In 1950, the iconoclastic seminal paper, *Computing Machinery and Intelligence*, was published by one of the most prominent computer scientists Alan Turing in the scientific journal Mind. In this paper, Turing has foreseen the rise of intelligent machines and initiates an argument on what it means for machines to be intelligent. In an attempt to challenge the established understanding of intelligence, Turing takes a different approach to answer the decade-old question “can machine think?”. Born out of this paper is the concept of artificial intelligence which has come under the increasing spotlight due to its growing influence in technological advancements. Although today AI technology has taken in various shapes in ways that Turing can never envision, the methodology of a computational approach to intelligence proposed in this paper remains to be the fundamental framework for many AI research. As AI technology gradually integrates with individuals’ lives, the implication of the idea introduced in this paper reaches far beyond its scientific realm. This paper will discuss the empirical methodology used by Turing in his arguments on artificial intelligence and its implication to the modern society.

In *Computing Machinery and Intelligence*, Turing at first vigorously defended what he thinks as a “intelligent” machine, and then established his own methodology to validate it. “Instead of attempting such a definition I shall replace the question by another, which is closely related to it and is expressed in relatively unambiguous words.” In response to the question “can machine think?”, Turing first argues that such question is vague and
impossible to establish a firm argument. Instead of blindly asking “can machine think?”, he believes that one could simplify it, and argue whether the machine has the capacity to completely imitate or replace its human partner. Based on this assumption, Turing proposes his important methodology to validate the existence of machine “intelligence”: the Turing test. The reason goes: if subject A exhibits similar behavior as subject B and if it is impossible for an unbiased observer to distinguish one from the other in certain context, A must have the capacity of possessing the quality of B. With this principal in mind, if ones want to test whether a machine has the capacity to obtain “intelligence”, they could set up a Turing test to compare the performances of a machine and a human operator. Since the human operator is intelligent, if the machine can trick the observer into thinking itself as the human operator, we can then conclude that the machine has the capacity of operating “intelligently”.

There are three underlying assumptions of the Turing test. First, unlike philosophers who seek to understand the essence of human intelligence, Turing wants to test “intelligence” from a pragmatic approach through pure observation. In Turing’s view, “think” or intelligence is not of some metaphysical concepts that are impossible to grasp, but a mere phenomenon, a reaction of individuals toward their surroundings. This is important because much of the Turing test is treating “intelligence” like a black-box, interrogating it under various circumstances, and providing an evaluation through observing its responses. The second assumption is that the Turing test assumes that the observer who is responsible for distinguishing the machine from its human counterpart, is capable of identifying “intelligence” based solely through observing its manifestation and its ability to effectively react to its surroundings. This is further supported by the last assumption that intelligence is a phenomenon, and when observed at its “face” value, it remains to be intelligence. However, is intelligence a visible “phenomenon” or a metaphysical idea that remains to be unattainable for the Turing test?

In *The Republic* of Plato, Socrates lays out a comprehensive discussion about the meta-
physical nature of ideas in contrast with human perceptions. In Book V, Socrates makes a radical claim that the “Forms” of things are distinct from the “Perceptible” of things, where the definition of “Forms” is equivalent to “what can be defined”, and the definition of “Perceptible” is equivalent to “what can be observed”. “...what completely is is completely knowable, while what is not is unknowable in any way at all”. [2] From Socrates’s perspective, abstract concepts and ideas have their stand-alone “Forms” which exists in a separate realm beyond our physical world, and things which are perceptible to human are mere “shadows” of its true “Form”. In his opinion, the “Perceptible” is “flux” that is deceiving, where the Definable is stable and pure in its nature. Socrates claims that philosophers ought to be lovers of the “Forms” rather than the seeming of them, which can easily carry us away from believing in what is not always is. For example, the seemingly random fluctuation of the Stock Market is guided by an underlying constant momentum that drives the stock prices, and the irregular natural phenomenon can always be reduced down to basic physical theorems. Rather than accepting things as what they look like, one should always pursue what is, the “Forms” of ideas. Because the stability of the “Forms” is lost when we bring it down to its “face” value, Socrates encourages people to always Pursuit the “Forms” instead of the imitation of it.

Turing’s convenient way of testing “intelligence” reminds us the epitome of imitation and sophistry from The Republic of Plato, and Socrates’s theory of the “Forms” has provided a strong philosophical case against the practice of Turing’s imitation game. Passing the Turing test does not necessarily mean that a machine has gained human intelligence, rather it means that the machine has demonstrated its effectiveness at mimicking, embodying and replicating the phenomenon of human intelligence. Thus, it is not hard to see that Socrates would deny the Turing’s claim on machine intelligence even though the machine has passed the Turing test. In Socrates’s mind, intelligence has its standalone “Form”, which is remained to be mysterious to human kinds and can neither be created nor destroyed through its interaction with the physical world. On the other hand, it is beyond human perceptions.
Therefore, the major difference between Socrates and Alan Turing is their distinct approach to the definition of human intelligence. The difference can be further explained through a hypothetical scenario: If a hidden object that can jump like a duck, quack like a duck, feels like a duck, and we ask both Turing and Socrates whether the object is a duck, Turing might accept the fact it is a duck, because the object has shown no difference compared to a duck. On the contrary, Socrates might hesitate in response to such a question, since he does not know what is the “Form” of a duck and whether the object possesses such “Form”. While Socrates base his belief on the metaphysical nature of things, Turing doesn’t bother to ask what constitutes intelligence while accepting the concept through its manifestation.

Many of Turing’s defenses for the Turing test are dependent on his black-box methodology in his research. Prior to the paper’s publication, Turing acknowledges that his Turing test may come under criticisms because of its inability in addressing the holistic human experience of intelligence. In response to these potential criticisms, he spends most of his writing to defend some of the major anticipated objections to the use of his own methodology. One of the nine objections is the consciousness objection. The consciousness objection states that essential part of the human intelligence include the ability to be emotional, and the intuition to compose music and poems that pleases the soul, and it is not physically possible for us to construct a machine to gain consciousness and intuition. Thus, no machine can be artificially intelligent. Turing’s response is surprisingly simple to the consciousness objection. In his response, Turing says that there is no point in trying to provide a definitive defense to such vague argument since there is no way for us to know exactly what another man thinks. “The only way to know that a man thinks is to be that particular man.” [4] By attributing the consciousness objection as a solipsist view of the self, Turing turns the argument of consciousness around and reckons that consciousness is only subjective to one’s senses and should not be the defining factor that neither breaks nor justifies the Turing test on intelligence. “But I do not think these mysteries necessarily need to be solved before we can answer the question with which we are concerned in this paper.” With this response in mind,
one can understand that the Turing test is designed to understand neither consciousness nor intelligence at its essence. It is solely designed to test the level of persuasion and deception of an imitation, which tricks us into an accept idea of “intelligence” as it seems to be while ignoring the essential question. “What would Professor Jefferson say if the sonnet-writing machine was able to answer like this in the viva voce? I do not know whether he would regard the machine as merely artificially signaling’ these answers...” With the example of a sonnet-writing machine, Turing further posits that in face of an “intelligent” machine, people are easily persuaded to consider it “intellectual” if they witness the machine could do exactly what a professional poet would do in a poet writing contest. Ultimately, it is persuasion that matters, rather than the essence of things.

A similar argument is found in another Turing’s response to the theological objection. The theological objection states that since “thinking is a function of man’s immortal soul”, and “God has given an immortal soul to every man and woman, but not to any other animal or to machine”, “no animal and machine can think”[4]. After a lengthy discussion on God’s creation, Turing states that by assuming animal or machine is unable to receive souls from God, the claim inevitably imposes a serious restriction on the omnipotence of the Almighty. It is entirely possible for God to decide to exercise the power of will and gives the elephants souls and enlarged their brain capacities. With this hypothesis, Turing claims that a total rejection of whether a machine can think based on the theological argument is, in another way, doubting the power of God. Therefore, it is entirely possible for the Creator to improve conditions of machines with the need of ministering a soul if necessary. “However, this is mere speculation. I am not very impressed with theological arguments whatever they may be used to support.”[4] Despite his attempt of dismissing the objection from a theological standpoint, Turing refutes the total use of theological debate in such case. “When that knowledge was not available it made a quite different impression.”[4] This last sentence indicates Turing’s suspicion of any theological claim. Together with his response to the consciousness objection, it is safe to say that Turing’s idea of intelligence is neither dependent on the “soul” nor on
the “conscious-self”. For Turing, it is the physical that matters, rather than the spirit of things.

Turing’s arguments against consciousness objection and theological objection implicitly indicate his emphasis on the persuasion and the appearance of intelligence while ignoring the essence and the spirit of it, and they have once again reminded us of Socrates’s warning against the practice of imitations. “delight in beautiful tones and colors and shapes and in everything that art fashions out of these, but their thought is incapable of apprehending and taking delight in the nature of the beautiful in itself.”[2] Socrates fears that by dedicating ourselves with the imitations of things, we subsequently become careless and eventually ignorant of the Truth, the “Forms” of things. As a result, we will no longer have our reason established upon the Definable and the Absolute. Turing’s lack of exploration of what constitutes intelligence creates an essential void in his argument on artificial intelligence that has a profound social implication to our cultural understanding of human intelligence. Passing the Turing test can only assure us that the machine’s algorithm is capable of imitating human behavior and nothing more. However, the practice of such imitations can often lead to social misconceptions on technology and intelligence. The movies Matrix, Terminator etc., are all results of these confusions between a Turing machine that simply mirror the phenomenon of human intelligence and a “self-conscious intellectual” one.

Turing’s promoted idea of machine “intelligence” has become the basic guideline of solving artificial intelligence over the past decades, and the practice of the Turing test has prevailed in the modern technology history. Ever since the publication of this seminal paper, tech companies have used the Turing test as a measurement of success in the industry. ELIZA[3], a natural language program developed in MIT Artificial Intelligence Lab, is one the earliest attempts to enable a machine to past the Turing test. The program was able to learn from pre-existing scripts’ and to simulate a Rogerian psychotherapist to response non-directional user input. Immediately following the success of ELIZA program, in February 1996, IBM astonished the world by developing a machine that can outwit the best chess player in
Today, there are dozens of tech giants such as Google, Amazon, Microsoft etc. investing billions of dollars every year in developing the generative artificial intelligent machines, and the Turing test has become the “holy grail” of artificial intelligence, attracting millions of scholars to dedicate their lives to mastering the machine imitation game. It is visible that in the modern field of artificial intelligence, the sole avenue to achieve general artificial intelligence is to create the perfect machine that passes every single aspect of the Turing test, and its cultural implication amplifies when integrated with technologies that we use daily.

Without a shadow of a doubt, the Turing test has made a tremendous contribution to the history of modern computing. However, its promotion of the imitation-oriented thinking has tempted millennials to look away from the true virtue of intelligence and pursue the appearance of it. Our ideas of “intelligence” are susceptible to the influence of this imitation game. Taking a calculator as an example, no one will say that a simple calculator is just “intelligent” as a human agent. However, if we throw a calculator and a human mathematician into a narrow Turing test and ask them to both perform the simple algebraic problems, we can observe that the calculator is far more efficient and accurate in answering the questions than a human mathematician. If the interrogator’s evaluation on intelligence is simply based on the number of questions answered correctly and efficiently, the Turing test will show results that a calculator possesses more “intellectual” quality than a human operator. This example is just a miniature of how technological influence has shaped our perception of “intelligence”. If we are to take intelligence at its face value, it is easy to say machine “intelligence” has already outwitted human intelligence by miles ahead in solving and analyzing defined problems. Compared to machines, are human “stupid”?

The answer is “No”. The underlying assumption of the Turing test simplifies the human intelligence to a mere phenomenon and fails to acknowledge the virtue of its true nature, and the illusion of humanity gradually losing intellectual ground to its machinery counterpart is just a manifestation of such empirical idea of intelligence. Though it is tempting to boast
that we are on the course of solving intelligence with such simplification, the practice of imitation has skewed our established perceptions of intelligence at the same time. Scientists no longer appreciate the mystery behind intelligence, but grow addictive to formulate it into mathematical equations; workers no longer value in meditation and inherent purposes in lives, but become obsessive in efficiency and multitasking. Pictionary-memory, quick mental math that are core characteristics of digital computers have become the modern labels for “genius”, and even the lifestyle of the millennials is changed because of this social influence. Machines that are built to assist us to understand intelligence has ironically shaped our perspective into machine-like thinking.

“Can machine think?” Turing’s answer is no, but through the imitation game, the perfect illusion of a thinking machine can certainly be created. Although the idea proposed in this Turing paper can be viewed innocent, the widespread practice of imitations in the field of artificial intelligence can persuade scholars to abandon asking the essential questions of what is and to lose sights to the virtues society once values. The true value of human intelligence still resides in great mystery. Intuition, creativity, love, and sense of responsibility are all characteristics of human intelligence can neither be defined in mathematical equation nor tested in the Turing test. Therefore, modern artificial intelligence research should be taken in place through extensive considerations, and rather than mindlessly imitate and formulate human intelligence, scholars should incorporate interdisciplinary perspectives in implementing their methodology. To conclude, the future of artificial intelligence technology should be a tool to help us search for deeper mystery and purposes of ourselves, instead of a mean to replace humanity.

In addition to this paper, I personally want to acknowledge the importance of theological study in the field of artificial intelligence. From a Christian perspective, due to the fallen nature of humanity, we can never fully lean on our own intelligence. “The fear of the LORD is the beginning of wisdom; A good understanding has all those who do His commandments; His praise endures forever.” [1] True intelligence in a Christian life is tightly coupled with
individual Faith in Christ. Only through conversation with our Creator, can we possibly obtain the true essence of our intelligence and the purpose of it.

References


