Is thinking computable

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Summary

Here author continues the ongoing debate of Scientific American paper (Searle, 1990). In this debate Searle states that no computer program can function like a mind because program has only capacity to do symbolic manipulation, whereas human brains have the capacity, conferred by their specific biology, to attach meanings to the symbols. But Churchland denies Searle's argument and says conscious thoughts can arise from only an algorithm. He adds that required computational power to run this algorithm likely to be achieved only in architectural neural networks that mimic the structure of brain. To defend his argument, he says intelligence arises because of collective effects of simple neuron firing, individual neuron need not to understand anything. (Churchiand, 1990)

Author favors thinking as a process which occurs before we articulate it. However machines which are programed inside language, cannot generate actions outside language, it can only do logical deduction, whereas we can generate new ideas.

In previous paragraph author has shown us the perspective of a philosopher and a neurobiologist. Now he bring the perspective of Physicist Roger Penrose. (Penrose, 1989) Penrose disagrees with belief that an algorithm must be essence of thought. In other words there can't be any algorithm to generate new ideas. He says mental phenomena are inherently more powerful than just computation. In the period of twenty years he had developed "Theory of Twistors" which is essential for the operation of mind. Twistors are abstract geometrical objects which operate in a higher dimensional complex space that underlies space-time. He argues that functions representing the mind may not be computable so its mechanical simulation may not be possible, and if they do approximation then they would leave out the quantum effects on which the conscious thought of brain may depend.

Author has also presented us a biologist interpretation offered by (Varela, 1988). They say consciousness of individual is associated with the way he observe things. They have also mentioned about different level of consciousness. Since none of the two observers have same experience in this world, so their interpretation includes biases. So these two observer would have different understanding of truth.

Author has presented viewpoints of a philosopher, a neurobiologist, a physicist and biologists to ease us from the possibility that one day we will be ruled by machines.

References

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