The Reductionism of Consciousness

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Abstract

The idea of consciousness has created major difficulties in the doctrine of reductionism. We shall here give an account for the history of reductionism and the mind-body problem, and try to address a few problems caused by the reduction of consciousness, finally we will see how reductionism can possibly respond.

Introduction

Reductionism has been one great triumph of the human understanding to the objective universe in the last few centuries. Its belief that essentially *everything* can be explained in terms of certain fundamental physical events has been greatly encouraged by the vigorous development in various fields of natural sciences, The modern quantum physics, for example, is extraordinarily successful in explaining many microscopic phenomena, giving extraordinarily accurate predictions of microscopic systems, and hence enhancing the development of numerous applications such as computer and nanotechnology. However, arguments against reductionism have never been stopped being raised here and there, and especially in the philosophy of mind, where consciousness and subjectivity comes into the play and creates major difficulties in the doctrine of reductionism. Here we shall give an account for the history of reductionism and the mind-body problem, and try to address a few problems caused by the reduction of consciousness, finally we will see how reductionism can possibly respond.

A Survey of Reductionism

The idea of reductionism can date back to as early as pre-Socratic period, when philosophers such as Democritus tried to explain the external world in terms of some fundamental indivisible atoms. Such reasoning, as "The Oxford Companion to Philosophy" puts it, "is the claim that facts about X can be 'reduced' to - that is, can be construed to be - facts about an apparently different subject-matter Y ('the reduction base')."[1]

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[1] Oxford University Press, "The Oxford Companion to Philosophy", [http://www.xrefer.com/entry/553366].

What this means is that, given a system, we can analyze it in terms of its constituent units which are in themselves fundamental. The relationship between the reduced system and the reduction base is often not obvious, and may be rather surprising sometimes, as in the case of human reproduction and the replication of DNA. Moreover, by this we do not mean only that the system is *composed of* some other things, but that it is in fact composed of *only* these things, and nothing else. In other words, the ultimate goal of reductionism about a system is to explain and *equate*[2] a system with its constituents. Hence, the meaning of "water being reduced molecules of H_2O" is that water is in fact only a collection of H_2O molecules - it is *identical* to the collection of H_2O molecules. Therefore in the strong sense of reductionism, then ontologically, H_2O molecules exist, water does not.

The reductionist strategy is applied in many different areas of human knowledge. In physical science, where reductionism flourishes and is proven most successful, physicists describe all the systems in the universe in terms of some fundamental constituents of matter[3], and their relationship in terms of the interactions between them, such as the attraction of the sun and the earth in terms of particle exchange between the constituent matters.

In the case of philosophy of mind, or the mind-body problem, reductionists argue that mental events are in principle physical events. In other words, sense awareness, thought, desire, and all other kinds of intentional properties of the mind can be "reduced" to the effect of certain physical events, or as some others put it more clearly, are only the result of brain processes.

A Survey of the Mind-Body Problem

The mind-body problem started with Descartes' claim that mind and body are two distinctive substances. Descartes believes that the mind can exist without the material body. He reasons that even when he imagines his body and the senses to the material world are only illusions, and do not actually exist, the only thing he cannot doubt about is his self, his mind who is making the doubts. Therefore he says, "I think therefore I am."[4] Descartes' idea that mind and body are two distinctive substances, each of which can act on, but not reducible to the other, is commonly known as dualism, or more precisely Cartesian dualism.

Cartesian dualism was criticized by subsequent philosophers in different aspects.

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[2] Gerald L. Smith, "On Reductionism", [http://smith2.sewanee.edu/gsmith/Texts/Ecology/Home.html].
[3] P. C. W. Davies and J. Brown, *Superstrings - A Theory of Everything?* (Cambridge: Cambridge University Press, 1999), p.1.
[4] René Descartes, "Meditations on First Philosophy," in *Philosophy of Mind – Classical and Contemporary Readings*, edited by David J. Chalmers (Oxford: Oxford University Press, 2002), p.10.

David Hume argues that the mind is not a single immaterial thing, but instead a bundle of little immaterial things.[5] Thomas Huxley, in addition, argues that the mind cannot act on the body whereas the body can affect the mind.[6]

Success in psychology in the mid- and late twentieth century promoted the rejection of the dualism. Various forms of materialism were explored as a result of the deeper understanding of the physical events taken inside the brain. Gilbert Ryle, for instance, argues that the mind is in fact only an aspect of the body's own activities. He believes that to be in a certain mental state means to be in a certain behavioral state.[7]

Hilary Putnam attacks Ryle's behaviorism by suggesting that a specially trained being might feel pain while having no associated behavioral dispositions, and similarly a perfect actor might have any behavioral disposition without the associated mental state.[8] Thus mental states cannot be reduced to mere behaviors.

A stronger reduction of the mind appeared as the Identity theory, and later, the Causal theory. The Identity theory was put forward by U. T. Place, J. J. C. Smart and Herbert Feigi. They think that the behaviorist approach is inadequate to account for such things as perception and consciousness, thus they move a further step by saying that perception and consciousness are indeed physical processes in the brain.[9] David Lewis and D. M. Armstrong were dissatisfied with the Identity theory's approach of being still half-behaviorist. They extend it by claiming that all mental events, including thought, desire and other intentional states, are physical processes in the brain.[10] Since mental events can be reduced to physical events, then, obviously, physical events have a casual effect on mental events.

Modern philosophers generally tend to be more or less materialistic, or physicalist at least, towards the mind-body problem. Nevertheless, the problem of consciousness still creates major difficulties to reductionism and has raised hot debates.

The Problems of Consciousness

Thomas Nagel published his influential paper "What Is It Like To Be A Bat?" in 1974, addressing clearly the difficulties towards the problem of consciousness faced by reductionists.

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[5] D. M. Armstrong, *The Mind-Body Problem* (Boulder: Westview Press, 1999), p.3.
[6] Ditto, p.4.
[7] David J. Chalmers, *Philosophy of Mind – Classical and Contemporary Readings* (Oxford: Oxford University Press, 2002), p.3.
[8] Ditto.
[9] Ditto, pp.4-5.
[10] Ditto, p.5.

According to Nagel, to say that an organism is conscious is essentially saying that it has something that is "like to be that organism". What this means is that, the organism (let's say he is a person) must have his own subjective point of view to the external objective world.

For the sake of an example, Nagel leads us to imagine what we would experience if we were bats. Since bats have very a different sensory organ than ours, which employs sonar as a mean to detect the distance between themselves and the objects inside their field of view, it is conceivable that what a bat would experience is considerably different from what a human would. Nagel infers, then, even if one tries to imagine himself "having webbing on his arms, which enables him to fly around at dusk and dawn catching insects in his mouth; and that he has poor vision, and perceives the surrounding world by a system of reflected high-frequency sound signals; and spends the day hanging upside down by his feet in an attic", all he is trying to do only tells him what it is like for *him* to be a bat, rather than what it is like for *a bat* to be a bat, which is its subjective point of view.

Nagel argues that since a reduction has to be based on something objective, and yet consciousness is subjective, it can thus hardly be seen that how reductionism can account for this important phenomenon.[11] But I shall try to show that if reductionism is not obviously true, then it is at least something that cannot be easily disposed of.

Consider drugs of hallucinogen, it is often reported that people taking such drugs "experience" some sort of hallucinations, such as having mystical stimulations in ordinary senses, "seeing" music and "hearing" light, feeling some sort of mystical euphoria, flying or floating in the sky or even having out of body experience.[12] Never mind how weird and paradoxical these "experiences" may sound, the point is that they are some experiences which we do not normally experience, but certainly appear to be very real in the eyes of the drug takers.

Now, if we analyze the taking of the drugs then we will find that it is some chemical substances in the drugs which actually stimulate the central nervous system, causing certain pattern of neuron firing. As we can see, certain patterns of neuron firing do indeed give us experiences which we do not normally process as human beings. Then, it seems inevitable to move a step further and suggest that I can actually experience "what it is like to be a bat" by stimulating my brain in a certain way and

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[11] Thomas Nagel, "What Is It Like To Be A Bat," in *Philosophy of Mind – Classical and Contemporary Readings*, edited by David J. Chalmers (Oxford: Oxford University Press, 2002), pp.219-225.

[12] William Glenn Steiner, "Hallucinogen", [http://www.britannica.com/psychedelic/textonly/hallucinogen.html].

causing a certain pattern of neuron firing.

Another similar yet slightly different problem is Frank Jackson's Knowledge Argument. Jackson argues that if a brilliant scientist, Mary, is for some reason forced to live in a black and white room and investigate the world via a black and white television, then even if she can possess all the knowledge necessary to understand all the reactions taking place inside the brain and in the physical world, she can have no understanding of the experience of colors at all.[13]

In particular, Mary may understand the word "red" as the sensation of a kind of electromagnetic waves with a wave length of 700nm, stimulating the cones on our retina in our eyes. In addition, Mary may be able to describe more preciously how neurons in the nerves and the brain are activated and things like that. Nonetheless she has no way of understanding how "redness" appears to us until she finally escapes from the room. Hence Jackson argues that since a complete picture of the physical events cannot give Mary the experience of redness, such experience must be irreducible and therefore reductionism must be incomplete.

However such reasoning is neglecting the possibility that experience can be a mere product of brain processes, as explained above. I can be fairly safe to assume the possibility that if Mary's brain is stimulated by electronic signals in a certain way, then she will feel the sensation of redness which she has never had before. Thus given enough details of the working principle of the brain, it is unreasonable to assume that experience of "a new kind" cannot be obtained.

If conscious experiences are indeed just certain patterns of neuron firing, then it is only because that our everyday experiences do not trigger some patterns of neuron firing which make us inaccessible to some alien experiences, such as the experience of a bat and that of a color that we have never seen before. It is just like the analogy that although we experience a three dimensional space, it is completely reasonable to assume that if the space were four dimensional, we shall still be able to perceive it. In other words, we are *capable* of having such experiences, but that we are only bounded by our physical nature.

Furthermore, a trained musician who can read the score and know what the music would be like if it is played, will sound as unbelievable as extrasensory perception to someone who does not know sight-reading nor anyone who knows it. But the reason why the musician can sight-read a new piece of music is only because he has old experiences of the sound of the different notes, together with a theoretical

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[13] Frank Jackson, "Epiphenomenal Qualia," in *Philosophy of Mind – Classical and Contemporary Readings*, edited by David J. Chalmers (Oxford: Oxford University Press, 2002), pp.273-279.

framework that organizes the notes into a complete piece of music. Thus it is reasonable to argue additionally that such experiences of sonar perception and color vision can be built up by lots of little old experiences of human perceptions and black and white vision.[14] Of course, old experiences may not always be enough to construct a new experience, but in that case, that is only because certain patterns of neuron firing are not triggered.

So as we can see, the idea of reductionism cannot be easily rejected.

Conclusion

I do not pretend that I am unbiased towards the mind-body problem, as D. M. Armstrong says, "without a point of view, a bias, a philosopher is nothing."[15] Although I cannot conclusively say that reductionism is the final answer, I can be fairly safe to say that, following centuries of rational, positivist scientific exploration, it has become more than reasonable to assume that human beings, together with their so-called "mind" and "soul", are nothing special in the physical universe. We first came to realize that the earth revolves around the sun and is not the center of the universe, then we knew that human beings evolved from monkeys some millions of years ago, and we found that illness is caused by bacteria and viruses instead of demons or punishments from god. As the story goes, I think it is time to accept that we are only *part of* the physical world, nothing more, nothing less. There is nothing that sets human special and apart from the others.

Nevertheless, I should have to make it clear that what reductionism argues about is that the mind is *in principle* reducible to the body. The human brain is by far the most complex system we know of, thus no realizable account can be given to the above mentioned experiments in the foreseeable future. In addition, no deprivation of the human dignity of any kind is intended by the attempts of reductionism. It is not necessary nor is it reasonable to regard human beings as a mere collection of atoms in everyday life, even if reductionism turns out to be correct. Human beings can still enjoy their subjective experiences while the human society can keep running, without caring about even a single little bit of what reductionism says. It is just like no one would try to understand what goes on with the protons and electrons in the nutrients when he wants to fertilize a farm. Therefore, reductionism only gives us a deeper understanding of the nature of the mind, but has nothing to deal with the deprivation of human dignity.

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[14] David Lewis, "What Experience Teaches," in *Philosophy of Mind – Classical and Contemporary Readings*, edited by David J. Chalmers (Oxford: Oxford University Press, 2002), pp.281-282.
[15] See 5, p.2.

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