Allegra Alfaro & Edie Huffard

Breaking the Code: The Enigma of Alan Turing

Friday, November 21, 2025

1950s Responses to the Turing Test

In his 1950 paper, "Computing Machinery and Intelligence" Alan Turing proposes "The Imitation Game" as a practical way to determine whether machines are capable of thought. Over the following decade, philosophers and mathematicians responded to Turing's questions, grounding their responses in the political and social context of the 1950s. Alongside the technological advances of World War II and post war economic boom, Cold War fears characterized foreign policy. Nations worked to advance aerospace engineering, missile technology and computing power as a form of national defense. In addition, the 1950s marked the formal creation of the AI field of study at the Dartmouth Summer Research Project on Artificial Intelligence in 1956. Throughout the 1950s, thinkers such as Wolfe Mays, Francis Hugh George, Mario Bunge, and Johnathan Cohen published responses to Turing's paper, arguing for or against the possibility of machine intelligence. Although these writers explored both sides of the argument, Pinsky and Cohen were more open to Turing's assertion, while Mays and Bunge remained sceptical. The 1950s responses to "Machine Computing and Intelligence" illustrate the scientific community's scepticism and reserved optimism surrounding machine thinking, reflecting Cold War-era technological fears, a firm pride in human achievement, and prevailing hopes for a future of technological wonders. The questions and objections they raised have dominated the last 75 years of scientific philosophy and attempt to unravel the foundations of what it means to be man or machine.

The very question of "Can Machines Think?" elicits two more before any meaningful discussion can begin: what is a machine, and what does it mean to think? These questions emerge as a central pivot of the following decade's responses. In the first paragraph of "Computing Machinery and Intelligence," Alan Turing acknowledges the amorphous words, but chooses to skip defining terms in favor of replacing the entire question with "The Imitation Game." As a direct result, the scientific communities of the 1950s wrestled with their own definitions before attempting any conceptual refutation of Turing. Philosopher Jonathan Cohen, in his 1955 paper, decisively proclaimed "The question [of machine thinking] is simply decided by choice of the meaning of the words "machine" and "think."" Cohen highlights that much of the dissent came from a misunderstanding of the opposition. The capabilities of a 'machine,' were bound by the individual's foresight or lack thereof. To the average consumer at the time, the word conjured notions of loud, clanking contraptions more at home in factories than symposiums. W. Mays, a Manchester colleague of Turing's, sided with popular sentiments and proposed "The O.E.D. [defines] a machine [as] "a combination of parts moving mechanically as contrasted with a being having life, consciousness and will. Hence applied to a person who acts merely from habit or obedience to a rule, without intelligence, or to one whose actions have the undeviating precision and uniformity of a machine." Mays's '52 essay poises 'parts moving mechanically' as inherently contradictory to human thought. This definition not only makes it near impossible to claim machines *can* think, it exposes how early responses to "Computing Machinery and Intelligence" viewed machine thinking as paradoxical. The general public considered machines to fall firmly into the 'object' category, intrinsically unable to be considered intelligence - akin to proposing a rock can reason. Social and scientific society may have turned towards the O.E.D definition of a machine, contrasting Turing, but where did they fall in the second, arguably more essential definition?

Turing himself frequently conflates intelligence or thinking and imitation, hence "The Imitation Game." It is, of course, impossible to draw a direct comparison between a test founded on a machine appearing to respond as a human (Turing test) and a fellow scientist's argument which relies on "thinking" as requiring motivations, emotions, or novelty. Responses to "Machine Thinking and Intelligence," such as Mays' comprehensive analysis in 1952, contrasted Turing's interpretation with social perceptions of thought that often implied an embedded opinion or verification (consider the questions "what do you think?" or "you think so?" and how they infer belief and conformation respectively). Mays emphasizes that Turing, likely operating from his background as a mathematician and logician, "identifie[d] logic with thinking and implies that intelligence and the capacity for emitting logical noises are identical." This early categorization of Turing's stance attempts to limit the scope of the Turing test and acknowledge it was only designed to handle a 'logical' version of intelligence.

Other prominent mid-century thinkers disagreed not with Turing's methodology for assessing logical prowess, but with what conclusions could be drawn from such a test. Outside of Turing's intellectual web, scientists gave much more credit to the work put into designing the machines than a machine's own response. Douglass Hartree, perhaps representing an entire faction of responses, eschewed attributing intelligence to the contraption itself, arguing "All the thinking has to be done beforehand, by the designer and the operator who provides operating instructions for a particular problem, all the machine can do is to follow these instructions exactly." Hartree is directly combating

Turing's classification, showing the anthropocentric pride of the 1950s in defending the intellectual might of the engineers. Perhaps a reflection of pervasive fears that technology could one day dominate humanity (or nuke a population into submission), Hartree keeps credit on the human achievements, pedestalizing the more comfortable notion that the natural mind will forever hold intellectual superiority - and therefore control - over any nut and bolt contraption.

In analyzing mere terminology, one prominent theme emerges; Turing himself viewed the world through a different lens than most scientists or philosophers of the decade. It is clear that he is proposing a very narrow version of 'thinking' and a broad interpretation of 'machine,' a stance not reciprocated by his peers. Even before the real deliberation of concepts began, Turing stands alone in proposing that machines could think.

For a machine to replicate a human, we must first consider what exactly makes us human. Is it a biological condition? A specific thought process? A level of achievement? While the study of human and machine similarity was in its infancy during the 1950s, the question of defining human nature was as old as consciousness itself. Researcher Leonard Pinsky turned back several thousand years to consider how "according to Aristotle, the property which properly distinguishes man from the rest of the universe is…the ability to misuse the faculty of reason." Aristotle, and Pinsky by extension, propose it is not our successes as a species that define us, but rather our mistakes. They claim it is essential that human reason can be swayed, by greed, by love, by mere imperfection. A machine infallibly following prescribed instructions would never "misuse the faculty of reason" - it must do directly as told. Turing argues that machines can be unexpected, but admits that such surprises are almost always the result of human error or imperfect planning. W. Mays, in the aforementioned 1952 paper, claims that "What is important is not what [the machine] does, but how it does it" - in other words, it's irrelevant that the computer reaches an unexpected result if it does so in the expected manner. Or, perhaps a more intuitive extension, it does not matter if the computer can imitate a human in the Imitation Game if the process it takes to produce those answers is substantially different from how a person would conjure their response.

Mays' was on the more popular side of the matter, with the majority believing consciousness - knowing that you are thinking - is a prerequisite for thinking itself. Cohen, who so strongly emphasized the importance of defining machines in the paragraph above, furthers Mays' points in saying "but to have a mind of one's own entails a capacity for consciousness, only living things can have conscious and unconscious states, and ' machines do not even belong to the category of things which can be dead or alive.'" Cohen uses a machine's lack of consciousness to prove its lack of thinking. He draws a clear line between the only possible states of a human - dead or alive - and the foreign third group that machines belong to, not even capable of the prerequisites for human intelligence.

Turing, however, was not alone in giving the benefit of the doubt to artificial thought. Prominent cyberneticist and philosopher F.H. George published twice in the decade, once in 1956 and again the following year, both times largely siding with Turing. George rebutted the notion that machines must be emotionless, pointing out that "in any case there is no evidence of note...that machines don't have feelings in the same manner as, or similar manner to, humans." George highlights a second, underlying theme throughout the decade - the overwhelming amount of unanswered questions. He shifts the burden of proof, saying that there should be equally as much of a responsibility to prove the negative matter - that machines are fundamentally different from humans -

as there is to prove the similarities. It is not enough to consider “that machines are constructed,” George continues, if we “forget that organisms are constructed also.” It is unfair to highlight a machine’s dependence on human input and creation but ignore the parallel logic that children must be taught to speak or communicate and don’t merely emerge fully formed on their own. George represents the smaller camp of intellectuals of the ‘50s that were able to view man and metal as analogous in many regards. While not a full proponent of machine thinking, George viewed the notion of human behavior to be potentially inclusive of artificial minds. George, together with Pinsky, Cohen, and Mays illustrate how essential one's definition of human nature could be in determining the limits of any machine

Throughout the responses to Turing’s paper in the 1950s, philosophers and mathematicians grounded their arguments in the context of the technology of the time. Since machines of the 1950s were not capable of thinking in an advanced fashion, many thinkers suggested that responses to Turing’s assertion should focus on the potential of future machine development. George, for example, expands his claim beyond the boundaries of modern day technology by envisioning a future in which humans can construct machines with emotions. In most of the early responses it was well understood that machines could not possess emotions in the same way as humans. Rather than taking this point as definitive proof that computers do not think, George points out that although this was not a reality in the 1950s, there is no proof that this technology is impossible to produce in the future. In George’s 1957 paper “Machines and Thinking,” he writes in response to Professor Ritchie who argues that machines cannot think because they are incapable of learning and dealing with new situations without a programmed response. George writes that “the basic and most fundamental error in Professor

Ritchie's note remains his belief that machines are incapable of dealing with unforeseen situations. Such a statement shows clearly how completely he has missed the whole point of current work in the field of Cybernetics.” George highlights how the rapid advancement of technology is actively changing the discussion around machines and thinking. More specifically, he points to the field of Cybernetics as evidence that people can construct machines that learn.

In contrast, other thinkers acknowledged George’s claim but argued that there is no point in speculating what could occur in the future if it is not a possibility in the present. In Mays’ paper “Can Machines Think?” He imagines a computing machine as advanced as the human brain. Mays writes that this piece of technology must be “as large as the Empire State Building and powered by the Niagara Falls [and] will still remain a subject for conjecture in those journals devoted to astounding science fiction.” Here, his description of potentially more advanced machines is still limited by his understanding of technology in the 1950’s. He asserts that a machine as complex as the human brain must be the size of the empire state building and use as much power as the falls. Mays even suggests that this is not a reality but instead a subject for an “astounding science fiction” journal. Mays’ and George’s understanding of the advancement of technology and limitations of the time period are key factors in their understanding of Turing’s paper.

The foundation of arguments in response to Turing’s paper break down into philosophical and scientific justifications. In Turing’s writing, he proposes the imitation game to justify his hypothesis with tangible results. Turing claimed that the philosophical debates surrounding his central questions were “meaningless” as they could not provide a definitive answer. Similarly, George writes “guesses and interpretations, that are based on vague preconceptions, from either side of the dispute, are not especially helpful." Unlike Turing, George is open to supporting philosophical arguments as long as they can be grounded in specific evidence. Both writers acknowledge how differing perspectives in the debate deal with different approaches to explaining theory. Mays also writes on the difference between scientific and philosophical approaches, stating that "in principle there is perhaps no reason why an elephant should not have wings…[but] there may be important physical limitations, spatial, temporal, and mechanical, why it is not possible." Here, Mays suggests that there aren't strong theoretical arguments to explain everything in life and thus thinkers should not search for a theoretical answer to Turing's question. Sometimes, people just have to take what they can observe as a basis for truth.

Bunge focuses on this difference in logical reasoning in his 1956 paper "Do Computers Think?" He claims that answering yes or no to the question, can machines think, is dogmatic by highlighting the theoretical versus literal interpretations of the question. To say that machines cannot think would mean grounding one's logic in some sense of the human consciousness, a purely philosophical argument. In contrast, those who agree with Turing's paper tend to focus on the scientific results without strong philosophical backing. In order to compare both abstract thoughts and tangible results, Bunge suggests examining the nature of computers in relation to the nature of mathematical thought. In conclusion, Bunge found that machines are syntactic not semantic. This means they can produce the words on the page but not the meaning behind it. This concept is echoed through Mays' writing when he states "Shakespeare loses his essential quality when translated into basic English." Machines can print out the text of Shakespeare by translating it into zeros and ones, but that takes away the human emotion behind the text. Thus computers may be capable of producing this style of art, but not feeling it.

The responses to Turing's paper, "Can Machines Think?" in the 1950s suggest that the imitation game is not a concrete test of intelligence. Through Mays, George, Cohen and Pinsky's writing, it is evident that the debate was never simply about passing the test, but rather what that meant about machine intelligence. For many philosophers and mathematicians, thinking and emotions were intertwined, leaving Turing to be a standout thinker in the 50s. The struggle to define intelligence ultimately reflects the struggle to grapple with defining humanity in a post world era. After the immense destruction caused by both human decision making and weaponized machinery, mid-century thinkers grew increasingly aware of the ethical boundary of machine development. The early debate over The Imitation Game reveals how people were not only grappling with new technologies but also redefining their understandings of humanity and purpose.

Edie Huffard + Allegra Alfaro
JSTOR LINK

Mays, W. “Can Machines Think?” *Philosophy*, vol. 27, no. 101, 1952, pp. 148–62. *JSTOR*, http://www.jstor.org/stable/3747787. Accessed 21 Sept. 2025.

George, F. H. “Could Machines Be Made to Think?” *Philosophy*, vol. 31, no. 118, 1956, pp. 244–52. *JSTOR*, http://www.jstor.org/stable/3748968. Accessed 21 Sept. 2025.

Pinsky, Leonard. “Do Machines Think About Machines Thinking?” *Mind*, vol. 60, no. 239, 1951, pp. 397–98. *JSTOR*, http://www.jstor.org/stable/2251326. Accessed 21 Sept. 2025.

Cohen, Jonathan. “Can There Be Artificial Minds?” Analysis, vol. 16, no. 2, 1955, pp. 36–41. JSTOR, https://doi.org/10.2307/3326576. Accessed 21 Sept. 2025.

George, F. H. “Thinking and Machines.” Philosophy, vol. 32, no. 121, 1957, pp. 168–69. JSTOR, http://www.jstor.org/stable/3749102. Accessed 21 Sept. 2025.

Bunge, Mario. “Do Computers Think? (I).” The British Journal for the Philosophy of Science, vol. 7, no. 26, 1956, pp. 139–48. JSTOR, http://www.jstor.org/stable/685697. Accessed 21 Sept. 2025.