Cognitive Science and Human Nature

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Abstract: In this essay, I discuss what can be the underlying principle to the philosophy of cognitive science that is useful for us to understand human nature. Reviewing the principles of science as already presented by Noam Chomsky, I expand the discussion by briefly discussing the computational aspect of the human mind, the key I argued, to unify the mental and physical aspects of the human brain/mind. The discussion led to Aristotelian psychology (or epistemology) as the suggestion for a way forward in the understanding of the nature of human mind from the mysteriousness of its nature as understood by the rationalists started by René Descartes.

Keywords: philosophy of mind, philosophy of science, philosophy of cognitive science, human nature

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The study of cognitive science is in a way a study on human nature. But to achieve such objective, certain foundations of what are to be the basis of the methodology, must be established, and to achieve this, certain obvious questions must be asked. We will come to some of the obvious questions as we go along in this essay.

When we say that, the study of cognitive science is the study of human mind, certain fundamental aspects of such study must be certain, such as, what is the nature of the human mind? And, in relate to the world, which aspects of the world does the study of the mind belongs to? As we know, in any secondary schools, when students are in the science stream, they would study physics, biology, chemistry and mathematics. Once they graduated to college, they would embark to practical disciplines derived from the branches of science we mentioned, such as medicine, engineering, architecture, pharmacology and astronomy. Nonetheless, we would agree that, physics, biology, chemistry and mathematics are the basic branches of science as we know it. Therefore, in which branch of science does the study of mind belongs to?

A typical answer would be psychology, and to be more precise, biology. But can we agree with such answer? Well, in certain aspects of the study of human mind we do can agree with such answer, however, in a bigger picture, such answer is weak. The study of modern psychology concerns more with the factors and effects of the human behaviour, and biological studies about it – the study of physiology of the human brain (and other parts of human body) fulfils such demands (Hayes, 2010). However, cognitive scientists generally (the rationalists) concerns more how such computation that occur in the human brain/mind is possible. To answer such curiosity, the answer to "what is the model (or mechanism) of the computation" need to be known. However, I may stress that, although the answer for the latter is the key to the answer for the former, it is not necessary that the answer for the latter can bring us to the answer for the former, for reasons we will discuss later.

To answer the question "which the study of mind belongs to?", Noam Chomsky (1996/2016) stated that they are many aspects to our world. Among others, there are the physical aspect,

chemical aspect, biological aspect, numerical aspect, geometrical aspect and mental aspect. The study of the human mind then, clearly belongs to the mental aspect, although some unifications with other aspects have been attempted. Chomsky's argument is a strong thesis to refute some contemporary philosophy of mind that treats the question of human mind within the framework of mind-body dualism. The 'mind-body' dualism in question is started in the Cartesian dualism, although prior to that, a sort of dualism was already in the literatures of Plato and Aristotle, chiefly in the format of (dualism) form and matter; soul and body. Cartesian dualism is a different format of dualism from scholastic dualism, and we can understand it as Descartes chose to divorce his belief from the Aristotelian scholastic philosophy (Hatfield, 2014). If we look at the timeline, Descartes in 17th century may study the scholastic philosophy that is taken from the Medieval (Arab/Persian) Muslim world, which Aristotelian metaphysics is understood within the framework of Neo-Platonism. Neo-Platonism (chiefly Plotinus) teaches that the physical world came to existence from the emanation of the One (Fakhry, 2009). From this perspective, we can see that, the 'dualism' in Aristotelian scholastic philosophy as being thought formally to Descartes in his formal education, are in a single entity – only graded to different classifications due to the different degrees of emanation from the One.

So Descartes chose to divorce himself from Aristotelian scholasticism. Following Galileo, Descartes chose to believe that world can be imitated by machine, in other words, the world is mechanical. However, Descartes realised that, as much as the mechanical philosophy is applicable to the physical world and the human body, it is not applicable to the human mind. Consciousness, as realised by Descartes, is not restricted as the like of the human body. Thus, the Cartesian dualism as we know it is defined – although it is was very much misrepresented by materialists arguing Cartesian dualism in their own created problems like the "ghost in the machine" and the "zombie problem" arguments (Chomsky, 2015). Descartes, never (as far as I can tell) suggests that the mind (consciousness) is a separate entity from the brain (body). Descartes does suggest that, the mind and body is together, but the nature of the union is "only known to God"[1], while we bear in mind that he divorced himself from scholasticism.

The unification problem of sciences as pointed out by Chomsky (2015) falls into classes of puzzle and mystery, and this have to do with human nature itself, which is the human mind has its own limit. In the 18th century, Cartesian philosophers faced a new challenge that eventually dismantle mechanical philosophy in explaining nature. Isaac Newton introduced to the world that matter can affect another matter without contact. Such mysterious force is none other but 'gravity'. A mystery that we accept as scientific fact today.

On the other hand, in early modern period, it is observed that whilst gravity is applicable to matter, it is not applicable so when it comes to chemical reaction. On the chemical level, one of the mechanisms that is understood to be applicable is thermodynamics. But that understanding, radically changed in early 20th century when quantum physics is discovered (Chomsky, 1996/2016). Quantum physics suggests that, electrons do jump from one place to another, in a pattern which is not recognized by human understanding. Chemical reactions are predictable but with experiences. Thus, quantum physics do provide a sort of unification of physics with chemistry – but a 'sort' I must say, for quantum physics itself is rather a mysterious subject on its own. Such unification is liken to the shadows in Plato's cave[2] – and by looking only at the shadow, at the best, we can only estimate what the real object is.

Thus, the brief development of science we seen above can give a gist on what to expect of the philosophy of science in study of human mind. The unification of mental aspect with physical (and consequently biological) aspect could very well fall in the same place with the unification of chemistry and physics. If at any best that we can know of, the unification (of mental and physical aspects) is liken to the shadows in Plato's cave.

To make things clearer, we will briefly discuss the unification of mental and physical aspects. To understand such unification, at first we must understand the computational aspect of the mind. By understanding the computational of the human mind, we can understand its logical pattern in its operation – a pattern that can be imitated. If the pattern is imitable, then the physical aspect of it will be knowable to us, although we may not be able to construct such Artificial Intelligence at that level of complexity. Think of the 'Turing Test'[3].

In computer science, computer architects would design the logical sequences for certain computational process to occur. The minutes of it is designed as algorithms – a formulated pattern that can change the output by manipulate the input (Dasgupta, 2016). Such event is observable in human behaviour/nature but with many limits.

To ask what is the purpose of the computational design of human nature (effect-reaction) is to ask what the purpose of life is. A quick Darwinian answer is "to survive". Like animals, humans are expected to "eat when hungry", "to mate to procreate", "to fight for self-defence", "to run from danger" and "to sleep when tired". But humans are not limited to these motives, as they can choose to do the contrary – a feat that is lacked in animals.

Let's consider the statement "human lives to survive". Such statement is weak, rather a deceiving one, if we consider other aspects of human nature such as his or her political, ethical, spiritual and creativity aspects. According to Peter Kropotkin (1906/2017), the Russian anarchist, a man only needs to work a few hours a day to live a decent life, provided that the economy system that he is in is communal. In the rest of the hours of his day, he able to fulfil his creativity needs, as humans are creative creatures. Although Kropotkin's ideal world remains an imagination in our mind, such reality can be observed in our daily lives. Mental health is a serious issue amongst workers who are coerced into working long hours just to make a decent living for his or her family. They work to "survive", but that is not their purpose. If not, metal health will not be a serious issue as it is today. The need to be creative is essential for mental health (and higher still, spiritual needs for the spiritual aspect in human experience).

Returning back to the computational of the human mind (although we have not diverted from the discussion), Immanuel Kant argues that among the many subject that human cannot study is his/her own mind (Gardner, 2008). Kant argues that, the mind cannot reflect itself on itself. Let's suppose we are challenging Kant's assumption. Assume, like in computers, there is algorithms in the human mind. To be more specific, our own consciousness is an algorithm. If we are to reflect on our own mind, that means, the algorithm of our consciousness would compute itself. It will put its own sequence in its formula, and so on – it will be in an infinite loop. Anything that in infinity cannot be known, and in Aristotelian cosmology, it would be non-existence. Perhaps, Kant was correct.

However, there is another main problem if we ought to limit the study of human mind to computer science. In A.I. studies, there is a problem for computer scientists to solve, which is

the 'frame problem'. The 'frame problem' suggests to us that, computer's knowledge is only limited to what it is given and its design. The purpose or intention of the designers, is beyond the frame of the computer's knowledge (Boden, 2018). In the literature of the philosophy of mind, this thesis is a part of what is known as Weak A.I. thesis by John Searle. With the Weak A.I. thesis, Searle (1997) refutes the physicalists, like Daniel Dennett, who assuming that complex computer machine has a human-like consciousness. Searle argues that, the A.I. can be a model to understand human cognition, but the intelligence displays by A.I. (computer, machine) is only intelligible to us because the human minds (ours) make it so.

If we are to insist the A.I. model represents the human cognitive system, then by default, we have to face the 'frame problem'. One possible solution to the 'frame problem' in the context of human cognition, is to return to Aristotelian psychology. Our consciousness may be in both within the frame and outside of the frame. In Aristotelian terms, the passive intellect would be within the frame and the Active Intellect would be outside of the frame. There are many degrees to the understanding of the Active Intellect; one being is the spirit which survives bodily death (Aristotle's argument for the immortality of the soul), and ultimately is understood to be God[4] – as Muslim Mystics understand God as the centre of our being.

So far what we have discussed in this essay underlines the principles of the philosophy of cognitive science. We come to a conclusion that there is a limit to human understanding on human nature itself. What we have discussed is pretty obvious and universal, and can be agreed by anyone (except for some physicalists). The only point where meaningful divergent to take place is, how to go beyond from this point (of the limit of human understanding). There are two diverted ways (although in certain aspects they do overlap, but we put that aside). One is to accept that mysterianism is a truism, which means, we just cannot know everything as nature do lie beyond our reasoning limits. The other way is to enter the metaphysical realm of theology with the possibility of knowledge via connection with the Active Intellect.

Endnotes

1. Descartes said, as found in his *The Selections from the Principles of Philosophy*, in part I, principle no. LX, "God united a body to a soul so closely that it was impossible to form a more intimate union, and thus made a composite whole, the two substances would remain really distinct, notwithstanding this union; for with whatever tie God connected them, he was not able to rid himself of the power he possessed of separating them, or of conserving the one apart from the other, and the things which God can separate or conserve separately are really distinct."

2. The 'Cave Argument' by Plato can be found in Plato's *The Republic*. It is an important argument that underlies the conception of Platonic forms. According to Plato, the world as we see it, is only 'like a shadow' to the reality.

3. To answer the question "can machine thinks?", the mathematician Alan Turing suggests that machine can think if it passes the Turing test – which is to fool other humans to believe that he or she was corresponding with a fellow human, albeit it was

a machine all along. The machine (Turing machine) is a conceptualized machine, could not be physically built (yet). However, according to Chomsky (2015) Turing regards the question as "too meaningless to pursue.." as Chomsky commented that the question itself is a language issue; it is like asking "can submarine swim?".

4. See Aristotle's *De Anima (On The Soul)* and *The Metaphysics*.

Bibliography

Al-Khalili, J. & McFadden, J. (2014) *Life on the Edge: The Coming of Age of Quantum Biology*. Transworld Digital.

Boden, M. A. (2018) *Artificial Intelligence: A Very Short Introduction*. OUP Oxford.

Chomsky, N. (2016) *Powers and Prospects: Reflections on Human Nature and the Social Order*. Pluto Press. (Original work published 1996)

Chomsky, N. (2015) *What Kind of Creatures Are We?* Columbia University Press.

Dasgupta, S. (2016) *Computer Science: A Very Short Introduction*. OUP Oxford.

Fakhry, M. (2009) *Islamic Philosophy: A Beginner's Guide*. Oneworld Publications.

Gardner, H. E. (2008) *The Mind's New Science: A History Of The Cognitive Revolution*. Basic Books

Hatfield, G. (2014, January 16) *René Descartes*. Stanford Encyclopedia of Philosophy. (Original work published 2008, December 3) https://plato.stanford.edu/entries/descartes/

Hayes, N. (2010) *Understand Psychology: Teach Yourself: How Your Mind Works and Why You Do the Things You Do*. Teach Yourself.

Kropotkin, P. (2017) *The Conquest of Bread*. Affordoble Classics Limited. (Original work published 1906)

Searle, J. R. (1997) *The Mystery of Consciousness*. The New York Review of Books.