The Ghostly Illusion of Freewill

(A brief introduction to the problem of freewill for Cafe Philosophy magazine)

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During my childhood I was fascinated by videogames. One game that stands out in my memory is Pacman. It wasn't the gameplay that interested me so much as the behavior of the ghosts. As you watch them roam around the maze, you get the feeling that they are intelligent. They seem to be making decisions about how best to catch Pacman. But how *free* are their decisions? One of the interesting things I noticed was that I could play exactly the same game over and over if I moved Pacman in precisely the same way each time. The ghosts always followed the same behavioral pattern and didn't deviate from that pattern until I changed my pattern. Experimenting with Pacman in this way revealed to me something about the ghosts' behavior. True, they make decisions, but their decisions are firmly and predictably determined by the way I move around the maze.

Another way to reveal the ghosts' behavior is by analyzing the Pacman computer program. Toru Iwatani, the creator of Pacman, has intimate knowledge of the program and can precisely predict how the ghosts will behave in any given situation. This is achieved by analyzing gameplay variables such as the x,y position of Pacman and the x,y position of each of the ghosts, then working through the program's source code to determine how each ghost will move in light of these variables. So it seems that the ghosts, while making decisions in a sense, are not making *free* decisions. Their moves are based on an a pre-defined set of rules—an algorithm—which produces behavior in response to the state of the game. If Pacman is positioned to the

left of a ghost, the ghost will move left—unless its path is blocked by a wall. If its path is blocked, the ghost will either move up or down, and this choice depends upon whether there is another ghost approaching from above or below. Whenever this situation occurs, the ghost acts in precisely the same way. Ghosts cannot act differently because their behavior is determined by the computer program.

Now, this may seem obvious. Of course the ghosts have to follow rules. If they didn't, they might never catch Pacman. The ghosts do not have freewill. They can't decide not to chase Pacman. They do exactly what their program tells them to do in any given situation. However, they do provide an illusion that they are making free choices.

We can accept that the ghosts in Pacman do not have freewill because they inhabit a simple deterministic world, but what about more sophisticated entities such as humans? Surely we have freewill. After all, our behavior is much more complex, and we certainly *feel* free?

Intuitively, many declare that we most certainly *do* have freewill. But we have to remind ourselves that the world we inhabit is also a deterministic system—more complicated than the Pacman world, but deterministic nonetheless. There are laws of nature that are consistent throughout the Universe. These laws determine the behavior of all natural systems from planetary motion to the firing of neurons in the human brain.

Now, in analyzing the neural activity of the brain, philosophers such as Paul Churchland (1996) conclude that the brain is a type of computer. It is not a digital computer like a Pacman machine; rather, it is device known as a connectionist network. Interestingly, since computer scientists can simulate connectionist networks using traditional digital computers (Copeland & Proudfoot, 2000; Fischetti, 2011), it is possible that future scientists will be able to *represent* the neural activity of the entire brain as a digital computer

program. Such a program would be unimaginably more complex than the Pacman program. However, despite its complexity, scientists could, in principle (although unlikely in practice) use it to make accurate predictions about a person's behavior. They would do this in the same way that Toru Iwatani predicts the behavior of Pacman's ghosts—by collecting complete information about the current state of the world, analyzing the current state of a person's memory, then working through the brain's program to discover the person's next action.

Imagine, for example, that scientists have a printout of Fred's brain. This printout contains the complete brain program and a full memory download. Armed with this printout, along with complete knowledge of the laws of physics and current state of the world, scientists predict that at midday on July 23rd Fred will murder his business partner, Robert. Imagine now that Fred does indeed commit murder just as predicted. The scientists knew that Fred was going to commit the crime before Fred made the decision. In this way, it seems that Fred's decision was not free. In fact, with all the conditions in place, it would have been impossible for Fred to choose anything other than to murder Robert. Why? Because if he was to choose anything else, the scientists would have predicted *that* outcome. You can imagine resetting the world to it's state at 6am on July 23rd and watching the whole scenario play out identically—just like resetting the Pacman machine and playing an identical game.

Given that we live in a Universe governed by a consistent set of rules; and given that our brains are computational devices that operate according to the laws of physics, it seems we cannot escape the conclusion that we do not have freewill. We experience an illusion of freewill, but essentially, we are as free as the ghosts roaming around Pacman's maze.

References

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