

Epistemological Themes in  
Ghost in the Shell

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The world is rapidly becoming more and more computerized. Data is accumulating at an astounding rate; it is being processed faster and sent farther. At first, computers were our calculators. Now, they are our clocks, our accountants, our managers, and even our weapons. What if they started being our bodies and minds too? This is the future that Mamoru Oshii imagines in his Anime masterpiece *Ghost in the Shell*. In futuristic Japan, it has become possible to download one's mind—or ghost—into a mechanical, humanoid body—or shell. As this futuristic world plunges deeper and deeper into computerization, a new question arises: if ghosts can exist within machines, can they be created by machines also? This question comes into acute focus when the mysterious hacker mastermind known as The Puppetmaster reveals himself to be a sentient life form that arose from the sea of information that now engulfs the world.

Such a movie is obviously rife with Epistemological themes and invites us to consider many of the age old questions about identity and mind in relation to the new world of computerization. The two characters around which most of the questions revolve are Major Motoko Kusanagi and the entity called The Puppetmaster. Kusanagi's body is entirely mechanical with the exception of some human brain matter. Her titanium body endows her with super strength and expedited access to countless networks of data, though it appears perfectly human. She works as an operative for Section 9, a government division assigned to cyber crime, and her work eventually involves her in an elaborate campaign to track down the infamous and mysterious Puppetmaster.

The questions raised by the cyborg nature of Kusanagi's character—and the ones she herself struggles with—are primarily questions of identity. An old thought experiment comes to mind: If body parts could be reproduced mechanically, and one slowly replaced parts of one's body with those parts, at what point does one cease to be a human and start to be a machine?

One popular theory, presented by John Locke in his “On Identity and Diversity,” is that personal identity hinges on memory. He distinguishes between a man and a person, the former being a coupling of a body and a consciousness, and the latter being the consciousness itself. In other words, a person is the fundamental building block of identity, and when that person is bonded to a specific body, then a man is formed. He describes this distinction in a way that sounds somewhat like the process of transferring the Major’s mind into her titanium shell:

“For should the soul of a prince, carrying with it the consciousness of the prince’s past life, enter and inform the body of a cobbler [ . . . ], everyone sees he would be the same person with the prince, accountable only for the prince’s actions: but who would say it is the same man?”

The Major in her mechanical body is fundamentally the same person, though she is now a different woman. So the person is the soul of identity. What is the soul of personhood? Locke’s answer is memory. When one possesses a memory, one is the same person to whom that remembered experience happened. This raises a lot of questions, but *Ghost in the Shell* seems to agree with this assessment of identity. The Puppetmaster, when he is trying to establish his credibility as a sentient being claims that “man is an individual only because of his intangible memory, and memory cannot be defined. But it defines mankind.”

One of the most common objections to the Lockian theory is that of false memories, and it is addressed in the form of “ghost hack humans.” The Puppetmaster earns his nickname from his ability to hack into the cybernetically enhanced minds of his victims. He can edit and rearrange their memories so that they will think and do as he pleases. One of the most poignant scenes in the movie gives the audience a brief glimpse of a ghost hack garbage worker being informed by Section 9 that his entire reality is false. The baby girl he was trying so desperately

to get custody of never actually existed. If memories can be falsified, this would seem like a good example of an objection to Locke's memory-based theory. But *Ghost in the Shell* invites us to consider this potential objection more carefully. The way a ghost hack human acts is changed when his memory is changed. He is treated differently. Despite the fact that his memories are not authentically his, he is still arrested for his illegal actions. He can never fully recover his old memory, and so he will have to live the rest of his life with this new set of experiences. Does that mean he is no longer the same person? In a lot of ways, it does. He cannot be held accountable for his old memories, since they have been erased. No one would expect him to act on something that he cannot remember. So as a moral agent he now has a different set of responsibilities. He is morally responsible for his new mind, and is treated like this new person by others, so what ground is there, then, to justify the claim that he is still the same person he was before the hacking? Will he still miss his daughter, even if she never really existed? The movie presents a man deeply violated, and permanently *changed*. The victimized garbage worker has become a different person.

This theory of identity may be acceptable from a moral and societal standpoint, but that does not make it comforting in a world full of cut-and-paste memories. Anyone with a hackable brain is led to wonder about his or her identity. Kusanagi expresses this discomfort in a brief elevator conversation with her partner Batou:

Kusanagi: Well, I guess cyborgs like myself have a tendency to be paranoid about our origins. Sometimes I suspect I'm not who I think I am, like maybe I died a long time ago and somebody took my brain and stuck it in this body. Maybe there never was a real me in the first place and I'm completely synthetic like that thing.

Batou: You've got human brain cells in that titanium shell of yours. You're treated like other humans, so stop with the angst.

Kusanagi: But that's just it; that's the only thing that makes me feel human: the way I'm treated. I mean, who knows what's inside our heads? Have you ever seen your own brain?

Batou: It sounds to me like you're doubting your own ghost.

Doubts like these remind one of the writings of Descartes. He posits that since the five senses can lead us astray, and since men can create illusions to fool the senses, how can we trust what we perceive? Descartes explicitly mentions the senses, but his logic would also apply to memories, given the ability to create false ones. How can anyone be sure that he or she is not a puppet? There is no good answer, but perhaps these words of from Kusanagi can give the audience some hope for the constancy of identity:

There are countless ingredients that make up the human body and mind, like all the components that make up me as an individual with my own personality. Sure I have a face and voice to distinguish myself from others, but my thoughts and memories are unique only to me, and I carry a sense of my own destiny. Each of those things are just a small part of it. I collect information to use in my own way. All of that blends to create a mixture that forms me and gives rise to my conscious.

This aside of hers offers some hope that there is more to identity than the unsure foundation of memory. Firstly she mentions her body. It is interesting that she, someone who inhabits a titanium cyborg body, would include that as an ingredient of her identity. She specifically mentions her unique face and voice, but in her world it is quite possible for two shells to have the same physical characteristics. Perhaps one's body is nonetheless a part of one's identity.

Perhaps, as with the ghost hack humans, identity is fluid and not necessarily unique. However, the context in which she mentions those ingredients calls our attention to the “but.” She presents the physical characteristics as ingredients, but they are smaller, less important ingredients. Maybe she does not even mean to include them as ingredients at all. Perhaps physical features serve is to distinguish one from others only in the same sense that a Social Security Number distinguishes one from other tax-payers: the characteristic is accidental and if it were to be given to another as well, it would not change anything fundamental about one’s own identity. Despite the ambiguity of this statement, she then goes on to list several other things that make her unique, namely her sense of destiny and her way of processing experiences. She implies that these things go deeper than memory, and could not be so easily overwritten. It is these elements, along with memory, that make up one’s *self*.

If understanding one’s own self is so challenging, how much more challenging will it be make judgments about the selves present in others? The introduction of The Puppetmaster brings this second set of questions into sharp focus. The Puppetmaster, codenamed Project 2501, is a program designed by the United States to carry out corporate and governmental espionage over the vastness of the internet. At some undetermined point, Project 2501 becomes self-aware, and the U.S. government goes great lengths to track it down and keep its existence a secret. But the Puppetmaster proves too cunning. Unable to hack through Section 9’s firewalls, it takes control of a mechanical body and allows itself to be run over on a Japanese highway. When it is brought to the Section 9 lab, it introduces itself as a sentient being and requests asylum from the Japanese government. According to the lab scientists, a genuine ghost appears to be present. The Puppetmaster only has a few minutes to converse with Section 9 before it is stolen by U.S. operatives, but in that short time it makes some very extraordinary claims.

The first and most controversial of the Puppetmaster's ascertainment is that it is a he, an that he possesses a consciousness similar to a human consciousness. In short, he claims to be a person. He rejects the label of Artificial Intelligence, and holds that he possesses an authentic mind and is due the same rights and privileges of any mind-holder. The audience's first reaction to this is obviously, "How can we know?" This question extends to minds in general: how can we be sure that others have minds, and if they do, how can we know things about those minds? Norman Malcolm and Thomas Nagel provide some very exacting insights into how we consider this question.

Malcolm repeatedly argues against using the "Inner Perception" model, which he claims is essentially an unreliable argument from analogy. According to the Inner Perception model, we understand many things about our own minds from simple mental introspection. We can observe how certain exterior inputs cause inner effects in us, which spur us to produce certain exterior outputs. When we see the same inputs enter another person followed by the production of similar outputs, we assume that the inner black box is the same sort of substance as our own. Malcolm feels that this system is too weak to provide us with assurance about other minds. He also attempts to destroy the simplistic notion of understanding our own minds by pure introspection. He follows Wittgenstein in concluding that the mental concepts we use—things like pain, happiness, etc.—are formed socially. If one stubs a toe, one cannot know that one feels what is called "pain" without a social context in which to share the experience. According to Malcolm, minds must develop socially.

How do these insights apply to The Puppetmaster? Did he have the proper social context in which to develop a mind? It is quite plausible that he did. He was designed to be an intelligent-like program that would crawl the internet and achieve various illegal goals for its

creators. He makes a point of stating that he *developed* his consciousness. It was not endowed to him originally. On the global internet, he had access to an incalculable amount of data, and not just numerical data but the documented experiences of mankind. Presumably, he also had ample contact with the many users of the internet. This seems like an ideal social context for the development of a mind, according to Malcolm's model. The way in which The Puppetmaster's origins are explained is very forward-thinking on the part of Oshii. Unlike his counterparts in similar films, The Puppetmaster is not magically endowed with consciousness as if it were a magical computer chip or a glowing ball of light. Human predecessors were born out of a sea of molecular ingredients, and relied on genes to evolve. The Puppetmaster claims that the sea he has sprung forth from—the global sea of information—is very similar to the sea of genetic information that gave rise to mankind.

But can we really know that The Puppetmaster has a mind, especially if that mind is of a different nature than our own? Thomas Nagel tried to explain why we cannot do so in his famous paper "What is it Like to be a Bat?" Modern philosophy has gone to great pains to destroy the Cartesian idea of a non-extended mind and remind us that being a physical human person is a fundamental part of what makes up our minds. Our bodies and minds are physical. We have senses and experiences and by them we observe the world and act upon it. Being a human with a human body is a fundamental part of what is it like to be us, and so Nagel claims that it would be absurd to think that we could understand what it is like to be any other sort of creature. Other creatures have other bodies. They see and act (and presumably think) differently than we do. Their very nature is inaccessible to us, not just their minds, and this means that we cannot empathize with them and learn what it is like to be them. There *is* something that it is like to be a bat, but until we can be bats, we cannot know it. Perhaps Nagel, were he present in

Section 9's laboratory, would come to the conclusion that if there is something that it is like to be The Puppetmaster we cannot really understand it. It developed in a manner similar to the way we developed, but it does not inhabit a human body. Only recently has it inhabited a mechanical body. If it's mode of existence is so fundamentally different than our own, how can we ever expect to understand what its mind is like?

Not all philosophers are so skeptical. Of course it is not possible to understand exactly what it is like to be something else, but philosophers like Daniel Dennett hold that we can—indeed have the duty to—know a lot of meaningful things about other minds nevertheless. Dennett is very practical and he refuses to give into what he labels philosophical defeat without considering all the available options. He starts with the givens: our own minds. No matter how they are formed or how they operate, we undoubtedly have a unique and intimate perspective on our own minds. This must be the basis from which we will understand the minds of others. All minds, conscious or not, are made of the same fundamental building blocks (“robots” in his terms). The more we come to know these robots, the more we will understand the minds they make up. In accord with a host of modern philosophers, Dennett proposes that language may be the real key to knowing and knowing about other minds. We can know a great deal about other human minds when we can speak to them. The degree of organization that we can achieve to engineer amazing feats like the building of the Pyramids or the creation of a nation are a testament to the power of language, and they surpass the splendor of even the most hyper-organized ant colony. We can share experiences with one another, if not genuinely then at least somewhat meaningfully. This gives rise to a communal reality to supplement our private realities, and it links minds together. We can use language to investigate the understanding of others. By simply quizzing someone, we can determine if they really understand a concept.

This, if not a logically valid way to know that a mind dwells in a body, is certainly a good indicator. The Puppetmaster certainly seems to have mastered language. His monologues are the most eloquent and reasonable of any character in the film. The Puppetmaster has conversations with Kusanagi and even the U.S. operatives trying to steal him back. If he is simply some kind of Turing Test, then he is a very convincing one. He astutely points out that, even if he is simply a program designed to protect itself from being destroyed, he is not much different than DNA, a sequence of genes that breeds exclusively for the ability to reproduce effectively.

This question of whether or not a digital intelligence could even exist with intentionality is a very important one to be explored. The Puppetmaster's existence invites the audience to ask this question. John Searle offers some insights into this topic in his paper "Minds, Brains, and Programs." He, similar to Malcolm, defends the position that simply producing the right output from the right input is not enough to belie the presence of intelligence. As computers rapidly gain the ability to store more information and process data faster, programs become easier and easier to create. Programs to translate between languages are developing quickly, and soon they will be so effective that most people will have a hard time telling the difference between a human translation and a computer translation. But this ability alone does not prove that a computer *understands* the language it is translating. It has no intentionality. It simply manipulates formal symbols... and even the word "symbol" is used very loosely, since the words do not actually symbolize anything to the computer. The fundamental reason why such translator programs cannot be intelligent is that the thinking has already been done by the programmer. To use Searle's example, a human programmer has already taken the English word for "dog," formed a mental concept of a dog, and located the corresponding Chinese word. The understanding has

been accomplished already, and it is the results of thought—not thought itself—which become the program. For a computer to be intelligent, it must have intentional states. It must understand concepts, and it must will its own actions. Interestingly, Searle does not deny the possibility of a computer intelligence (in his words, “strong AI”). In fact, he vaguely implies that such a thing is unavoidable as we continue to broaden our understanding of the human mind. He notes that “I see no reason in principle why we couldn’t give a machine the capacity to understand English or Chinese, since in an important sense our bodies with our brains are precisely such machines.”

The mechanical language that Searle intentionally uses leaves him open to several objections. If machines, which simply process formal signals, cannot understand, what is it about the brain that allows it to understand? At some basic level, isn’t it also simply processing formal signals?

Unfortunately, this line of debate quickly slips into the unanswered questions about mankind’s ability to will. Just like everyone else, Searle doesn’t seem have the answers there. The second reply often made to Searle is the objection that, while the individual parts of the system may not understand, perhaps the system as a whole does. His reply to this is simple: internalize the system completely within the person or computer in question. Once again, this eventually leads to questions about the ability to will, and that goes beyond the scope of his paper.

Searle’s idea that the thinking has to be done by the computer and not the programmer also highlights the importance of the Puppetmaster’s developmental origin. Since programs require the programmer to do the actual thinking (and thus render the program incapable of thought), perhaps it is not possible to program intelligence. Perhaps we cannot explicitly create it. Perhaps, like The Puppetmaster, it must be generated from a sea of information. This is a very revolutionary consideration, but it is one that certainly deserves serious attention. What if the best way to create digital intelligence was not to program it, but to create the environment out

of which it could spring—a primordial soup of virtual information? Here, perhaps, Dennett’s concept of consciousness as an emergent property will prove quite useful. If consciousness can develop from many small, non-conscious “robots,” perhaps these robots are the building blocks of which this primordial informational sea will be composed. These tiny robots may prove to be the Amino Acids of robot evolution.

The last part of *Ghost in the Shell* follows Major Kusanagi as she peruses the U.S. operatives that have stolen The Puppetmaster. She eventually succeeds with help from Batou, and is afforded the chance to “dive into” the cyber brain of The Puppetmaster. She finds more than she had bargained for. The Puppetmaster speaks to her and reveals that his goal this whole time has been to meet her. Surprisingly, he wishes to merge his ghost with hers in a way that is symbolically sexual. Both of them will change, producing unique offspring into the internet. Once this has happened, the Puppetmaster tells her that he will finally have achieved the last two qualities requisite of all life on Earth: the ability to reproduce and to die. Both of these seem like very strange desires, but when one considers them, they actually do seem make sense. Life has evolved to survive and reproduce by constantly changing out the old for the new and constantly introducing variation. Individuals die, but the species continues and prospers. Now the audience must step back and look at the larger picture. The Puppetmaster is no longer trying to be digital intelligence: he is trying to be digital life.

*Ghost in the Shell* is arguably the most unique Artificial Intelligence movie of its time. It probes deeply into the philosophical and scientific definitions of life, identity, and intelligence. Its presentation is new and refreshing, and the perspective offered on digital intelligence is truly groundbreaking. Identity and intelligence are no longer static things to be produced by a meticulous creator. They are fluid, ever changing and regenerating, parallel to biological life.

The scientific definition of a species specifies two beings that can produce viable offspring.

Perhaps *The Puppetmaster* is not so different from the Ghost-in-Shell Kusanagi after all. Either way, *Ghost in the Shell* has encouraged investigation into the science of mind, and has offered striking new perspectives to the field.