Contemporary Issues in philosophy of Mind and Cognition

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The Different Models of Cognitive Mind

I am going to explain the Different Models of Cognitive Mind and here, how the different scientist as well as philosophers they have been explaining or they have explained the concept of cognitions mind or consciousness indifferently. And generally, cognition is one of the important aspect of the human mind, because it involves issues like, how we acquire knowledge, how we store knowledge, how we retrieve knowledge, and how we use all this kinds of knowledge with the help of our cognitive system.

If we use cognitions every time and acquire bit of information, place it in or use of information in some ways, then cognition must include a wide range of mental processes. And cognition is not so simple, we are only acquiring knowledge or storing knowledge or something, it is more than that. Through cognitive processes, we can achieve many kinds of things in the world and we can do many kind of discovery with the help of our cognitive faculties. And here, I am concerned only in the case of human cognition, not in the case of animal cognitions.

But in the case of human cognition, you will find there is one kind of development is there, because of that, we are a rational being or rational animal than any other beings, that is a change in the human cognitive processes, but not in the case of animality or in the case of any other beings, like in beings like, plants and animals.

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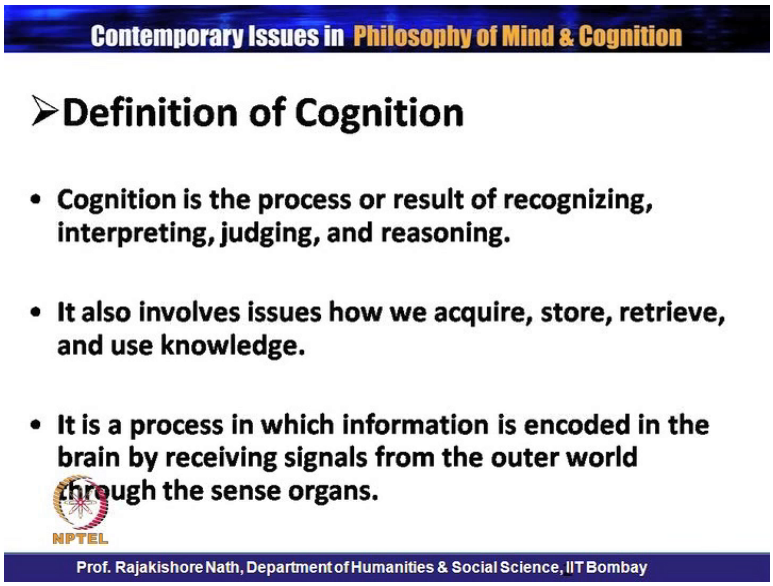

Cognition generally is a process in which information is encoded in the brain by receiving signals from the outer world through the sense organs. Sometimes, you need to you may not get the knowledge from the outer world, its knowledge arises from the inner world, from the inside it emerges the knowledge and it represents a new idea. And through the cognitive activities, we explains our creativity abilities, it is seems that cognition is largely different from that of, therefore it is seems that human cognition is largely different from that of other animals, because of the enormous richness of the human cognitive processes.

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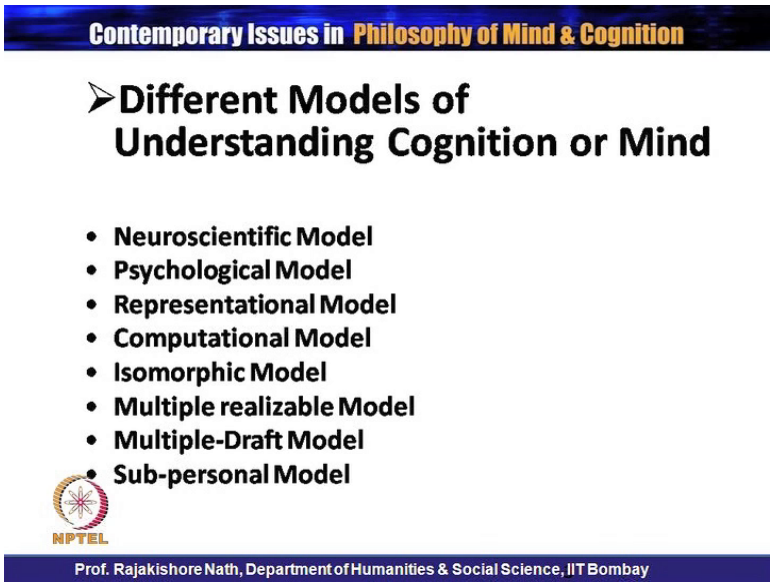

There are different models of understanding of cognitive mind and there are different scientists, different philosophers, they have explained the cognitive model of mind. Even if in the last lectures, you have seen the how functionalist are explaining, how the mind is functioning, in that they are explaining the mind consciousness in different ways. But here also, you will find some of the scientists and philosophers they have been, they are explaining a consciousness or remind your cognitions in the similar way. And some of the things, which I shall be repeating in these sections, to make you more clear on the cognitive aspects of mind or consciousness aspect of mind or the importance of mind in the scientific realm.

Now, we will go through different model of understanding cognitive mind. There are many models, which I have put before you, and the one is neuroscientific model, psychological model, representational model, computational model, isomorphic model, multiple realizable model, multiple-draft model and sub-personal model and all these models are plays very important role in explaining a cognitive mind.

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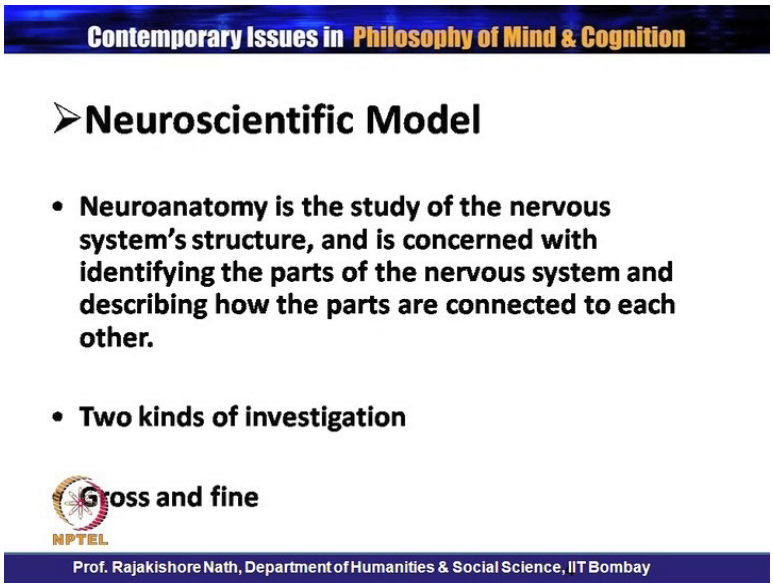

Let us see first, neuroscientific model of mind, a Neuroanatomy is the study of the nervous system structures, and is concerned with identifying the parts of nervous systems and it describing how the parts are connected to each other. Here, Neuroanatomy can be made at many discrete (()) levels. According to neuroscientist, investigations can be made at two levels, and this is the neuroscientific view and firstly grows Neuroanatomy

and is, and this grows Neuroanatomy is about general structures and the connections whereas, (()) Neuroanatomy is the main task that describe the components of individual neurons. And secondly, histology is the study of tissue through the dissections, and the primary concern of Neuroanatomy is to ideally connect the patterns of connectivity in the nervous systems, may have the mechanism that allows permissions to get from one place to another.

For neuroscientist, this Neuroanatomy is the analogy of cognitions. And cognition is nothing through which we are explaining this Neuroanatomy that is cognitions. While explaining neuroscientific approach to cognitions, Francis Crick, a famous neuroscientist have has well as a neurophilosopher and he say that, the brain does not make a distinction between hardware and software as a computer does. Theories have made the distinctions are unfortunate. What Crick is trying to show is that, the way if functionalist have explained about, mind or a consciousness that there is a, they have done one kind of distinction, that is software and hardware, but in the case of neuroscientist, there is this kind of distinction is not there and the software or hard ware or the neurology is something, and we have process a something, one neural and neural process both the things, they goes together.

And the way they have done the distinction is one kind of unfortunate and I think for cricket is not acceptable, and quick argues for the, for theories of cognition that are strictly try to biology, which implicitly force him to argue for the study of simply cognitive acts such as, visual word detections rather than the complex acts such as, paragraph, comprehensions or etcetera. For neuroscientist, especially for Crick, mental actions depends on the psycho neurological factors underlying in it, any kind of interactions, whatever we are doing or acting is depends upon the neurological factors underlying it.

No mental action is without these factors, which determine the mental history of an agent. Although Crick's general discussion is on the concept of conscious thought. Virtually, all our specific studies decides, deal with visual cognitions, for him it might be most profitable to deal with vision entirely within the field of Neuroscience, while dealing with language comprehension in terms of psychological notions as known neural basis.

Therefore, for him cognition is a multi dimensional process, which needs a many scientist approach and neuroscientist claims that, there is a process happening in the brain that, they have measured in terms of 40 hertz, 40 hertz process is nothing but the consciousness, consciousness is accessible in this 40 hertz level, otherwise all other level is not measurable. And they they have measured consciousness, and the way they are measuring consciousness, it is they are quantifying the consciousness, and this quantified consciousness is explainable in terms of neuroscientific model.

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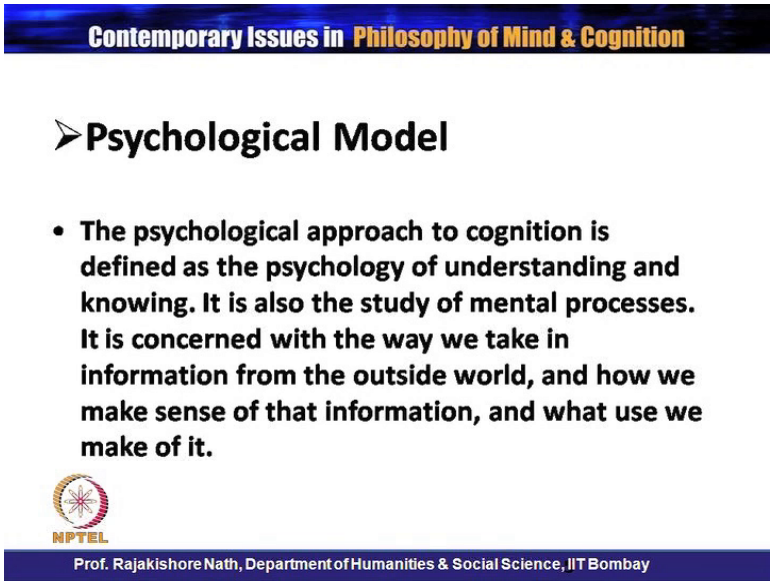

Now, we will see the psychological model of mind, the the psychological approach to cognition is defined as the Psychology of understanding, I am knowing to just study of mental processes. It is concerned with the way we taken information, the outside world and how we make sense of that information, and what we use we make of it.

According to Broome, one of the famous psychologists, for him that have been a three main opportunist to study of cognitive psychology namely, experimental psychology computer modeling and cognitive neuropsychology, first the experimental psychology involves in the use of psychological experiments on human subjects, to investigate the ways in which we perceive, learn or remember or think.

In this process, the experimental psychology is concerned about how the human mind remembers the things. Secondly, cognitive psychology is the use of computer model of cognitive processes, and this approach involves the simulation of some aspects of human

cognitive functions by writing computer programs, in order to test of our murders or possible brain functions and this model especially many brain scientist, they have been trying to study the human brain processes.

And what we are see things, and how the mind is functioning, with the help of different kind of advanced program, they are trying to investigate on the human cognitions. And lastly cognitively, new psychology is concerned with the activities of the human brain during the cognitive processing, and this is one of the important aspect, whenever we are doing any kind of activities, during that period, how our mind is functioning, how we are remembering, how we are reacting to a particular situations? In that level this approach of cognitive psychology explains the psychological level of cognitions.

Although, a cognitive neuropsychology plays a one of the vital role, in the case of neuroscientific a model of mind, because as you have seen that the new scientific model is trying to explain this cognitive psychology with the help of neuropsychology. Therefore, in another way in different angles, both the cognitive neuropsychology and neuroscientific model of mind or cognitions are going together to investigate on mind.

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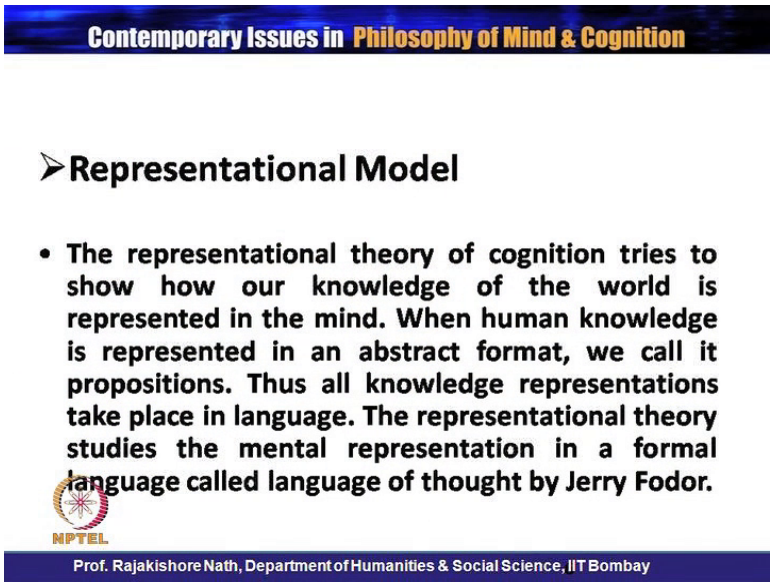

Now, we have to see the representational model of mind is one of the important model of mind, the representational model of mind many scientist, they have explained in different way; some scientist they have explained it syntactical, some scientist they have explained symmetrical way, but here I will be explaining how the syntactic way, the cognitive

system is explainable through representations. The representational theory of cognition tries to show, how our knowledge of the world is represented in the mind and when human knowledge is represented in an abstract format, we call its propositions, thus all knowledge representations take place in language. Here, the language is one of the main things which plays important role to representational model of mind, the representation studies the mental representations in a formal language called language of thought, by Jerry Fodor and this language of thought, I will discuss in the next lecturers very clearly.

Let us see first, what is this representational model of mind, a representational is something that stands for something else. For example, the words of any human language are forms of the representations, because they stand for object's image and ideas. Words are an abstract representations, because the relation between a word and the object signified or the idea, it represents is a arbitrary words in our language, can refer to the same objects and ideas.

And in few cases, the representation of a word cannot be predicated from its arbitrary form, there are many words even if you say something which has no representations, you can say even if golden mountain which have visual representation, actual representation is not a, it has (()), but we can have some kind of a pictorial mind in our that, there is a something called golden mountain which is exist in this world, but there is nothing called such as golden mountain in the real or empirical sense, but in the case of mental representations, mind preserves information about objects or images in the world.

For example, when we have a mental representations of table, and this representation preserves location of object in this space, it supports number of abilities include imaging the place, estimating the distance from the memory, and shown many kind of things is happening whenever I am looking at a chair, there is a distance is there, when which patio temporality its existing, how much the visibility is that chair, and the various kind of angles that we have to see in the case of representational model of mind. And this mental representation is necessary, because human behavior cannot be explained without specifying how individual represent the world to themselves. Therefore, this representation model plays important role in the case of this Jerry Fodor, and this representational model plays one of the vital role to explain cognitive, cognitions or consciousness.

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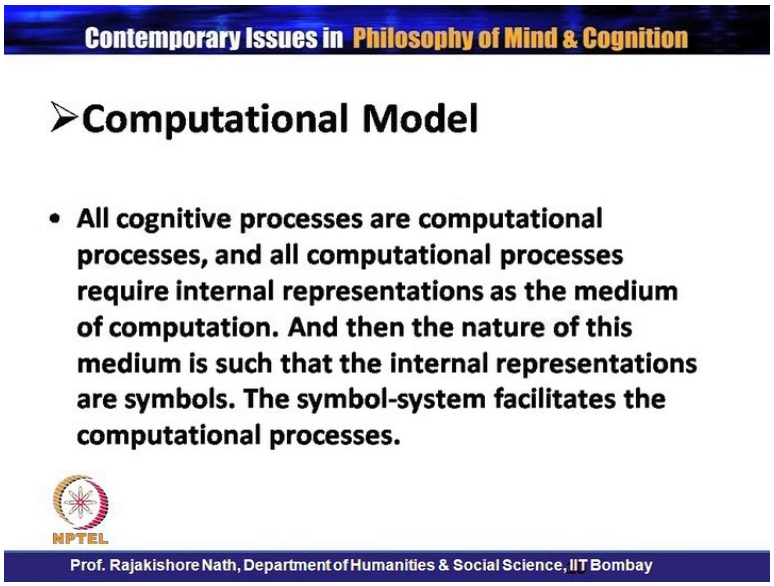

And let us see now, computational model of mind, according to cognitive scientist, all cognitive process are computational process, and and all computational process require maintainer representations as the medium of computations. And then, the nature of this medium is shows that the internal representation are symbols, the symbols systems facilitate the computational processes, and computational process is a kind of symbolic way can be explainable and because without the help of symbolic systems, it is very difficult to explain any kind of computational model of mind.

Therefore, the computational modeling in cognitive science and artificial intelligence has profoundly affected how human cognition is viewed and studied. Computational level of cognitions shows that the mind is a computer, which is based on symbolic information, in symbolic a computation, the obstructions provided has symbols and rules. With the help of this symbols and rules, we are explaining about human, this computational model of mind. But, according to the classical computation theory of mind, mental representations are symbolic structures, and the mental processes consist in the manipulation of these representations according to symbolic algorithms as computation is based on symbolic rules. And Herbert Simon is one of the founder of computer science, discusses the nature of cognitions while constructing models of human mental activities.

According to him, cognition is a mental process based on mechanism of the brain; the brain mechanism can be studied by neurophysiology and further if he argues that human brain functions like a computer so that the human cognitive processes are computational in nature. And therefore, if we manage to program a computer to play chess, we may have to discover how human thought proceeds. Thus, Simon argues for a sharp distinction between brains as a physical system and the programs the brain executes and therefore, he adjust to concentrate our attention on the program, because programming is one thing, which we can able to study the human cognition or consciousness or human mind.

This is, one of the important aspect of scientific investigating the human knowledge and consciousness, and a great deal of modern study of cognition depends inside that representational level and neuron level, events can be linked through the development of intermediate computational theories of thought. And even if, both Simon and Allen Newell, both of them are trying to show that, this insight is based upon rather sophisticated motions, both of thinking and computation as activities that are carried out by physical symbol systems. As we know, a machine or a computer is a physical device that manipulates electric signals and that stand for the symbols in the equations.

The physical system transmits signals into symbol systems; here, computers and engineer paper pencil devices are general computing system, in the sense that, they can in principle compute any computable function that is defendable by symbol systems. In order to actually compute something, the physical device must be given a set of instruction which are stated in terms of symbols, thus computing systems operate systems of symbols to arrive at particular results. And we have to note that, algorithm is not stated in terms of the physical machine, because the physical operation that achieves the primitive function such as writing down, multiplying and subtracting have not been specified.

But according to Newell, and in the modern way of explaining is that, a physical symbol system has the necessary and sufficient means for general intelligent actions and they have been defining beneficial computational model, it can be called as physical symbol systems, it has a physical hardware is the symbol way is there, it is a completely a system is there, therefore, it is a physical symbol systems. Instead of calling a system, a turing machine, you can call as a turing machine, we can call as a physical symbol system, and

we can call as a computer, and we can call as robotic systems. Let us see all this definitions on computational model of mind very clearly; by necessary we mean that any system that exhibit general intelligence will proof of analysis to be a physical symbol system.

By sufficient, we mean that any physical symbol system of sufficient size can be organized further to establish general intelligence actions. And lastly, by general intelligence actions, we wish to indicate the sense scope of intelligence as we see in the human actions. And here, Simon and Newell are trying to say that there is no distinction between human intelligence and this computational intelligence. There is one kind of synthesis; bad synthesis, one kind of the similar way of function, the way in which human mind is functioning, the same way is in the case of robotic system or a computer system is functioning. There is no distinction between mind and machines according to this physical symbol system thesis, and thus for physical symbol systems, as we have seen gives rise an intelligent action because of the presence of the symbol manipulations according to rules.

Whenever we do any kind of activities, we follow some kind of rules and regulations and we do also, we express everything through language, and which are the symbolic representation of the world in that representation, is there in the case of computational systems. And it is not necessary to explain mind in some different way and therefore, mind can be explainable in computational term. The physical symbol system hypothesis plays an important role in showing computation levels of cognitions, because the symbols system hypothesis implies that the symbolic behavior of humans arise because he or she has the characteristics of a physical symbol systems. Hence, the success in modeling a human behavior on the symbol systems becomes an important part of the evidence for this hypothesis. The hypothesis helps in research in cognitive psychology also research information processing psychology involves two kinds of empirical activities.

Now firstly, it conducts observations experiments on the human behavior in task require intelligence. Secondly, it formulate the hypothesis about the symbolic representation found in the human systems, not only the psychological experiments required to retest the human behavior, but also they point out the experiments which are come out new idea of the design and construction of physical symbol systems.

And even if with help of this computational model, are what Simon and a Newell and many of them have trying to explain a computational model of mind, for them there is a mind is a computational process, and consciousness is nothing but a computational process, and brain process is nothing but a computational process, and whatever is happening in the human brain is not nothing but the computational process that can be analyzable in mechanist way, with the help of this physical symbolic systems. And let us see now, another model isomorphic models of mind, according to this isomorphic model of mind, two systems are functionally isomorphic, if there is a correspondence between state of one and the state of the other that preserves the functional relation.

This model, I have already explained in the functionalizing in the last lecturers, remind you, I am introducing this model of cognition and mind here, this isomorphic model is one kind of functional isomorphic. According to Putnam, there is an isomorphic between mind and a machine, this functional isomorphic hold due to the casual capacity of of functional state of the machines and for example, when I have a pain that is a neurophysiologic process corresponding to the mental state because of the firing of the sea fiber.

The brain identifies follows there is a functional identity between the two, whenever there is a sea fiber firing is happening, then I am getting pain and here there is an identity between, the identity between the one state to another state. And there is a identity between mind and machines therefore, there is no distinction between mind and machines, thus the identity between mental state and physical process of the brain establishes from the functional point of view, that is in functional terms of brain, that is isomorphic with the mental state, that is to say that there is a identity between a software that constitutes the program and the hardware of the machines which helps the software to realized in the machines. And here, machine can realize this software, and software can realize this hardware and there is a one kind of identity relationship between mind and machines, and even if mind can be explainable in terms of mechanistic way and machine can be explainable in terms of mentalistic way.

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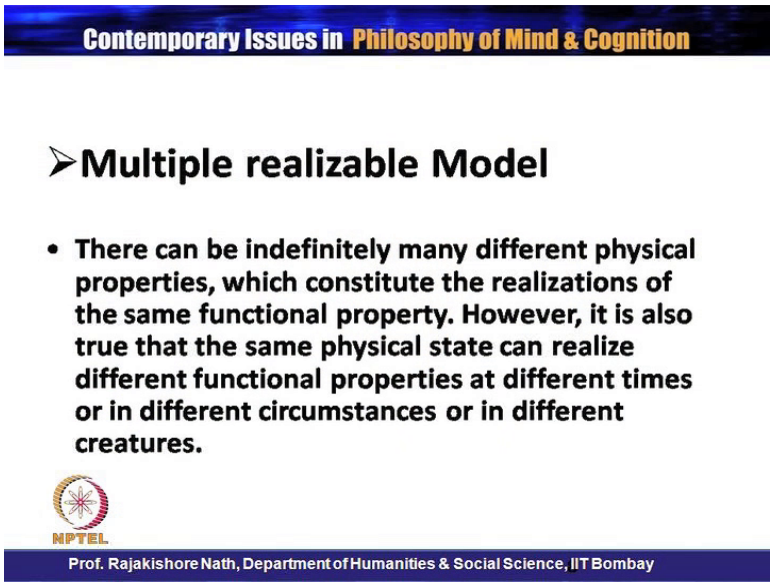

Now, let us see the another model of mind is multiple realizable model of mind, and this model I have already explained in the last lecturers on functionalism, there can be indefinitely many different physical properties, which constitute the realizations of the same functional property. However, it is also true that the same physical state can realize different functional properties at different times or in different circumstances or in different creatures. What is the motive of explaining this multiple realizable model of mind in this way? The functional states are multiply realizable, in the sense that a functional state cannot be identity call to a particular physical relation of it. For example, someone could write a program using two completely different types of a computer which use different sorts of hardware to run the same program.

Here, I am trying to say that there are different hardware, but one software program, but one software program can be implemented in different kind of software systems. In this sense, the program said to be a multiple realizable, any number of computers may be used to realize, same program functionality takes states of minds and mental property to be a functional states and properties. Mental properties are realizable by, but not identical with material properties, because as I told you that functionality, there is no identity between hardware and software.

In the same way, mental properties are different from the physical property for them, and here the mental properties, they are explaining in terms of functional properties. For

example, the same mental property, the property of being in pain may be realized by one property in a human being, and to a certain extent by another property invertebrate. And here for the functionalist, if someone has now a particular pain, then he or she can imagine that this pain is realized through a particular neural state, and that neural state has and identify material structure. And this may be studied by a low level hardware science like Neurobiology, or like even if the hardware in the computer systems. In the case of Neuroscience, we can see from the Neurobiology, but in the case of computer model, we can see from the hardware systems. Therefore, for functionalism, what makes state a realization of pain is not its metal constituents, but occupying a particular kind of causal rule within our nervous system.

Multiple realizable thus implies that, there is a higher level of functional description of physical state in terms of their causal rule, which abstract from their low level physical constitutions. It is with such functional properties that mental properties can be identifiable, here this multiple realized model is one of the vast, one of finest model to develop high technical system, because philosophical model behind any kind of computer systems, and which philosopher have tried to understand the human mind, then they have tried to implement in the system and that this multiple realizing model is now possibility that even thus possibility may not give a sufficient explanation of the human mind, that may give sufficient explanation on machines.

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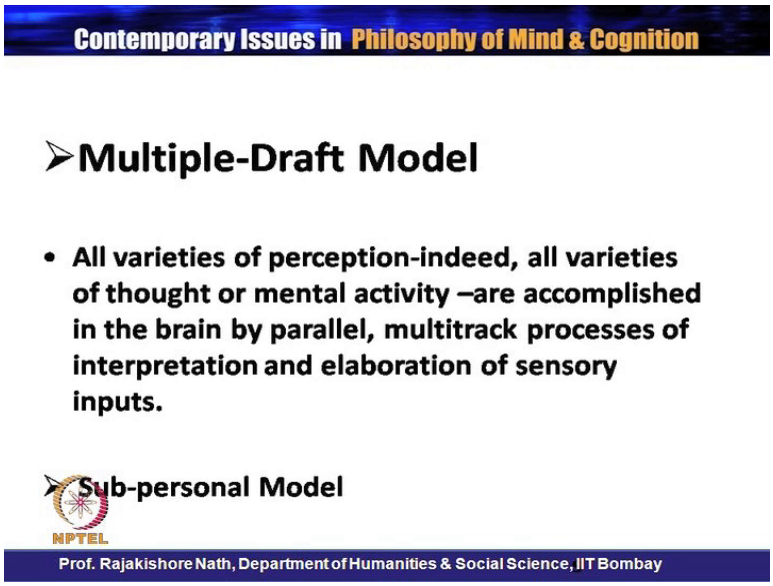

Now, we will see multiple-draft model of mind and sub personal model of mind, these two models has been advocated by Daniel C Dennett, and Dennett is one of the proponents of functionalistic model of mind or a mechanist model of mind, and he has been arguing that mind can be explainable in terms of machines.

Let us see this PPT, the multiple draft model given by Dennett suggest similarity between the function of the human mind and those of the computer, the brain system functions in relation to the different sub systems. So, there are multiple drafts which operate within an artificial system. According to Dennett such an analogy is beneficial because it analyses consciousness from the point of view of the language processing.

This is given important precisely in the sense that a linguistic language is being considered not only as a conscious being but also a rational being, even the robots as information processing system can also be characterized as intelligent systems. According to Dennett, if we see and he has been arguing that we are machines, and we are just very sophisticated in machines that as been organized molecule instead of metal and silicones. And we are conscious, so there can be conscious machines like us, it is even if a machine is a component of material object, in the same way human beings are also component of material objects. In this way, these material components are existing in both the cases, and if anything at all, the so called mind is there and it can be explainable in terms of machines.

So, the human thought processes and language processing in the artificial systems are analogous to each other, in the case of conscious thought process, we are aware of thoughts at the same time, that is psycho chemical processes which goes in our brain and then its functions, analysis of consciousness is divided into two parts. Firstly, sub personal view of consciousness and the multiple draft model of consciousness, and both this models plays this vital role in order to explain the mechanistic model of mind.

The Sub personal model explains consciousness and other mental activities through the help of neurological states and process of the organism, where as in the case of Multiple draft models if we see, it discusses how an artificial system behave intelligently. And if we see, if we make the difference between these two models, in one model is explaining from the macro level and one model is explaining in the sub personal level. According to this multiple draft model, all varieties of perceptions, in deed all varieties of thought, or

mental activities are composed in the brain by parallel, and that is also multi track process of interpretations and elaboration of sensory input, that is to say that it functions different, multiple draft as well as in the parallel.

And it is like a criss-cross relationship among the neurons and this, even if one neurons functions in different directions in different situations, it is not like that one neuron is functioning for one activities and another neuron is for another activities, every one action there must be many neurons which are giving rise the consciousness experience, and Dennett offers a functional explain of consciousness are the sub personal level, and this sub personal level because this sub personal level is concerned about the particular neurons.

And he says that, this sub personal theory proceeds by analyzing a person into an organization of sub systems like organs, routines, nerves, faculties, components of even atoms like that, and it also attempt to explain the behavior of the whole person as the outcome of the interactions of this sub systems. The sub personal level of consciousness tries to explain now, how the human beings are system of organism. Now the question is, how the system is being constituted, and how the various functions involved in different physiological parts of the organizing function together. And this is one of the important problems for sub personal level, but Dennett says that this functional structure would help us in defining the capacity involved in causing consciousness of what we call consciousness behavior.

Therefore, a state of consciousness is simply one which establish a certain characteristic pattern of casual relation to other states, both mental and physical and here he has been trying to say that the relationship between mind and even if the body are, even if mental things and physical things are existing in a casual relations.

Therefore, all the level of cognitions and which we have discussed are not universally accepted, there are different kinds of model we have seen, even if psychological model to computational model, isomorphic model and multiple realizable model, multiple draft model, sub personal model, all these models are not acceptable. Although they have explained a differently about the human mind and about the consciousness, but those are not acceptable really in order to explain the consciousness experience, because which need different kinds of explanations.

And that different kinds of explanation is possible with the help of philosophical clarifications, and this philosophical clarification will give one kind of tentative explanation on mind or consciousness. And even if here, I have discussed varieties of cognitive a mind, what I am not explained about connectionist model of mind, which is also part of the verities of mind, but that I will be explaining in different sections, a special reference to folk psychology. But if u see, there are many kind of reactions to this, a varieties of cognitions and according to David Selmer, a computational basis of cognition can be challenged into two ways; first, it can be argued that computation cannot do what cognition does, that a computation simulation cannot reproduce a human cognition, because the casual structure in human cognition goes beyond what a computational (()) can do.

Secondly, computation might capture the human capacities, but something more is required to replace the human capacity. The human cognition can be applied to what is known as memory, at instance pattern recognition language problem solving and etcetera. The most important aspect of the human mind is the selection of information, information further proceeding, and storage. And the information available during the moment, except sleepy and unusual occasions is vast and complex, do a constantly bombard by our senses because in the case of the cognition, sense organs plays very vital roles.

We get knowledge not only from inside, it is because of the sense experience we get knowledge from the outside also, and both the things are mutually supplementing each other. All the external senses give us information which the mind deals with different stages, and cognition is the output produced after a long process of getting the inputs. And here, although this mechanistic, all this the variety of cognitive mind and functionalistic model of mind are explaining about the mind in different ways, there giving a way to explain a consciousness and mind, but this explanations has some kind of limitations that we will see later on.

Although this model say, help us to study the human mind, human cognitions and there are cognitive disorders, and this may help for scientific community to explain something in a definite way, but in the case of if you see really the philosophical explanation of consciousness or mind, it has different kind of explanations. Thank you.