Why Computers Can’t Be Poets

William Barrett

There is no royal road to learning, the ancients said; but in our culture, now, all roads seem, in one way or another, to lead to the computer. The transition from mathematical logic to the computer is an easy and natural one. Ludwig Wittgenstein’s protest in his last years that mathematical logic had become a bad influence in philosophy was directed against the threat, as he saw it, that reliance on a linguistic mechanism could replace real insight and thinking. When the logical machinery gets embodied in an actual physical apparatus, the temptation becomes all the greater to let the machine do one’s thinking for one. The question, the overwhelming question, then becomes: how far can the machine go in taking over human thought?

The tendency toward materialism is perhaps a permanent one in human nature, and within its limits a valid one. With the advent of the science of mechanics, in the 17th century, the materialistic inclination turns toward mechanism: the tendency to see phenomena everywhere as bits of machinery incarnate. Thus we get in La Mettrie, the 18th-century philosophe, those quaint illustrations of the human body as a system of imaginary gears, cogs, and ratchets. Man, the microcosm, is just another machine within the universal machine that is the cosmos. We smile at these illustrations as quaint and crude, but secretly we may still nourish the notion that they after all are in the right direction, though a little premature. With the advent of the computer, however, this temptation toward mechanism becomes more irresistible, for here we no longer have an obsolete machine of wheels and pulleys but one that seems able to reproduce the processes of the human mind.

Can machines think? This has now become a leading question for our time. It was first proposed in direct and explicit fashion by the British logician and computer expert Alan Turing in 1950. Turing himself, in addition to his gifts as a logician, was an unusual and interesting personality. During World War II he was part of the British team of intelligence experts that succeeded in breaking the German code and thus freeing a good deal of Allied shipping from the menace of the U-boats. After the war he returned to Cambridge, and continued his researches on logic and computer theory. But his life thereafter became rather clouded and unhappy; he insisted on being an indiscriminate homosexual and fell foul of the authorities. In 1954 he committed suicide, at the age of forty-one. For a man whose mind had been continuously engaged with the question of how the machine might guide and regulate life, he seems to have been sadly incapable of managing his own.

Turing’s imagination leaped beyond the actual state of the computer to envisage its future possibilities. Writing in 1950, he predicted that in fifty years we would have computers with a storage capacity of 109 bits. Well, we are near the end of that period, and we already have machines that approach that figure. We are thus in a position to test some of his prophecies about the future range of the computer’s operations.

Among other things, Turing claimed that a future computer could very well write poetry. I propose here to center on this claim, because poetry would seem to be one use of the human mind that the machine could not duplicate. Indeed, the creation of a poem would seem to be at the opposite end of the mental spectrum from the additive and combinatorial operations of a machine. Turing, however, imagined a machine that had actually written a poem: and to be specific, he imagined the poem was Shakespeare’s sonnet “Shall I compare thee to a summer’s day?” Then he put the machine to a test.

For this purpose Turing devised what he called the imitation game. The question “Do machines think?” he held to be too vague; to give the question sense he replaced it by a more behavioral test.

In the imitation game, the machine and human being are placed in a room, and nearby is an examiner, E, who can put questions and receive their answers. For a machine with a suitable storage capacity, Turing holds, the examiner in 70 percent of the cases would not be able to judge which of the respondents was the human and which the computer, so connected and reasonable would the responses of the machine be.

Here are some of the questions that Turing puts to the machine that has just written Shakespeare’s sonnet:

Examiner: In the first line of your sonnet, which reads, “Shall I compare thee to a summer’s day,” would not “a spring day” do as well or better?

Witness: It wouldn’t scan.

Examiner: How about “a winter’s day”? That would scan all right.

Witness: Yes, but nobody wants to be compared to a winter’s day...
Thus, presumably, by giving such coherent and sensible answers the computer would prove that the poem to which it had given birth was not a freak accident.

Turing’s argument moves seductively, but if we pause for a moment, we begin to find it very questionable. In the first place, the question at issue is whether a machine could ever write a poem, and Turing’s method of handling this question is to say, let us assume that a machine has actually produced a poem. Then we proceed to test it. In short, he assumes the very point at issue. If indeed (and it is a very big if) a machine had actually produced a poem, then we should expect that it would be able to answer very elementary questions about it. But the question at issue is the ability to produce the poem in the first place.

Then again, the questions Turing suggests are rather curious, for they omit the first and overwhelming question that would arise if a machine actually were to grind out Shakespeare’s beautiful sonnet: is this an original poem of yours? If the machine is only quoting, then it is merely disgorging data already fed into it. But if the response is that the poem is indeed its own, and original, we are in for more serious trouble, for we move into the dimensions of style and history, from which poetry cannot escape. The next question would be: why have you written a poem in a style that was valid over three hundred years ago? In other words, we have to deal with the poem not merely as a manipulation of symbols, but as an act of human consciousness within time and history.

It is a curious twist of irony that this same point can be argued against the school of literary critics known as the deconstructionists. Just as for the partisans of the computer a poem is simply the adding of one symbol to another, for the deconstructionists, too, a poem is merely a collection of signs or symbols to be unraveled by the critic from any point or in any direction his ingenuity can supply. It might seem curious that these two groups—the literati of the avant-garde and the somber partisans of the computer—should here converge toward the same attitude. But if we reflect for a moment we shall not find it so strange. We have to recall that for a long time now the labor of a good part of our culture has been reductive: the effort to undermine in one way or another the spiritual status of the human person. And when thinking becomes generally reductive, we can expect that there will be surprising convergences of differing groups. When you dig the pit deep enough, waters from opposite directions will flow down the same hole.

But we have to insist that the poem is not merely a collocation of signs or symbols. If we take poetry seriously, if the experience of poetry is really a part of our life, then we do not merely read single poems. When the poet matters to us, when he really involves us, we read the body of his work—or as much of it as we can manage. The poet himself becomes a kind of spiritual presence in our life, a personality present to us through and within the poems.

Of course, we have to distinguish between this sense of personality and the trivial and accidental features of “personality” that figure in gossip columns. And here the example of T.S. Eliot becomes especially relevant. In his early criticism Eliot spoke against the poet’s flaunting of personality. The genuine poet, he said, is one who seeks to escape from personality—and Eliot even uses a much stronger expression: the poet seeks the “extinction” of personality in his poems.

Yet there seems a rather ironic contrast between the critic’s pronouncements and his actual performance as a poet. The body of Eliot’s poetry, now that we have it all before us, strikes us as the work of a single personality—a unique and individual mind and sensibility. And this unity is there from beginning to end, through the changes of style and tone, through the long journey from despair into the affirmations of faith. It is always Eliot himself, a unique and individual soul, who speaks to us through and within the poems.

Now suppose that this poetry had been produced by a computer. What would the machine have to be capable of in order to produce this particular body of poetry?

It would first have to have a grasp of the contemporary state of the language, of the idioms, that would be vital and charged for modern readers of poetry. To be sure, our language is still English, and in that general sense is the same as Shakespeare’s. But the language also changes from generation to generation: different words and rhythms of speech become charged for contemporary ears. Eliot, in his early poems especially, was one of the apostles of modernism, intent on writing a kind of poetry that would not be a repetition of outworn 19th-century idioms and styles. Then, we should have to presuppose in our imaginary computer an intuitive tact, a creative sensitivity, toward the living language. It is hard to see how one could install these qualities of mind in a machine, however vast you make its storage capacity. The writing of a poem is not merely the combination of discrete units of language.

But more than this: there is the relation of the poet to the past, to dead writers and their traditions. This fusion of past and present is one of Eliot’s most original and remarkable achievements, both in his poetry and in his critical prose. One cannot, for example, grasp the full resonance of the poetry without some understanding of his critical explorations of the Elizabethans, the metaphysical poets, and certain French poets of the end of the 19th century. And Eliot did not add these influences one to another, like so many discrete units; they were part of an individual sensibility seeking to define itself, and what he saw in these predecessors was something that had not quite been seen before in the same way. His appropriation of the past was also a transformation of it.

Can we imagine a computer capable of even simulating these acts of mind? Make its storage capacity as vast as you wish, we would still need to equip it with some unique historical sense, an ability to see the pastness of the past as well as
its presence, and to respond to the piercing actuality of the present as well as to its evanescence. This is a sense of time and history that cannot be achieved by the addition of units of information; otherwise, every encyclopedic pedant would be able to qualify as a creative historian.

Finally, to bring this tedious business to its conclusion, there is the fact of what may loosely be called the poet's development. The poet changes, ages, matures—and sometimes ripens into wisdom. He is, after all, a man of flesh and blood. That is a fact of which the partisans of the computer take too little note in their search for a mechanical substitute for the human mind.

How much of our consciousness is embedded in and inseparable from this fleshy envelope that we are? Certainly it is not the poet's business to write as a disembodied spirit. He falls in love, suffers, and his body ages—sometimes into the ripeness of vision: "Bodily decrepitude is wisdom," wrote William Butler Yeats, who turned the affictions of old age into great poetry. But a machine cannot age in this way. Properly speaking, indeed, a machine cannot mature, for it is not an organic body, growing and ripening through time. As a piece of equipment, it becomes used and defective, its wires frayed and its circuits burned out, and shortly ready for the scrap heap. That might be a metaphorical description of some human lives, but only a very nihilistic and reductive one.

I have no intention here of launching a diatribe against the computer as such, a tool that has its valuable and now indispensable uses. My quarrel, rather, is with the fantasies that have taken shape around this instrument. More often than not, the enthusiasts of the computer are unaware that they are speaking from a particular point of view, a particular philosophy, in the light of which they see the whole phenomenon of mind. And this view of mind is not new; we encounter it in David Hume and the British empiricists. This is the view that the nature of our human consciousness is essentially additive and atomistic. Its function consists in combining one discrete datum, or bits of data, with others; and mind itself is but an aggregate of such data.

It is not hard to see why users of the computer should easily fall into this view. They speak, for example, of the storage capacity of a particular machine, meaning the number of discrete units of information that can be fed into it and again extracted from it by the human attendant. And this way of speech becomes congenial when they turn their talk to the human mind. But their own disposition to see facts in a certain way is not merely one more separate datum in the list of facts; it is, rather, a point of view that provides the structure for the whole.

The reality of consciousness as we actually experience it is more than a grocer's list of disparate items. Its presence is more total and engulfing, and it can move backward and forward in time. In memory, for example, my mind may be jogged at times by some isolated fact or facts from the past of which I merely take incidental notice. But there is another experience of memory more total and vital than this. Something comes back to me from the past, from long ago, but it does not remain an isolated factual datum; I am suddenly back in the house where it happened, feeling as I once did, living in that world I once knew. Memories like this reintegrate us into the past. I look through time, and meet myself as I was; I am the same and other. The memory is the emergence into view of that enduring self that I am through time.

If we turn our eyes in the other direction in time, toward the future, we shall also encounter a consciousness that is not, or at least not yet, a mere listing of discrete data. I have, let us say, the vision of a particular project for the future. It comes to me not as an aggregate of ready-made items, but as a whole of which I have as yet only an intuitive grasp and which I must now proceed, with much sweat and toil, to articulate in its details. If our consciousness could not be groping in this way, it would cease to be genuinely creative, and it could not then be the powerful instrument that it has been in shaping human history.
sions that what we might do will have much effect. He concludes that: "The hardships of repression and censorship, and of scarcity and rationing, are not like the hardships of war: the Nicaraguans have brought the former, but not the latter, on themselves. They will have to find their own escape."

I find this a very strange thing for Walter, a respected Democratic Socialist thinker, to admit. If "the Nicaraguans" Walter is referring to in the above sentence are the people of Nicaragua (even in the broader context of his article this is not at all clear), then he is blaming them for the crimes of their Sandinista rulers, and turning his back on them. So much for solidarity with the oppressed. But if "the Nicaraguans" he is referring to are the Sandinista comandantes themselves, then he surely knows enough about Communist social arrangements to understand that the inevitable "hardships of repression and censorship, and of scarcity and rationing" do not fall upon bureaucratic elites but upon those they rule. The Sandinistas themselves have no need to escape these hardships: they have, for their own purposes, created them.

Michael Walzer's sophisticated despair seems to be enjoying a kind of vogue among maturing radicals of the 1960's. It strikes me that the men and women of the Nicaraguan resistance have both a greater moral strength and political understanding. For all its elegant anguish, Walzer's position leads not only to the abandonment of the Nicaraguan people, it also leads to a great increase in the Soviet and Cuban military threat—a gain that greatly enhances the likelihood of major war.

Computers & Poets

TO THE EDITOR OF COMMENTARY:
William Barrett's article, "Why Computers Can't Be Poets" [April], shows a fundamental misunderstanding of Alan Turing's famous essay, "Can a Machine Think?"

Mr. Barrett begins his argument with a discussion of the Turing test, an attempt (by Turing) to define an objective criterion to determine whether or not a machine exhibits intelligence. Turing felt that before he could discuss the question of whether or not a machine can think, he had to describe what "thinking" meant. In this way he could avoid a semantic argument and get right to the crux of the question at hand.

The Turing test, as Mr. Barrett accurately describes it, has an examiner in one room communicating with a computer and a human being in two other rooms; the examiner must decide which respondent is the computer and which is the human. If the examiner consistently fails to guess correctly, then the machine is exhibiting intelligence. This common ground was to be the basis (and is today) for discussing whether a machine can think. In arguing for the test, Turing presents a hypothetical conversation between the examiner and the computer, in which the computer defends the style of a poem it had written. Turing's point is that if the machine were able to answer such questions, then regardless of how it managed to do so, we would have to admit that it was "thinking."

Mr. Barrett at this point claims that Turing is not handling the question at issue, which is "the ability [of the computer] to produce the poem in the first place." I am afraid, however, that it is Mr. Barrett who has missed the question and with it the whole point in this section of Turing's essay. The point is that the Turing test is a reasonable definition of thinking. Turing does not conclude here, as Mr. Barrett implies, that the computer can write poems; instead, all he claims is that if it could write poems and then fool an examiner by talking about its use of style (i.e., pass the Turing test), then it would be exhibiting intelligence. I doubt that Mr. Barrett has any argument with this.

We can then move on to Mr. Barrett's question, which is whether a machine will ever be able to pass such a test. . . . I refer the reader to Turing's essay, which contains many compelling arguments in favor of the machine's ability one day to pass the Turing test. The essay is reprinted in Volume IV of The World of Mathematics, a wonderful collection of mathematical literature, edited by James R. Newman (Simon and Schuster, 1956). It is unfortunate that Mr. Barrett does not discuss any of these arguments. . . . He does, however, correctly describe Turing's belief that in fifty years (from 1945), when a machine would have as many memory cells as the brain has neurons (approximately 10^9), it would be able to pass the test.

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Unfortunately, even here he errs by writing 109 rather than 10. I assume that this is a typographical error rather than a conceptual misunderstanding.

We can let Turing's essay speak for itself, so let us now consider Mr. Barrett's own arguments against the possibility of the machine passing the Turing test. He writes: "The writing of a poem is not merely the combination of discrete units of language. Among other things, it requires "creative sensitivity toward the living language" and a "unique historical sense." He continues: "It is hard to see how one could install these qualities of mind in a machine."

An excellent point. Of course it is hard. This is precisely why neurobiologists, psychologists, and computer scientists are spending their lives trying to solve this problem (or at least small pieces of it). The alternative is to give up trying to understand how we do what we do.

It is natural for us to feel that our own creative activities (writing poetry, composing music, or discovering scientific principles) must be more than a manipulation of discrete symbols. But if we suppress our self-centered pride for a moment, we can ask ourselves: is there not some underlying mechanical structure to our creative thoughts? Surely something mechanical (or at least electrochemical) happens in our brains.

If we admit this much, then the real problem, of course, is trying to discern the relationship between the electrochemical firings of our neurons and the finished poem. It is this problem that must be solved (not denied) before a computer can pass the Turing test. Unfortunately, this is quite a tall order. It is like trying to describe a hurricane by pointing to the paths of each molecule of water in the heavens. There may be a relationship, but we must be in a lot of effort to make it comprehensible.

Mr. Barrett writes: "For a man whose mind had been continuously engaged with the question of how the machine might guide and regulate life, he [Turing] seems to have been badly incapable of managing his own." This is perhaps the most misinformed sentence in the article. Turing was engaged in the effort to bridge the gap between physical mind and creative thought, not in the technocratic preoccupation with how a machine might guide and regulate life. As to whether he was capable of managing his own life, I can only recommend to Mr. Barrett a recent biography by Andrew Hodges, entitled Alan Turing: The Enigma, ... that gives an honest picture of the great yet tragic life of the scientist. ... Whether Turing's suicide was a brave response or a cowardly escape, his short life left the world some of the most important foundations of computer science.

To try to discern how we create is an honorable human endeavor; to deny the validity of this effort is vanity in its most dangerous form.

CHARLES SIMONSON
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TO THE EDITOR OF COMMENTARY:

William Barrett writes that the storage capacity of modern computers approaches 109 bits. Even a small personal computer has a capacity of at least a few hundred thousand bits. Evidently Mr. Barrett knows nothing about computers; if a computer were asked to write a poem about his article, we might expect to get something like this:

There was a professor named Barrett.
Didn't know a computer from a carrot.
He was so out of his wits,
Thought the limit was 109 bits.
Barrett should go back to his garret....

SAM REYBURN
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TO THE EDITOR OF COMMENTARY:

For someone as profoundly distrustful of computers as William Barrett, he has taken surprisingly little trouble to learn much about them, either technically or in terms of how they are currently being used in the arts, most notably in the visual arts and music. Shrewdly, he has confined his case against computers to poetry, a field in which, owing to the lack of a close and indispensable connection with technology, their application may indeed prove relatively unproductive even over the long term.

Let me then provide some of the rudimentary technical information Mr. Barrett left out, and then indicate how computer graphics, artificial intelligence, and other computer-related technologies and disciplines are being successfully applied to both creative art and research in art theory and aesthetics. I hope thus to make it easier to understand why those of us deeply involved with computers, despite the inevitable difficulties and frustrations associated with them, are unable to view them as gloomily as does Mr. Barrett.

For Mr. Barrett the basic—possibly the only—resource of a powerful computer is the size of its memory, the number of bits of information it is capable of storing. The phrase "storage capacity" is used four times in the article, with no mention of speed as an equally important consideration in the operation of computers, or of how computer memory is intricately organized and allocated to different functions. There is not even a hint that Mr. Barrett knows the difference between read-only memory (ROM) and random-access memory (RAM)—a feature known to millions who own personal computers and to multitudes of bright children as well (not to mention the writers—including poets—who have taken to word processors and the use of thesaurus-like programs).

Linked to his notion of computers as nothing but memory and hardware is Mr. Barrett's failure to consider software and the role of programmers in designing and coding this software. Finally, there is no mention of the contribution of those who commission, purchase, or otherwise use the software that makes the hardware work. Sensing, one presumes, that any mention of the role of human beings in the design, use, and improvement of computers would soften his picture of computers as profoundly non-human and anti-human, he leaves out the human factor entirely.

If a computer is programmed to write poetry, whether a superficial parody of the real thing or at the level of the great poets, the program is of the class known as a simulation. Programs of this kind are essentially an abstract representation—a model—of real-life phenomena.

If the purpose of a program is to simulate everything involved in the process of creating great poetry, in a particular style, then the "everything" must be identified and modeled, an accomplishment that may indeed prove impossible after centuries or thousands of years of dedication to the task. But a simulation need not be perfect to be