THE GREAT IDEAS ONLINE

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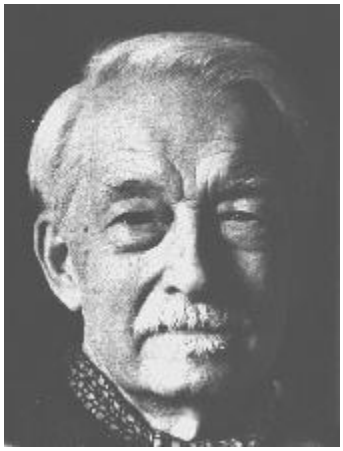

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Part 2 of 2

Maritain Lecture
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May 1, 1982
Mortimer J. Adler

ANGELISM AND POLITICS

D. The current state of the issue between these two views, each of which *appears* to be tenable.

1. The Aristotelian and Thomistic arguments for the immateriality of the intellect fail to persuade the opponents. We can easily understand why this is so.

2. The empirical evidence the opponents come forward with to support their side of the issue.

   a. Talking chimpanzees

   b. Thinking machines or computers

3. Grounds for dismissing the talking chimpanzees: how they acquire meaning for their symbols (always denotatively, never connotatively) and the distinction between perceptual and conceptual speech.

4. But the dismissal of artificial intelligence is not so easy. Permit me to deal with this problem at some length because of its critical importance.

E. The Cartesian challenge and the Turing game

1. Matter cannot think—and the Cartesian challenge

2. The Turing game—and the possibility of a machine that can succeed in being indistinguishable from man.

3. The future holds the probability of wet computers with chips in excess of 10 raised to the 11th power—in short, artificial (and nonliving) replications of the human brain, and much more powerful than the human brain.

4. Let me present now what I think is the strongest argument against the probability that the performance of artificial intelligence machines will ever be indistinguishable from the performance of human beings in the Turing game.

   a. Let us consider, first, human beings and the higher manmals. Both have two kinds of native endowment.

      (1) The first kind is what might be called "programming," borrowing that word from computer technology.

         (a) Programming consists in an animal's innate endowment with determinate preformed responses to stimuli.

         (b) Insects with very elaborate patterns of instinctive behavior have such innate endowment to a very high degree.

         (c) The higher mammals have much less of such preformed patterns of instinctive behavior than the insects do.

         (d) Human beings have the least of all: they have no instincts, in the strict sense of that term. Their innate programming consists solely in a relatively small number of spinal and cerebrospinal reflexes.

      (2) The second kind of native endowment consists in abilities or powers that are indeterminate in the sense that they are subject to determination by learning and by the formation of habits. At birth and prior to any determination by learning and habit formation, innate abilities are indeterminate; that is, they do not tend to produce one rather than another type of actual behavior.

         (a) The higher mammals are innately endowed with such abilities and are capable of learning and habit formation, as the training of domestic animals so plainly manifests.

         (b) Human beings have such innate endowment to the highest degree: they are preeminently learning animals whose conduct after birth is largely the result of the determinate development of their innate abilities by learning and habit formation.

(c) Thus, for example, the human infant is endowed with the ability to learn any language, and has no determinate tendency to speak one rather than another. The human is also endowed with the innate ability to think anything that is thinkable.

b. Let us next consider humans and machines. In contrast to human beings and the higher mammals, artificial intelligence machines have only one kind of native endowment, the kind that Turing calls. infant or initial programming.

(1) Such programming produces always and only determinate preformed behavior on the part of the machine. The machine's programmed performances are exactly like the elaborate instinctive performances of insects or like reflexes in the higher mammals is and in man.

(2) As Hubert L. Dreyfuss points out in his book, *What Computers Can't Do*, the kind of innate endowment involved in the programming of machines produces prescribed, determinate performances on the part of the machine, never indeterminate abilities, rendered determinate by learning and habit formation.

(a) In the case of animals, such learning and habit formation takes place by conditioning.

(b) In the case of humans, it takes place by conditioning in some instances and by free choice in others.

(3) To quote Professor Dreyfuss, "non-programmable human capacities are involved in all forms of intelligent behavior," and it is precisely such nonprogrammable abilities that cannot be put into machines.

c. This being the case, the initial or infant programming of an artificial intelligence machine will never be able to succeed in the Turing test.

(1) No matter how great such programming is in the endowment of the machine with preformed responses to N questions (where N is any finite number however large), there will always be the N-plus-1 question to which the machine will have no preformed response, and so the interrogator will be able to detect the machine behind the screen, because the human behind the screen will be able to answer the N-plus-1 question.

(2) Of course, it remains possible that machines can someday be given the second kind of innate endowment—indeterminate abilities subject to determination by learning, by habit formation, by conditioning or by choice.

(3) I think—and so does Professor Dreyfuss—that this is highly unlikely. But the only way that we can empirically discover that it borders on the impossible is to have the artificial intelligence experts try and try again and fail each time. The more times they

try and the more times they fail, the greater the probability that they cannot succeed.

5. If it turns out to be impossible for machines to perform in a way that is indistinguishable from human performance, as I think it will, then we will be justified on an empirical basis in concluding that man's distinctive performance is not explicable solely in terms of the electrochemical power of his brain.

   a. If it were, then future machines, which can be given more electrochemical power than that possessed by the human brain, would certainly be able to outperform man and outperform man in a manner that is indistinguishable from human performance.

   b. The conclusion we have reached confirms Aristotle's and Aquinas' philosophical judgment that the brain is *only a necessary and not the sufficient condition* for human thought. We cannot think without our brains, but we do not think with them. We think with an essentially immaterial power—the power of the human intellect.

6. Let me add one final step in the argument.

   a. Remember the materialist's admission that mental states and processes are analytically distinguishable from brain states and processes: the necessity of two distinct languages to describe them.

   b. This gives us grounds for holding that the computer's simulation of human thought *is only a counterfeit of it, not the real thing.*

      (1) Only one language is needed to describe what is going on when the computer simulates thought — the language of the external observer of the machine.

      (2) No other language is needed (like the internal language of the human reporter of his own experience) because the computer does not experience the thought it appears to manifest—does not reflexively know that it is thinking and what it is thinking.

7. What the future holds: either ultimate success of machines to support the materialist's position, or ultimate failure and abandonment of it, with the admission that human thought—and free choice—show that man has sufficient spirituality to warrant our regarding man—and man alone—as a person.

THE END

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