiction writers jumped on this bandwagon long ago. In Frederick Pohl's Heechee series, a holograph-projecting AI responds to, analyses problems for, and trains a human protagonist.(1) Artificial intelligence is a reality in Pohl's version of the future. Pohl is dressing in fiction the faith-- and it is a faith-- (2) of those scientists who think that computers will eventually be built which can reason on a par with humans. Saberhagen, Heinlein, and Clarke produced well-known science-fictional examples. In several stories, Isaac Asimov coupled artificial intelligence with bodies outwardly indistinguishable from humans. His robots, rational and benevolent, serve passionate, fallible humans.(3) But is AI capable of attaining a human level of thinking? If so, how would we know? What are the implications of AI for Christians?

REDUCTIONIST FANTASIES

Let us take the questions in reverse order. If human-level AI is possible, the first and most sombre consequence is the triumph of reductionism-the doctrine that
everything can ultimately be explained in terms of the lowest units of nature: atoms, force particles, etc.). Intelligence is then shown to consist of no more than circuits, logic gates, and energy cells switched on or off. Christians, claiming souls for men, would be hard pressed to explain why they were unwilling to attribute souls to thinking machines.(4)

TURING TEST

But how would we know that the machine's intelligence rivalled human? Computer genius Alan Turing proposed a test. Modified, it is this: Place a human and an AI behind partitions. Bring in an astute human observer. Typing on a keyboard, which transmits electronically to the hidden subjects, the observer asks any questions he chooses, and receives typed replies on his monitor. The AI is programmed to respond as slowly as a human. If the observer is unable to say, after a predetermined time, which answers originate from the AI and which from the human, the AI is shown to be as intelligent as a human.(5) Such tests have already been conducted. Under restrictive limits, AI is sometimes able to fool human observers.(6)

Ideally, an observer should ask questions answerable by an ordinary person but incomprehensible to a machine, questions which demand a comprehensive world view: jokes, puns, twists on common knowledge, ambiguous sentences, paradoxes. Terry Winograd gives as an example two almost identical sentences in which the pronoun "they" changes reference because of context: "The committee denied the group a parade permit because they advocated violence," and "The committee denied the group a parade permit because they feared violence." It is very difficult for programmers to structure logic to express the difference in these sentences because the sentence patterns are identical.(7) Most humans, after attaining a certain level of maturity in their language development, unconsciously assign the "they" of each sentence to its proper antecedent.(8)

FALLING SHORT

Despite all difficulties, specialized AI systems are being designed to drive vehicles,(9) translate languages,(10) and walk obstacle courses.(11)

Specialists are attempting to convert the world of common knowledge into machine-readable form with the goal of giving a computer network basic knowledge of the world.(12) If attained, they hope such abilities can be miniaturized and merged into one highly versatile machine. Would it then be intelligent? If screened from sight, could it fool an observer into thinking it was human in an unrestricted test? Many technologists believe it is only a matter of time.

At present the artificial intelligences we employ on computers do best at logical, mathematical operations: game playing, number crunching, problem modelling. This is because mathematics and games such as checkers and chess can be expressed.
in relatively simple algorithms. Indeed, "algorithm", a term derived from Arabic mathematics, is used to express a procedure for solving a mathematical problem in a finite number of often repetitive steps. Squaring the circle to a specified accuracy is an example, as are finding greatest common divisors and calculating reiterative Mandelbrot sets in chaos theory.

Computers do worst at the most human tasks: artistic, interpretive, and judgmental functions. The absurdity of the programmers' hope to create true AI is spotlighted when you consider the question: How do you program a computer to know truth, goodness, beauty, love, or justice?

Not only are AI's incapable of feeling, they "think" differently than people. Humans set goals for themselves--and for computers. Computers set no goals unless programmed to do so by people, in which case the goals are the person's, not the computer's. If a computer could fool a discriminating human observer in an unrestricted Turing test, would it really be the computer doing the fooling? Would it not be humans, through skillful programs, fooling the observer in the equivalent of an expensive practical joke?

Because they cannot comprehend powerful, motivating abstractions, computers are emotionless. They lack what Christians call spirit. Even children see this difference between computer and themselves. While saying they like computers, they laugh when asked if a computer likes them. The question is absurd.

AIs will never write Shakespearian poetry nor match the profundity of the psalms. A world view, connotations, and the insight of suffering are prerequisites of enduring art. Logic gates, data bases, and neural networks are not satisfactory substitutes for these. Computers "think" too differently from humans to achieve literary immortality. Chess-playing computers, which outrank most humans, achieve their results quite differently from them. My computer often beats me but does so by running through thousands of positions and moves while I look for simple patterns and apply a few principles and tactics that I learned reading Chernev and Reinfeld. Its "thinking" is alien to mine. This is why non-biological AIs will never match human intelligence, no matter what capabilities are built into them by humans.

ANALOGIES GOOD AND BAD

Our difficulty creating artificial intelligence, the millions of man hours expended by the most brilliant minds of our age, serves to highlight the majesty of our own brain's design. How superbly conceived and packaged is the human mind! It is compact, versatile, brilliant, and functional. Our attempts to create AI demonstrate forcefully that reason alone begets reason. Thus AI becomes a powerful analogy of man's need for a creator.
While boasting over their relatively miniscule successes in emulating or modelling nature, many technologists refuse to acknowledge the much greater intelligence implied by the far more sophisticated design of the living creatures whose functions they attempt to understand and copy. Their arrogance implies a worship of the works of the human hand and brain. It is not unthinkable that some future dictator will enforce the worship of a robot in a new idolatry. Something like this was suggested in biblical prophecy nineteen centuries ago.(16)

An equally urgent danger is that we should begin to think of man's mind as analogous to AI. Doing so, we dehumanize mankind. The pagans who worshipped animals did not degrade themselves as much as those moderns who idolize the computer, for the least animals—even insects—have more intelligence than our best AI machines.(17) The tiny bee, for example, has speed, energy efficiency, reproductive ability, autonomy, and self-reliance unattainable in any forseeable machine. And its ability to see, navigate, walk, recognize, remember, communicate, and relocate are beyond machine emulation.(18)

Yet another danger is that in declaring AI analogous to ourselves, we give too much credence to AI and too willingly allow machines to "think" for us. For the Christian this borders on blasphemy. Christians, who should be spirit-led, may usefully employ AI, but should never trust it to do what our own minds ought. The implications of reposing trust in mechanical brains are already apparent. Innocent people have been errorized through false arrests after inclusion of their names in crime data bases, following the loss of their ID and use of it by criminals. It is almost impossible to expunge the files. Elaborate telecommunications systems have gone awry, costing businesses millions of dollars.(19) The United States now faces a terrible danger in computers which were programmed with two digit rather than four digit years.

Nonetheless, I am all for attempts to develop AI as far as it can go. By studying and developing computer applications, our knowledge of the fundamental principles of the sciences is improved. Forced to break knowledge into its most rudimentary units so that it can be manipulated by machines, we learn to see the world in new ways. As a consequence, our methods of manipulating data are greatly improved. And who can help admiring those original hackers who threw themselves with passion and single-minded dedication into developing the computer?(20) Who isn't a little in awe of those analytical and creative geniuses who continue to develop systems such as that on which this newsletter is produced? They have eased our labor and benefitted us beyond measure.

References:


   2. Dennett, Daniel C., "Can machines Think?" in Kurzweil, Age of Intelligent Machine, p.51.


12. eg., Doug Lenat, who spearheads an attempt to feed a computer 10 million facts to give it common sense; Zimmer, "Flake of Silicon," p. 38.


GODS THAT DEVOUR

In his science fiction novel, "Michaelmas", Algis Budrys links a human protagonist with Domino, an efficient artificial intelligence. Michaelmas thereby attains superhuman (not subhuman) powers. With this fantasy, Budrys commits a modern error: he turns to a machine for the guidance which should come from the Holy Spirit. The machine grants godhood to the man.

The fantasies we read can propagandize us with erroneous assumptions. Thus Budrys sees AI emerging somewhat by chance, contrary to our experience which shows it comes by enormous planning and intellectual labor. Interestingly he does make an alien intelligence intrude dangerously upon the network. As a true artist, he perhaps saw that man, who worships the work of his hands with applause, time, and dollars, could be endangered by his computer "savior" and deplore its tyranny. No work of man's hands can long endure in place of God.

False gods devour their devotees.

Too often our dreams are about power through the idols of our hands. The real danger of misperceptions about AI is not an alien intrusion but this: What resistance will men exert against governmental tyranny through artificial "intelligence" and information networks if their fantasy is to wield the powers of Michaelmas?

GEORGE BOOLE AND MATHEMATICAL LOGIC

Anyone who has worked with IF, OR, AND in computer search strings has applied theory originated by George Boole.

Born to a poor cobbler, Boole assisted in the shop at an early age. His father was unsuccessful and the penniless boy had to educate himself. He determined to become a minister. To eat he taught. By age sixteen he was teaching mathematics at a private school and at twenty set up a school of his own. Almost all of the pittance he earned went to his parents.
His every spare moment was devoted to the mathematics he needed to know in order to teach. Unassisted, he studied Newton's Principia and produced a calculus of variations. In 1849, age 34, his reputation won him a mathematics professorship at Cork, despite his lack of a degree. Thus mathematics supplanted the church.

Although carrying a heavy teaching load, he devoted himself to research and initiated the theory of invariants, skillfully handling calculus operators.

He also contributed to probability theory. In all, he produced over fifty mathematical papers and four books, was elected to the Royal Society, and won medals.

Boole's Mathematical Analysis of Logic, written in defense of a friend, developed the mathematical logic for which he is famous. Symbolic logic had been attempted by others (including the famous Leibniz, co-discoverer of calculus) but without practical success. Boole's methods permitted the tackling of problems unsolvable in earlier systems. With Boolean logic, the philosophy of mathematics was made scientific.

Boole was a man of sweet disposition, gentle sympathy, wide learning, modesty, and a reverent spirit. Conscientiousness hastened his death. Never strong of health, he went to his duties at college in spite of a heavy rain, caught cold, and died of lung congestion.

He was survived by a wife, Mary Everest, and five daughters. They had formed a happy family.

REFERENCES TO BOOLE:


THE INFORMATION SUPERHIGHWAY

Many fantasies of artificial intelligence assume the existence of an information network such as the info-highway touted by Vice President Al Gore.
The assumption is that when a critical number of connections is reached, intelligence is triggered. This involves a glaring non-sequitur. The addition of any number of non-living units to other non-living units does not produce life. Only thinkers coming from a humanist/materialist world view could fall into such a fallacy.

It is no accident that, like Gore, many who push hardest for the Internet are enamored of new age and humanist thinking. They see in man himself and his technology the solution to problems which are actually spiritual. Although Internet has immense potential for good, even for filling the earth with the glory of God, I predict that in the intermediate future it will worsen our problems.

For example, Internet is already heavily infiltrated with the occult, the bizarre, the lurid, and the exotic; among certain clientele it is pervaded with an atmosphere of decadence. (For evidence, examine the Internet Yellow Pages.) Thus high tech helps debauch some of us.

What happens if we place too much reliance on an ephemeral network? History is replete with examples of engineering triumphs which could not be sustained in crisis; our communications are vulnerable to terrorism. The more Internet is relied on, the more horrific the results of its collapse, especially in an information society. When I originally wrote this article I was not aware of the year-2,000 crisis. This confirms my point. Machines were programmed years ago with two-digit symbols for dates; when 2,000 turns the symbols will repeat, with the potential for great confusion. Some experts are predicting a national crisis.

There are other potentially fatal flaws. Some of the network's government computers are fossils. (Tom Brokaw 10-11-94.) The mere fact that government is so involved in the system strikes fear in the hearts of those who observe America's increasing self-tyranny. Not surprisingly, the current administration demands control of all encoding devices.

QUESTIONS FOR ATHEISTS AND AGNOSTICS

If it has taken the combined efforts of the greatest technologists of our era to develop the simple AI they have given us, why isn't intelligence ascribed to the designer of the intelligent, compact, and self-replicating ant or bee?

What right has man to be proud of creating an intelligence far beneath his own, using a brain he did not give himself, while not ascribing glory to the designer of his own brain?

You who say there is no God, why do you worship (boasts + admiration + time + pride + $$ = worship) the fallible works of your hands?
"Now if we are children, [of God] then we are heirs--heirs of God and co-heirs with Christ, if indeed we share in his sufferings in order that we may also share in his glory."

Just as a clever computer design reflects glory upon its originator, so should the human mind bring glory to God its maker. Christ Jesus, echoing Moses, taught that we must love God with all our heart, soul, strength and MIND.

He set us an example. Inevitably this brought him into conflict with the religious and political establishment of his day.

How the self-deception of his enemies pained him! At the end of a series of pointed warnings, he exclaimed in pent-up anguish: "O Jerusalem, Jerusalem, you who kill the prophets and stone those sent to you, how often I have longed to gather your children together as a hen gathers her chicks under her wings, but you were not willing." Let us vow to use our minds for God's