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A Review of "Flesh and Machines - How Robots Will Change Us" by Rodney Brooks

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Respect...Just a Little Bit

Flesh and Machines – How Robots Will Change Us

by Rodney Allen Brooks, Pantheon Books, New York, 2002

Reviewed by Phil Fetzer

"Cog 'noticed me' after I entered its room. Its head turned to follow me and I was embarrassed to note that this made me happy." So wrote Professor Sherry Turkle after visiting a university research lab a few years ago. She concluded: "I had behaved as though in the presence of another being." A central argument in *Flesh and Machines,* then, is that the more we treat robots like people the less we will distinguish between robots and people. While we treat chimpanzees "with an almost, but not quite, human level of respect," mice and rats get much less. Reptiles? Fish? Insects? Well, you get the picture. All robots need is a little respect.

After viewing *2001: A Space Odyssey* as a teenager, Rodney Brooks decided to spend his life "building intelligent machines." He now teaches computer science and engineering and serves as Director of MIT's Artificial Intelligence Laboratory. Professor Brooks has written a very interesting book about the development of robots.

The first robots were developed during the Second World War. They used vacuum tubes and electric motors. By the late 1970s, scientists at the Jet Propulsion Laboratory in Pasadena had designed a robot to assist in the exploration of Mars. While corporate giants such as Sony and Honda have become active in the production if industrial robots, *Flesh and Machines* focuses on the work of individuals or small faculty teams working in university research labs.

An intriguing aspect of the history of robots lies in the selection of names. Some creations have robot-sounding names such as "P2." Other names are distinctly human. Take Bodicea. The name sounds like that of an attractive woman. It's a bit of a let down to discover she's actually a "pneumatic, six-legged walker"! There's a reason why some inventors apply a person's name to a machine: they believe that the machine is "alive." Brooks sees little difference between people and machines.

For example, the author argues that since the body is a "mass of biomolecules" that act on the basis of "a set of specifiable rules," the distinction between human and robot is a moot one, at best. Brooks writes: "So here is the crux of the matter. I am arguing that we are machines and we have emotions, so in principle it is possible for machines to have emotions as we have examples of them (us) that do."

Discussing the computer that plays a key role in "2001," Brooks says: "HAL 9000, conflicted by its orders, decides that the mission is more likely to succeed if the human crew on board the space ship is eliminated." Human beings are frequently conflicted. And human beings are decision-makers. But robots? Another example is "Kismet," one of the most popular robots yet developed. Kismet, from Brooks' perspective, is a "truly sociable" robot "that can interact with people on an equal basis, and which people accept as a humanoid creature."

During my undergraduate days, I took a class taught by an outstanding logician, Professor Carl Hempel. One of our assignments was to examine the meaning of what seemed like a relatively simple concept "blackbird." For example, is a dead blackbird, still a "blackbird"? Suppose it had been run over by a car. Is it still a "blackbird"? What if it lost one of its wings? Or its tailfeathers? Is there a point at which it is appropriate to describe a robot not as a "machine" but as a "living being"? If so, what is that point?

By the new millennium what can robots do? Well, they can walk extremely well, climb stairs, sight-read music, converse with people, and make eye contact. Robots also make great toys. This past Christmas, Hasbro marketed "FurReal Cats" that cuddle when you pet them while Sony continues to make money on Aibo, the robotic dog. At the same time, Brooks acknowledges that there are many things that robots can't do. They can't perform simple visual tasks such as distinguishing a coffee cup from a chair. They can't say anything meaningful. Hmmm...

What would we like robots to do in the future? It turns out that what we really want are machines that will clean our floors and bathtubs, iron our clothes and mow the lawn. Sounds good! This description reminds me of a song. The first musical I ever saw was "My Fair Lady." During the show, Professor Henry Higgins starts to sing while asking his friend "Why can't a woman be more like a man?" Professor Brooks it seems, may be asking a similar question in *Flesh and Machines:* "Why can't a robot be more like a spouse?"

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