

Artificial Intelligence and Natural Intelligence

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First we need to explain what we mean by intelligence. The word itself comes from the Latin *intellegere* which means "to understand." This leads to the point: does anyone ever think of artificial understanding? Considering the word as a conjunction of two other words *inter* (between) and *legere* (chose, discriminate) may help to recognize the significance of intelligence as understanding. It implies a judgement or discernment, discrimination, decision, or determination is being made.

A very important function of computers is to make decisions mechanically or mathematically by comparing two numerical data entries as greater than, less than, or equal to each other. In this sense, then, computers can be considered mechanical decision makers. Does this then qualify a machine as being intelligent? When the eye, as a sensor, senses the environment, an image is produced on the retina, and the intelligence discerns if an object in the image is bigger or smaller than another object. Comparisons like bigger or smaller are not done by the eye, which is just a sensor, but by the intelligence. In a computer, an aggregate of data points or items (from sensors, collections, etc.) do not compare themselves on their own; they have to be processed through a program that performs the comparisons.

Human intelligence, however, does not only make quantitative comparisons or judgements. More subtle, less clearly defined qualitative, ethical, emotional, and other types of decisions are also performed. In this sense, computers may qualify for certain mechanical decision making ability but fall far short of the wide tasks of which human intelligence is capable. Artificial intelligence has never been referred to as artificial understanding. We don't consider machines capable of understanding what they are doing. They are capable of processing information but we recognize that they do not understand what they are doing at a purely mechanical level. Defining intelligence in terms of the ability to achieve goals in a wide range of environments, which has been mathematically formalized, may only apply when dealing with physical/mechanical space. The subjective space in which human intelligence can function is not covered by such definitions.

Basically, existing Artificial Intelligence machines lag far behind humans in terms of general intelligence, which is sometimes defined as the "capacity to learn how to carry out a huge range

of tasks." They may be good at performing certain specific tasks but beyond that they are not capable. An important and fundamental distinction exists between the massive size of computational machinery compared to the size of the human brain, which should indicate a major difference in their functional operations from a purely material viewpoint. Materialist philosophy considers the physical brain and psychical intelligence to be the same substance, but traditional philosophy has historically favored the distinction of subjective and objective reality. Whether it is a duality of non-interacting substances, or a unity of interacting varieties of being has been a topic of concern in modern times. The more advanced thought on this topic tends toward a dialectical relation of unity in differences. This perspective would certainly disrupt the attempt to explain subjective intelligence in terms of computational decision making. Sometimes this difference is described as the difference between programming and the physical computer itself. Programs are written by intelligent subjects for objective machines. It is said that Godel had as his objective to show that syntactic mathematics, and therefore mechanical computers, could not handle semantic logic and were therefore incompatible with meaningful human intelligence. For example, the meaning of the self-referential phrase, "this statement is false," is false if it is true, and true if it is false, leading to its being undecidable.

If we extend the problem of size in comparing computers to the brain beyond the human, the difference becomes even more glaring. Aeronautic and navigational miniaturization in the military technologies is unable to imitate nature. For example, the fruit fly (*Drosophila*), despite a very small brain, maneuvers with precision and agility beyond any manufactured mechanical system at much larger scale. It also possesses sensory ability and carries its own energy source making it viable for weeks. No mechanical system has been able to duplicate this at such a minute scale. Plants should also be classified as intelligent based on their ability to sense and model external and internal environments and adjust their morphology, physiology and phenotype accordingly to ensure self-preservation and reproduction. But they do not possess the neural-network-based system or brains of animals. This means that computers based on neural network systems are not able to duplicate or explain natural intelligence in most of Nature. Another important feature of plant intelligence is that the major system of a forest is below ground, in what is called the rhizome. There is a unity in plant life that is more important than the surface life of individual trees, and that makes the individuals viable - without which the individuals would perish.

This unity in differentiation is an essential feature in all life, including human, that is nonetheless most often ignored in scientific studies that take the atomic perspective of analysis as the foundation of the scientific method. Computer programs are written with this fundamental atomic idea in mind. A more holistic approach is warranted, but computers are not well suited to such computations as they are built upon an architecture of conjoined individual parts that are not holistically designed.

Autonomous cars would be an example of artificial intelligence in practical use. But such cars still have many problems, although they were promised years ago. The responsibility for any accidents in such cars is not held to be the computers, or the programmers, but the intelligent drivers. Computers are not considered responsible agents. The fact that decision making can be computerized does not mean that legal judgements (determinations) can be made on the basis of artificial intelligent computers. No one would consider that today. These limitations are important factors to consider in discussing the hype that now surrounds artificial intelligence and the way we think about it. A deeper understanding of what we mean by human intelligence is necessary. Especially noted in the area of scriptural study, the human form of life is considered unique in awakening to one's spiritual nature. This is a philosophical issue requiring thoughtful inquiry, and a religious matter involving meditation. Neither of these activities can be performed by computers. They are hardly performed by the average human intelligence, although these are their most unique and important abilities as a human.