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Body/Mind Intelligence Dichotomy
09/06/2001

When Mike was installed in Luna, he was pure thinkum, a flexible logic—"High-Optional, Logical, Multi-Evaluating Supervisor, Mark IV, Mod. L"—a HOLMES FOUR. He computed ballistics for pilotless freighters and controlled their catapult. This kept him busy less than one percent of time and Luna Authority never believed in idle hands. They kept hooking hardware into him—decision-action boxes to let him boss other computers, bank on bank of additional memories, more banks of associational neural nets, another tubful of twelve-digit random numbers, a greatly augmented temporary memory. Human brain has around ten-to-the-tenth neurons. By third year Mike had better than one and a half times that number of neuristors.

And woke up.

Am not going to argue whether a machine can "really" be alive, "really" be self-aware. Is a virus self-aware? Nyet. How about oyster? I doubt it. A cat? Almost certainly. A human? Don't know about you tovarishch, but I am. Somewhere along evolutionary chain from macromolecule to human brain self-awareness crept in. Psychologists assert it happens automatically whenever a brain acquires a certain very high number of associational paths. Can't see it matters whether paths are protein or platinum. (Heinlein, Robert. The Moon is a Harsh Mistress. Page 12)

For once in the history of science fiction, a male author may very well have (inadvertently?) taken up the position that the physical representation of a body is vital to it's ability to think and reason "intelligently." This passage by Robert Heinlein is very telling. A computer has "awoken" because of its physical presence. Human intelligence is even implied to have sprung from the physical properties of our brain. Mike is given tools to interact with the physical world, why? The physical body of not only humans is important for intelligence, but the "bodies" of non-humans.

It is my contention, that the body is in fact the "key" to intelligence, or the ever-western "mind". The "world" and the interactions that the body has with that world are what allow for the development of intelligence. However, when I speak of body, I do not speak of a human body.

Instead I will offer a new definition of body that allows non-humans the privilege of embodiment. (Un?)Fortunately by taking up this position, we have placed the power and “wonder” of intelligence in the body and it’s interactions with the world rather than in the brain, the most typically western locale. The opportunities that are offered in a world where body is key stands to dethrone many typically Western ideals, and in doing so “takes away” human privilege. I hope to make this point through liberal use of Excerpts of Katherine Hayles work, How we became Posthuman.

Elizabeth Grosz makes a good start in her valuable study, *Volatile Bodies: Toward a Corporeal Feminism*. She argues that the mind/body split, pervasive in the Western tradition, is so bound up with philosophical thinking that philosophy literally cannot conceive of itself as having a body. (Hayles, Page 195)

It is apparent that when one begins to take a counter position to the idea that the mind is key, and the body springs forth from that, you are going to face a great deal of opposition. However, it seems that most of the opposition will not stem from any science, and instead would probably come from western philosophy, western religion, and perhaps computer science’s artificial intelligence crowd. Why the determination to keep the mind and body separate?

A person is not a head and arms and legs, that’s trivial. A person is a very large multiprocessor with a million times a million small parts, and these are arranged as a thousand computers. (Marvin Minsky in Haraway, Page 244)

Attempting to reduce the work of Marvin Minsky into a single quote is difficult, although this provides quite nicely a summation of his views on the importance of the human body, or any body for that matter. What is his stake in the whole situation? I suspect that a great deal of his rhetoric, and that provided by the philosophers of the cult of, “I think therefore I am,” stems from an interest in immortality. The human mind can be morphed into the “immortal” soul and a mind as Minsky sees it can be downloaded for later use. By privileging the human mind and

reducing the importance of embodiment, we take away the importance of this world, and instead take the main component of Western Individualism and allow it to be transported over space and time; we are no longer bound by our physical presence. This subtracts from the importance of any element of our “world” that is deeply rooted in embodiment and representation.

Michael Dyer in his comparison of the two fields (Artificial Life (AL) and Artificial Intelligence (AI)), points out that whereas AI envisions cognition as the operation of logic, AL sees cognition as the operation of nervous systems; AI starts with human-level cognition, AL with insect- or animal-level cognition; in AI, cognition is constructed as if independent of perception, whereas in AL it is integrated with sensory/motor experiences. (Hayles, Page238)

Artificial Intelligence (AI) has taken up the position that the mind is the point from which intelligence has sprung. By mimicking human decisions and learning patterns, AI has sought to create a human intelligence in a different body, though they would claim that they were attempting to build a human intelligence “out there”. In more recent years AI has even attempted to map the human physical brain and it’s mechanics onto the hardware and software of computing systems. The very notion of a neural net is an attempt to mimic the neural connections found in a human brain. However, these systems have been very unsuccessful. It would be my contention that this is because we are attempting to re-embodiment the computer in a more human fashion. If we had instead started from the position that the computer body is inherently different from our body, it must therefore learn and “think” quite differently from humans.

The body as I conceive of it is a representational element. A “body” is something that is capable of interacting with the surrounding world. A body provides representation, and provides the ability to manipulate and sense the surrounding world. Whether this body be that of a simulated creature in an Artificial Life simulation, or that of a human body. The body provides the

opportunity for a mind and intelligence, whether or not such a thing emerges is a completely different story.

The field of Artificial Life (AL) provides some of the components that I would tout as a new “angle” by which to encourage artificial “intelligence.” There are two approaches being taken in the race for artificial intelligence that has sprung from the underlying computer system. The two approaches require a “body” in one sense or another. Simulated Artificial Life has taken the position that a “truly” physical body is not necessary, and instead we may simulate a body. This body interacts with other simulated bodies, and a simulated world. This world can be quite different from our own, and often times may be much simpler than the “human” world that we are familiar with. However, the bodies (creatures) are given a means by which the possibility for evolution is available to them. The other approach involves the creation of physical robotic bodies that place a new non-human body capable of interaction into the “human” world.

The goal of AI was to build, inside a machine, an intelligence comparable to that of a human. The human was the measure; the machine was the attempt at instantiation in a different medium. This assumption deeply informs the Turing Test, dating from the early days of the AI era, which defined success as building a machine intelligence that cannot be distinguished from a human intelligence. By contrast, the goal of AL is to evolve intelligence within the machine through pathways found by the “creatures” themselves. (Hayles, Page 239)

AL has taken up the position that AI was doing something fundamentally wrong, and that to correct this situation, something at the basest level must be changed. Although not fully realized, I believe this new revolution lies in an acceptance of the importance of the “body.” Why has this transition been so long coming? Who has stakes in maintaining the old ways of thinking? These are all questions that are intricately important to the future of not only AL and AI, but to human philosophy.

What this all comes down to in the end is a newly emerging trend to allow for the importance of embodiment. If AL research has shown anything, it has shown that embodiment and the world surrounding a creature is far more important than any other component of learning. We are beginning to understand that form and representation is important, but we must also allow ourselves to see that the bodies of non-humans are also intricate to the fashion in which they interact with us and this world.

With the newfound importance of body, we are deconstructing the Western notion of self as being so deeply rooted in the mind. However, in doing so, we do so at the risk of facing the wrath of philosophers and religions that would like to keep us disembodied. We also root ourselves in a world where our bodies have become the “root” of our self-hood. We accept that the complexity of our bodies, and the interaction we can have with our world provides the basis for our intelligence. Just like Mike, we have awoken because we reached a point where we merely had enough time and resources to do so, but we still ARE our bodies.

I used to think that the brain was the most wonderful organ in the body, but then I thought, who's telling me this? (Emo Phillips in Haraway, Page 238)