

Mind and its relation to Brain: A critical evaluation

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Abstract: One of the most pertinent problems of the Philosophy of Mind is the relation between mental states and physical states of the body, generally referred to as the mind – body problem. If we look at the history of the modern philosophy of mind, we will find that it is mostly a denial of the commonsense view of mind. According to the commonsense view of mind, mind exists in the body, and there is causal interaction between the mind and the body. Commonsense endorses the view that the mental states are immediately known by our experience. When I have a pain, say at my tooth, I have experience of the pain. Philosophers cannot deny the mental states which are revealed by the facts of experience. But when philosophers want to determine the ontology of mind they generally tend to deny the commonsense view. The features of mental states as subjectivity, qualitiveness, intentionality etc. make the mental states so different from physical states that it becomes very difficult for philosophers to give explanation of mental phenomena within the scientific paradigm. Many philosophers find it difficult to accept mind as an entity with all its states and features. But John R. Searle, one of the leading American philosophers, tries to bring a consistency between the commonsense view of mind and the scientific world view. He holds that mental phenomena are real and they are real in the sense in which biological phenomena are real. According to him, mental phenomena, like any biological phenomena, are caused by brain states and in turn cause other brain states. The aim of this article is to see critically Searle's view of the relation between the mind and the brain.

Key words: mental phenomena, biological phenomena, macro-feature, micro-level elements, brain – states.

It is held in the commonsense view that the world includes two completely different types of phenomena: physical and mental. Physical phenomena are tangible, visible, publicly observable and explainable by causal laws. Mental phenomena, on the other hand, are intangible, invisible, private and not governed by causal laws. Commonsense uses the word “mind” to stand for the collection of mental states and processes. In spite of so many differences between the nature of mind and body, the commonsense notion of mind is always an embodied one. Mind, common men believe, exists in the body and there is causal interaction between mind and body. Our perceptions, thoughts, intentions, volitions directly affect our bodies and actions. Our brain states and nervous system, in turn, affect our mental states.

Commonsense endorses the view that the mental states are immediately known by our

experience. When I believe, for instance, that the earth rotates round the sun, the belief along with its content can be known through experience –when I have a pain, say, at my tooth, I have experience of the pain, when I am in joy, I have experience of joy. Philosophers cannot deny the mental states which are revealed by the facts of experience. But the features of mental states as subjectivity, qualitiveness, intentionality etc., make the mental states so different from physical states that it becomes very difficult for philosophers to give explanation of mental phenomena within the scientific paradigm. Many philosophers find it difficult to accept mind as an entity with all its states and features. So there arises the question as to whether the existence of such a mind can be accepted. The philosophers who want to study mind within the scientific framework are not inclined to accept the commonsense notion of mind. But John Searle, one of the leading American philosophers, argues that the commonsense view of mind and mental states can be shown to be consistent with the world – view with which science is concerned. In this article my aim is to see critically Searle’s view of the relation between the mind and the brain.

By “mind” Searle does not mean any substantive entity like self or ego. Mind, to him, is synonymous with mental states and events which have four features of consciousness, intentionality, subjectivity and mental causation. In his attempt to place mind within the scientific framework he does not deny the real existence and causal efficiency of mental states and events. The model he suggests for showing how mental phenomena are related to physical phenomena is a biological one. According to him, mental states and events are real and they are real in exactly that sense in which biological phenomena are real. He holds that all mental states and events, like biological phenomena, are caused by processes occurring in the brain.¹ Our sensations of pain, for example, are caused by the firings of a large numbers of neurons at large number of synapses. Like pain, Searle holds, all other mental phenomena are caused by processes inside the brain. If an event occurs outside the central nervous system but nothing happens in the brain then there will be no mental event. But if the right processes occur in the brain then we can have a mental event even when there is no outside stimulus. To be mental is to be caused by the brain.

Furthermore, mental phenomena are not only caused by brain states but they themselves also cause other brain states. As Searle says: ‘.....mental states are caused by biological phenomena and in turn cause other biological phenomena. If one wanted a label one might call such a view “biological naturalism”². Willing to raise my arm is, for instance, a mental state.

When I wish to raise my arm, a number of processes occur in the brain. Brain activity causes bodily movement by physiological processes. Both Descartes and Searle agree on the point that mind and body interact. But there is a disagreement between them. While Descartes regards mind and body as two distinct entities Searle never thinks them to be so.

But Searle's view that mental states are caused by physical states and in turn cause other physical states has raised an immediate objection: How can Searle speak of causal relation between two completely different kinds of things? Mental entities belong to one category and physical entities, to another. But causal relation cannot obtain between two ontologically different categories.

According to Searle, the objections which have been raised against him would really be quite significant for him if the mental and the physical were two separate entities for him. But, he holds, there is no dualism between mind and body, for mental states and events are caused by the brain processes and at the same time are realized in the brain.³ He holds that if we can understand how mental states are caused by and realized in the brain then we can overcome the specific difficulties of dualistic account. In order to explain how mental states are caused by brain processes and are also realized in the brain Searle takes some instances of casual relationship from nature. Any physical system has global or surface feature and micro-level elements. Water, for instance, is composed of H₂O molecules. The liquidity of water is surface or global feature and H₂O are micro-particles. Global features are those which are formed from combination of micro-level elements. The liquidity of water is formed as a result of combination of H₂O molecules. So the relation between the H₂O molecules and the liquidity of water is clearly causal. Thus the liquidity of water is caused by the behavior of micro-elements, and at the same time is a feature of the very system in question. The liquidity of water is not a separate entity; it is just a feature of water. When we describe the water as liquid we just describe the molecules at a higher level than that of the individual molecule. Searle claims that higher-level causes are not something over and above the causes at the lower-level. But here one may ask: How can there be a causal relation between the H₂O molecules and the liquidity since water is both liquid and a combination of H₂O molecules? According to Searle, it is wrong to think that there can be a causal relation only between two distinct events where one pushes another. He holds that beside the "push-pull" concept of causation there is also simultaneous causation. There are many instances of causation where the cause is simultaneously present with the effect. Searle says that there are lots of instances of simultaneous causation

where micro-level elements cause macro-features. The liquidity of water, for instance, is a surface feature of water. It is caused by the behavior of molecules at the micro-level. So the relation between the liquidity and the micro-level elements is clearly causal though they are not two distinct events coming one after another. Searle holds that causation is a relation which can hold between two phenomena belonging to two different levels within the same system.⁴

Now, if we apply the analogy of water to the study of mind, we find that just as the liquidity of water is a global feature which is both caused by the micro-level elements and is realized in the system made up of micro-level elements, so the mental states and events are global features which are both caused by the micro-structures of the brain and are realized in the system made up of micro-structures. Out of the combination of neuron-firings in the synapses mental states and events are formed. So the relation between micro-structures of the brain and mental states is clearly causal. Our sensations of pain are caused by a number of processes that begin at sensory nerve-endings and end in the brain. But where in this causal account is the pain located? It is right there in the brain where these processes are taking place. That is, the pain is both caused by the processes occurring in the brain and is realized in the structure of the brain. Thus just as the liquidity of water is causally accounted for by the interaction of micro-level elements and at the same time is a feature realized in the very system in question, so the mental states and events are caused by the micro-structures of the brain, and yet they are the features realized in the brain made up of neurons. There can very well be causal relation between consciousness and the micro-level elements of the brain even though they are not two distinct events coming one after another. So what Searle wants to say is that if we can change our concept of causation we will find no difficulty in admitting a causal relation between consciousness and micro-level elements of the brain. The consciousness in the brain is not a separate entity; it is just a feature of the brain. And, Searle says, '...because mental states are features of the brain, they have two levels of description—a higher level in mental terms, and a lower level in physiological terms.'⁵ The causes at the macro-level are not something over and above the causes at the micro-level. Searle holds that macro-level causes are causally explainable and thus are causally reducible to micro-level elements. This is true of consciousness as well as of the solidity of the table or of the liquidity of water. To say that my intention to open the window causes my hand to go up, for instance, is not to say that some causes occurred over and above the interaction of the neurons which produce the required

contraction and expansion of the muscles. There are only some neurobiological phenomena, Searle holds, which when described from higher –level are mental and when described from lower –level are physical. One thing needs to be mentioned here. Though there is an analogy between consciousness, on the one hand, and solidity or liquidity on the other, still there is disanalogy between them. The solidity of the table is ontologically reducible to the behavior of micro-level particles or the liquidity of water is ontologically reducible to the behavior of H₂O molecules but consciousness is not ontologically reducible, according to Searle, to the brain processes.

So far we have discussed Searle's view regarding the relationship between mind and brain. We will now critically review Searle's claim that mental states are caused by and realized in the brain processes. We have seen that Searle admits 'bottom-up' causation in addition to 'top-down' causation between macro and micro levels.

Alastair Hannay, for one, questions whether Searle's account of the 'bottom up' causation is an adequate account of the relation of micro-levels to their corresponding macro-levels.⁶ According to Searle, conscious mental states are both 'realized in the structure of the brain' and 'caused by the operations of the brain'.⁷ To say that mental states are realized in the structure of the brain is to say that if we want to describe something as a conscious mental state then we have to describe the structure of the brain itself. The structure of the brain itself is described at a higher level than that of neurophysiology. And the fact that mental states are caused by the operations of the brain means that if some change occurs in the operations, then the given mental state will not occur. The molecular structure in which liquidity is realized is different from the structure in which ice is realized. If any changes occurs in the molecular structure in which liquidity is realized then we would not get liquidity but would get ice or steam. Since the surface features correlates with the changes at the micro-level, the causation is 'bottom-up' causation.

Hannay says that in the case of conscious mental states Searle describes the 'bottom-levels' as neurophysiological, and that he refers to the bottom-levels as well as the surface features collectively as the 'basic micro-levels' of physics. But Hannay points out that between the surface level and the sub-atomic levels, there exists a number of levels. Microphysics deals with the phenomena at the sub-atomic and sub- nuclear levels. Physics deals with phenomena at sub-molecular level. The way in which Searle characterizes the micro-level phenomena as causing the surface features is not the real scientific picture. The structural

level which brings changes at the surface level may be relatively higher than sub-atomic and sub-nuclear levels. Of course, these sub-atomic and sub-nuclear levels have a constitutive role because they sustain the structural level which is just beneath the surface level. The changes in this structural level are reflected at the surface levels. So Searle is mistaken in holding that the surface phenomena are caused by the merely constituent levels. They are rather caused by the relatively higher structural level.

As regards the detail of the causation of the surface-level from the lower level, there is a difference between the opinions of Hannay and Searle. If, following Hannay, by 'lower-level' we mean the lowest level, i.e., the sub-nuclear and sub-atomic level, then the lowest-level has no causal role but only constitutive role. But Searle, by "lower-level", understands the level below the surface-level and so if we want to understand Searle's spirit, we have to admit the causal role of the lower-level. So if we accept Hannay's concept of lower-level, it cannot be said that there is bottom-up causation between lower-level and surface-level. But it is notable that even Hannay will not reject bottom-up causation between the lower -level in Searlean sense and the surface-level. So in effect Hannay's objection has only the virtue of pointing out that in strict scientific sense the lower-level has only constitutive relation and no causal relation with the surface -level and so Searlean account does not conform to the picture of reality which is accepted in the sciences. But this objection does not suffice to show that Searle is totally wrong in holding that there is some level of physiological occurrence which is below the surface -level and that there is causal relation between these two levels.

But Philosophers have raised some other objections which claim that even the level which Searle describe as lower-level has no causal role but only constitutive role.

Eugene M. Brooks points out that whenever a thing causes another thing, then what is required is energy.⁸ Ever since the discovery of Isaac Newton, there is a principle of physics which states that an object at rest can come into motion only in virtue of some energy. For example, the inert hydrogen and oxygen molecules cannot combine to produce water unless the heat energy causes them to unite to produce water. The energy is the causative factor in transforming the molecules of hydrogen and oxygen into water. The molecules, Brooks holds, constitute the water and do not cause it. The relation between the molecules and the water, according to Brooks, is identity and not causality as Searle holds. A certain configuration of molecules or micro-elements constitutes macro-elements but do not cause the macro-element.

Another objection to the same effect has been raised by Brian J. Garrett.⁹ Garrett argues that all relations of explanation are not relations of causation. He agrees with Searle that the solidity of the table can be explained in terms of the molecular behavior. But he insists that in this case explanation at hand is not causal explanation. He substantiates this claim in the following way: if there were relation of causation between the solidity and the molecular structure, there would be two discrete events where one precedes the other. But when solidity is caused by the molecular structures, we find spatial and temporal overlap between the two. The solidity of the table is nothing more than the molecular combination. And where the two events are spatially and temporally co-extensive, there always occurs the relation of constitution and not the relation of causation. David J. Chalmers also subscribes to the similar view where he challenges Searlean analogy between consciousness and liquidity. He writes: 'Given all the microphysical facts about a particular batch of H₂O, it is logically impossible that those facts could hold without liquidity being instantiated. The notion of a non liquid replica of a batch of liquid H₂O is simply incoherent. It follows that the relation between the microphysical facts and liquidity is much tighter than a simple causal relation. The microphysical features do not cause liquidity; they constitute it. This is entirely different from what is going on in the case of consciousness.'¹⁰

Searle's main aim in developing the theory of biological naturalism is to give an account of how there can be conscious, subjective minds in a world constituted by non-conscious, objective, physical particles in fields of force. To fulfill that aim he makes use of some analogies. He says that just as solidity is caused by and realized in the system made up of micro-elements so also consciousness is caused by and realized in the physical system made up of micro-elements. Solidity is a macro-feature of a physical micro-system; similarly consciousness is a macro-feature of a physical micro-system. There are some philosophers who have raised objections to this attempt to understand the mental with the help of such examples as solidity, liquidity, photosynthesis etc. Daniel D. Novotny is one of such philosophers. Novotny points out that while it is easy to conceive how solidity is caused by and realized in the system of non-solid microparticles, it is very difficult to conceive how conscious, subjective mental phenomena are caused by and realized in the system of non-conscious, objective micro-elements¹¹. In Searle's opinion this difficulty is due to the fact that we wrongly try to picture what cannot be pictured. He writes: '....we cannot form a picture of the necessity of the relation between subjectivity and neurophysiological phenomena, because we are already in the subjectivity,

and the picturing relation would require that we get outside it. (If solidity were conscious, it would seem to it mysterious that it was caused by vibratory movements of molecules in lattice structures, but all the same those movements explain solidity.)¹²

Novotny points out two difficulties in Searle's explanation. First, he says, Searle has used too much metaphor unsatisfactorily and his whole discussion is also not very precise. He asks, what does Searle mean by 'in the subjectivity'? Second, the analogies used by Searle are problematic in character and this problematic character of the analogies is interpreted by Searle to be a difficulty with 'picturing'. Novotny would however argue that the difficulty is not due to the fact that consciousness cannot be pictured as a macro-feature of the physical system made of micro-elements but it is due to the fact that we cannot conceptually conceive consciousness as a macro feature of a non-conscious physical system made of micro-elements. The features of solidity, liquidity etc. are physical macro-features which are explainable by the features of physical micro-elements (solidity occurs when micro-particles are attached to each other rigidly, liquidity, when they do not) but mental phenomena, in contrary, with their properties of consciousness, subjectivity, intentionally can never be a feature which can be explainable by the features of physical micro-elements in fields of force as we know them from physics. From physics we learn that micro-particles and fields of force have the properties of mass, energy, spin etc. Anything constituted by micro-particles and fields must have the properties of mass, energy etc. and also some properties which emerge from the configuration of the elements. There is no difficulty to understand solidity as a macro-feature of micro-elements but it is very difficult to understand how consciousness is a macro-feature of micro-elements or how it is a property which emerges from the causal interaction of neuronal elements at the micro-level.

'It is as if one hoped that the properties of lines, squares, and points could eventually explain the property of having weight'.¹³ It may so happen that in future physics will discover that the micro-elements have some extraordinary properties in virtue of which consciousness, like solidity, liquidity etc., could be another property of physical systems. But at present, Novotny Says, 'we may conclude that conscious minds with their subjective ontology do not fit into the ontology of our contemporary physical and biological sciences certainly not in the way that solidity and photosynthesis do'.¹⁴

Anthonie W. M. Meijers, another critic of Searle, also points out some reasons for which the analogy between solidity and liquidity, on the one hand, and consciousness, on the other,

appears to be inappropriate.¹⁵ Like hardness, toughness etc. solidity, liquidity are dispositional terms. They describe how a particular substance would behave under some conditions. To say that water is liquid is to say that water has the propensity to flow under some particular pressure and temperature. Now, this behavior of water is explained by the behavior of molecules in the following way : The behavior of flowing of water is ensured by the three-dimensional molecular structure for which at least six H₂O molecules are required.

We should note that what is described here is not disposition but how the matter actually behaves under the influence of some external factors. There is some underlying mechanism which explains the behavior. This type of causal explanation is different from the Searlean type. According to Searle, solidity is a disposition which is caused by the micro-level elements and also realized in those elements. Meijers says that engineers termed this type of explanation, structural explanation which explains the stability of a bridge, for instance, in terms of its structure and components. And if we have recourse to Aristotelian terms then the first type of causal explanation can be described in terms of Aristotle's efficient cause and the second type in terms of his material and formal cause.

Meijers holds that the analogy between solidity or liquidity and consciousness fails, because

- (i) Solidity and liquidity are dispositional properties (for Searle) whereas consciousness is not a dispositional property but a manifest property.
- (ii) While solidity and liquidity are spatial and temporal properties, consciousness is not.
- (iii) Solidity and liquidity are relational properties but consciousness, for Searle, is an intrinsic property. Meijers says that solidity or liquidity of a substance varies directly with pressure and temperature – the two ambient factors. If the ambient pressure of a solid matter be increased, then it may turn into a fluid. But consciousness and intentionality, on the other hand, depend upon the proper functioning of the body. Since Searle considers consciousness and intentionality as intrinsic properties, he does not give importance to this relation of dependency. Meijers regards the proper functioning of the body as enabling conditions of consciousness and intentionality, and ambient pressure and temperature as determining conditions of solidity and liquidity. Unlike determining conditions, enabling conditions do not determine the actual characteristics of a phenomenon; they only make possible a particular phenomenon. Thus since a number of differences exist between solidity and consciousness, they are not very helpful.

Walter J. Freeman and Christine A. Skarda have criticized Searle's model of mind – brain relationship from neurological viewpoint.¹⁶ They observe that Searle's explanation of the aforesaid relationship in terms of higher-level and lower-level description of the same neurological phenomenon is problematic because of two reasons. To put in their language: 'First, it by-passes the role played by global neural activity and conflates the global neural and mental levels. Second, although Searle argues against dualism, he seems to argue here for a level of activity that plays a causal role but is not physiological, a specifically "mental" level'.¹⁷ Skarda and Freeman want to show that Searle's concept of higher-level and lower-level description is not as clear and obvious as Searle thinks it to be. Searle believes that mental states are caused by and realized in brain states and accordingly they can be regarded as higher-level features of brain states. But what does Searle intend to claim when he says that mental states are caused by and realized in the neuronal states? Does he want to say that there is a level of neuronal activity which causes some physical state and this later physical state is to be described in terms of mental vocabulary? If so, then though it is true that there is a higher-level neuronal state produced from a lower-level physical state, it is questionable whether the higher-level physical state has two descriptions, one in mentalistic term and the other in physicalistic term. Accordingly the question which becomes relevant is: why should this higher-level physical state be described in mentalistic term? The question is important because it may help us to bring out a gap in Searle's reasoning in this context. It is important to note here that the higher-level physical state has a description which is different from that of the lower-level and this is so because the higher-level is an effect of the lower-level, and the higher-level has some emergent properties that are not there in the lower-level. So difference in description between higher-level features of a neuronal state and lower level features of it is explained by the cause-effect relationship between the lower and the higher. So certain higher-level concepts are used for describing the higher-level features such that those concepts can not be used for any description of the lower-level. Now if the higher-level be also described by using mentalistic concepts then the question as to why such concepts need be used is to be answered unless such description would be a matter of arbitrary feat. Searle does not provide us with any justification as to why a particular physical level should be amenable to a mental description. What appears from Searle's presentation is that he believes that there cannot be a physiological description of the macro-level neural phenomena. He perhaps thinks that unlike the cases of physical entities where both macro and micro-level descriptions are available in physicalistic vocabulary,

in the case of neural events only micro-level description can be given in physicalistic language while macro-level description can be given only in mental vocabulary. But he says nothing about why the macro-level description in case of neural events should be restricted to mental vocabulary alone. One of the reasons why he does not allow macro-level description in physicalistic terms may be that he was not informed enough about the possibility of macro-level neural effects of micro-level neural events. This is why Skarda and Freeman say that Searle's account in this context 'by-passes the role played by global neural activity.' But they want to emphasize that global neural occurrences are not only a mere possibility but those occurrences actually take place and they have important consequences relating to our behavior. Searle perhaps failed to take into account the existence of such states and their descriptions. The other reason for which Searle might have denied physical description of the higher-level neural states is that he confused the higher-level neural states with mental states. Drawing our attention to this possibility Skarda and Freeman say that Searle 'conflates the global neural with mental levels.' Since higher-level neural states are responsible for goal-directed behavior, Searle might have taken them to stand for mental states with intentionality. To avoid this charge of conflating the neural with mental Searle has either to claim that there is nothing which can be considered to be a global neural state or to show that the global neural state can legitimately be described in mentalistic terms. Since the first option would go against established facts about neural states, Searle has to go for the second option. But to accept the second option Searle has to show reasons why over and above physical description the neurological states can be described in mentalistic language. Searle has not said anything which can justify his ascription of mental description of neural events.

Skarda and Freeman further point out that due to confusion regarding the relationship between neuronal micro-level and neuronal macro-level Searle seems to have landed in a sort of dualism between mental and physical. If the neuronal macro-level is only describable in mentalistic term then it is legitimate to hold it to be a sort of mental state only. Searle would admit causal role to this level of event and also would consider this level to be ontologically irreducible. Since dualism consists in the admission of ontological irreducibility of mental and causal efficacy of the mental, Searle can hardly avoid the charge of dualism if he sticks to the claim that the higher-level neuronal phenomenon is the mental level.

In defence of Searlean position it may however be held that by higher-level Searle does not mean any additional phenomenon over and above the micro-level neuronal states. What

Searle insists, it may be urged, is that his micro-level phenomenon (in the case of neuronal activity) has two descriptions, one in physical vocabulary and the other in mental vocabulary. The description by 'mental vocabulary' is what Searle means by higher-level description (in the case of neuronal events). In other words, Searle does not admit any additional phenomenon or event over and above the micro-level neuronal states corresponding to the higher level description and so the charge of dualism is a misplaced one.

But in favour of Skarda and Freeman, it may be held in turn that if Searle intends to avoid dualism by introducing a specific notion of higher level description, then it would be difficult for Searle to maintain his claim that mental is caused by the brain-states. If the neuronal states be the referent of both higher-level and lower-level description, then it makes no sense to say that the lower-level causes the higher-level simply because something cannot be its own cause. Skarda and Freeman go one step further to claim that even if Searle wants to refer to the global neural state (i.e. the higher-level neuronal state) to be the referent of mentalistic description then also it is doubtful whether any causal relation can be admitted between the mental and the brain states. Since, as Skarda and Freeman point out, it is not possible to construct any causal law to hold between the neuronal level and the global level of neuronal activity, it is pointless to admit causal relation between them. Explaining what makes it impossible to construct causal law between these levels, they say 'Quite apart from the classical problems concerning causality raised by Hume, Kant, Whitehead and others, or modern conceptions of feedback necessarily introduce ambiguity and indeterminacy'.¹⁸

In reply to this observation Searle would point out that '..... from the fact that we "cannot make strict causal inferences from one level to the next", it does not follow that "we cannot impute cause and effect relations between the global neural and mental levels."' ¹⁹ The absence of any strict law between the mental and the neurophysiological does not show that there can be no causal relation between them. It is, of course, true that the presence of a strict law between any two events enables us to infer one from the other. But the absence of any such law does not imply the absence of causation. Searle gives the examples of hurricanes and social revolutions to show that though these phenomena cannot be explained in terms of strict laws, still they are not uncaused. In the same way, though there are no strict laws between the mental and the neurophysiological, still there is no inconsistency in saying that mental are caused by neurophysiological processes in the brain.

This defence can hardly serve Searle's purpose for a number of reasons. Even if we agree that every event has a cause and accordingly mental states also are produced from some cause it does not follow that they are caused from some micro-level neural events. We have already noted that Searle has not given any explanation as to why the global neural events should be described in mental vocabulary over and above being described in physical vocabulary. So before claiming that since micro-level neural events can be regarded as the cause of higher-level neural events, they can be considered to be the cause of mental events also, Searle has to give arguments in support of the claim that mentalistic words refer to the events of the higher-level neural activity. But Searle provides us with no such argument. In other words, he presupposes the referential identity between descriptions of mental events and that of higher-level neural events and expects that it will enable us to construct a model of mind-brain relationship which is consistent with scientific world view. But he fails to note that merely from the fact that an explanatory model has resemblance with some other scientific model of explanation, it does not follow that the former model is also a scientific one. To count as scientific, a model of explanation must have evidential support. Seale's claim that mental states are caused by brain states is neither based on evidential support nor on arguments. The only sort of argument Searle has offered is argument from analogy and it is evident from Freeman and Skardas's account that this analogy is not only very weak but also misleading. Moreover while referring to the analogy of the relation between higher and lower level of neural activity Searle takes it for granted that the higher-level of neural activity must be caused by the neural events. He does not consider the possibility of the presence of any extrinsic factor which may contribute causally to the origin of the higher level states. In the realm of physical world (as distinct from the physiological) the higher -level states are not always caused by the lower-level ones though the latter constitute the former. Alastair Hannay has clearly explained this fact with reference to the instance of a wheel rolling downward.¹¹ Hannay shows that what explains the behavior of the molecules of the wheel cannot be found in the lower-level phenomenon alone but is to be looked for in the operation of other extrinsic factor like mechanical and meteorological laws. Since Searle does not substantiate his account of mind-brain relationship with any argument to show why the lower-level neural states should be considered to be cause of the higher-level mental states, he, in our view, fails to bring home what he expects from the analogy of higher and lower-level physical phenomena.

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