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Adam Bateman

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Adam Bateman
Computer Science at Missouri University of Science and Technology
DEFINING CONSCIOUSNESS

Abstract

A researcher trying to develop a conscious artificial intelligence or examine consciousness in plants would be completely unable to do so without first obtaining a clear, concise, and global definition. This idea is what originally inspired my research. The main method of research to be used will be to thoroughly examine scholarly articles pertaining to consciousness and different theories of the mind. After gathering data and different ideas, I will create a definition that is plausible, and is optimized in terms of being useful to researchers. Currently, the issue is that there are an incredible amount of mental features that certain organisms have that may contribute to making them conscious. However, these features, such as emotion, thought, and willpower, have yet to be accumulated into a definition. Consciousness should, at the very least, involve a being's awareness, ability to think, and ability to feel. The main reason this research is important is due to the exponential growth rate of technology. Heading into the direction of sentient machines, we must know whether what we create is conscious or not, and how conscious it may be, in order to determine whether it may be dangerous or not.

Defining Consciousness

There has been an incredible amount of research done over thought processes and awareness over the last 10 years. Almost all of it makes some sort of conclusion as to how people think and feel, and why they think and feel those ways. However, when it comes to consciousness, most of the research that has been conducted is just a small part of the much bigger idea. Without obtaining a definition that benefits research, mankind heads towards a dangerous area of uncertainty in technology. Imagine a futuristic world where members of the Robot's Rights Activists Club (RRAC) advocate for their rights, and issues take 20 years to settle because the robots cannot be defined as conscious or not. Aside from saving time, this research would also improve decisions regarding ethical ramifications of mistreatment of organisms whose current consciousness levels cannot be determined. Consciousness needs to be defined, it must be useful, accurate, and measurable, and it must involve, at the very least, a being's awareness, ability to think, and ability to feel.

Awareness

The idea of consciousness is often closely related to awareness. While the definition of awareness is certainly a part of it, the concept of consciousness branches much further beyond simply being aware of one's existence and surroundings. "Most scientists accept that attention can occur in the absence of awareness. But evidence for the opposite idea, that conscious awareness can exist without attention, has been less clear" (Sanders). The idea here is that for most of mankind's history, awareness and attention have gone hand in hand in regard to their definitions and their usage. It is only recently that researchers have had to differentiate the two. The concept of being able to focus on a particular object and being aware of the existence of an object are two separate areas. It is theorized that one can focus on an object, or an idea, without

really knowing what the object is, or if it even exists. Alternatively, attention without awareness is a feature of everyday life. The differentiation that Sanders makes between “awareness” and “conscious awareness” is the fact that conscious awareness most likely cannot exist without the attention of the person. It can then be theorized that one’s ability to focus may have an impact on determining whether one can be defined as conscious. Similarly, one’s ability to focus on themselves may have a significant impact on one’s level of consciousness. “Self-consciousness comes in varying degrees of self-awareness. Sometimes it merely involves a *non-conscious thought awareness* of one’s own mental states, and, sometimes, it comes in the form of *conscious meta-psychological thoughts*”(Gennaro 17).

Gennaro is acknowledging the idea that one’s consciousness can be measured based on their knowledge of their own existence. These levels may range from a very basic knowledge of one’s emotions, to the ability to conceptualize thoughts that may not be empirically verifiable. Whether this spectrum of self awareness represents one’s level of consciousness, however, is still unclear. If not, it would be very easy to define a robot as fully conscious if it can express some sort of emotional response to a stimulus, or a plant as fully conscious if it can be proved that it feels pain. Applying the self-awareness spectrum would increase motivation to reach what might eventually be defined as 100% consciousness in man-made machines. Attention and awareness are very important parts of consciousness. The very core of one being conscious is for one to be aware of themselves and their surroundings. In order for one to be aware of these things, one must also have even the slightest ability to pay attention and maintain focus, in order to firmly grasp ideas and truly have self-awareness.

Thought

In order for an organism to be described as conscious, it must be able to know, and to think. Thinking, however, is a very difficult area, as it is impossible to determine whether a plant, a machine, or other living organisms are capable of thought. “We are still unable to explain why human beings think a precise way at a certain moment; however, thought is known by certain neurological mechanisms”(Turenne 15). Thinking is an incredibly complex human capability. Humans know the reasons that they have to think, whether it’s for reasoning, recollection, debate, etc. There is, however, a theoretically infinite number of factors that affect why people think *exactly* the way that they do. These factors can range from something as large as a recent traumatic event, to something as small as a slight gust of wind impacting the way a person’s neurons fire. This brings up the question of whether or not succumbing to these environmental factors is a necessary part of thought, and therefore, consciousness. That would then affect the implementation of random events provoking unrelated thoughts in the creation of an artificial consciousness.

Thoughts are not the only human feature that can be very slightly altered by a theoretically infinite numbers of factors. The way people feel is also incredibly flexible, and the slightest change in temperature or even shifts in things as small as sand can cause the smallest changes in how one feels. “When we are in conscious states we are often not *consciously* thinking about our own [mental] states, but we are nonetheless thinking of having ‘thought awareness of’ them”. (Gennaro 19) This extract is tying one’s ability to think with one’s ability to feel emotion. Humans are always aware that they are constantly in some form of mental state, however, are almost never directly thinking about it. There is, however, something inside each person’s head that connects their current mental state with the way that person would respond to

stimuli. This demonstrates a sort of “ambient awareness” of one’s specific mood. This ambient awareness certainly has a place within the definition of consciousness, in the sense that only conscious beings can contain thoughts without directly thinking about them. For one to be defined as conscious, one must have the ability to think and to feel. The depth at which both external and internal stimuli affect one’s thoughts and emotions can be connected to the what can be defined as a person’s consciousness level. In order for these slight changes in mental processes to be proven, the person must also demonstrate an ambient awareness of emotions that they are not directly thinking about.

Measurability

In order for the understanding of consciousness to be most valuable to researchers, it must first be determined whether consciousness exists in binary states (i.e. something is either conscious or it isn’t), or if there are grey areas in which organisms can achieve certain levels of consciousness. This would allow researchers to more accurately gather data on objects and then use that data to gain a better understanding. “Input to each eye’s retina holds steady, while perception—whether an image pops into awareness—flips back and forth. Scientists can measure brain activity to track this perceptual switch”. (Sanders) In this experiment, it was proven that awareness of an object either exists in a being or does not exist, and the idea of being “somewhat aware” of something is impossible. Therefore, awareness can be thought of as the bare minimum amount of knowledge that one might have about something, after knowing of its existence. The measurability of consciousness then becomes slightly more complex, under the idea that awareness is a binary state of mind. It is, however, still possible to use one’s capability level of thinking, as well as the strength of their ambient self and environmental awareness in order to measure the degree at which one is conscious. These, however, are not the only determining

factors of one being conscious. It has been speculated that one's willpower may also play an important role in determining whether one can be defined as conscious or not. "The strength of our will is the measure of the manipulation of power we enjoy over our selves [sic]; so it is a measure of this *internalized authoritarianism*" (Paglieri 161). Here, Paglieri is relating consciousness to willpower, and willpower to a person's control over their own state of mind and thoughts. The idea of willpower plays a crucial role in defining consciousness, as it brings up a very interesting idea. In order to be conscious, one must also have to want. The ability for one to have internal goals to set towards is very relevant, as willpower is an ambient emotion that can be measured in terms of intensity. It can be safely assumed that if one is imbued with the willpower to control their own life, that being must have some degree of consciousness. Consciousness can, and should be measured, but not based on awareness. Rather, it should be determined by the existence of awareness and ambient awareness, as well as the strength of that person's willpower and their ability to react to infinitely small stimuli.

Discussion

Every one of the features of mentality that has been discussed is a key feature in what makes humans, human. Looking at a person who lacks thought, emotion, or willpower, they are clearly in a state of unconsciousness. Applying these characteristics to a machine would make for a very accurate representation of a conscious human. Researchers could also look for these characteristics in other things they think may be conscious, such as plants. Therefore, an object can be defined with consciousness under following five characteristics:

1. The object must be aware of its own existence, as well of the existence of things that surround it.

2. The object must be able to feel emotion, as well as accurately respond to stimuli while feeling emotion.
3. The object must be able to think.
4. The object must have the ability to “want”. The degree at which the object can feel desire shall correspond with the object’s level of consciousness.
5. The emotions of the object must be a result of external and internal stimuli. The degree at which the object can react to smaller, less relevant external stimuli shall correspond with the object’s level of consciousness.

References

- Baars, B. J. (2015). Consciousness. Retrieved from <http://www.scholarpedia.org/article/Consciousness>
- Gennaro, R. J. (1996). *Consciousness and Self-Consciousness*. Philadelphia: John Benjamins Publishing Company. Retrieved from <https://ebookcentral-proquest-com.libproxy.mst.edu/lib/umr-ebooks/detail.action?docID=622349>
- Paglieri, F. (2012). *Consciousness in Interaction*. Amsterdam: John Benjamins Publishing Company. Retrieved from <https://ebookcentral-proquest-com.libproxy.mst.edu/lib/umr-ebooks/detail.action?docID=979716>
- Sanders, L. (2012, February 16). Consciousness emerges: Somewhere along a tangled path, sights, sounds and insights pop into awareness. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/scin.5591810419/abstract>
- Sejnowski, T. J. (2015). Consciousness. Retrieved from http://www.mitpressjournals.org.libproxy.mst.edu/doi/pdf/10.1162/DAED_a_00321
- Singh, G. (2014, April 9). Consciousness. Retrieved from <http://www.msmonographs.org/article.asp?issn=0973-1229;year=2014;volume=12;issue=1;spage=161;epage=162;aulast=Singh>
- Tononi, G. (2012). *Integrated Information Theory of Consciousness: An Updated Account*. Retrieved from <http://www.architalbiol.org/aib/article/viewFile/15056/23165867>
- Turenne, N. (2013). *Knowledge Needs and Information Extraction*. Hoboken: John Wiley &

Sons, Incorporated. Retrieved from

<https://ebookcentral-proquest-com.libproxy.mst.edu/lib/umr-ebooks/detail.action?docID=>

1124004