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Reductionism and Its Different Types in the Context of the Mind - Body Relationship : a Philosophical Analysis

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Abstract: The following discussion presents an analysis of reductionism, particularly in the context of the mind-body relationship, and an argument in its favor. Two main types of reductionism are discussed: ontological, which concerns the nature of being, and methodological, which concerns how best to study the world. It is argued that while both types have merit, methodological reductionism, which seeks to explain psychological phenomena in terms of physical ones, is the more promising approach. This is because it can potentially account for all aspects of human experience, including consciousness, free will, and intentionality, in a way that is consistent with our best scientific theories. Additionally, it is argued that methodological reductionism can help to resolve some of the outstanding problems in psychology, such as the mind-body problem and the problem of consciousness.
It also discusses the relationship between reductionism and other views on the mind-body relationship, such as dualism and non-reductive physicalism. It is also argued that reductionism is compatible with both of these views. Finally, it is concluded by arguing that methodological reductionism is the most promising approach to understanding the mind-body relationship and that it has the potential to make a significant contribution to our understanding of human nature.

The key- words :
* Reductionism: A philosophical concept that attempts to explain complex phenomena in terms of simpler ones.
* Mind-body relationship: The relationship between the mind and the body, a major topic in philosophy and science.
* Ontological reductionism: The view that everything that exists is ultimately physical.
* Methodological reductionism: The view that psychological phenomena should be explained in terms of physical ones.
* Dualism: The view that the mind and body are two separate entities.
* Non-reductive physicalism: The view that physicalism is true, but that the mental cannot be reduced to the physical.
* Consciousness: The state of being aware of and responsive to one's surroundings.
* Free will: The ability to make choices that are not determined by prior events.
* Intentionality: The power of minds to be about something or to represent something.

One of the main goals of the philosophical inquiries of the philosophers belonging to the Logical Positivist group was to establish a unity among different sciences. They believed that physics should be accepted as the paradigm for all sciences. They hoped that all sciences could be 'reduced' to physics. The main objective of reductionism regarding the relationship between body and mind is to present the possibility of reducing psychology to physical science from various perspectives. Needless to say, here we are using terms like 'reduction', 'reductionism', etc., as technical terms. In the first part of this article, I will discuss the types of reductionism and their interrelationships. In the second part, I will present arguments in favor of reductionism from a specific point of view.

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According to reductionism, saying 'a substance called 'A' can be reduced to a substance called 'B' means saying that 'the substance A is nothing more than the substance B'. That is, the term 'reduction' is used to denote the relationship of non-addition between two subjects. Different philosophers have discussed the types of reductionism from

different perspectives. Here we will present the types from two perspectives. In the first one, the types of reductionism are mentioned according to the relata of the non-addition relation. John Searle mentions the types from this perspective. According to him, reductionism can be of at least five types. The type of reductionism that tries to prove the ontological non-addition of one type of substance to another type of substance is called ontological reductionism. For example, a gene is nothing more than a DNA molecule; or the mind is nothing more than the body. On the other hand, the type of reductionism where a physical quality or property or state is said to be non-additional to its physical qualities, properties, or states, then, in Searle's terminology, it will be called qualitative or property-based ontological inclusion. For example, light is an electromagnetic wave. Hunger means a disturbance of a particular chemical balance in the body.

Searle says that a third type of inclusion can be spoken of where an attempt is made to prove that one theory is non-additional to another theory. For example, if it is proven that neurophysiology is nothing more than physics, then it can be said that neurophysiology is included in physics. Searle says that just as inclusion can be spoken of in the case of matter or theory, so can it be spoken of in the case of words or sentences. If a particular material-referring word or sentence can be translated by a sentence or word referring to a different kind of material, then the first kind of word or sentence can be said to be included in the second kind. For example, sentences related to numbers can be translated through sentences related to sets. This type of inclusion is called logical or definitional inclusion. When behavioral psychologists say that sentences related to mental states can be expressed through sentences related to behavior, they are talking about the possibility of definitional inclusion. According to Searle, a fifth type of inclusion can be called causal inclusion. If the ability of a material object to produce an effect can be fully explained by the ability of another objective effect, then the causality of the first object can be included in the second objective causality. For example, if a solid object is pressed, it can resist the pressure. This ability to resist pressure can be explained by the ability to produce effects due to the motion of the molecules that the object is made of.

Searle's theory regarding the types of inclusion presented is weak for two reasons. Firstly, this classification cannot be called exhaustive because the theoretical possibility of finding more different types of relations in the case of the non-additional relation remains. In fact, Searle himself is ready to admit that possibility, which is why he said at the beginning of the discussion of the classification that inclusion can be 'at least' five types. Secondly, the difference between the relations of identity and non-addition is not clear in the classification discussed by Searle. It is not that if there is identity between two things, then non-addition or inclusion can be spoken of. Non-addition or inclusion is a matter of proof. This proof-dependence may not be present in the case of identity. When Searle speaks of definitional inclusion, he is essentially talking about translation-based identity. This identity is not always proof-dependent.

In the book Philosophy of Psychology, Joseph Margolis has classified inclusion, based on which Searle's presented classification can be possible to bring them under two broader categories. In that case, the mutual relationship between different types of inclusion can be understood more clearly. However, before going into Margolis's context, it is necessary to mention that from now on, we will limit the discussion of inclusion to the possibility of including psychology in physics.

While introducing the discussion on the types of inclusion, Margolis says: In the discussion of the scientific explanation of mental states, mental functions, etc., attempts are mainly made to find answers to two questions – (1) Can the ontological non-addition of mental subjects to physical subjects be accepted? And (2) Is it possible to explain mental events using the vocabulary and methods used to explain various events in physics?

The theory regarding the mind-body relationship that gives a positive answer to the first question is identified by Margolis as ontological reductionism, and the theory that gives a positive answer to the second question is called methodological reductionism. Let's try to understand the nature, differences, and relationships of these two types of reductionism a little more extensively.

We will first discuss methodological reductionism. Because, regarding what exactly is meant by reductionism, all the well-organized descriptions available mainly show discussions related to methodological reduction. While analyzing the meaning of reductionism, Ernest Nagel says that including one theory in another theory means

"explaining a theory or experimental law presented for one field of knowledge by a theory created for another cognitive field."

According to Nagel, two conditions need to be fulfilled for 'inclusion'. Firstly, to include science A into science B, it must be established that all the rules and theories of science A can be deduced logically from the established rules and theoretical constructs of science B. Secondly, all the terminological words used in science A can be translated or analyzed by the vocabulary used in science B. If you observe carefully, you will see that there is a relationship between these two conditions. If there is a word in science A that cannot be translated or analyzed by the vocabulary of science B, then no rule or theory of science A formed with that word can be logically deduced from science B. Therefore, the second condition needs to be fulfilled before the first condition. It is noteworthy that fulfilling this second condition is not always very easy. Although definitional sentences or definitions are often helpful in establishing relationships between the vocabularies of two sciences don't happen in all cases. In this context, logical positivists like Carnap and Hempel have discussed it in detail. The conclusion Carnap reached in this regard can be mentioned. According to Carnap, if a term 'x' belonging to a vocabulary can be used or applied by fulfilling certain conditions, and if these conditions can be indicated by other terms 'y', 'z', etc., belonging to another vocabulary, then it can be said that the term 'x' can be translated or analyzed by the terms 'y', 'z', etc.

If establishing vocabulary-related relationships is possible, then the first condition, i.e., moving towards fulfilling the condition of deducing a law of science 'k' from a law of science 'h', becomes feasible. However, a law of one science cannot be deduced from a law of another science unless bridge-laws are accepted between both sciences. Let's assume a law of science 'k' is $\alpha_1 \rightarrow \alpha_2$. To deduce this law from a law of science 'h', $\beta_1 \rightarrow \beta_2$, it is necessary to accept two bridge-laws. The two laws are: $\beta_1 \equiv \alpha_1$, and $\beta_2 \equiv \alpha_2$. Needless to say, fulfilling the conditions related to the vocabulary plays a crucial role in forming bridge-laws.

Based on the above discussion, it can be said that if the laws and theories of psychology can be deduced from the laws of physics by forming bridge-laws using the vocabulary of physics or physical science, then the methodological inclusion of psychology in physics can be described as possible. It is noticeable that methodological inclusion is essentially another name for theoretical inclusion, and Searle's recognized symptomatic inclusion and causal inclusion are also parts of methodological inclusion.

From the way methodological inclusion is presented, it might seem that this type of inclusion is merely a matter of language and logic, and ontology of physics plays no role in this type of inclusion. In fact, Carnap, the main proponent of inclusion theory, supports this view. While discussing inclusion, he states that the question of unity among different sciences is not a question about being, but a question about the logical structure of science. "Whether the so-called mental processes are actually physical processes" is not a question asked here. While those who want to separate methodological inclusion and existential inclusion support this view, many believe that if unity is to be established among different sciences by including other sciences in physics, then it is not possible to do so by ignoring the ontology of physics. Therefore, Paul Oppenheim, Kemeny, and others who believe in this view propose an alternative theory for methodological inclusion. This view is known as micro-reduction. We will discuss the theory here.

Just mentioning it, not discussing it in detail. According to this theory, if a branch of science β_2 is includable in another branch β_1, and if the relationship between the entities acknowledged in β_2 and the entities acknowledged in β_1 is such that each of the parts into which the entities of β_2 can be divided is acknowledged as an existing entity in β_1, then the inclusion of β_2 in β_1 will be called 'micro-reduction'. Oppenheim's theory emphasizes the trend of physical molecular analysis and stresses the close relationship between methodological and ontological inclusion.

It is necessary to mention here that, like Carnap, Margolis also describes methodological inclusion and ontological inclusion as mutually independent. He believes that there is no inconsistency in saying both 'man means nothing more than a physical body with physical properties' and 'for methodological reasons, the mental characteristics applicable to man cannot be explained by physical characteristics' at the same time. That is, someone may admit the possibility of inclusion in the case of an ontological theory but may not admit the possibility of methodological inclusion. As an example, Margolis mentions Davidson's theory. On the other hand, Margolis believes that when explaining all the phenomena that are tried to be explained in psychology, relying solely on physical terms and the

laws of physics, there is no obligation to comment on the entities acknowledged by psychology. As an example, J. B. Watson's behaviorist theory can be taken. According to Watson, mental states or matters do not play any role in scientific causal theory. Therefore, he did not discuss the nature of mental states or matters.

Margolis's view on the relationship between the two types of inclusion cannot be fully supported. There is room for doubt as to whether methodological inclusion can be denied by admitting ontological inclusion while discussing methodological inclusion. It is true that in Davidson's theory, only physical objects and events are said to exist ontologically, and the possibility of laws relating physical events and mental events is denied. But can it be said solely on the basis of this information that Davidson's theory is inclusionary from an ontological point of view? I have mentioned earlier that the relationship of identity can be distinguished from the relationship of non-redundancy. In this context, the statement of Paul Churchland can be mentioned. Regarding when inclusive non-redundancy can be admitted, he says, 'All that would be required would be that an explanatorily successfull neuroscience develop to the point where it entails a suitable 'mirror' image of the assumptions and principles that constitute... conceptual framework for mental states.... If this (rather demanding) condition were met, then we would be justified in announcing a reduction, and in asserting the identity of mental states with brain states."

It can be mentioned that Davidson himself did not want to describe his theory as an inclusionary theory.

2

Everyone will admit that the development of physics over the past hundred years has been much greater than the development of psychology. Generally, any science has three goals: (1) to explain phenomena within its domain, (2) to help predict future events, and (3) to provide guidance on how to control events. We are aware of the success of physics in all three of these areas. However, even fifty years ago, the role of psychology in achieving these three goals was very disappointing, and it cannot be said that it has reached a much improved state even now. It is true that psychology was integrated with philosophy for a long time, and during that time it was rarely guided towards achieving the goals of science. However, it has been more than a hundred years since experimental methods began to be applied in psychology, leaving the confines of philosophy. In 1879, Wilhelm Wundt established a laboratory for psychological experiments. Of course, physiologists like Ernst Weber and Gustav Fechner had already started experimental work on topics related to psychology before this. There is no denying that the application of experimental and controlled observation methods has eliminated many erroneous ideas accepted in philosophy-based psychology. However, in terms of achieving the goals of science, it must be admitted that the progress of psychology is very slow. An attempt can be made to analyze what the reasons for this might be.

Analyzing the nature of the development of psychology before the theoretical discussions of the logical positivists began, it can be seen that there is a lack of consensus among psychologists about what the subject matter of psychology should be. According to Wundt, the subject matter of psychology is 'experience'; William James believes that the unbroken stream of consciousness is the primary subject of psychology; Freud claims that the main reason for psychology is to help uncover the nature of the unconscious; and according to Watson, the goal of psychology is behavior analysis. In fact, the nature of the mind and due to having different opinions on the relationship between mind and body, disagreements have arisen regarding the goals of psychology. Furthermore, due to differing goals, differences have also emerged regarding which methods should be prioritized in psychology. Associationists have advocated for dividing mental states into smaller parts to understand them. On the other hand, Gestalt psychologists try to understand mental processes from a holistic perspective. Freud wanted to explain behavior based on memories and unconscious desires; Watson emphasized the presence or absence of stimuli. In other words, there is not only variety but also opposition among different schools of psychology regarding both goals and methods. This multi-faceted division regarding goals and methods can be identified as one of the major obstacles to the progress of psychology. To overcome this obstacle, it is necessary to agree on the nature of mind and mental phenomena, as well as on the methods of scientific inquiry into these matters. Mind-body inclusion can help in this regard.

The lack of attempts to establish connections among different schools of psychology is also a reason for psychology's lagging behind. Due to each school of psychology's rigid stance on the scope of discussion, there is no opportunity to prepare for establishing connections among them. Inclusion can certainly be helpful in

overcoming this rigidity. If it can be shown that the theories accepted in one school of psychology can be deduced from physics, then it may inspire the scope of the aforementioned school of psychology to be expanded in the case of other theories deduced from physics and relevant to psychology. Let's take an example. Edward Titchener, a psychologist from the era of experimental psychology, kept abnormal psychology and comparative psychology outside the scope of psychology. He was discouraged about these branches of psychology because the method of introspection could not be effectively applied in these areas. If it is shown by applying the method of inclusion that the theories of Titchener's psychology, abnormal psychology, and comparative psychology can all be included in physics, then the possibility of establishing the necessary relationships among these three types of psychology will emerge.

Applying inclusion not only allows for establishing connections with other schools of psychology, but also often makes it necessary to realize the need to revise or refine one's own school of psychology. When explaining perception, associationists say that we first perceive the parts, and then the concept of the whole is formed. Conversely, according to Gestalt psychology, we first conceive of the whole, then we arrive at the concept of the whole. Needless to say, these two mutually contradictory theories cannot be true at the same time. In this case, an impartial method is needed to choose one theory. It can be mentioned that if perception is inherently acknowledged as a physical activity, then the theoretical dispute regarding perception can be resolved by relying on the results of brain-related physiology experiments.

One of the reasons for reluctance or objection in applying inclusionism is a kind of apprehension. It is thought that acknowledging the inclusion of psychology in physics essentially denies the existence of the mind. Because the main characteristics of mental states are then no longer acknowledged. We believe that only a person can directly know their mental state, mental states have a kind of privacy, the mind has an autonomy, etc. If the non-redundancy of mental states with physical states is acknowledged, then a neuroscientist will also directly know my mental state just like me, and in that case, its privacy will also be lost. I think this apprehension is baseless. If the mind is a part of the body that can directly receive information about changes caused by the activity of other parts of the brain, then the feeling related to this change that the person with that mind will have will be different from the feeling of the scientist who will know the change through external perception. As a result, there will be no difficulty in acknowledging the mental state as exclusively personal and directly accessible.

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