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Can Access Consciousness Qualify as Computer Consciousness?
Or, So What If My Computer Can't Cry!

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The concept of consciousness is a hybrid or better, a mongrel concept: the word 'consciousness' connotes a number of different concepts and denotes a number of different phenomena. We reason about "consciousness" using some premises that apply to one of the phenomena that fall under "consciousness", other premises that apply to other "consciousnesses" and we end up with trouble. (Block 1995a, p. 375 in BFG 1999)

Of the many divergent concepts and notions that are entertained under the broad domain of Consciousness there are two that have become central to the search for an encompassing theory of Consciousness that will rest easy with philosophers, psychologists, computer scientists, and cognitive scientists alike: Phenomenal Consciousness ("P-consciousness"), and for our purposes Access Consciousness ("A-consciousness") as flushed out by the Philosopher Ned Block. Of these, P-consciousness has been and continues to be the subject of extensive analysis and pontifical pronouncements as to its generative sources and character. While A-consciousness has been debated, it has not endured the intensive attention of P-consciousness mainly because it does not present the perplexing "unresolved" issues that adhere to P-consciousness (see Carruthers 1998a, 2000, and 2005 for discussion of these issues). In part this is because the various concepts and notions that are pertinent to Consciousness, and P-consciousness in particular, have been developed principally as they apply to human beings, not animals, not plants nor fauna, not insects, and certainly not Computers or Robotic entities known descriptively as possessing Artificial Intelligence ("AI"), even though such AI models have been used to facilitate the study of the human mind and consciousness. Furthermore, it is certainly far from settled among and within the various professions that study the issues what the actual attributes of a complete theory of Consciousness should be, let alone are (see Baars, *et al* 2003, Block, *et al* 1999, Dennett 1994, Chalmers 1997 and 1998, Clark 2000 and 2003, Searle 1984 and 1997, Rey 1997a & b, Hameroff, *et al* 1998, Metzinger 2000 to mention a few).

Historically, we, as the adjudicators of the social usage (meaning) of 'Consciousness' have not been generous in ascribing Consciousness or the functionality of thinking to fall amongst our perceptions of any psycho-physiologically inferior form of being or entity. Now to some extent this is due to our socio-religious heritage, complemented by the commonly accepted perspective notably expressed by Kant in his famous expoundment: "We cannot know the thing in itself." We reach out to grasp a comprehension of the object before our gaze, develop 'accounts' of the perceived object that attribute a comportment to it, that portends to satisfy our 'use options' of the object in accordance with our needs, but of the 'What it is like to be the object' we have not even a remote notion (see Kant 1965, Husserl 1970, Merleau-Ponty 1962, Wallace 1981 for further discussion).

As the history of the philosophy of P-consciousness demonstrates we have serious problems in attributing Consciousness to others, the problem of 'Other Minds' still lacks a definitive theory. Simulation Theory still underlies much that is under development in the accounting of knowledge of other minds; Problems with Simulation Theories notwithstanding (see Carruthers and Smith 1996 for discussions on Simulation Theory). Being the good analytic observers that we are, we, from our observations and development of hypothesis, determine

that certain actions, events, procedures, processes have varying degrees of similarity across object concurrences that warrant certain conclusive theories as to what is happening in the effectuation of those actions, events, procedures, processes as being sufficiently identical as to qualify our extension of recognition to the other as being like ourselves as conscious beings.

Also portending as serious contenders for a theory of consciousness are the neurological theories of consciousness seeded within the unified endurance of the firing of neurons within specific areas of the brain. Connectionist theories of psychology and cognitive science postulate that all consciousness activity is brain centralized neural/synaptic (see Baars, *et al* 1998, Bechtel 1994, Block 1998 and 2005, Chalmers 1998, Crick 2000, Hameroff, *et al* 1998, Metzinger 2000 for discussions on Connectionism). Adapting many of the underlying assumptions of the Parallel Theory of Computer Science as the prime model for their theories, cognitive scientists believe that consciousness is simply another bio-chemical moment. Indeed, if the electro-static discharge was all there was to human consciousness, then why do these simple solutions not satisfy the issues that remain with regard to the body and the quantum issues that are raised by physicists regarding the physical community and communication within that community that Quantum and Relativity Theories hold as basic assumptions? But, to pursue these questions is to pursue ‘what it is like to be human’, questions relevant to P-consciousness, not our objective in this short paper.

Taking these points under advisement, recent developments in Robotics and AI signal that a fresh look should be given to raising the following question in a more serious vein: Are computers, or at least AI-Robots Conscious? And if so, what might this Consciousness be like? I propose that the notion of A-consciousness comes close to providing a foundation for a theory of Consciousness applicable to AI, not as a model for human Consciousness, but as descriptive of a large portion of what goes on for ‘what it is like’ to be AI.

To set the stage, let us first set out in detail Block’s distinctions regarding P- and A-consciousness, as this will prove foundational when we draw the correlates for consideration in our seeding Consciousness to AI. According to Block:

[Phenomenal or] P-consciousness is experience. P-conscious states are experiential properties. P-conscious states are experiential states, that is, a state is P-conscious if it has experiential properties. The totality of the experiential properties of a state are "what it is like" to have it. Moving from synonyms to examples, we have P-conscious states when we see, hear, smell, taste and have pains. P-conscious properties include the experiential properties of sensations, feelings and perceptions, but I would also include thoughts, wants and emotions. A feature of P-consciousness that is often missed is that differences in intentional content often make a P-conscious difference. What it is like to hear a sound as coming from the left differs from what it is like to hear a sound as coming from the right. P-consciousness is often representational. (Block 1995a, p. 380 in BFG 1999)

A state is A-conscious if it is poised for direct control of thought and action. To add more detail, a representation is A-conscious if it is poised for free use in reasoning and for direct “rational” control of action and speech... An A-state is one that consists in having an a-representation. I see A-consciousness as a cluster concept in

which reportability is the element of the cluster that has the smallest weight even though it is often the best practical guide to A-consciousness. (Block 1995a, p. 382 in BFG 1999)

I will mention three main differences between P-consciousness and A-consciousness. The first point, *put crudely*, is that P-conscious content is phenomenal, whereas A-conscious content is representational...it is in virtue of its representational content, or the representational aspect of its content that a state is A-conscious. (Block 1995a, p. 383 in BFG 1999)

A closely related point: A-conscious states are necessarily transitive: A-conscious states must always be states of consciousness *of*...P-consciousness, as such, is not consciousness of. (Block 1995a, p. 383 in BFG 1999)

A-consciousness is a functional notion, and so A-conscious content is system-relative: what makes a state A-conscious is what a representation of its content does in a system. P-consciousness is not a functional notion...But what makes content A-conscious is not anything that could go on *inside* a module, but rather informational relations *among* modules. Content is A-conscious in virtue of (a representation with that content) reaching the Executive system, the system that is in charge of rational control of action and speech, and to that extent, we could regard the Executive module as the A-consciousness module...what makes an A-conscious representation A-conscious is its causal relations to other representations. (Block 1995a, pp. 383-384 in BFG 1999)

A third difference is that there is such a thing as a P-conscious *type* or *kind* of state. For example the feel of pain is a P-conscious type--every pain must have that feel. But any particular token thought that is A-conscious at a given time could fail to be accessible at some other time. (Block 1995a, p. 384 in BFG 1999)

Currently, the question of Consciousness within or about an Artificial Intelligence can be said to reflect the entrails of what I will call the ‘Absentee Homunculus’ theory of Mind and Consciousness¹. In brief this theory places the ‘virtual consciousness’ of the computer programmer/software engineer, along with the ‘virtual consciousness’ of the computer design team of electrical engineers, computer scientists (collectively the Absentee Homunculus “AH”) within the central processor as an absentee homunculus directing the functions of the artificial intelligence (call it “Fred”) through its many assignments by way of the values that AH have built, written, coded, installed into Fred. AH through the

¹ I adapt the Absentee Homunculus (“AH”) theory from the theories of mind that hold that there is within the mind a homunculus or functional entity that receives, reviews, examines, and acts upon all information received by the mind. So for example, if I am looking at a field of buttercups this image is brought into my mind via the appropriate sensory inputs and projected upon a screen within my mind where the homunculus ‘sees’ the images and then informs me of what I am experiencing. A Homunculus would qualify as an example of the ‘Ghost in the Machine’ per Gilbert Ryle (Ryle 1984) and is fundamental to a theory of consciousness tendered by Francis Crick (Crick 2000). For the purposes of my example I have moved the Homunculus external to the Artificial Intelligence (“Fred”) and replaced it with the essence of the AH, making AH the executive force behind the actions, functions, processes, procedures events that we would metaphorically extend to what Fred is said to do. The AH is absentee and historical as of the date of the finalized version of Fred’s programming.

detailed instructions coded into Fred carries out the conscious management of each task asked of Fred by its operator. Fred will not, if you will, cannot perform contrary to the strict values coded into its circuits and software. To the extent that Fred can in any way be said to be good or bad depends on how well Fred was designed and the security values practiced by AH in the development of Fred's various essentials. In fact anything that can or is said about Fred as to qualitative and quantitative performance in actuality is said of the AH.

A quick encounter with a couple of famous computer entities will help demonstrate our difficulties here. Jack Copeland recounts the history of several famous cyber identities that have been developed, to further research by humans into aspects of intelligence (Copeland 1997 pp. 11-32). Regarding Copeland's examples of 'human cyber' programs² ("cybershrinks"): Whereas, contrary to the mental actions a human expert portending a professional prognosis such as a psychiatrist or psychologist would weight regarding the gravity of a patient's statements and responses, there is no 'Intentional Choice' in the action of the cybershrink's choosing to turn the patient's response back upon them, in the example of Eliza. It is a step of logic in the run of the routine of the software. Simply having the data qualitatively available for the executive program to act upon, even if the intelligence appears to our understanding to be similar to the qualification of A-consciousness, does not by necessity make it so. It would seem that to qualify as having A-consciousness there must by necessity be more incorporated in the considerations given to the manifestation of the enactment prior to the execution. The human expert is able to provide reasons for the choices that are exercised in the statement (retort) back to the patient that the cybershrink cannot provide. For the cybershrink has no intentional knowledge, it knows neither the "How" nor the "That" pertaining to the routines called and run while exercising those aspects of its program. Thus, at the level of the software development for Parry and Eliza it would be inaccurate to attribute a theory of Consciousness. Simple implementation of a routine or subroutine based upon "If Then, or Else" and "Do" routines, while also characteristic of much that passes as human thought, is not sufficient in and of itself to qualify as consciousness as this conceptual notion is used when directed at human or animal activity (consider the logic of inferential thought and the degrees of reflective/reflexive activity involved in reaching a conclusion – see Floridi 2005 and Wallace 1981 for a perspective on these issues); neither does a substantial store of observationally determined human responses to situations and communications, emulated and encoded into cyber memory for recall when the appropriate module of a specific routine is called, count as human behavior.

Yet, Zombie-like as they may be there could be a consciousness that is in a way unique to the electro-cyber embodiment of the components and circuits constitutive of the Artificial Intelligent Entity, constitutive of Fred, and it may be that the expoundment of that state is found to be, as hard pressed as we are at articulating, 'What it is like'. So, just as we are at a loss when asked to give a complete account of Consciousness, perhaps Fred likewise is

² Parry, a program designed by psychiatrist Kenneth Colby at the AI labs of California as an aid in Dr. Colby's study of the processes underlying paranoia, and Eliza, a program designed by Joseph Weizenbaum at the MIT AI Laboratory that was utilized to administer therapeutic interviews to potential patients. Each program was so convincing in the communications that transpired during interactive sessions with a human participant, that a large percentage of their human inter-actors were deluded into the belief that they had interacted with a human intelligence, not a computer program; interestingly meeting a main aspect of the Turing Test. (Copeland 1997 pp. 12-15)

unable to recount its conscious states. So we perhaps need to pass from an analytic perspective to the speculative mode of thought.

To strictly adhere to Block's distinction of A-consciousness, the processes we need look at are those that take place once any data/information has been infused into (entered into, perceived by) the cyber entity. What we ask here is "That". In a word, a cyber (binary) representation of data is enabled and ready to be acted upon. It would be the resulting processes that causally ensure the processing of this data from inception to result that present as the candidate for A-consciousness. These are the processes that adhere to 'the decision process' involved in the execution of a program analogous with the steps in linear thinking that, while not foremost-to-mind, are inferred from the current models of thought that are foundational to cognitive science. Continuing with analogy, compare memory (location and function) with hardware -- neuronal pathways/electrical circuitry, and software -- language of thought (mentalise)/machine language, along with the common energy source for both -- electricity (see Block 1995b, Carruthers 1998a & b, 2000, and 2005, Fodor 1975, 2001a & b, Crick 2000, Chalmers 1998 for discussions re: language of thought, modularity, neuronal pathways). Simple implementation of a routine or subroutine based upon "If Then, or Else" and "Do" routines, that ensures the data reaches the central processor would seem in a simplistic way to indeed qualify. Thinking back to Block, "...what makes content A-conscious is not anything that could go on *inside* a module, but rather informational relations *among* modules. Content is A-conscious in virtue of (a representation with that content) reaching the Executive system..." (Block 1995a, pp. 383-384 in BFG 1999). Data within Fred has, or does (whatever the internal process) reach the Executive System and is consequently acted on as a result of this causal process. In a manner of speaking there is an ongoing communicative relation among the modules constitutive of Fred. Appropriate applications have moved data along to the Executive, even if an Absentee Homunculus. We can account for the "That" of the process.

Having compared the mechanisms relevant to the processing of information (a binary representation) by Fred with the essence of Block's mechanics underlying A-consciousness, we find that we can generate an analogy whereby it appears that similar efforts and results pertain. Speculation allows us to extend a simple notion of how A-consciousness is perceived to work to our understanding of how Fred is metaphorically said to think. Tracing electronically the thought processes of Fred, and by MRI those of a human, will display circuit activity with determined results (although the MRI will show a far less linear picture). Thus, where A-consciousness is a process we can generously extend A-consciousness to Fred, to ask for a more exacting account is to ask 'What it is like' which is to request a P-consciousness explanation.

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