MIND AND COGNITION: A STUDY ON THE PHILOSOPHICAL FOUNDATIONS OP COGNITIVE SCIENCE

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CERTIFICATE

This is to certify that the thesis entitled Mind and Cognition: A Study on the Philosophical Foundations of Cognitive Science submitted by Mr.Tomy C.A. for the degree of Doctor of Philosophy to the Department of Philosophy, School of Humanities, University of Hyderabad, has been done under my supervision and embodies the result of bonafide research work. This work or a part thereof has not been submitted for any other degree or diploma to any University or Institution.

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This is to certify that I, TOMY C.A have carried out the research embodied in the present thesis titled MIND AND COGNITION: A STUDY ON THE PHILOSOPHICAL FOUNDATIONS OF COGNITIVE SCIENCE for the full period prescribed under the Ph.D. ordinances of the University.

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CONTENTS

INTRODUCTION :
MAPPING THE DOMAIN

Cognitive science aims at the study and explanation of human cognitive capacities like perception, memory, reasoning, language use and so on. It is a distinctively multidisciplinary enterprise emerging out of the interaction of various disciplines like Artificial Intelligence, Cognitive Psychology, Linguistics, Neuroscience and Philosophy, each studying human cognitive capacities in its own way. It is not a mature or well-defined science like, say Physics. Hence it depends and draws heavily on the resources of the contributing disciplines. The present work is not an empirical inquiry into the human cognitive capacities as such, though it certainly has specific implications for such an inquiry. Hence the thesis will not, at any stage of the investigation, be concerned with any of the subdisciplines except Philosophy. The study is restricted to certain philosophical assumptions that makes cognitive science a legitimate discipline.

0.1 THE FOUNDATIONAL ASSUMPTIONS

Cognition is essentially an internal mental process. Hence philosophical discussions on cognitive science revolve around two basic questions: 1. What is the nature of mind? 2. What is the nature of cognitive processes? These questions are interrelated and interdependent in the sense that an answer to any one of them would determine the answer to the other. In what follows I shall identify a set of interrelated issues that form the philosophical foundations of the emerging discipline. The issues pertain to the existence and nature of minds or knowing things, to the mind-body distinction, to the nature of cognition and to the method of cognitive science. In dealing with them I shall describe the

approach of the contemporary cognitive scientists and cognitivist philosophers — I shall call them cognitivists — to these basic questions and my reactions to their approach. In responding to these questions, I do not intend to question the possibility or viability of cognitive science. My objective, on the other hand, is to specify what should be our approach to the basic issues that would make a scientific study of mind and cognition possible. The foundational assumptions of cognitive science fall into two broad categories: substantive assumptions and methodological assumptions. And we shall deal with each of them briefly.

0.1.1 Substantive assumptions

The substantive assumptions are basically concerned with the nature of the mind and the cognitive states and processes. They have primacy over methodological assumptions since they determine the latter. We shall identify three such substantive issues for our discussion. They are the following:

0.1.1.1 Existence and nature of mind

Any scientific inquiry must have a specific domain of its own. It must be about some particular aspects of the universe and not the universe as a whole. Hence, to specify its domain, it is necessary to make certain inclusions and exclusions. In cognitive science we study the cognitive aspects of the universe. Therefore, all those entities which exhibit cognitive properties fall under its scope. There *are* basically two assumptions regarding the existence and nature of knowing things or minds:

1. There is a natural domain corresponding to cognition, namely minds or knowing things.
2. The cognitive states and processes of the mind are phenomenal in nature. That is, cognitive states and processes like perception, memory, reasoning etc., are conscious mental states and processes with their phenomenological properties.

These two assumptions pre-theoretically specify the domain and goal of inquiry in cognitive science.

According to cognitive science as it is practised today, in addition to humans, animals, computational machines and even hypothetical creatures like martians possess cognitive capacities and, therefore, constitute the domain of cognitive science. As against this position, I defend the view that the proper domain of cognitive science consists only of human cognitive capacities. The martians, machines and the non-human animals come into the picture only to the extent that they can contribute to our understanding of human cognitive capacities. The function of the talk of martian cognitive capacities for example, is to clarify the obscure psychological concepts that impede the scientific study of the human cognitive functions. Apart from this, the cognitivists' speculations about martian psychology do not make much sense. Again, machines do not at all possess any cognitive capacities; they just provide models for the study of the human mind. It is true that some animals are endowed with certain cognitive capacities though these are less sophisticated than those of humans. We study the animal cognitive capacities only in so far as they throw light upon our own cognitive capacities. Hence I conclude that the project of the cognitivists to develop a universal psychology and cognitive science covering humans, non-human animals, machines and martians is untenable.

0.1.1.2 Mind-body distinction.

As stated already, one of the pre-theoretical assumptions of cognitive science is that the cognitive states and processes are phenomenal in nature. The phenomenal features or the conscious aspects do not yield to any description in physical vocabulary. This, has led to the notorious mind-body dualism: the doctrine that mind and body are totally different sorts of substances, yet causally interact with each other. Cognitive science is not concerned with mind-body dualism. However, the philosophical response to this problem has specific implications for cognitive science. Once substantial dualism is granted, cognitive science is sheer impossibility, for we are not in a position to make a scientific study of the mysterious, unextended, immaterial substance we call mind. Moreover, in accounting for the causal interaction between the mind and the body we face insurmountable difficulties. It is not possible for us to

understand how the cognitive states and functions described phenomenologically could be physically realised. As a result, cognitive science cannot rest upon substantial dualism.

There are three reactions to the mind-body problem within the framework of materialistic monism, the doctrine that there is only one kind of substance viz., matter with its physical properties. The first reaction is rightly characterised as reductionism. On this approach, the mental properties, cognitive or otherwise, are reducible to certain physical properties. Consequently, the mind does not have any ontological status and there is nothing for cognitive science to enquire into. This contradicts the basic assumption that there exists a natural domain corresponding to cognition that makes cognitive science possible. Moreover, the denial of cognitive mental states and processes goes counter to our own experience and to the strong pre-theoretic intuition regarding the nature of our mental states. Since reductionism is rooted in materialistic monism, it makes a scientific study possible. But unfortunately, there is no mind for us to make a scientific study of

The lesson we learn from reductionism is that if there is to be a science of the mind, our pre-theoretic intuition regarding the nature of the mind has somehow to be preserved without our falling back upon substantial dualism. The mental properties must have a place within the framework of materialistic monism. That is, the irreducibility of mental properties and materialistic monism must somehow be combined. This is achieved by maintaining that there is, in fact, a distinction between the mind and the body. However, the distinction is not substantial but only conceptual or logical. The conceptual distinction between the mind and the body forms the foundation of contemporary cognitive science. However, the conceptual distinction has misleading consequences for cognitive science: the cognitivists are led to think that the mind is distinct from the body not just logically or conceptually but empirically as well. Hence the mind could be understood and scientifically studied independent of the underlying physical facts, neurological or otherwise. From this cognitivists conclude that mental properties could be multiply realised. That is, the mind could be realised not only by the human or animal brain with its neurological structures and processes but also by mechanical or

electrical computers, and other such machines and organisms. This constitutes the second approach to the mind-body problem from the point of view of materialistic monism. Why the thesis of multiple realisability is not tenable is dwelt upon in detail in the chapters that follow.

The third approach to the mind-body problem, which is adopted and defended in this thesis maintains that the mind is conceptually distinct from the body/brain but is not empirically independent of the brain. Though the mind can be conceived and understood independent of the body, a scientific study of it is not possible without an inquiry into the physiological facts that realise the mind. That is, for a scientific study of the mind, the kind of physical stuff that constitutes or causes the mental properties must be taken into account. It is an empirical fact that mental properties are exhibited by creatures with specific types of neural structures and processes. If the nature of mental states and processes is determined by the neural structures and processes, then the mental properties can be attributed only to creatures with a central nervous system like that of humans. To non-human animals are attributed mental properties, provided the structure and organisation of their brain and nervous system as well as the behaviour they produce are similar to ours in the relevant respects. This justifies why only human cognitive capacities constitute the subject matter of cognitive science.

0.1.1.3 Nature of cognition: the computational-representational assumption

Our pre-theoretic intuition suggests that the cognitive states and processes are the conscious states and processes of the mind. But this intuition by itself does not throw much light upon the nature of the internal states and processes. In addition, there are, however, other equally strong pre-theoretic intuitions which do not contradict it. They are three in number: 1. The cognitive states and processes are productive or creative; 2. they are intentional; 3. they are causally efficacious in the production of behaviour. Intuitions such as these suggested to the cognitivists that the cognitive processes could be defined as some kind of computation. And by computation they mean rule-governed manipulation of internal symbolic representations. This view implies that cognitive states are *computational* as well as *representational* states, and that the mind is

a computational/representational device or a computer. The creativity, intentionality and the causal efficiency of the cognitive states and processes are explained in terms of computational processes. Since computation is the manipulation of formal symbols and the rules governing the process apply to the symbols on account of their formal properties, this is a formalist approach to the study of mind.

In this thesis I describe two objections to this approach. First, the approach is reductionist in the sense that it fails to do justice to the "phenomenal", "qualitative" or "subjective" features of our cognitive mental states and processes. They are "felt" in certain ways by us on account of their being accessible to us in awareness. This facet of human mentality remains unaccounted for within the computational representational model. Second, in defining cognition as rule-governed manipulation of formal symbols, only the formal or the syntactic features of our mental states and processes are taken into account. The semantic features do not find a proper place within the scheme. By the semantic features of the mental states, we mean their intentionality, their being directed to certain objects and states of affairs. My disagreement with the cognitivists is not on the assertion that cognition is a sort of computation; it might very well be. But it is not the sort of computation they speak of: the rule governed manipulation of symbolic representations. Computation is essentially a semantic process. Hence, strictly speaking, machines cannot compute. Their rule-governed manipulations of symbols are computations only for humans or for other intelligent beings who interpret them.

0.1.2 Methodological assumptions

Cognitive science is committed to two important methodological assumptions. The first is that the scientific study of cognition is individualistic in its approach. We shall call it this assumption methodological individualism or internalism. The second assumption is that the cognitive faculty can be analysed into a number of capacities, and the cognitive capacities of the mind are explained by appealing in part to the analysing capacities and their organisation. We shall call this strategy functional analysis.

0.1.2.1 Methodological Individualism

Cognition we know is an internal mental process. Cognitive science is concerned with the internal mental states and processes only. So by the methodological individualism of cognitive science, we mean that it does not take into account the influence of environment and culture on cognitive processes. The approach, however, does not deny such influences. But such influences are mediated through individual perceptions and internal representations of the cognizer and hence cognitive science has to do only with the latter.

0.1.2.2 Functional analysis

The second methodological assumption is that the mind or the cognitive faculty can be divided into a number of cognitive capacities, each of which can be studied, to a great extent, in isolation from the others. Such partitioning of the cognitive faculty is a requirement for a scientific understanding of cognition. However, it is important to note that the various cognitive capacities such as perception, problem solving, memory, language use etc., make a system and hence it is the same mind which exercises each of these capacities. In other words the cognitive capacity of the mind as a whole is explained by appealing to the capacities of component systems.

Discussions on the methodological issues as such will not figure at any stage of this inquiry except for a brief mention of functional analysis in the third chapter. There are two reasons for this omission. First of all, our primary interest lies in those substantive theses regarding the nature of mind and cognition that make cognitive science possible. The methodological issues concern us only to the extent that they arise out of the substantive assumptions. Even when we are dealing with functionalism we do not discuss whether functional analysis is an adequate research strategy in cognitive science. We are interested in finding out whether the mental states and processes can be defined as functional/computational states and processes. Secondly, cognitive science being an immature science, its methodological assumptions are pretty general in character and the position of the thesis with regard to the substantive issues does not contradict the methodological assumptions. Hence there is no reason why the latter should receive much attention in the present work.

0.2. THE LAYOUT OF THE INQUIRY

In the discussions that follow, I have not identified and classified the substantive issues on above lines. However, the thematic thrust of the various chapters directly deals with these issues though none of the chapters exclusively deals with them in that order. The inquiry takes its own course touching one or the other of the foundational questions in various stages of the inquiry. Hence I shall briefly describe how the inquiry proceeds.

Almost all the substantive issues identified above are touched upon in the first chapter on Cartesian dualism and cognition. The chapter has a central place in the overall framework of the thesis. The basic issues relating to mind and cognition as they figure in Descartes' writing is important because our understanding of and response to them determine the perspective of the thesis and give direction to the inquiry. Therefore, our interest in Descartes is not merely historical. Our emphasis is on interpreting Descartes in the light of the foundational questions in cognitive science. The central issues in Descartes' philosophy of mind, such as the existence of knowing things, the nature of the mind, the distinction between the mind and the body and his theory of cognition will receive our attention in the chapter.

The second chapter, on reductionism, examines various reactions within the framework of materialistic monism against Cartesian dualism understood as two substance theory. First, we deal with the two versions of behaviourism: the logical and the methodological. Both the versions are infected with the same difficulty. They explain away the mental properties: they deny the internal mental processes we are aware of, and fail to supply a causal explanation of the human cognitive processes and behaviour. Then we proceed to discuss two versions of physicalism: type physicalism and token physicalism. Type physicalism identifies mental properties with neural properties. It is attacked by Kripke and Nagel on the grounds that it fails to accommodate qualitative aspects essential at least to some mental states. It is shown in the thesis that this objection does not hold against type physicalism as it is proposed only as a scientific hypothesis and not as a definition of mental states. The token

physicalists, on the other hand, argue that mental events are the same as physical events, granting at the same time that the mental types could be multiply realised. The multiple readability of the mental as entailed by token physicalism is taken as a boon by most of the contemporary philosophers of mind and cognitive scientists. But in my opinion, it proves a bane to the scientific study of the mind. In addition to the problems associated with multiple readability, token physicalism is troubled by another difficulty. It defines cognitive mental states and processes just in terms of their formal aspects. It is a narrow definition of mental states and processes which excludes the content of the mental states essential to them. It is argued that a science of the mind is possible only if type physicalism is preferred to token physicalism.

The most powerful approach to the study of mind within the framework of materialistic monism is functionalism. Cognitive science as it is practised today is founded upon this philosophical doctrine on the nature of the mind. Hence the third chapter of this thesis is a study of functionalism. Functionalists define mental states in terms of their causal roles, that is their causal relations to sensory stimuli (inputs), behavioural responses (outputs) and other mental states. The theory contains within itself certain aspects of both behaviourism and physicalism. There are two versions of functionalism. Functional Specification Theory (FST) and Functional State Identity Theory (FSIT). The former is committed to type physicalism and the latter to token physicalism. FST can be seen as a reaction to logical behaviourism, as is fairly clear from the writings of the exponents of FST. Though this is not very obvious, it seems to me that a case can be made to show that FSIT is mainly a reaction to methodological behaviourism. I do not undertake to establish this claim in the thesis. To make my point, I only suggest that this has been acknowledged by thinkers like Dennet. One of Dennet's complaints against the functional state identity theorist Fodor is that Fodor fails to note that his own theory is a reaction to Skinnerian behaviourism rather than to logical behaviourism of the Rylean variety.[1]

[1] See Daniel C. Dennet, "A Cure for the Common Code?" in *Brainstorms: Philosophical Essays on Mind and Psychology* (Cambridge, Mass.: The MIT Press, 1981), 90-108.

Of the two versions of functionalism, cognitive science as practised today Is committed to FSIT. This point is clarified in the third chapter of this thesis by showing that the theory conceives cognition to be a rule-governed symbol manipulation. Following Searle's celebrated Chinese room argument, it is argued that this model of cognition is an implausible one. The second half of the chapter works out a critique of functionalism in general based on two Cartesian intuitions: first, the mind-bodyrelation is a contingent one and second, phenomenal characteristics are essential to *and* definitive of mental states.

Block and Fodor raised two qualia centred objections against functionalism: the inverted qualia argument and the absent qualia argument. Sydney Shoemaker developed a very sophisticated version of FST which he claims does not fall pray to these objections. The fourth chapter of my thesis starts with a discussion of Shoemaker's strategies for meeting the objections. In what follows, it is argued that in the process of meeting the objections, Shoemaker has provided a model of cognition within FST. This is elucidated with reference to a reconstruction of Shoemaker's causalist model of perception. The chapter concludes with a critical review of Shoemaker's thesis. My main objection to Shoemaker is that despite his claims to the contrary, his theory fails to accommodate the subjective and conscious aspects of our mental life. An exercise in Shoemaker's version of functionalism becomes essential because of the fact that this is perhaps the only competing model of mind once we reject FSIT. Hence it becomes imperative that we examine whether this model can accommodate our pre-theoretic intuitions regarding the nature of mind and cognitive states. Our finding is that it too fails like its counterpart.

The fifth chapter on consciousness is a search for a theory of mind which can account for the phenomenological aspects of our cognitive mental states. There are three facets of human mentality: awareness, phenomenality and intentionality. The chapter defends the thesis that there is a conceptual relation among these features of mentality. First, we critically examine the theoretical reasons and empirical evidences cited

by Nelkin for maintaining that these three aspects are distinct and separable. Then it is argued that each of our conscious mental states is a unitary state with all the three features of consciousness. The unity of consciousness defended in the chapter does not conflict with the view that mind can be divided into various faculties like those for problem solving, perceptual analysis, language use etc. Exploiting Dennet's distinction between personal and subpersonal levels of description, it is argued that our talk of the unity of consciousness is a talk at the personal level whereas our talk of the division of cognitive faculty into a number of information processing systems belongs to the subpersonal level of description. Finally we aim at working out a plausible personal level theory of consciousness. On this theory, awareness, intentionality, and phenomenality are inseparable features. There are no independent intentional states or qualitative states. Nor is there any second order consciousness as many cognitivists maintain. An adequate personal level theory of consciousness is important because in the absence of such a theory, it is not possible to develop a subpersonal theory of mind that can give a proper explanation of cognitive mental states and processes.

The cognitive mental states and processes are conscious states and processes. The problem with contemporary cognitivism is that it does not properly explain consciousness. A scientific explanation of consciousness is possible only by appealing to the structures and processes that realise the mental properties. The cognitive mental states and processes, we know, are realised as a matter of fact by the structure and organisation of the brain and nervous system. This leads us to the idea that the mind is species-specific in its nature and functions. So the attempt of the cognitivists to construct a species independent psychology is implausible. And the question whether martians have mind or whether computers can be attributed psychological properties does not simply arise at all. Hence the thesis winds up with a defence of the species-specificity of psychology and cognitive science.

Finally, one may raise the question why at all we must inquire about mind and cognition. Though the answer to this question does not come under the purview of the present inquiry, I shall just say a few words by way of its justification. There are two basic kinds of inquiry man is engaged in.

The first is an investigation of the physical world he is situated in, resulting in the development of natural sciences. This inquiry is an essential part of his struggle for existence and survival. The other is an inquiry into his own nature. The latter inquiry is in fact, prompted by the former. It is only natural that he tries to understand his own nature once he comes to know the various aspects of the physical universe. As the horizon of his knowledge of the physical universe widens, it becomes necessary for him to redefine his own nature and the way he is related to the rest of the universe. It is a natural corollary of the thesis defended here that the study of mind and cognition is a part of our basic inquiry into our own nature.

1

CARTESIAN DUALISM AND COGNITION

1.1 INTRODUCTION

Many of the foundational issues of philosophical interest central to the contemporary discussions on cognitive science have been raised by Descartes in some form or other. Without a proper understanding of them it is not possible to appreciate, or to participate in, the contemporary discussions in cognitivist philosophy of mind. A careful examination of Descartes' theses on mind and cognition would reveal that the contemporary cognitivist theories are largely Cartesian in their outlook. The present chapter makes a study of the Cartesian theses from the point of view of cognitive science.

We have already seen that cognitive science makes the fundamental assumption that there is a natural, autonomous domain corresponding to cognition; namely, the existence of knowing subjects. Therefore, in the first section of this chapter, Descartes' *cogito* argument is construed as an attempt to establish the existence of knowing things. It will be followed by a discussion on Descartes' views on the nature of mind, and his arguments for the mind-body distinction. I shall argue that there is a line of reasoning implicit in Descartes' writing that mind-body dualism need not be taken to imply substantial distinction but only a conceptual one. This interpretation will be further substantiated by an examination of Descartes' argument for mind-body unity. Since substantial dualism and its difficulties are well known, substantial dualism as such does not find a place in the discussion.

The second section is a discussion of the Cartesian theory of cognition along lines consistent with a conceptual distinction between mind and body. Descartes does not use the term cognition. However, he uses the

term 'perception' in a wide sense to characterise all cognitive acts. Perception may mean either sensory perception or understanding. For Descartes, both sensory perception and understanding are functions of innate ideas. Hence his theory of perception and the doctrine of innate ideas form the theme of the section. Noam Chomsky who traces the origin of his own thesis on language and cognition to Cartesianism had a significant role to play in the development of modern cognitive science. In view of this fact, the chapter concludes with a brief section presenting a unified perspective on the Cartesian theory of mind, cognitive science, and what Chomsky called Cartesian linguistics.

1.2 THE MIND AND THE BODY

The present section deals with four issues: 1. Descartes' argument for the existence of mind; 2. his conception regarding the nature of the mind as opposed to that of the body; 3. his arguments for the distinction between the mind and the body; and 4. the union of the mind and the body so as to form a single cognising unit. A discussion of these fundamental problems, I think, can reveal how much philosophical discussions on cognitive science owe to Descartes; so much so that without a clear understanding of them, no meaningful philosophical discourse is possible on the foundations of cognitive science.

1.2.1 The existence of mind

Any legitimate science, we have noted, will have its own well defined subject matter. If cognitive science is such a discipline then there must be a set of entities that fall within its scope, and these are the set of knowing subjects. Since cognition is a function of the mind , the existence of knowing subjects means that there are minds. Descartes tries to find out whether there is at least one knowing subject and he recognizes himself to be one. He arrives at this truth through his methodic doubt. The methodic doubt suggested to Descartes the possibility that the whole of knowledge - both the opinions received from the senses and the general and necessary truths such as mathematical propositions - is mistaken. This observation is based on the fact that people do commit mistakes in mathematics, and are often deceived by the senses. Two important facts

known through the senses are that there is an external world and that we possess a body with sensory and motor organs. If the knowledge of these is totally mistaken, it is quite possible that there is no external world and that we have no senses and no bodies[1]. Descartes raises a fundamental question in this connection: from the possible non-existence of the external world and our own bodies, does it not follow that it is possible that we ourselves do not exist? His answer is as follows:

> But we cannot for all suppose that we, who are having such thoughts, are nothing. For it is a contradiction to suppose that what thinks does not, at the very time when it is thinking, exist. Accordingly, this piece of knowledge - *I am thinking, therefore I exist*- is the first and the most certain of all to occur to any one who philosophizes in an orderly way.

To think that one does not exist, one must exist. Hence one's own non-existence is inconceivable.

Cogito, for Descartes, is an indubitable proposition. Doubting one's own existence reinforces the awareness that one is doubting. From this indubitable proposition, viz., 'I think' how does Descartes come to the conclusion 'I exist'? What is the nature of the relation between *Cogito* and Sam? Descartes argues that *Cogito ergo Sum* is not a syllogistic inference of the form: Whatever thinks exists; I think; Therefore, I exist. Once *Cogito* occurs to the mind, he argues, it recognizes the truth of Sum "by a simple intuition" Cartesian scholars are divided among themselves as to the nature of the transition from *Cogifo* to Sum. Bernard Williams argues that the relation in question is one of presupposition i.e., the truth of *Cogito* presupposes the truth of Sum. Hence it is an inference, though not of syllogistic form. This interpretation permits the

[1]Cf. Rene Descartes, Meditations on First *Philosophy,* in The *Philosophical Writings of Descartes,* Vol. 2 , trans. J. Cottingham, R. Stoothoff, and D. Murdoch, (Cambridge: Cambridge university press, 1985), 16. This translation is hereafter cited as CSM followed by volume number.

Principles *of Philosophy,* CSM I, 194-95.

[3]Second *Replies,* CSM II, 100.

For Williams, *Cogito ergo* sum is an inference of the special form: "if p presupposes *q* and *p* is true, *q* must also be true. For since 'p presupposes *q'* means 'q must be true for p to be either true or false', it follows *a*

replacement of *Coglto* with any arbitrary verb say 'walk' Umbuiare). Consequently, It could be argued *Ambalo ergo sum.* This does not fit well with the Cartesian scheme for he wants to come to Sum from an indubitable proposition. *Cogtto* is such a proposition where as ambulo is not, since its negation is conceivable. Unlike Williams, Hintikka argues that *cogito ergo* sum is not an inference but a performance. "The function of the word *cogito* in Descartes' dictum", he says, "is to refer to the thought-act through which the existential self-verifiability of 'I exist' manifests itself".[5] The relation of *Cogito* to Sum is similar to the relation of a process to its product. The truth of *I exist* is revealed to one only when one actively thinks just as illumination is present only when the source of light exists. The truth of I exist cannot be revealed by any arbitrary human activity like breathing, but only by thinking. An attempt to think one's own non-existence amounts to persuading oneself to the belief that one does not exist. Through each act of thought, including the thought of one's own non-existence, the truth of Sum is verified. The self, in coining to know its own existence does not become the object of thought. Rather its existence is revealed in the act of thought.

Since the thought-act reveals the self, Descartes characterises it as the thinking thing or res *cogitans* which is variously called by him 'mind' or 'soul'. According to him, the *res cogitans* is that which "doubts, understands, affirms, denies, is willing, is unwilling, and also imagines and has sensory perception". This list of the activities the thinking thing can perform shows that Descartes understands the word 'thought' in a very broad sense covering all cognitive acts. The various types of cognitive acts are for him different forms or modes of thought. Any one of them can be substituted for *Cogito* in the above argument as each of them

fortiori that *q* must be true for p to be true; in other words, if p is true *q* is also true." The truth of my thinking, presupposes the truth of my existence. Bernard Williams, "The Certainty of the Cogito" in *Descartes: A Collection of Critical* Essays, ed. Willis Doney (London: Macmillan, 1968), 96.

Jakko Hintikka, *"Cogito ergo* sum: Inference or Performance", in Doney, ed., *Descartes: A Collection of Critical Essays,* 122.

[6]*Meditations,* CSM II, 19.

can reveal the truth of Sum. Since by 'thought' Descartes means any cognitive act, the existence of the thinking thing is same as the existence of the knowing thing. The existence of the knowing subject is the foundation stone for cognitive science. Descartes here proves only his own existence as a knowing subject, and it may be objected that we cannot have a science of an individual. So we must prove that there are other individuals as well. Here we are concerned with the problem of other minds. If there exists at least one mind, it is logically and even empirically possible that there are other minds as well. Such a possibility is sufficient for conceiving a science of the mind.

1.2.2 Nature of mind

Descartes uses the word 'thought' to signify the thought acts and to refer to the substance where these acts inhere. In the former sense the term applies to "everything which we are aware of as happening within us, in so far as we are aware of it." So the acts of thought are synonymous with acts of consciousness. The various acts of thought fall under the common concept of consciousness. When Descartes says that thought is a substance, he means only the common concept of consciousness.

According to Descartes, thought is the essence of mind. The essence of a thing is defined as that which is necessary for its existence.[9] Descartes claims that he has clear and distinct perception or awareness that he is a thinking thing and nothing other than thought belongs to his nature. Since only what he is aware of is sufficient to enable him to subsist with it alone, thought is his essence.[11] In short, thought is the necessary and sufficient condition for the existence of res cogitans.

Malcolm argues that in identifying thought as his essence Descartes

[7] *Principles*, CSM I, 195.

[8] Cf. *Third Replies*, CSM II, 124.

Descartes provides only a negative definition of essence: "if something can exist without some attribute, then it seems to me that that attribute is not included in its essence". *Fourth Replies*, CSM II, 155.

[10] *Meditations*, CSM II, 54.

[11] Cf. *Fourth Replies*. CSM II, 155.

employs the following principle;

> *x* is my essence if it is the case that (a) if 1 am aware of x, then (necessarily) I am aware of myself and (b) if 1 am aware of myself then (necessarily) I am aware of *x.*

Malcolm illustrates how thought alone satisfies the above principle. Any act of thought for Descartes is identical with an act of consciousness. Consequently, if I am aware of anything, then I am thinking. In Malcolm's view, though Descartes does not explicitly maintain that whenever I think, I am aware of myself, he would be drawn to accept it partly because "the best support for his principle 'I think *ergo I* exist' is at the same time a support for the principle 'I think *ergo* I am aware that I exist'"[13] . So thought satisfies the condition *(a)* of the above principle. As any instance of awareness is an instance of thought on Descartes' broad use of ' thinking', thought satisfies the condition (b) as well.[14]

However, Malcolm points out that the above principle is defective. Condition *(a)* is satisfied irrespective of the value of *x. x* could be given the value of any arbitrary human activity and that activity, say, breathing, would pass for my essence. Hence condition (a) does not serve to eliminate any candidate for my essence. The satisfaction of (a) by thinking does not help me to identify thinking as my essence. On the other hand, condition (b) can be used to eliminate candidates for my essence. From the fact that I am aware of myself, it does not necessarily follow I am aware of breathing but it does follow that I am aware of thought. Hence only thinking pass for my essence. But Malcolm is of the opinion that even (b) cannot be employed to prove that thought is my essence. Here the problem lies with the value of *myself.* Anything can be substituted for *myself* and the resultant proposition would always be true. That is, if I am aware of breathing, then necessarily I am aware of thought. This odd consequence is attributed by Malcolm to Descartes' broad use of the word

[12]Norman Malcolm, "Descartes' Proof that His Essence is Thinking", in Doney, ed., *Descartes: A Collection of Critical Essays,* 330.

[13]Ibid., 319.

[14]Ibid.

Ibid.

'thought' whereby thought cannot occur without our being aware of It,[15]

In my opinion, Malcolm's formulation of the principle does not seem to reflect Descartes' intuition. The word 'thought' may be either the act of thought or the object of thought. Descartes uses it in the former sense. For him, any act of awareness is an act of thought. Malcolm, on the other hand, understands it as an object of thought. Descartes would not disagree on condition (a). This doctrine implies that if I am aware of breathing, then necessarily I am aware of myself. However, it does not follow from this that breathing is my essence, for the content of thoughts (what thoughts refer to) does not form my essence. To be faithful to Descartes, the condition (b) must be restated as 'if I am aware of myself, then I am thinking'. The sentence would remain true even if the value of *myself* is replaced by *breathing.* Since the variable *x* in the principle take the value of individual thought-contents which are the object of my thought, Descartes does not employ the principle to identify his essence, for Descartes uses the word 'thought' in its generic sense.

Descartes' broad use of 'thought' has certain implications for our discussions on cognition. The acts of thought, as we have noted, are acts of cognition. Since acts of thought are identified with acts of consciousness, it follows that cognitive acts are conscious acts. So for Descartes, one of the most important aspects of cognitive states and processes is their phenomenality. Our perception, understanding, judgment etc. can be defined and explained only in relation to consciousness. This is a theme that will recur in the thesis.

The mind or the *res cogitans,* according to Descartes, is unextended and hence it is not possible to distinguish any parts within it. Yet, the mind is endowed with various faculties, such as sensory perception, understanding, willing etc. These faculties with their specific acts are distinct from one another. Hence there is a possibility that these various acts belong to different substances. And mind could be a system of parts or association of subminds. Descartes denies such a possibility for it is one and the same mind which wills, understands and has sensory perceptions.

[15]Cf "Descartes' Proof that His Essence is Thinking", 332-33.

The thinking substance can be conceived without any specific reference to the faculties. I can conceive of myself as a thinking substance even if 1 am not endowed with the faculties of willing or sensory perception, provided I am able to perform some intellectual act or other. None of the faculties on the other hand, can be conceived apart from thought for each act of any of these faculties is an act of thought. Hence the faculties belong to the thinking substance alone.

If the faculties were considered substantially, mind would be a system of subminds each of which would be contributing to the totality of its thoughts. As Wagner notes, for Descartes, faculties are modes and no mode depends upon another mode for its existence. Descartes would not grant intersubstantial dependencies between modes. So mind is not analysable into subminds as Aristotle holds. If the mind understands or wills only if one of the subminds does, such dependency violates the Cartesian principle of the independence of distinct substances. So the subminds if there are any, can only be treated as modes in the Cartesian sense. Though the various faculties are distinct from one another, their distinction is not real but only modal. In other words, the various acts of willing, understanding and sensory perceptions are modes of the indivisible thinking substance.

Descartes grants the possibility that what we have so far called mind in fact falls under the concept of body, and that thought acts really belong to the body. This possibility drives him to the examination of the nature of body in its metaphysical aspect i.e., body in the most general sense of the term. The most general concept of body attained through a clear and distinct perception of the intellect[18] is that it is an extended substance, a continuum with three dimensions of length, breadth and height. The extended substance cannot be conceived except as being divisible, hence, argues Descartes, it is divisible and having parts.[19] As in the case

[16]Cf. Steven J. Wagner, "Descartes on the parts of the Soul", *Philosophy and Phenomenological Research* 45 (1984): 57-6O.

[11]'*Meditation,* CSM II. 59.

[18]Ibid.. 22.

[19]Cf.Ibid., 59.

of the mental substance, the extended substance too is known through its acts or modes which, according to Descartes, are shape, size, position, being in motion, being at rest etc. As the corporeal substance is divisible, it could be supposed that each of these different acts inheres in different subjects and there are substances corresponding to each of these acts or accidents. Through motion and shape, for example, can be understood apart from each other, they cannot be understood apart from local extension, for all these acts "fall under the common concept of extension".[20] Consequently, each part of the corporeal substance will have its own shape, size, motion etc.

1.2.3 Mind-body distinction

The mind and body are diametrically opposite in nature; mind is the thinking thing, unextended and indivisible, body is extended and divisible. A consideration of the nature of the body and that of the mind reveals that they cannot be identical as they fall under different common concepts. There is nothing common between them as they do not possess any common acts. Descartes provides three arguments for the distinction between the mind and the body. The first one, known as the argument from doubt appears in part IV of the Discourse. The second argument viz., the divisibility argument occurs at two places: in the *Synopsis* and in *Meditation* VI. However, the third known as the separability argument is the most powerful and well-articulated, and is presented in the sixth *Meditation.* Since this is the most significant of all the arguments, we shall be concerned only with it in this section. Our point in discussing this argument is to show that Descartes' argument for the mind-body distinction needs to be understood as an argument for the logical possibility of their separate existence and not for the fact that they exist independent of each other.

The separability argument runs as follows:

> First, I know that everything which I clearly and distinctly understand is capable of being created so as to correspond exactly with my understanding of it. Hence the fact that I can clearly and distinctly understand one thing apart from another is enough to make me certain that two things are distinct, since they are

[20] ***Third Replies,*** **CSM II, 124.**

> capable of being separated at least by Cod. The question of what kind of power is required to bring about such a separation does not affect the judgment that the two things are distinct. Thus, simply by knowing that I exist and seeing at the same time that absolutely nothing else belongs to my nature or essence except that I am a thinking thing, I can infer correctly that my essence consists solely in the fact that I am a thinking thing. It is true that I may have (or, to anticipate, that I certainly have) a body that is very closely joined to me. But nevertheless, on the one hand I have a clear and distinct idea of myself, in so far as I am simply a thinking, non-extended thing; and on the other hand I have a distinct idea of body, in so far as this is simply an extended non-thinking thing. Accordingly, it is certain that I am really distinct from my body, and can exist without it.[21]

The premises of the argument are carefully chosen from the conclusions Descartes arrived in the previous Meditations. The second *Meditation* reveals the idea of clear and distinct perception of mind existing as a thinking unextended thing. In the fifth *Meditation,* he comes to the clear and distinct conception of body as non-thinking, extended substance. The third and the fourth Meditations too have their own contributions. The third proves the existence of an omnipotent God who is not a deceiver and the fourth, the validation of clear and distinct perception by God, for he is the author of such perception. There is an element of truth or reality in my clear and distinct perception, for it is free from conceptual contradictions. Though there may not be anything corresponding to my clear and distinct perception, a state of affairs corresponding to the clear and distinct perception *can* be actualized by the omnipotence of God. Viewed in this way, clear and distinct perception is developed as a modal principle. The proof for the existence of God and his argument for the validation of clear and distinct perception helped Descartes achieve this goal.

In the light of this discussion, it becomes obvious that the clear and distinct perception of a thing indicates its possible existence. So it is clear that the first sentence of the passage quoted above states the modal principle: whatever is clearly and distinctly perceived is logically possible. The subsequent sentence is a statement of the principle of distinction derived from it, viz., the possible existence of one thing

[21]Meditations, CSM II, 54.

apart from the other shows that they are distinct. Descartes has already proved the existence of a thinking being and since he has a clear and distinct perception of mind as a thinking, non-extended thing, it is possible that mind exists as a thinking non-extended thing. Similarly he has a clear and distinct idea of body as extended, which does not attribute thought to it. So, it is possible that body can exist as such apart from the mind. Mind-body dualism is inferred from the possibility of their separate existence.

The underlying idea behind the argument is that distinction and *identity* are contradictory notions. If *x* is identical with y, then it is necessary that *x* is identical with y. On the other hand, if *x* and y have different sets of properties, it follows that they are not identical, meaning they are distinct. This can be understood, if one invokes the Leibnizian notion that necessity is truth across all possible worlds. If mind is identical with body, then it is necessary that they are identical. Hence it must be true in all possible worlds where mind or body exists. The existence of a single possible world where either mind or body exists and functions independent of the other is sufficient to establish that they are distinct. The following passage clearly points out that Descartes makes use of the modal intuitions to prove mind-body dualism:

> the fact that we often see two things joined together does not license the inference that they are one and the same; but the fact that we *sometimes* observe one of them apart from the other entirely justifies the inference that they are different... For it is a *conceptual contradiction* to suppose that two things which *we clearly perceive as different should become one and the same* (that is intrinsically one and the same, as opposed to by combination); this is no less a contradiction than to suppose that two things which are in no way distinct should be separated.[22]

The modal intuitions are required for the proof of mind-body distinction because as a matter of fact we find the power of thinking only with corporeality.

Philosophers are not unanimous as to whether Descartes makes use of any modal principles. While Kripke argues that the separability argument

[22]*Sixth Replies,* CSM II, 299. Emphasis added.

Is a modal argument[23] E.M. Curley reacts with the sarcastic comment: "Modal logic here appears to take over the role of theology In Descartes' philosophy"[24]. According to him Descartes would not accept this offer. However, it seems to me that Descartes is in fact ready to dispense with theology. The only premises of the argument, according to him, are that "the mind can be understood as a subsisting thing despite the fact that nothing belonging to the body is attributed to it, and that, conversely, the body can be understood as a subsisting thing despite the fact that nothing belonging to the mind is attributed to it". [25] Descartes invokes God's existence and His validation of clear and distinct perception only to justify his thesis that clear and distinct perception is the criterion of possibility. Such a justification was demanded by his own method. In his opinion, the existence or the non-existence of God does not affect the truth of the judgment that mind and body are distinct. If modern analytic philosophers can take inconceivability as the sole criterion for the identification of logical possibilities, there is no reason why Descartes could not take clear and distinct perception as the basis of logical possibility.

Descartes' use of the premise drawn from the Second *Meditation viz.* I have a clear and distinct conception of mind as a thinking thing which does not attribute any extension to it, has been objected to on the grounds that it makes the separability argument, an argument from ignorance. For example, Arnauld objected that my clear and distinct perception of mind apart from the body does not imply that they are not necessarily connected just as the clear and distinct conception of the triangle as having the property of right-angledness without another, namely that the square of the hypotenuse is equal to the sum of the square of the other two sides, does not mean that the properties in question are not necessarily connected. This objection does not seem to stand against the separability argument

23See Saul Kripke, "Naming and Necessity", in Semantics *of Natural Language,* ed. D. Davidson and G. Harman (Dordrecht: D. Reidel, 1972), 334-35.

[24]*Descartes Against the Skeptics,* (Oxford: Basil Blackwell, 1978), 201.

[25]*Fourth Replies,* CSM II, 159.

[26]*Fourth Objections,* CSM II, 141-42.

because Descartes does not take clear and distinct perception psychologically. On the other hand, clear and distinct perception of a thing must be *complete*[27] which makes it logical rather than psychological. As Wagner point out. the completeness of the clear and distinct perception of the thing F requires us to include in its concept all the modes of the thing, f_x .... f_n and of no other properties besides those of (a) transcendental properties, (b) negative properties, (c) modes of f_1 .... f_n (d) logical consequences of properties included in (a) - (c)[28]. Such an interpretation of clear and distinct perception would rule out counter examples of the sort Arnauld raised. Hence the premise in question does not make the separability argument one from ignorance.

However, the requirement that the clear and distinct perception must be complete, presents its own problems. It is doubtful whether it is humanly possible to have clear and distinct perception of anything at all. Moreover, as Wagner points out, the inclusion of the concepts of modes of f_1 .... f_n in the clear and distinct perception of the thing F restricts the application of modal principles to proving mind-body distinction only.[29] It is so because only two substances are available to us. If Descartes tries to save the idea of clear and distinct perception by dropping the concepts of the modes of f_1 .... f_n from it, it turns out that something can lack the properties we do not find essential to it. If the clear and distinct perception is subjective and arbitrary, there is no reason why God should validate it.[30]

The message of the separability argument, it seems to me, is that the concept of mind and the concept of body are distinct. Such conceptual or logical distinction does not rule out that there could be an extended mind. The expression 'extended mind' of course is a conceptual contradiction in Descartes' framework. Though he does not use this expression, he more or less means it when he says that the mind is united with the whole of the

[27]*First Replies,* CSM II, 85-86.

[28]Cf. Steven Wagner. "Descartes's Arguments for Mind-body Distinctness", *Philosophy and Phenomenological Research* 43 (1983): 506-507.

[29]Ibid., 514.

[30]Ibid.

human body. Descartes' point seems to be that even if we find mind united with the extended substance, such a union must be taken as a contingent one, for mind could exist apart from extension and extension, apart from mind. By the expression 'real distinction', between thought and extension, Descartes means the logical possibility of their separate existence. So the distinction between mind and body does not entitle Descartes to deny that they can exist together. In other words, a conceptual distinction between two things does not forbid their empirical or contingent identity, just as table and wood which are conceptually distinct could be empirically identical. The empirical or contingent identity of mind and body, according to Descartes, does not mean that they are really identical.

The real import of Descartes' arguments in a number of passages is not a substantial distinction of the type he often speaks but rather the logical possibility of the separate existence of mind and body. In actuality thinking nature is found to exist combined or united with extension. The mind does not and perhaps cannot exist independent of body in the actual world. This perhaps is the meaning of his observation that the kind of power required for their separate existence does not affect the truth of the judgment that they are distinct. What is perhaps required for their separate existence is the omnipotence of God. In other words, God could create a world in which mind and body would exist and function independent of each other. That is, in a world where the laws of nature are different, mind could function independent of the body. But given the laws of nature binding on the actual world, mind cannot exist and function independent of the body. In other words, their separate existence is only a logical possibility and not a nomological one. The difficulty of the interaction between mind and body seems to be the result of Descartes' confusion between logical and nomological possibilities.

1.2.4 Mind-body unity

Descartes' arguments for dualism, we have been arguing, need to be understood only as supporting the conceptual distinction between mind and body. By conceptual distinction we mean the logical possibility of their separate existence. Descartes, of course, speaks of mind as a substance existing and functioning independently of the body. Yet there are passages

where he clearly maintains that the mind depends upon the body for its existence and cognitive functioning. The substantial distinction would not grant him such a dependence. In what follows we shall examine Descartes* account of the union of mind and body which further strengthens our claim that the talk of real distinction amounts only to the logical possibility of their separate existence.

The mind is distinct from the body because the metaphysical concepts of mind and body exclude each other. In spite of the distinction, Descartes maintains that there is a particular body united with a particular mind. While speaking of the union of mind and body he uses the term 'body' in a specific sense meaning the structure and organisation of certain limbs. This, of course, is a special case of the body in the metaphysical sense. But the body that is united to the mind is not an extended substance *per se* but an extended substance with a specific structure and organisation.

In Descartes' opinion, the union of mind with body is known from the awareness of bodily sensations like pain, hunger, thirst etc. which are nothing but confused modes of thoughts[31]. It is assumed that thinking by its very nature is clear and distinct. Consequently, the confused modes of thought if any cannot arise in the mind in virtue of its being a thinking thing, but emerge because of its joining with something other than itself viz., the body[32]. Thus for Descartes man is a composite entity consisting of mind and body. The composite entity exists as if it is one subject, hence they could be characterised as "one and the same". This unity is not the unity of nature but of composition. In the case of the former kind of unity, things united cannot be conceived independent of each other whereas in the case of unity of composition, they can be conceived apart from each other.[33] Thus the basis for the distinction between mind and body is that each as a metaphysical concept is complete in itself and the two can be conceived independent of each other. Yet they can be considered as one and

[31]Cf. Principles, CSM I, 224.

Comments on a Certain Broad Sheet. CSM I, 299.

[33]Cf. Sixth *Replies,* CSM II, 285-87.

the same; mind exists in a particular body with a certain specific structure and organisation, like a mode or a quality that inheres in a substance. In other words, though mind considered in itself is a complete thing (and hence a substance in Cartesian terms) it could be viewed as a quality inhering in the body when conceived in relation to the body.[34]

The particular body joined to the mind, argues Descartes, is an automaton working in accordance with certain mechanical principles. This idea of body as a machine has rendered a reading of Cartesian dualism in line with Plato for whom body is the vehicle of the soul. Arnauld points out that within the Cartesian framework "man is merely a rational soul and body is merely a vehicle for the Soul - a view which gives rise to the definition of man as a 'Soul which makes use of body'"[35] The modern version of this objection is advanced by Gilbert Ryle who interprets dualism as the "dogma of the Ghost in the Machine."[36] But Descartes would not approve of this understanding of dualism. For him, mind and body are joined together as if they were "intermingled" with each other. It is this intermingling which helps a person know the conditions of the body like pain, hunger etc., through confused modes of thought. As mind is very much affected by the conditions and activities of the body, the relation between mind and body is not similar to that between a sailor and a ship. Had it been so, pain, hunger, etc. would not have been known through confused modes of thought but through pure intellectual perception, just like a sailor who perceives the damage to the ship by sight[37]. Thus for Descartes, mind and body are mixed up or intermingled. This union according to him, is a "substantial union" which "does not prevent our having a clear and distinct concept of mind on its own, as a complete thing".[38] This means that mind-body dualism does not imply that mind exists and functions independently of the body, but that the concept of mind is complete in

[34]See Sixth *Replies,* CSM II, 297-98; *Comments*, CSM I. 299.
[35]Fourth Objections, CSM II, 143.
[36]See Gilbert Ryle. *The Concept of Mind* (London: Hutchinson, 1975), 11-24.
[37]*Meditations,* CSM II, 56.
[38]Fourth *Replies,* CSM II, 160.

itself and that such a concept can be formed without any relation to the concept of body as a substance. In other words, the concept of body does not entail the concept of mind and *vice versa.*

The conceptual distinction between mind and body does not prevent Descartes from holding on to the view that the human mind depends upon the particular body united to it to perform many of its functions. As he notes:

> For even the mind depends so much on the temperament and disposition of the bodily organs that if it is possible to find some means of making men in general wiser, and more skillful than they have been up till now, I believe we must look for it in Medicine.[39]

That is to say, mind depends upon the bodily conditions and dispositions of the organs for its functioning. If the body is affected, the normal functioning of the mind too is affected. In his reply to Gassandi, he concedes that the mind does not work properly when it is in the body of an infant and that its actions are often slowed down by wine. However, he notes that as a thinking thing *per se* or in other words when the functions of the mind as such are considered, it is complete in itself and is not made more or less perfect by bodily conditions.[40] That is, the concept of mind is neither enriched nor impoverished . by our knowledge of the particular conditions of the body. Though mind and body are complete in themselves, they are incomplete concepts considered in relation to man.[41]
It is clear that for Descartes, man is neither body devoid of thought nor a disembodied mind but the union of both mind and body. A human limb, say a hand, considered in itself is complete. However, it is structurally and functionally dependent upon the concept of the human body. In a similar way, mind is functionally dependent upon the mind-body unit called man.

Descartes in a sense wants to suggest that though mind can be conceived as res *cogitans,* it depends upon the body united to it to carry out the operations of thought. In this context, it would be interesting to raise an important question. Can a disembodied mind if at all there is

[39]*Discourse on the Method,* CSM I, 143.
[4°]Fifth *Replies,* CSM II, 245.
[41]*Fourth Replies,* CSM II. 157.

one, conduct the activities of thought? The line of thinking we have pursued so far suggests that Descartes' answer would be negative. In fact. Descartes clearly maintains that mind can think only with the help of body. In his reply to Arnauld, Descartes observes:

> I do not doubt that the mind *begins to think as soon as it is implanted in the body* of an infant, that it is immediately aware of its thoughts, even though it does not remember, this afterwards because the impressions of these thoughts do not remain in the memory.[42]

For Descartes, the nature of mind is thought and it does not cease to think even for a moment. If the mind begins to think only when it is implanted in the body of an infant, it is doubtful whether mind has a disembodied existence. It is interesting to note that Descartes nowhere speaks of the pre-existence of mind. If it is true, then it is doubtful whether mind can exist and function in a disembodied state when it departs from the body. This means that a mind can exist and function only in a body. Descartes' talk of mind's being implanted in the body can be understood to mean that at a particular stage of the development of the human embryo, the mind emerges in the body.

There are, of course, a number of cognitive functions like memory, imagination, sensory perception etc. which the mind is unable to perform in isolation from the body. These cognitive acts are special modes of thinking or consciousness which depend upon the mind's union with the body. Take, for example, memory. It is natural to suppose as Gassandi did, that if it is the nature of mind that it always thinks, then it must have had thoughts while in the womb or during deep sleep. . But no one remembers such thoughts.[43] Descartes does not doubt the occurrence of thought at the embryonic stage of the human being's life and during deep sleep. He explains the failure of the humans to recollect such thoughts by appealing to physiological factors.

> So long as the mind is joined to the body, then in order for it to remember the thoughts which it had in the past, it is necessary

[42] *Fourth Replies*, CSM II. 171-72. Emphasis added.

[43] *Fifth Objections*, CSM II, 184.

> for some traces of them to be imprinted on the brain; it is by turning to them, or applying itself to them, that the mind remembers. So is it really surprising if the brain of an infant or a man in deep sleep, is unsuited to receive these traces?[44]

If memory traces in the brain are a necessary requirement for remembrance, remembrance cannot occur in a disembodied state. The same is true also of sensory perception and imagination. These functions are performed only because of certain physiological processes in the brain. Two cognitive functions which the mind performs without the aid of brain processes are pure understanding and volition.[45] Cognition of mathematical propositions and understanding of mathematical or geometrical objects is an instance of pure intellection according to Descartes. But it is doubtful whether the contemplation of abstract ideas and mathematical propositions can be considered a case of cognition. Cognition or understanding takes place only when abstract universal ideas are applied on particulars. If at all there is a disembodied mind, it would not be able to attain any knowledge, for it would not be able to avail itself of any particulars to which universal forms of thinking can be applied. The most important function of will in Descartes* system is to affirm or deny the propositions presented by the intellect. In the absence of propositions about the world of particulars the faculty of will would be without employment. All these observations suggest that given Descartes' framework, no cognitive process can take place in a disembodied state.

In the light of our observation that Descartes cannot in principle grant a disembodied existence of individual minds, Descartes' thesis that the mind is united with the whole body assumes significance. Mind exercises its function mainly in *a* particular gland located in the middle of the brain. And from there "it radiates through the rest of the body" by means of the nervous system and other mechanical constituents of the body.[46] The union of unextended, indivisible and incorporeal thought with extended divisible corporeal substance remains a stumbling block in understanding

[44] *Fifth Replies,* CSM II, 247. See also *Treatise on Man,* CSM I. 105ff.

[45] *Meditations,* CSM II, 51.

[46] The Passions *of the* Soul, CSM I, 340-41.

Descartes. The problem was raised by Cassandi as follows. Suppose that the mind is united with the body at a point. This point is either a physical point or a mathematical point. If the mind is united with body at a physical point, it follows that the mind too is extended as a physical point is not without extension. On the other hand, if the point in question is a mathematical point, we cannot speak of a union of mind with body since the mathematical point is purely imaginary.[47] Descartes does not give a satisfactory answer to Cassandi. However, he makes an attempt to resolve the problem in the Sixth Set *of Replies* where he compares mind to the power of 'gravity' or heaviness. Though heaviness is scattered throughout the body, it can exert its force at one part of it. Similarly mind can exert its power in a particular part of the brain and yet can be diffused all through the body. So for Descartes the mind is "co-extensive with the body — the whole mind in the whole body and the whole mind in any one of its parts".[48] Heaviness of a body, it may be noted, does not exist independently of the body. Hence this analogy does not permit Descartes to say that mind exists and functions independently of the body.

Descartes conceives both mind and body as independent of each other. However, he argues that the mind is united to the whole body. The question is how the mind and the body which have nothing in common can be united. The root cause of the problem, in my opinion, lies in the equivocation of the word 'body'. Descartes uses it in two different senses. In the metaphysical sense, body is a corporeal substance, extended and divisible. Body *per se* is distinct from the mind by definition. Here body is taken in the most general sense of the term. Descartes uses the term also in a much more restricted sense, meaning particular body of a certain sort. Such particular bodies are identified and classified based upon their structure and organisation. The human body, for example, is one such type of body.

[47]Fifth *Objections,* CSM II, 235-36.

[48]*Sixth Replies,* CSM II, 298. As the measure of gravity or heaviness is not proportionate to the volume of the body in which it inheres, it, argues Descartes, could be concentrated to a mathematical point. He warns that there is no complete parallelism between heaviness and mind as the concepts like divisibility, and measurability are applicable to gravity but not to the mind.

When Descartes observes that the mind is united to the whole body, he uses the term 'body' to refer to the human body with its own characteristic function and organisation. Descartes clearly lays it down as follows:

> And the soul is of such a nature that it has no relation to extension, or to the dimensions or to other properties of the matter of which the body is composed: *It is related solely to the whole assemblage of the body's organs.*[49]

There is not much difficulty in understanding how the mind is united to the whole of the body if mind — to use an expression from the contemporary discussion on the mind-body relation — is *realised* by the assemblage (i.e., structure and organisation) of the body's organs. The immediate consequence of this view is that the dismantling of the organisation of the body's organs would lead to the disappearance of the mental properties from the material substance. In Descartes' words, the mind "becomes completely separate from the body when we break up the assemblage of the body's organs."[50] The human body has the required structure and organisation for the functioning of the mind. Descartes is ready to concede to the Aristotelian Scholastics that mind may be considered as the *form* of man provided it is taken as the principle of thought.[51] In other words, the mind realised by the functional organisation of the brain is not a passive state of brain but an active principle. But unfortunately, Descartes shrank from developing the relation between the functional organisation of the brain and the mental states and processes. That is, he did not explore how mental processes result from the organisation of matter.

In the light of Descartes' account of the nature of mind and its relation to the body discussed so far, it seems that the mind-body relation may perhaps be better articulated by using the analogy of the computer. In the case of the computer a distinction is made between the *program* of the computer and its mechanical structure viz., the hardware. The computer like the human body is an automaton, with its own mechanical structure and

[49]The Passions, CSM I, 339. Emphasis added.

[50]The Passions, 340.

[51]Fifth Replies, CSM II, 246.

organization. The term *program* refers to the sequence of instructions thatcontrols the computational activity of the central processing unit of the computer. Though very inferior to the human mind in its capacities, and functions, the program almost seems to satisfy many of Descartes' defining characteristics of the human mind. It is the principle responsible for the thought (of course in a very limited and perhaps metaphorical sense) of the computer. The program cannot be conceived as a corporeal substance. It has no physical dimensions and hence is indivisible. The program developed for specific purposes may, however, have modules similar to different modes or faculties of the Cartesian mind. Each of the modules can be understood apart from the other modules but none of them can be understood apart from the program as a whole. In other words, a module always belongs to a particular program. Hence a program can be said to be *functionally* indivisible since each subunit of the program, with a specific purpose can be understood only in relation to the general purpose for which it is developed.[52] The program depends upon a particular machine for its functioning. Yet it can be conceived independently of the machine on which it runs. That is to say, it has an independent existence of its own. Thus a program is a substance to use Descartes' vocabulary as it can exist on its own.[53] The other observations made with reference to Descartes' concept of mind, are true of the program as well. Since the same program runs in different machines, it can be conceived independently of the particular machine on which it runs and hence it has an aspect of universality. The program does not function independently of the machine, but it starts functioning as soon as it loaded into the computer. The program is fed into the active memory of the computer; yet it is united to the whole of the computer. In addition to the central processing unit of the computer, it is related to the input as

[52]Anyfunctional unit *per se* including the human body according to Descartes is functionally indivisible: "For the body is a unity which is in a sense indivisible because of the arrangement of its organs, these being so related to one another that the removal of any one of them renders the whole body defective." The Passions, CSM I, 339.

[53]For Descartes anything that exists or can exist on its own is a substance. In his replies to Mersenne Descartes identified substance on the basis of the possibility of its independent existence. In *Principles,* on the other hand, he seems to define substance as that which actually exists on its own. See *Fifth Replies*. CSM II, 159 and *Principles*. CSM I. 210.

well as to the output mechanisms. Moreover,' the destruction of the structure and organisation of the machine Implies that the program too ceases to function.

Despite the parallel between the program and the human mind, Descartes would not consider the mind to be similar to the program as the latter does not exhibit two important characteristics of the human mind, viz., consciousness and creativity. Our aim in the presentation of the parallel between the program and the mind is to emphasise the view that Descartes' considerations entail only a conceptual distinction between mind and body. The stuff of dualism for Descartes, as Bracken notes, is not the dualism of substances as we generally understand it, but the mere existence of an abstract level of explanation.[54]

1.3 THEORY OF COGNITION

In the previous section, we have been trying to establish that Descartes' distinction between mind and body needs to be understood only as a conceptual distinction. This interpretation is very advantageous from the point of view of understanding the cognitive processes of the mind. It is possible to explain cognition without wrestling with the notorious problem of interaction: how two substances viz., *res cogitans* and *res extensa* which are diametrically opposite in nature causally interact with each other. As mind is united with or is realised by the structure and organisation of the bodily organs, mind seems to be "intermingled" with the body. Consequently, each of the cognitive states and processes have corresponding bodily states and processes; though Descartes occasionally maintains that there is a particular type of cognition viz., the pure understanding, which has no bodily correlate. If the mind cannot exist and function in a disembodied state as we noted in the previous section, it is doubtful if there could be any intellectual process without the corresponding brain process. Thus in each of the cognitive processes both the mind and the body are involved. In every act of sensory perception, for example, in addition to the senses, the intellect is also involved. So Descartes would not grant any pure sensation as the empiricists would postulate.

[54]Harry M. Bracken, Mind and *Language: Essays on Descartes and Chomsky* (Dordrecht: Foris Publications, 1983), 15.

Descartes uses the term 'perception' in a wide sense covering cognitive acts like sensory perception and understanding, Knowledge arises not through sensation *per se* but through the scrutiny of the mind. As far as cognition is concerned, the activities of the body and the mind are involved. In what follows we shall discuss Descartes' theory of cognition in two stages. First we shall discuss his theory of perception. Here our emphasis will be on understanding the physiological processes involved in perception. A proper understanding of perception is not possible without a study of Descartes' doctrine of innate ideas. This will be dealt with in the second stage.

1.3.1 Theory of Perception

The most important of our cognitive processes is, no doubt, sense perception. As already noted, it involves both the senses and the intellect. Sensory perception can be seen as the continuation of physiological processes in the body, and in this sense there is no radical difference between the physical and the mental processes. Hence the entire cognitive process can be seen as a kind of mechanical process. Sense perception, according to Descartes, takes place in three grades or levels: the physiological processes, the sensations and the judgments consequent upon the sensations. At the first grade of perception, common to both brutes and humans, the sensory organs are stimulated by external objects and the impressions formed thereof reach the brain through the nerves. The impressions reaching the brain, consisting of certain movements, form the first grade of sensory response. This immediately leads to the second grade of sensory response produced in the mind as a result of its being united with the body. The second grade consists of the perceptions of pain, pleasure, colour, smell etc. or, in short, what Locke later called "secondary qualities". The third grade consists of the judgments about the objects in the external world. These judgments are occasioned by the movements of the bodily organs.[55]

It is important to know how the first grade leads to the second viz., the perception of secondary qualities, since the second grade of sensory response, is for Descartes, a mental response. Since the mind is present

[55]Cf. Sixth *Replies*, CSM II, 294-95.

in the brain and is united with it, the first grade of sensory response consisting of certain movements in the nerves directly "acts upon" the mind. These movements according to Descartes are ordained by nature so that mind may have these sensations whenever they occur. The various states of mind which are the immediate results of these movements are the sensory perceptions.[56] Though there appears, in Descartes' account, to be a temporal gap between the first and second grades of sensory response, the first arid second stages are in fact only conceptually distinct grades of the same processes. In other words, the mechanical movements of the nerve fibers in the brain forming the first grade of the sensory response simultaneously realise the second grade because of "the intermingling of mind and body". It accords with the standpoint we have adopted in the discussion of the mind-body problem: that the distinction between the two is conceptual, and not substantial. The secondary qualities the movements produce are obscure and confused, (There is no "intelligible resemblance" between the secondary qualities supposed to be in the objects and our sensations of these qualities.) These qualities which exist only in the mind of the perceiver refer to some entities or the other in his body or in the world. But the real nature of the things represented by these sensations cannot be known by an examination of them.[57] Consequently, there is nothing resembling our ideas of colour, light, smell etc. in the objects we perceive. The secondary qualities, according to Descartes, refer to certain dispositions in the objects which depend upon the size, shape and motion of the parts of the object.[58]

There are other qualities in objects like position, distance, size, shape, motion etc. Here again, for convenience's sake we shall use the Lockean expression "primary qualities" to characterise them. According to Descartes, the perception of primary qualities takes place differently from the way the knowledge of secondary qualities arises. The perception of the primary qualities is not strictly speaking caused by the movements in the brain. They are known, according to Descartes, in accordance with a sort of "rational calculation". As a result of being affected by the sensation

56Principles, CSM I, 280.

[57]Cf. Ibid., 216-17.

58Ibid., 285.

of colour one judges that the object located outside is coloured. The size, shape, distance etc. of the object is calculated "on the basis of the extension of the colour and its boundaries together with its position In relation to the parts of the brain,. . ."[59] Similarly the changes occurring in the position of the limbs where nerves culminate are correlated with the slight changes in the position of the tiny part of the brain where nerves originate. It is on the basis of the various positions of the tiny part of the brain, that we come to know the position of an object relative to the body. The same explanation holds for the perception of the local motion of an object. The objects at various *distances* are perceived by adjusting the shape of the eyes. The changes in the shape of the eyes too are correlated with certain movements in the particular part of the brain which are "ordained by nature", so as to make the mind perceive distance. These various processes however, Descartes argues, take place without our awareness of them.

The perceptions of the primary qualities unlike these of secondary qualities are clear: "Our knowledge of what it is for the body to have a shape" for example, "is much clearer than our knowledge of what it is for it to be coloured".[60] We do not know what there is in the objects corresponding to the secondary qualities. The primary qualities on the other hand, are found "to be actually or at least possibly present in objects in a way exactly corresponding to our sensory perception or understanding".[61] In other words, primary qualities are presented to the mind "as things or modes of things existing (or at least capable of existing) outside thought, . . ."[62]

[59]Sixth Replies, CSM II, 295. It is clear that for Descartes, the perception of colour is a basic requirement for the visual perception of primary qualities, for according to him, anything coloured is extended. Rules *for the Direction of the* Mind, CSM I, 4O-41. But Descartes does not explain how we come to know the extension of colour and its boundaries. This is problematic because the notions of extension and boundary are necessary for us to have those of shape and size. We cannot discriminate part of the bodies we are looking at except in so far as they differ in colour. Optics, CSM I, 168.

[60]Principles, CSM I, 218.

[61]Ibid.

[62]Ibid.. 219.

The above account of the perception of primary and secondary qualities makes obvious the mechanistic character of the process of perception, There is an implicit suggestion that mind is a certain kind of machine, perhaps a calculating machine. The mechanistic model of perception Descartes had in mind becomes further explicit when he argues that for perceiving objects, the mind does not have to contemplate images transmitted by them to the brain. This is not acceptable for two reasons: First of all, it cannot be explained how images can be formed by the objects. Secondly, it is not possible to specify how the senses receive the images and transmit them to the brain. On the other hand, to have sensory perceptions, there must be certain movements in the brain which are said to stimulate the mind. These movements are the representations of the objects. These representations in the form of movements in the nerves cannot be identified with the perception of objects. Nor can these movements resemble the objects that cause them. The object and its representation resemble each other only in a pictorial representation. If the representations were pictorial, their perception by the mind would its functioning like an eye within the brain. This model of perception would lead to infinite regress, since the images within the internal eye would require a further eye and so on *ad infinitum.* Descartes rules out such a model of perception when he says:

> . . . we must not think that it is by means of this resemblance that the picture causes our sensory perception of these objects - as if there were yet other eyes within our brain with which we could perceive it.[63]

The external object is represented in the brain in the form of certain movements of the nerves. These movements lead to the perception of the object because of mind's presence in the brain; or, in other words, mind is realised in the structure of the brain. In his account of the mechanical model of perception, Descartes emphasises the representational aspect and the computational character of perception. So he can be considered the forerunner of the computation- representation theory of mind.

The nature of the relation between the movements of the nerves and the corresponding perception is problematic. Descartes finds it difficult to

[63]Optics, CSM I, 167.

characterize this relation as he almost interchangeably uses three different expressions to convey the idea: First, movements are *ordained* by nature such that whenever they occur, the corresponding perception takes place. Second, the perceptions are *occasioned* by the movements of the bodily organs. Third, they *cause* or produce the corresponding perception. A closer examination shows that there is a common idea running through all three of them, viz., that there is no temporal gap between the physiological processes and the corresponding perceptions. The movements of the nerves are ordained by nature such that at the very same moment of their occurrence, the corresponding perceptions are realised. Similarly, the movements of the nerves occasion the perceptions, only as long as the movements are present. That is, the occasion for the occurrence of an event cannot be temporally prior to it. However, the third view, viz., that movements in the brain cause or produce perception seems to conflict with the other two. The apparent conflict vanishes if it is understood in terms of the notion of causality Descartes devised in the first set of replies to prove the existence of God. Two senses of the notion of the efficient cause can be distinguished. In the first case, causes are prior to the effects in time, hence they are distinct entities existing in different discrete moments. In the second sense, on the other hand, something can be cause of itself where "the concept of a cause is, strictly speaking, applicable only for as long as the cause is producing its effect, and so it is not prior to it"[64]. In this case, we may note, there is no actual distinction between cause and effect but only a conceptual or a logical distinction. An understanding of the causation of perception in this latter sense of efficient causality fits well with Descartes' overall framework. This view categorically denies that anything material from the external world is carried over to the brain or to the mind. Moreover, this view of causation and the mind-body relation relieves us, as we noted above, of the burden of explaining the interaction between substances which are opposite in nature. Certain brain states or processes "act upon" the mind to produce a particular mental state, say pain, but the mental state in question is realised by the states and process in question. As this view makes room for the conceptual distinction between cause and effect,

[64]*First Replies*. CSM II, 78.

body and mind, brain states and mental states and so on, it would not allow reduction of the mental to the physical, as concepts would not yield to pressure of reduction.

1.3.2 Theory of Innateness

In the above discussion on Descartes' account of perception, we noted that the ideas of external objects formed through the act of perception are not strictly speaking caused by external objects in the sense that something material passes over to the mind in pictorial form. In other words, the external objects do not imprint any images upon the mind. On the other hand, on the occasion of sensory stimulation the mind forms certain ideas. This perceptual model has driven Descartes to attribute a very rich innate content to the mind. In sharp contrast to the empiricist *tabula rasa* conception of mind, Descartes argues that some of the most basic ideas and general principles are implanted in the mind. They are a necessary requirement for the occurrence of cognitive acts like perception, understanding etc. Since no knowledge of the material world is possible without them, they are for Descartes, as Bracken puts it, the ontological foundation for the knowledge of the external world.[65]

Depending upon the manner in which ideas arise in the mind, they are classified into innate, adventitious and made up. In Meditations Descartes observes: "My understanding of what a thing is, what truth is, what thought is, seems to derive simply from my own nature. But my hearing a noise, as I do now, or seeing the Sun, or feeling the fire, comes from things which are located outside me, or so I have hitherto judged. Lastly, sirens, hippogriffs and the like are my own invention."[66] The list of innate ideas viz., substance, truth and thought, given in the passage, is neither exhaustive nor very specific. A more specific and comprehensive list is enumerated elsewhere. They are ideas of independent thinking substance or God, created thinking substance, corporeal substance, duration, order, number, size (i.e., extension in length, breadth and depth), shape, position and motion.[67] The list of innate ideas, it can be seen, fall into

[65]Bracken. Mind *And Language*. 3.

66Meditations. CSM H, 26.

67*Principles,* CSM I, 208-211.

two classes: those having references and those not having them. We shall name the former referential innate ideas and the latter, non-referential innate ideas. The ideas of God, soul and corporeal substance belong to the former category. The ideas of size, shape, position, motion etc. can also be included in it, for these ideas refer to the various modes of the corporeal substance. The non-referential innate ideas are those of duration, order and number. They are just ways in which the external objects are conceived. For example, there is no existing thing corresponding to duration. Nor does duration belong to the material objects in the way shape belongs to them. It is just a mode under which a thing is conceived in so far as it continues to exist. Similarly, there is no order or number independent of things ordered or numbered.[68] The same is true of other universals as well. They too are only psychologically real.

Besides the kinds of ideas cited above, some general principles or "common notions" are also native to the mind: *Nothing comes from nothing; It is impossible for the same thing to be and* not *to be at the same time; What is done cannot be undone; He who thinks cannot but exist while he thinks;*[69] *If you add equals to equals, the result will be equal;*[70] *Things which are equal to a third thing are equal to each other.*[71] The common notions too do not refer to any objects in the external world. Some of them have their employment in the construction of geometrical proofs. These principles or maxims are eternally true and any mistake with regard to them occurs due to mind's failure to attend to them all the time. In addition to these general maxims or principles, there are certain specific rules innate in the mind for the modification or manipulation of ideas, such as shape, size, motion etc., and the rules in accordance with which these three things (shapes, sizes and motions) can be modified by each other are, according to Descartes, "the Principles of Geometry and Mechanics"[72]. Since the ideas of shape, size and motion, the foundational notions of geometry and mechanics, and the rules for their manipulation are

[68] *Cf. Principles,* CSM I, 211.

[69] Ibid., 209,

[70] Ibid.. 197.

[71] Comments. CSM I, 3O4.

[72] *Principles*. CSM I, 288.

innate, it could be said that all of our actual and possible knowledge of the material world is innate. By the successive application of this finite number of rules, these ideas can be modified by each other indefinitely. The result of each such modification either corresponds to or at least can correspond to the world of things. Thus once the basic notions and principles are known, the knowledge of the external world can in principle be deductively arrived at. Thus Descartes provides a deductive model of cognition as well. Just as the ideas of shape, size, and motion pertain to the material objects, the rules too in some sense relate to the external objects; for the modifications of these shapes, sizes and motions obey the rules or principles of geometry and mechanics.

There are two defining characteristics of innate ideas viz., their universality and their clarity and distinctness. The universality of innate ideas may be understood in two ways. First, they are available for use to all human beings provided there occurs the appropriate sensory experience to activate them. As Descartes writes to Mersenne "since all men have the same natural light, it seems that they all must have the same notions".[73] Secondly, they are universal as against particular in the sense they can have infinitely many instantiations. For example, the concept of a triangle is a universal as it can be applied to all existing particular triangles. Hence innate ideas may be considered as "all those which represent true, immutable, and eternal essences"[74] . Innate ideas and common notions are clear and distinct. We have a very clear understanding of what shape, size, motion etc. mean and much of our knowledge of the external world is derived from them. The ideas conveyed to us by the senses are confused and obscure. Therefore, they "cannot serve to give us knowledge of anything outside ourselves, . . . "[75]

73Letter to Mersenne, October 1639, in *Oeuvres de Descartes,* vol.3, ed. Charles Adam and Paul Tannery (Paris: Leopoldcerf), 598, quoted in Zeno Vendler, Res *Cogitans: An Essay in Rational Psychology* (Ithaca: Cornell University Press, 1972), 182. Here after Oeuvres will be cited as AT.

[74]Letter to Mersenne, 1641 in AT_t 303. Quoted in Anthony Kenny "Descartes on Ideas", in Doney, ed., *Descartes: A Collection of Critical* Essays, 231. This passage is quite strange since Descartes does not accept the existence of universals. It contradicts his view that the universals are just modes of thinking. See Principles, CSM I, 212.

75Principles, CSM I, 288.

Innate ideas are not produced in us by the senses. If the ideas conveyed to us by the senses like heat, sound, colour, etc. do not refer to anything outside ourselves, they too must be innate. In the following passage Descartes seems to argue for the same. The ideas of pain, colours, sounds and the like must be all the more innate if, on the occasion of certain corporeal motions, our mind is to be capable of representing them to itself, for there is no similarity of these ideas and the corporeal motions"[76]. The passage seems to blur the distinction between innate and adventitious ideas. Kenny however, argues that the distinction can be maintained as follows:

> Innate ideas are capacities whereas adventitious ideas refer to the exercise of the very same capacities accompanied with an extramental judgment: that is, it is judged that the occurrent idea is caused by the extramental object.[77]

On Kenny's account no strict distinction can be maintained between innate and adventitious ideas. From one point of view all ideas are innate and from another all are adventitious. It does not seem that Descartes would agree with this view of the distinction between the innate and the adventitious. Irrespective of whether we think of a triangle followed by a judgment or not, the idea of a triangle is innate, since according to him all those ideas which involve no affirmation or negation are innate.[78] This suggests that the distinction between the two can be retained in a different way altogether. Innate ideas are universal ideas whereas adventitious ideas are particular. We may note that the adventitious ideas listed in the above quoted passage from the *Meditations* viz., *my hearing a noise, seeing the sun,* and *feeling the fire* are all particular ideas.[79] On the basis of the distinction between universal and particular, it is possible to understand what Descartes means when he says that the ideas of pain, colour, sound etc. are innate. As universal ideas or general concepts they are innate. On the other hand, particular instances of them

76Comments. CSM I, 304.

77Cf. Kenny. "Descartes on Ideas", 233.

[78]Cf. AT III, 418. Quoted in Kenny, "Descartes on Ideas", 233.

79It must be noted that the perception of the particular is not possible without the universals.

are adventitious. As Kenny himself observes: "When Descartes says that the idea of truth is innate, he does not mean that one is born thinking of truth; and on the other hand, in saying that the idea of heat comes from the fire, *he does not mean that the* concept *of heat is acquired by sensation".*[80] The difficulty, it seems, is the product of Descartes* persistent confusion between ideas of sensation and sensations proper.

Innate universal ideas are a necessary requirement for the cognition of the particular. A figure drawn on a piece of paper cannot be cognised as a triangle unless we are equipped with the universal concept of a triangle. Similarly to have the particular idea of the sun resulting from its perception, a number of innate universal concepts like those of shape, colour, motion, light, heat etc. are required. The innate ideas work as the basic components of one's knowledge of the external world. There could be an infinite number of ideas of particular things due to the permutations and combinations of the finite set of basic components. The permutations and combinations take place in the intellect on the occasion of the sensory stimulation. For Descartes perception and understanding are not two totally distinct acts as each act of perception involves understanding. In understanding, what is presented to the mind is analysed into its basic components. The sensations for example are presented with certain codes carrying information about the external world which are decoded with the help of innate ideas. In other words, the meaning of sensory data is the function of innate ideas and principles. Descartes says:

> It is surely obvious to everyone that strictly speaking, sight in itself, presents nothing but pictures, and hearing nothing but utterances and sounds. So everything over and above utterances and pictures which we think of as being signified by them is represented to us by means of ideas which come to us from no other source than our own faculty of thinking. Consequently, these ideas along with that faculty, are innate in us, ...[81]

So in cognition both the particular sensations evoked by the external objects and the universal ideas existing in the mind are involved. Since particular sensations are understood in terms of universal ideas innate to the mind, Descartes, like Plato, compares acts of cognition to acts of

[80]"Descartes on Ideas," 231. Emphasis added.

[81]*Comments.* CSM I, 305.

remembering. "And the truth of these matters is so open and so much in harmony with my nature, that on first discovering them [clear and distinct ideas], it seems that I am not so much learning something new as *remembering what I know before, . . .*"[82] In short, since the knowledge of the external world is derived from innate basic components, we could in a sense say that all our knowledge is innate.

By the innateness of an idea, Descartes does not mean that one is conscious of it from birth. Nor does it mean that an innate idea can be brought to the consciousness at will. In his opinion, by the innateness of an idea "we simply mean that we have within ourselves the faculty of summoning up the idea".[83] The innate ideas exist in us as certain capacities or powers. They are brought to consciousness under appropriate circumstances. Innate ideas do not refer to the acts of the mind but rather the acts of the mind require innate ideas and reveal their existence. Descartes makes it clear as follows:

> But it must be noted that, although we are always actually aware of the acts or operations of our minds, we are not always aware of the mind's faculties or powers, except potentially. By this I mean that when we concentrate on employing one of our faculties, then immediately if the faculty in question resides in our mind, we become actually aware of it, and hence we may deny that it is in the mind if we are not capable of becoming aware of it.[84]

That is, we become aware of innate ideas not through introspection but by the exercise of these ideas. They exist not actually but potentially in the faculty of thought. Here, Descartes seems to identify innate ideas with the faculty of thinking itself. This view is in fact endorsed in the following passage.

> I have never written or taken the view that the mind requires innate ideas which are something distinct from its own faculty of thinking. I did, however, observe that there are certain thoughts within me which neither come to me from external objects nor were determined by my will, but which came solely from the power of thinking within me: So I applied the term 'innate' to the ideas or notions which are the forms of the thoughts in order to distinguish from others which I called 'adventitious' or 'made

[82]*Meditations.* CSM II, 44. Emphasis added.

[83]Third *Replies,* CSM II, 132,

[84]*Fourth Replies.* CSM II, 172.

> up'. This is the same sense as that in which we say that generosity is 'innate' in certain families or that certain diseases such as gout or stones are innate in a certain others: it is not so much that the babies of such families suffer from these diseases in their mother's womb but simply that they are born with a certain 'faculty' or tendency to contract them.[85]

This passage, according to Sullivan, can be construed as a retreat from the doctrine of innate ideas to "a reliance on the powers of reasoning itself to generate these ideas", that is to "a more generalised rationalist position". This, he argues, is "a major concession to the Aristotelians and a retreat from Platonism".[86] However a change of position does not seem to be attributable to Descartes solely on the basis of this passage. Descartes' position is that it is due to the reality of innate ideas and principle that cognition is possible. This does not mean that innate ideas have an existence distinct from the faculty of thinking. There is no separate realm of innate ideas, a receptacle or container that houses them. On the other hand, it is these innate ideas and principles that constitute the faculty of thinking. As Descartes himself clarifies, he uses the expression 'innate ideas' to characterise those notions that form the basic structure or form of thought.

It is true that Descartes sometimes conceives of the thinking faculty as a sort of 'disposition' or 'tendency'. Since the thinking faculty is endowed with certain conceptual structures and forms, it has the capacity to bring to consciousness the clear and distinct universal ideas. So Descartes argues that they "always exist within us potentially, for to exist in some faculty is not to exist actually, but merely potentially, since the term 'faculty' denotes nothing but a potentiality".[87] By the term innate ideas Descartes means not only the conceptual structures and thought forms of our thinking faculty, but also to the universal ideas resulting from the exercise of the thinking faculty.

By innateness Descartes means a potentiality, disposition or a tendency. These clarificatory expressions themselves have been used in two

[85]Comments, CSM I, 303-304.

[86]John J. Sullivan, "Noam Chomsky And Cartesian Linguistics", in *Psychology of Language and Thought*, ed. R.W. Riebar. (New York: Plenum Press, 1980), 214.

[87]Comments, CSM I, 305.

different ways in the history of philosophy. Unless these two senses are identified and distinguished. Descartes' use of innateness could be easily misunderstood. Potentiality or disposition can be used in the sense of mere receptivity. For example, a piece of wood has the potentiality to have hacked out of itself statues of various personalities, depending upon the intentions of the sculptor. On this account there is an unlimited number of statues potentially present in a piece of wood. The empiricist philosophers, when they speak of the potentiality or disposition of the mind, understand it in the sense of mere receptivity. The dispositions of the mind are similar to the dispositions of a piece of wax to receive any impression no matter what in fashion, depending solely upon the nature of the seals that fall upon it. In other words, the content of the mind is determined solely by the objects in the environment no matter what their nature is.

There is an equally compelling theory of potentiality or disposition which construes it as a real power. For example, the potentiality of a mango seed to grow into a mango tree — the tree exists in the seed potentially. Environmental factors like the nature of the soil, water, the availability of sunlight and open space etc. do have some influence on the growth and development of the tree. But the effects of these factors are very limited in the sense that they do not seem to have much role in determining the nature of the tree. When the rationalist philosophers speak of the potentiality or disposition of the mind, they understand it as an active power. In spite of the influences of the sensory stimuli, the forms that mind could take is in a sense predetermined. In contrast to the tabula *rasa* conception of the mind, Leibniz argues that mind is like a veined marble with the figure of a statue implicit in it. The sense experience serves to reveal the innate structure of the mind just as chiseling reveals the figure within the marble. When Descartes says certain universal ideas and principles exist in the mind potentially, he means to say that they can be brought to consciousness because of the influence of sensory experience which triggers the conceptual structure already existing in the mind.

Descartes invokes the doctrine of innateness to explain the acquisition of knowledge and the universal availability of certain basic concepts. Their universality is not accounted for by arguing that they are abstracted from the sensory experience, for there are no sensory data that

are universally available. Innate Ideas, we have seen, are universal, The sensation present only particulars which are confused. Hence the clear and distinct universal concepts, which are to be applied to the particular in order that there be cognition of the external world, must be innate to the mind. Though these universal ideas exist as potentialities, and hence are unconscious, they are defined in relation to consciousness. Though they do not actually exist in the consciousness they can come to consciousness. And in each cognitive act — which is for Descartes invariably a conscious act, the innate ideas are somehow present.

1.4 DESCARTES, COGNITIVE SCIENCE, AND CHOMSKYAN LINGUISTICS: A UNIFIED PERSPECTIVE

Descartes* philosophy of mind is not directly responsible for the development of the contemporary cognitive science. The latter, in fact, emerged from the sharp reaction to behaviourism. However, the view of mind that emerged out of this reaction has a very strong affinity and similarity with the Cartesian theory of mind and in this sense, Cartesianism is no doubt a distant philosophical pedigree of contemporary cognitive science. Three philosophically interesting foundational notions of cognitive science in its narrow sense are functionalism, formalism and internalism.[88] I shall briefly state how each of these three doctrines that constitute the theoretical foundation of contemporary cognitive science resemble Cartesianism in its own ways.

Setting apart the pre-theoretic intuitions that make cognitive science possible, in the introduction we identified two each of substantive and methodological issues as forming the philosophical foundations of cognitive science. The substantive issues are the mind-body distinction and formalism, the doctrine that the mind is a computational representational device. Among the methodological assumptions are functionalism and internalism (methodological individualism).

In the above discussion of Descartes' philosophy of mind we have dealt with each of these issues. Descartes makes a very strong case for an understanding of mental states and processes independent of the body where

[88]See Radu J. Bogdan. "Cognitive Science" in *Handbook of Metaphysics and Ontology*. Vol.1, ed. Hans Burkhardt and Barry Smith (Munich, Philadelphia & Vienna: Philosophia, 1991), 153-55.

these functions are exercised. Similarly cognitivists, as a result of their commitment to the mind-body distinction, argue that the mental states and processes can be understood at a very abstract level independent of the kind of substances that realise them. Descartes also grants the existence of internal representations which can be modified in accordance with certain rules. These representations as well as their modifications are realised by the assemblage of the body's organs which is responsible for the acquisition of knowledge and for the production of behaviour. For the cognitive scientists, cognition is a formal process in the sense that executing structures and processes are causally efficacious only on account of their structural organisation as well as the form of internal representations.

According to functionalism conceived as a methodological strategy, cognition consists of a number of cognitive functions like vision, memory, understanding, language use etc., organised into a system and executed cooperatively by certain structures and processes. This is a version of Descartes' theory that the mind has a number of faculties like imagination, memory, understanding, willing and sensory perception. By internalism the cognitivists mean that cognition is an internal process totally determined by a set of internal conditions. Cognition, they argue, is governed by or totally determined by a set of internally represented instructions or by program. Hence environment has very little influence on the cognitive processes. Descartes would readily agree with this view for he too believes that cognitive states and processes are, to a large extent, a function of the internal structures and conditions of the cogniser.

The above foundational assumptions of cognitive science taken together imply a computational representational theory of mind blending elements of mentalism and nativism. I do not intend to elaborate upon this theory of mind here as it will be dealt with in detail in the third chapter. My point here is that the modern cognitive enterprise can indeed be considered in line with Descartes' attempt — he of course, was not successful — at naturalising mind within a mechanistic framework.

The growth and development of cognitive science has two very powerful influences. The first is the invention of computers and our attempt to understand human cognitive capacities and functions on their model. The second is the revolution brought about by Noam Chomsky in our study of the linguistic faculty. Here we are not concerned with the influence of the

computer revolution on cognitive science but with the impact of the Chomskyan revolution in understanding language use. This assumes importance in the context of our present discussion because of two significant claims made by Chomsky: first, that linguistics is a subfield of cognitive psychology; second, that the linguistics he develops is Cartesian in the true sense of the term. Chomsky shares with Descartes his commitment to innatism and the view that language is the medium of expressing one's thought.

According to Descartes, the bodily functions of both humans and beasts can be explained in purely physical and mechanical terms. The sole difference between humans and beasts is that the humans possess a thinking faculty whose existence is evidenced by creativity exhibited in human action and linguistic behaviour. Man can perform actions appropriate to the new situations and can construct grammatically correct, context sensitive sentences expressing new thoughts. Reason or the thinking faculty, for Descartes, is a universal instrument capable of responding in many different ways to different situations.[89] Though Descartes succeeded in mechanically explaining many of the cognitive functions of the mind, he did not provide a mechanical explanation for human creativity. Chomsky's concerns in linguistics can be construed as an attempt to give an explanation of human creativity within a mechanistic model using Cartesian resources.

The Cartesian view on the creative use of language by humans, according to Chomsky, suggests that human languages are unlike animal communicative systems. Whereas the animal communicative systems have only a finite number of fixed responses under the control of certain stimuli, human languages are free from stimulus control. The utterance of new sentences is not predictable on the basis of the external stimuli. Hence, human languages do not serve merely a communicative function. They are, on the other hand, instruments for the free expression of new thoughts.[90] As a linguist, Chomsky aims at the study of the mechanism responsible for the production of new grammatically correct sentences.

[89]See *Discourse, CSM I,* 139-141.

[90]They have infinite generative capacity. Cf. Noam Chomsky, *Cartesian Linguistics* (New York: Harper & Row, 1966). 13.

In his endeavour to develop a linguistics that can explain the creative use of human language, Chomsky has been greatly influenced by the Cartesian School of Port Royal Grammarians. According to Humboldt, who belongs to this school, there is a finitely specifiable fixed mechanism which enables the speaker to produce infinitely many speech events. This generative principle, according to Humboldt, can be considered the "form of language". It consists of a finite set of transformation rules called the grammar of the language. The unlimited possibilities of thought and language are constrained by the rules of sentence formation. The existence of the generative principle or the organic form of the language, according to Humboldt and other Port Royal Grammarians, implies that there is a deep structure consisting of an arrangement of simple sentences which could be brought to consciousness with care and attention.[91] The same generative principle is involved in speech perception as well. For the perception of speech, argues Humboldt, mind produces a representation of the presented expression, making use of the same generative principle. This means that both speech production and speech perception are creative acts of the mind requiring an internal representation of the semantic content. The underlying system of generative principles is virtually identified in both hearer and the speaker, which makes inter-personal communication possible. The fundamental identity of the generative system in various individuals is explained by appealing to the uniformity of human nature.

In Chomsky's opinion, Humboldt and others did not care to explicate the nature of the generative principle. They, no doubt, specified the universal aspects of the grammatical form that determined the class of all possible languages. However, there was no attempt to develop particular generative grammars that conform to the universal schema. The generative principle, argues Chomsky, must be understood as the concept of generative grammar. The speaker of the language knows the generative grammar of his language in the sense that he possesses a capacity or potentiality to use language grammatically. So the knowledge of grammar does not mean the actual employment of the grammatical rules. Like the Port Royal Grammarians Chomsky is committed to the view that there exists a deep structure responsible for the actual production of sentences. But unlike

[91] *Cartesian Linguistics*. 19-28.

them, he argues that the deep structure does not consist of sentences but of the abstract structure underlying various sentences of a language: The deep structure may be highly abstract; it may have no close point by point correlation to the phonetic realization".[92] The transformational rules are applied to these abstract underlying forms.[93] The possession of deep structure enables the speaker to use language in concrete situations. On the basis of his concept of deep structure Chomsky makes a fundamental distinction between *competence* and *performance*. By 'competence' Chomsky means the speaker-learner's knowledge of his language and by 'performance', the actual use of language in concrete situations.[94]

In consonance with Descartes' theory of mind, Chomsky makes three interrelated claims about the deep structure and principles responsible for one's capacity to use language; they are for him, (a) innate, (b) universal, and (c) *necessary*. The innateness thesis is invoked to explain how the speaker-learner acquires the underlying deep structure responsible for the production and perception of the linguistic expressions. "By attributing such principles to the mind, as an innate property, it becomes possible to account for the quite obvious fact that the speaker of a language knows a great deal that he has not learned".[95] That the knowledge of the grammar is an innate property of the human mind, according to Chomsky, does not mean that the speaker-learner is actually conscious of the grammatical rules. Unlike Descartes who tried to defend the existence of innate ideas in terms of our capacity to become conscious of them on their employment, Chomsky establishes the possession of the innate knowledge of the grammar just in terms of speaker-learner's capacity to use it. "Any interesting generative grammar" he argues, "will be dealing, for the most part, with mental processes that are far beyond the level of actual or even potential consciousness".[96] So the speaker-learner is not

[92]Chomsky, *Language and Mind* (New York: Harcoxst & Brace Jovanovich World, 1968), 27.

[93]*Cartesian Linguistics,* 56. See also note no. 106 in *Ibid.,* 107.

94Cf.Chomsky, *Aspects of the Theory of Syntax* (Cambridge Mass.: MIT Press, 1965), 4.

[95]Cartesian *Linguistics*. 60.

[96]Chomsky, *Aspects of the Theory of Syntax*. (Cambridge Mass: 1965), 8.

conscious and perhaps could never become conscious of the innate grammatical structure.

For Chomsky the innateness thesis is an explanatory hypothesis. That is, the speaker-learner's ability in the use and acquisition of language is explained by attributing to him the knowledge of the rules of grammar. ". . . we postulate that a speaker of a language has an unconscious knowledge of the rules of grammar if this postulate is empirically justified by the role it plays in explaining the facts of use and understanding and acquisition of language".[97] It is because of the innate linguistic categories and forms that a child is able to internalise the highly complex grammatical rules of his language within a very short span of time. This, however, does not rule out the role of external factors in the acquisition of particular grammars. In line with Descartes, Chomsky too argues that the external factors are required to set the innate mechanism to work. However, the form of the language acquired, is not determined by the external factors, but by the internal structure and organisation, for what is acquired on the basis of scattered and inadequate data has uniformities not determined by them. On the basis of relatively few and highly degenerate data, the child is able to come out with well-formed sentences as outputs. The gap between the input and output is explained by attributing a rich species-specific innate mechanism.

The language faculty for Chomsky is not just an input output system like the communicative systems of birds and animals. It has an *initial state* and in the course of development acquires a *steady state,* passing through various intermediary states. The performance of the linguistic faculty is fully determined by the initial state. Hence, state changes are mostly directed internally. However, the extraneous factors have their own impact upon the linguistic faculty. The state changes can occur as a result of the exposure to one or another language. Hence state changes reflect linguistic experience. So the "language faculty *is* modified in response to linguistic experience, changing states until it pretty much stabilises, perhaps as early as six to eight years old, which would mean that later (non-lexical) changes that have been found, up to about puberty,

[97]Noam Chomsky, "Comment on Hannan's Reply" in *Language and Philosophy: A Symposium,* ed. Sydney Hook (New York University Press, 1969), 155.

are inner-directed".[98] So we may say that Chomsky advocates methodological individualism or internalism for the study of human linguistic faculty.

The universality of linguistic categories and forms innate to the mind explains the existence of linguistic universals, i.e., features common to all languages. The grammatical structures and principles common to all languages, according to Chomsky, can be considered as the universal grammar. He says:

> The central doctrine of Cartesian linguistics is that the general features of grammatical structure are common to all languages and reflect certain fundamental properties of the mind. It is this assumption which ,led the philosophical grammarians to concentrate on *Grammaire Generate* rather than *Grammaire Particuliere* . . . There are then, certain language universals that set limits to the variety of human language. The study of universal conditions that prescribe the form of any human language is "grammaire generate".[99]

Since the universal grammar is a fundamental property of the human mind, and since language learning as well as language use or production are basically mental acts, there cannot be any language which does not reflect the universal grammatical categories. The existence of the linguistic universals, according to Chomsky, must be traced to certain categories and forms of the mind.

This leads to the third of Chomsky's claims, namely, that the universal grammatical structures and categories are necessary. The necessity of the universal grammar can be understood in two different ways. First of all, the innate knowledge of universal grammatical principles is a pre-requisite or a necessary condition for language learning. The universal grammar is not learned. Rather, this is what makes learning of a language possible. "Such universal conditions are not learned; rather, they provide the organising principles that make language learning possible, that must exist if data is to lead to knowledge". [100] Secondly, the universal grammatical categories are necessary in the sense that no particular language can exist or operate without them. It must be noted

[98] Chomsky, "Language and Nature." *Mind* 104 (1995): 13.

[99] *Cartesian* Linguistics, 59.

[100] Ibid., 59-60.

that by the necessity of the universal grammatical principles. Chomsky does not mean that they are logical truths.

In the above, we have tried to rethink the significance of Descartes' theory of mind in the context of Chomsky's theory of language, for the latter's work is a kind of scientific exposition of Descartes' thesis. But Chomsky's claim that his theory of language is within the Cartesian framework has been challenged by many philosophers. According to David Cooper, for example, the three central notions viz., innateness, universality and necessity common to Chomsky and seventeenth century rationalists are employed by Chomsky in a way radically different from the rationalists' use. In his opinion, Chomsky interprets innateness as a sort of disposition but there are passages in Descartes and other rationalists which support the view that men literally and actually know truths and ideas prior to experience.[101] Necessity and universality are the marks of innateness both for older rationalists and for Chomsky. By the universality of innate knowledge, the older rationalists understand the knowledge of universal i.e., non-particular truths, concepts and principles whereas for Chomsky it is the knowledge which is universally and generally possessed.[102] Similarly, by necessity the old rationalists mean that which is not contingent. Chomsky, on the other hand, employs it in the sense of that which is *required* or as a certain pre-supposition.[103]

If Cooper's observations are correct, Chomsky made a radical break from Descartes, and the similarities between them if any are merely superficial. However, our discussion of Descartes in the present chapter suggests that Chomsky's use of innateness, universality and necessity is in continuity with Descartes'. He only refines and reformulates the basic Cartesian tenets. With regard to innateness, it seems the problem lies with Cooper's understanding of the term. Cooper has in mind the contemporary empiricist/behaviourist conception of disposition and potentiality according to which there is no reality for the dispositions and capacities. The early rationalists, on the other hand, employ

[101]David E.Cooper, "Innateness - Old and New," *Philosophical Review* 81 (1972): 469.

[102]Cf."Innateness - Old and New," 472.

[103]Cf, Ibid.. 474-75.

disposition in the sense of real power. Certain universal truths and ideas exist in the mind potentially but they can be brought to consciousness under the impact of appropriate experience. So the universal truths and ideas are psychologically real, though they may not be psychologically actual. Chomsky's views square with those of the early rationalists, since he too subscribes to a realist construal of the dispositions. Since the real power or potentiality is not defined by Chomsky with reference to consciousness, he in a sense breaks away from the Port Royal Grammarians. For him, the potentiality or disposition is defined with reference to the correct employment of the rules of grammar. The speaker of the language actually knows the rules of grammar when he employs them. The definition of innate knowledge with reference to consciousness gives the older rationalists the liberty to take the universal ideas and truths as something actual as well as potential. Since Chomsky defines innate knowledge of grammar in relation to the correct employment of the rules of grammar, the speakers of the language can be said actually to know the grammatical rules if and only if they correctly employ them. Chomsky inherits the older rationalists' realist construal of innateness. The real difference between the old and new rationalism is that the former defines the innate knowledge or potentiality with reference to consciousness while the latter does not. In this sense, Chomsky makes a break from the older rationalists including the Port Royal Grammarians. But the point of difference is not the dispositional construal of innateness as Cooper maintains.

Similarly it can be seen that Chomsky's use of the concepts 'universal' and 'necessity' are also rooted in Descartes. The non-particular truths do not picture any particular states of affairs. Similarly the universal concepts have several instantiations. It is true that the universal concepts and truths are available to all humans and hence they could be considered knowledge universally and generally possessed. But not all the universal truths and concepts have their application in each act of cognition. Chomsky's basic linguistic forms and categories are universal, for they exist in all human beings as a part of their common genetic endowment. These linguistic categories have several instances. So they can be considered universal even though they do not occur in all possible languages, for it could be said that the particular language is one of the several modes of cognition. With regard to the

notion of necessity, it is true that older rationalists think of certain basic truths and propositions as necessary in the sense that they turn out to be true under all possible situations. However, Cooper fails to note that the older rationalists used the notion in the sense of 'empirically necessary' as well, for without these innate concepts no cognition is possible. So Cooper's observation that Cartesian and Chomskyan rationalisms are radically different doctrines fails to take note of all relevant aspects of the Cartesian school of thought.

Chomsky's enterprise is undoubtedly a continuation of Descartes' attempt to develop *a* scientific understanding of human cognitive processes. The Cartesian idea that mind is a unified system of a number of cognitive faculties is found in Chomsky. The mind", he argues "then, is not a system of general intelligence,. . . Rather, the mind has distinct subsystems, such as the language faculty, a cognitive system, a system of knowledge, not an input or output system".[104] As a linguist he identifies only the language faculty for his scrutiny and analysis. To understand the linguistic competence of the language user, the formal program viz., the grammar used for computing the grammatically correct sentences also must be specified. Like any other cognitive process, language production and perception can be understood in terms of formal structures and rules where neither the meaning of the sentences nor their physical form is taken into account. This results in the conception that the mind is a computational representational system. "For unknown reasons", argues Chomsky "the human mind/brain developed the faculty of language, a computational representational system based on digital computation with recursive enumeration and many other properties"[105]. It is the internal representation of the generative procedure that provides a scientific explanation for human creativity in cognition. Linguistic creativity in particular is the result of the internal representation of the particular grammar that specifies the structure of the language. This enterprise is truly Cartesian, since we find in Descartes the seeds of the formal view of mind

[104] Chomsky. "Linguistic and Cognitive Science: Problems and Mysteries," in *The* Chomsky an Turn, ed. Asa Kasher (Cambridge Mass.: Basil Blackwell, 1991), 50-51.

[105] Ibid., 50.

as a computational representational system. Chomsky's contribution in understanding Descartes' philosophy of mind is that he read the Cartesian problematic as truly scientific.

1.5 CONCLUSION

So far we have been trying to understand Descartes' intuitions on the working of the mind as a step towards a scientific study. Such a study for him is not reductionistic as is apparent in our discussion on the dualism of mind and body. Most of the cognitive functions and processes are explained with reference to brain states and processes. Nevertheless man is a combination of body and mind. Since the working of the body can be mechanically explained, it means that man is a rational machine. As a latter day Cartesian, La Mettrie, observes: "Since all the functions of the soul depend to such a degree on the proper organisation of the brain and the whole body, that they are apparently the organisation itself, the soul is clearly an enlightened machine".[106] Descartes did not clearly lay this down, the idea does emanate from his own doctrines.[107] It must be remembered here that while pointing towards the possibility of explaining cognition as a sort of mechanical calculation, he also equally emphasised the phenomenal aspects of cognition. All cognitive states and processes are for him conscious mental states and acts or they could at least be brought to consciousness. This is a point to which we will come back again and again in the succeeding chapters as contemporary cognitive science pays scant

[106] J.O. La Mettrie, *de: L'* Homme-Machine, 1747, trans, as *Man a Machine,* ed. A.Vartaxian, (La Salle: Open Court, 1912), 128, quoted in *Cartesian Linguistics,* 30.

[107] Chomsky attributes the view that the mind is realised in the mechanical structure and organisation of the brain to La Mettrie. However, he fails to note that this view is implicit in Descartes, and many of his passages can be interpreted in this way as we have attempted above. Cottingham seems to realise this when he observes: "Descartes" position is thus quite clear. His reflection on our uniquely human ability to respond to "all contingencies of life", led him to believe that the 'universal instrument' of reason could not feasibly be realised in a purely physical set of structures; but the possibility of such a physical realisation is one that, good scientist that he is, he is not prepared absolutely to rule out*. John Cottingham, "Cartesian dualism: theology, metaphysics and science," 249.

attention to the phenomenality of the mental states. His insistence on the phenomenal aspects of cognition concealed Descartes' scientific temperament in the study of mind. This led to a reading of mind where mind is understood as a homunculus — a little man controlling the body while residing within the brain. Most contemporary reactions to Descartes are from this angle. Since these reactions played a significant role in the emergence of cognitive science, we shall deal with them in the next chapter.

2 REDUCTIONIST

THEORIES OF THE MIND

2.1 INTRODUCTION

In the previous Chapter, we saw how Descartes' mind-body dualism could be understood as a conceptual distinction between the mind and the body. Descartes' enterprise can be seen as a pioneering attempt in modern philosophy at a naturalistic understanding of the mind within a mechanistic framework and in this sense he laid the philosophical foundations for the development of cognitive science. The received interpretation, however, failed to take note of the highly scientific theses on mind implicit in the works of Descartes. The stuff of dualism is taken to be the existence of the substances of two opposing kinds: an indivisible, unextended *res cogitans* and a divisible, unthinking *res extensa,* working like an automaton. The causal interaction between the substances of two opposing natures remained a stumbling block in the scientific study of the mind. The res *cogitans* is often conceived as a homunculus residing in the brain; consequently, intelligent human behaviour is explained by appealing to the intelligence of the little man in the head. It yielded a circular explanation of the highly complex and peculiarly human cognitive functions. Similarly, within this model, the perceptual capacity of humans is explained by appealing to the perception of the inner man, resulting in an infinite regress. Since the root cause of these maladies lies in the two substance theory, there have been various attempts to remedy them within the framework of materialistic monism. Consequently, there emerged various reductionist theories of mind. In the present chapter we shall examine two such strategies: behaviourism and physicalism. While the former reduces mind to certain behavioural patterns and dispositions, the latter is said to reduce the mental states and processes to certain

physiological/neurological states and processes, a subclass of the physical.

2.2 BEHAVIOURISM

Behaviourism roughly is the doctrine that there is no independent ontological status for the mental states and processes over and above the physical behaviour of the organism. It does not mean that it altogether rules out the use of the mental vocabulary, or that the latter is meaningless. Mental predicates can no doubt be employed in psychological explanation. But each such predicate must have at least one description of behaviour to which it bears a logical connection.[1] In other words, the description of the observable physical behaviour provides an operational definition of the mental predicates. That is, the meaning of the mental terms is specified and applied in terms of certain operations namely, the behaviour of the organism. In this section, we shall examine two versions of behaviourism; logical behaviourism which is concerned with the logical analysis of mental terminology and methodological behaviourism which is an empirical doctrine specifying the way psychology is to be practised. Both versions are unanimous in explaining away the internal cognitive states and processes.

2.2.1 Logical behaviourism

Logical behaviourism results from the influence of two powerful philosophical traditions on the philosophy of mind: analytical philosophy and logical positivism. The basic assumption of the analytic philosophy is that most philosophical problems arise due to conceptual or linguistic confusions and they can be solved by an analysis of the language in which these problems are raised. The fundamental idea of logical positivism is that the meaning of a sentence is a matter of observable physical circumstances in which the sentence is verified. A psychological statement, according to logical behaviorism, is to be analysed in terms of the observable behaviours which are the physical circumstances that verify

[1] Jerry A. Fodor, *Psychological Explanation: An Introduction to the Philosophy of Psychology* (New York: Random House, 1968), 51.

it. The mental vocabulary subjected to scrutiny and analysis, therefore, consists of the folk psychological terms occurring in ordinary language.

Logical behaviourism is not an ontological doctrine regarding the nature of the mental states and processes. However, it has a certain ontological bias: the mental states have to be understood in terms of the physical and therefore have no ontological autonomy. In line with the Russell-Whitehead system of modern logic where numbers are defined as logical constructs out of sets, the logical behaviourists argue that the mental events and processes are logical constructs out of the actual or the possible physical behavioural events.[2] The ontological bias towards physicalism worked as a platform from where they could react to dualistic metaphysics and the consequent division of science into psychology and physics with different methods and subject matters. Logical behaviourism argues that both the method and the subject matter of psychology and those of physics are the same. Psychology could be reduced to a sub-field of physics like neurology or to physics itself.

The subject matter or the theoretic content of a science is found in the body of its theoretical statements. Physics and psychology have the same subject matter if there is no fundamental difference between statements of physics and those of psychology. The meaning or the content of a statement is determined by the conditions of its verification: the physical circumstances under which the statement turns out to be true and those under which it turns out to be false. The circumstances of its verification are laid down by the physical test sentences. If two statements that differ in formulation are verified under the same physical condition, they have the same meaning and one can be replaced by the other *salva varitate*. A verified statement asserts that all its physical test sentences have been obtained. Hence it is an abbreviated formulation of the conjunctions of the physical test sentences obtained.[3] Both psychology and

[2]Hilary Putnam. "Brains and behaviour." reprinted in *Readings in Philosophy of Psychology,* vol.1, ed. Ned Block (Cambridge: Harvard University Press, 1980). 25. This anthology will be hereafter cited as NB I.

[3]Carl. G. Hempel, "Logical Analysis of Psychology." in NB I. 16-17.

physics have the same subject matter, for the statements of both the sciences are verified by conditions described by physical test sentences. The conditions for the verification of the psychological statement, say 'John feels pain' are described by physical test sentences such as 'John winces', 'John mourns', 'John utters ouch' etc. The physical test sentences in this case detail empirically observable bodily behaviour. The psychological statement. according to the behaviourists, is logically equivalent to the conjunctions of the physical test sentences. It abbreviates the behavioural responses. The psychological terms, being logical constructs out of such behavioural responses, do not refer to any ghostly entities or episodes in the brain. Consequently. the psychophysical problem — how the mental interacts with the physical — is a pseudo-problem.

But the above analysis is contrary to our everyday experience. It is not necessary that a person feeling pain should exhibit all the physical responses that define pain. He may exhibit only a few of them or perhaps none at all. In such circumstances, argue logical behaviourists, the meaning of the sentence must be defined not in terms of the actual behaviour obtained, but in terms of the possible behaviour that would obtain under such circumstances. Such possible behaviour is called a behavioural disposition. Solubility for example is a dispositional concept. The statement 'the sugar cube is soluble' does not mean that the given piece of sugar cube at this very moment is *actually* being dissolved, but rather it could be dissolved if immersed in water. Thus the dispositional statement implicitly conveys a hypothetical conditional or a conditional of the counter factual variety like 'if it is immersed in water, the sugar cube will dissolve or would have dissolved'.[4] The dispositional statement is definitionally equivalent to the conjunctions of such conditional statements. The dispositional properties like solubility, brittleness, etc., are single track dispositional properties the actualization of which is nearly uniform. Such simple models of disposition are not useful in dealing with the complex mental properties which are

[4]Cf. Ryle, *The Concept of Mind*. 43.

multitrack behavioural dispositions the exercise of which is Indefinitely or perhaps even infinitely heterogeneous. Such behavioural disposition unpacks an infinite set of behavioral hypotheticals. A behavioural hypothetical is generally taken as a counter factual statement whose antecedent is couched in 'stimulus parameters' and consequent, in 'response parameters'.[5] The stimulus -response parameters do not contain any mental vocabulary. And the mental statement is definitionally equivalent to the conjunctions of the behavioral hypotheticals. Consequently, 'mind-talk' can be translated into 'behaviour-talk'.

The dispositional statements, according to the behaviourists, do not describe any particular states or events. To possess a dispositional property" argues Ryle, "is not to be in a particular state, or to undergo a particular change; it is to be bound or liable to be in a particular state, or to undergo a particular change, when a particular condition is realized".[6] The immediate consequence of this construal of disposition for the philosophy of mind is the rejection of internal mental states and processes. Such states and processes just inferred to explain one's actions are occult causes. Invocation of such processes would legitimize the use of phrases like 'in the mind giving the impression that minds are queer places for "special status phantasms".[7] Since the mental properties are nothing other than multi-track behavioural dispositions, the analysis of these dispositions into behavioural hypotheticals provides an alternative kind of explanation that would not land in difficulties. "A statement ascribing a dispositional property to a thing" argues Ryle, "has much though not everything in common with a statement subsuming the thing under a law".[8] The type of explanation we have when we say 'the glass broke because a stone hit it', is causal. Explanation in the realm of human or animal behaviour does not belong to this category. On the other hand, they

[5]Fodor. "Introduction: Something on the State of the Art," *Representations: Philosophical Essays on the Foundations of Cognitive Science* (Sussex: The Harvester Press, 1981), 3.

[6]Ryle. *The Concept of Mind.* 43.

[7]Ibid., 40.

[8]Ibid.. 43.

are of the type 'the glass broke when the stone hit it because it was brittle'. That is, a behaviour is explained when it is subsumed under a law or a regularity. Such regularities are laid down in the behavioural hypothetical into which a dispositional statement is analysed.[9]

The strong version of logical behaviourism discussed so far is plagued with a number of difficulties. The number of behavioural hypothetical into which a psychological statement can be analyzed is in principle infinite or at least indefinite. In such cases, the psychological terms in the original statement cannot be properly defined, for as Churchland rightly points out "no term can be well defined whose *definiens* is open ended and unspecific in this way".[10] The *definiens* can be taken either as the conjunction or as the disjunction of the behavioural hypotheticals. In the former case, it is not possible to attribute a mental disposition if any one of the conjuncts is not obtained. In the latter case, it is not possible to determine the absence of a mental disposition in an organism as it might satisfy any one of the infinite disjuncts of behavioural hypotheticals. Moreover, on this account, there are many ways of telling what a mental state or process is. Consequently, there are as many meanings for a mental term as there are different ways of telling what it is. It leads to indeterminacy in the translation of mental statements into behavioural statements. If an attempt is made to overcome this difficulty by the *ad hoc* stipulation that each way of defining, say, pain, is logically equivalent to the original psychological statement, then we have the odd corollary that a statement about saying ouch is equivalent to a statement about wincing. Such consequences are of course, counter intuitive. Moreover, the translation of mental talk into behavioural talk is objected to on the grounds that when a person reports the occurrence of pain for example, he means much more than the occurrence of behavioural responses.

It could be argued that the difficulties associated with the strong version of behaviourism could be easily overcome with a weaker version of

[9]Ryle's suggestion of subsumption strategy is employed by the functionalists. See Chapter 3.

[10]Churchland, *Matter and Consciousness: A Contemporary Introduction to the Philosophy of Mind* (Cambridge, Mass.:Bradford Books, 1988), 24.

behaviourism. If it is granted that either logically necessary or logically sufficient conditions for the application of mental predicates is specifiable in behavioural terms we get a weak version of logical behaviourism. Such a weak version is read into the later Wittgenstein by Fodor and Chihara.[11] They argue that according to Wittgenstein, there are conceptual or logical relations between statements about mental states and processes and statements about behaviour. This relation is not one of entailment but a special one called criterial relation, according to which the mental states and processes are ascribed to a person on the basis of certain behavioural criteria. The meaning of the mental terms is determined by the behavioural criteria which are conventions for the ascription of mental properties. Since the criteria are laid down by the rules of the language game, the relation between the mental statement and the behavioural statement is not a contingent relation based on observed correlation but is necessary and *a priori*. Obviously, this version does not imply that mind statements can be translated into behavioural statements.

Even the weak version of behaviourism is not a plausible doctrine of the mind, as it could be shown that the occurrence of behaviour is neither a sufficient nor a necessary condition for the ascription of mental predicates to an organism. If the behavioural response is a sufficient condition for the ascription of the mental state pain to an organism, the occurrence of pain behaviour implies that the organism is in pain. If on the other hand, pain behaviour is taken as the necessary condition, the absence of pain behaviour would indicate the absence of pain. However, both the theses are counter intuitive as Putnam has convincingly shown. There is nothing self-contradictory in speaking of hypothetical worlds in which there is pain but no pain behaviour and of those in which there is pain behaviour but no pain. It is quite possible to conceive a world in which the way mental states are related to responses is different from the way they are in our world. Putnam makes it clear by conceiving a world of 'super-spartans' who have the ability to suppress all involuntary pain

[11]See "Operationalism and Ordinary Language," in *Representations*, 35-62. We are neutral as to the plausibility of this interpretation.

behaviour yet have the capacity to feel pain.

> Imagine a community of 'super-spartans' or 'super-stoics' - a community in which the adults have the ability to successfully suppress all involuntary pain behaviour. They may, on occasions, admit that they feel pain, but always in pleasant well-modulated voices - even if they are undergoing the agonies of the damned. They do not wince, scream, flinch, sob, grit their teeth, clench their fists, exhibit beads of sweat, or otherwise act like people in pain or people suppressing the unconditioned responses associated with pain . . . Yet there is a clear absurdity to the position that one cannot ascribe to the people a capacity for feeling pain.[12]

This shows that pain behaviour is not a necessary condition for the ascription of pain to an organism. Similarly, the ascription of pain behaviour is not a sufficient condition for the occurrence of pain. It could be possible to conceive another world of pain pretenders who exhibit the pain behaviour that we have on the earth without the feeling of pain. It means that there is no necessary relation of any sort between pain and pain behaviour. In other words, the concepts of the mental and those of the behavioural are distinct. It reminds us of the Cartesian view regarding the conceptual distinction between the mind and the body. In the same vein, Putnam argues also that the mental states are not conceptually related to physical stimuli either. It is easy to conceive of a world in which pain stimulus and pain are related differently from the way they are related in the actual world. A person belonging to such a world, for example, might feel pain only when a magnetic field is present. Thus though the mental states, in our own sense, may be clearly present, they may have neither the normal causes nor the normal effects.

Both the strong and the weak versions of behaviourism agree on defining the mental states and processes on the basis of behaviour. However, it is a fact of our common experience that a given mental state does not invariably have the same behavioural manifestations. Consequently, a given mental state has different meanings depending upon the kinds of behaviour we use in defining it. If a dream report is taken

[12]Putnam, "Brains and Behaviour," 29.

as the defining characteristic of dream, we have a concept of dream which is totally different from the concept of dream if dream-talk is employed as the criterion to determine the occurrence of dreams. If, in the course of scientific development, new methods are employed to determine whether a person is dreaming or not, we may have a totally different concept of dream. This will lead to bizarre consequences. For example, when research in psychology speaks of mental processes, as Fodor and Chihara note, it *ipso facto* commits the fallacy of ambiguity.[13]

It is a fact of our common experience that there are mental processes that go on, even though they do not issue in any behaviour. When I think, my thinking need not result in any behaviour. However, it is obvious to me that there is something going on in me which I call thought. But behaviourism altogether denies the internal states and processes to which the mental vocabulary is generally understood to apply. As there is no tangible or visible criterion for the application of the mental terms from the first person point of view, it cannot make sense of the a person account of the mental states and processes. As Armstrong rightly points out, "[b]ehaviourism may be a satisfactory account of the mind from an other-person point *of* view, it will not do as a *first-person* account."[14] This amounts to a total rejection of all those phenomenal experiences and qualitative states a person is aware of. However, it is an undeniable fact about human beings that they are aware of things and this awareness or being aware of is so fundamental that it cannot be analysed in terms of, or reduced to, any kind of bodily happening or behaviour.[15] As Armstrong observes; "In our own case, we seem to be aware of so much more than mere behaviour".[16] When behaviourists try to reduce, the conscious mental states and processes, they in fact deny our rich world of phenomenal experiences. What is essential to pain, according to behaviourism, is pain behaviour. Certain versions of behaviourism include also the stimulus that produces

[13]Cf.Fodor and Chihara, "Operationalism and Ordinary Language," 53-54.

[14]Armstrong, "The Nature of Mind," in NB I, 197. Emphasis Armstrong's.

[15]Cf.H.H. Price "Some objections to Behaviourism," *Dimensions of* Mind, ed. Sidney Hook (New York University Press, 1960), 79.

[16]Armstrong, "The Nature of Mind," 197.

the pain behaviour in the defining characteristics of pain* In spite of the presence of pain producing stimuli, and the pain behaviour that usually accompanies them, if a person does not feel the way pain feels to him, he cannot be said to have pain. It could be argued against logical behaviourism that it is logically and perhaps even empirically possible that an organism in spite of producing the pain behaviour, in the presence of pain producing stimuli, would not itself have the feeling of pain. This shows that what is essential to the mental states is their phenomenality or their qualitative aspects.

We have seen that behaviourism tries to explain the occurrence of behaviour by appealing to the behavioural dispositions which do not refer to any real states of the organism. The behavioural dispositions are analysed into certain regularities. The occurrence of a behaviour is explained when it is shown to be an instance of one such lawful regularity. But insight into the nature of explanation suggests that an event is not explained by citing it to be a special instance of an empirically observable regularity. In the case of behaviour, it is the behavioural hypotheticals themselves that need to be explained. The meaning of a mental state term may be explained with reference to the overt behavioural responses but occurrence of the overt behaviour itself is explained only by appealing to the mental state or process which is a condition or an event that causes the overt behaviour. So the mental states and processes should not be identified with behavioural dispositions but rather with the causes of behaviour.

Behaviourists might argue that the behavioural dispositions themselves could be considered as the causes of behaviour. Suppose for behaviourists, a headache is the disposition to take aspirin. Here it is right to say 'John took aspirin because he had a headache', but in the statement, 'John was disposed to produce headache behaviour because he had a headache' we cannot identify the headache with disposition to produce headache behaviour. The second statement involves reference to mental causes, and as Fodor argues, at least pre-theoretically we have no reason to doubt the truth of the statement. Fodor observes that the term 'headache' does not mean the same thing in the two statements. Had it been so the latter statement would mean 'John is disposed to produce headache behaviour

because he is disposed to produce headache behaviour' which is absurd. This suggests that mental causes cannot be traded for behavioural dispositions.[17]

The presence of behavioural dispositions does not always issue in the occurrence of behavioural responses. This is a challenge to behaviourist theory. Behaviourists try to overcome this difficulty by incorporating *ceteris paribus* (other things being equal) clauses into behavioural hypotheticals. But such *ceteris paribus* clauses in fact refer to other mental states. Even if a headache is identified with the disposition to take aspirin, a person suffering from headache would take aspirin only if the dispositional state is accompanied by other mental states such as the *desire* to avoid pain, the *belief* that taking aspirin would reduce pain etc. That is to say: "Mental causes typically have their overt effects in virtue *of their interaction with one another,* and behaviourism provides no satisfactory analysis of the statements that articulate such interactions".[18] An analysis of mental causation will lead to an etiology consisting of a long chain of mental states which will account for mental processes like reasoning, problem solving etc. A "mental mechanics" can be developed only if the causal sequences articulating the causal law are identified. Behaviourism fails to identify the causal laws.[19]

Logical behaviourism is a reaction to Cartesianism. It denies even the conceptual distinction between the mental and the physical. It denies all internal states and processes including those we are conscious of. It tries to explain the occurrence of human behaviour without appealing to the internal states. It could be seen that the various objections raised against logical behaviourism stem from intuitively plausible Cartesian intuitions like the conceptual distinction between the mental and the physical, phenomenality as one of the essential aspects of human mentality, and the appeal to internal states and processes for the explanation of human behaviour. According to the critics of behaviourism, the internal

[17]"Introduction: Something on the State the Art," 5.
[18]Ibid. Emphasis Fodor's.
[19]Ibid., 6.

states and processes are the theoretical entities that are Invoked for explanation. Such explanations are plausible even though there exist no logical connections between theoretical and observational terms. The postulation of such psychological entities can be justified, as Fodor and Chihara observe, on the basis of simplicity, plausibility and the predictive adequacy of the explanatory system as a whole.[20]

2.2.2 Methodological behaviourism

Methodological behaviourism, is a very vehement reaction against dualistic metaphysics and the resultant view that the method of psychology is introspective. In order that psychology may have a firm scientific footing, it must have a method along the lines of the physical sciences and methodological behaviourism strives to devise such a method. It aims at the explanation of human and animal behaviour: their practically observable and measurable activities. For this the notions of mental states and processes are of little use. They are not clearly defined and there are no objective criteria for their application. For psychology to be firmly rooted in empirical reality, argue methodological behaviourists, the theoretical terms used in psychology must be operationally defined.[21]

B.F. Skinner, the chief exponent of methodological behaviourism argues that the goal of psychology is the prediction and control of human and animal behaviour. For the accomplishment of this dual function the appeal to inner causes does not pay any dividends. Inner causes invoked are of two types: psychic inner causes and neural causes. Psychic inner causes like desire, belief, etc., have neither predictive success nor any value in controlling the behaviour of the organism. They are just ad hoc postulations based on behaviour attributing just those properties required to account for the behaviour. The extensive use of this pseudo explanation hides from us the actual factors responsible for the production of behaviour. The neural causes too are inferred from the occurrence of

[20]Fodor and Chihara, "Operationalism and Ordinary Language," 56.

[21]Note that logical behaviourism too is committed to an operational definition of mental terms. But unlike methodological behaviourism it is concerned with the mental terms occurring in folk psychology.

behaviour and hence cannot be legitimately used for the explanation of behaviour as the *explanans* is based on the *explanandum* itself. As the nervous system is not amenable to any manipulation and the relevant neurological facts required would not be available at the time of prediction, the neural causes are of no avail in the production and control of behaviour.[22]

In the causal explanation of behaviour generally offered, it is possible to discern three causal links: an operation performed upon the organism from without, an inner state (neural or psychic) and the response. Skinner argues that in the prediction and control of behaviour, the second link in the causal chain can be wholly dispensed with. The argument he advances to this effect is as follows. If the internal events are lawfully related to the environmental events on the one hand, and the behaviour responses on the other, then the first and the third link in the causal chain are lawfully related. Consequently, internal states are superfluous as far as prediction and control of behaviour is concerned. So we must always turn to the factors responsible for the production of the second link. In such cases, we can avoid many tiresome and exhausting digressions by taking the behavioural response as a function of environmental events.[23] Thus, for the description and analysis of behaviour, the variables of which behaviour is a function are to be identified. They are, according to Skinner, the genetic endowment of the species produced by the environment through natural selection, the antecedent events in the life of the individual of the species, and the current setting of the environment which shapes and maintains the repertoire of individual behaviour through another selection process namely, operant conditioning.[24] Thus for Skinner Psychology is a study of the subtle and complex relations between behaviour on the one hand and, on the other, the environment — the environment in

[22]Skinner, "Selections from *Science and Human Behaviour*;" in NB 1.37-9.

[23]Cf. Ibid., 41-42. This argument is known as the theoretician's dilemma: if the second link is lawfully related to the first and the third, then it is superfluous and if not, it is useless. See Owen J. Flanagan, *The Science of the Mind* (Cambridge, Mass.: Bradford books, 1984). 93-98.

[24]*Reflections on Behaviourism and Society*. (New Jersey: Prentice-Hall. 1978), 85.

which the species has evolved and that In which its members lives and in response to which at a given moment they behave.[25]

2.2.2.1 Operant conditioning

For the prediction and control of behaviour the effect of each variable upon the organism is to be quantitatively determined. Skinner argues that this is possible with methods and techniques of laboratory science which help us identify the laws specifying the relation between the relevant set of variables and the behaviour. Skinner claims to have found out the body of laws in his work on operant conditioning. Skinner identifies two main categories of responses, the respondents and the operants. The former are pure reflex responses elicited by specific prior stimuli. The latter, on the other hand, are emitted responses for which no obvious prior stimuli can be discerned. Operant conditioning is the process whereby an operant is made contingent upon the consequences that follow the behaviour without identifying a prior stimulus. An operant may be under the control of stimuli, but the relation between stimuli and the operant is not one of elicitation as the stimulus in the context of operant conditioning is part of the consequences of the behaviour. In other words, in operant conditioning, the response is governed by "the law of effect". The behaviour is acquired and maintained because of the stimuli that follow the behaviour and not the ones that precede it. These stimuli form part of the consequences of behaviour known as contingencies of reinforcement. If a given operant is followed by favourable consequences then that response is said to be positively reinforced. The positive reinforcement make the response more probable or frequent in future. According to Skinner, the science of behaviour, or psychology, is concerned with the study of variables that make the occurrence of operants more probable, and with measurement of this probability.

Operant conditioning is a special case of natural selection in the behavioural evolution. In biological evolution the environment has a distinctive selective role which explains the emergence of a new biological

trait. During the life of an individual there is a similar and equally important selective action of the environment which is responsible for the genesis of a *new* response. The selective action of the environment in the case of individuals, i.e., "the effects upon the individual organisms of extremely complex and subtle contingencies of reinforcement"[26] can be studied through experimental analysis of behaviour in the laboratory. The experimental device developed by Skinner for the analysis of behaviour consists of a cage with a rat placed in it. The cage has a bar attached to one of its walls such that the pressing of the bar releases food grains into a tray in the cage. Whenever the bar is pressed by the rat placed in the cage, the food grains are dropped. The food grains are called the *reinforcer* which *strengthens* the bar pressing operant. The strength of the operant is defined in terms of the time lapse between the last reinforcing event and the recurrence of the operant. The bar pressing operant is acquired and maintained by the reinforcer in the controlled experimental situation of the laboratory. The occurrence of the bar pressing operant is the function of a number of variables like positive reinforcement, events in the life of the rat, (say deprivation of food) and finally its genetic endowment.[27]

In operant conditioning, it is not a particular response that is conditioned but a class of responses. An operant is not an accomplished act but rather a set of acts defined by the property of the consequences which are specified in physical terms. In other words, it is a behavioural pattern that is conditioned and not a particular instance of the behavioural pattern. The responses, which are similar, are grouped into a class and the term 'operant' describes and. denotes this class. The

[26] *Reflections on Behaviourism and Society*, 70.

[27] The terms 'stimulus', 'response', 'conditioning', 'reinforcement' etc. are borrowed from Pavlov. However, operant conditioning is different from pavlovian "respondent" conditioning. In respondent conditioning the reinforcer is paired with a prior stimulus. The magnitude of the response elicited by the conditioned stimulus is increased and an attempt is made to decrease the time lapse between stimulus and response. In operant conditioning on the other hand, the reinforcer is made contingent upon the response. The operant is *strengthened* by making the response more frequent.

consequences that follow the response define certain properties with respect to which responses are taken to be similar or dissimilar. That is, if two responses have identical consequences, they are said to belong to the same class and if not, to different classes.

2.2.2.2 Rejection of cognitive psychology

Skinner argues that his theory of operant conditioning paves the way for an outright rejection of cognitive psychology. The statements of cognitive psychology, argues Skinner, can be rendered as statements of operant conditioning. Cognitive psychology appeals to intentional states and processes for the explanation of rational human action. It conceives knowledge as a system of internal representations. It invokes an internally represented system of rules in order to account for linguistic behaviour. Skinner argues that the theory of operant conditioning shows that none of these basic tenets of cognitive psychology are plausible in the ultimate analysis in terms of his theory of operant conditioning. Intentional states, the internal representation of knowledge, and the rules of language are modes and instances of operants which are physical in nature and this can be brought within the framework of natural science.

A successful psychological theory, according to Skinner, cannot use any intentional terms like *beliefs, desire, intentions* etc. for the explanation of rational human actions, as their employment pre-supposes the notion of rationality which is the very thing psychology is supposed to explain. So if we are to make progress in psychological explanations, appeals to beliefs, desires and other terms from the intentional idiom must be eliminated. In Skinner's opinion, the intentional idiom does not refer to the internal states and processes. These terms are just a way of referring to the controlling variables. So a statement containing intentions can be reduced to or translated into statements about operant conditioning that do not contain intentional idioms. The statement 'I am looking for my glasses' for example, is translatable into 'when I have done this in the past, I have found my glasses'. That is man behaves in a particular way not because of the consequences that are to follow but because of the consequences that have followed in the past. The 'goals'. 'purposes' etc. of our behaviour refer to such consequences.

Like 'goal' and 'purposes' the intentional idioms of prepositional attitudes, like *desires* and *beliefs*, or any of their variants can be defined in behavioural terms. Quine who develops an epistemology within the broad framework provided by Skinnerian behaviourist psychology, argues that the characteristic mentalistic idioms of prepositional attitudes take the form of attributions of verbal disposition. '*x* believes that p' for example, is modeled after the indirect quotation 'x says that *p'* as if to attribute to *x* the disposition to utter the sentence 'p'. Thus intentional idioms, according to Quine, describe mental states in a way that hints at disposition to verbal behaviour.[28] The behavioural dispositions are in fact identical with certain physiological states or mechanisms. The physiological states are described dispositionally if they are identified by means of behavioural symptoms. Thus the intentional states are nothing other than behavioural dispositions which are ways of referring to the physiological.[29] Skinner, it must be noted, does not deny the existence of so called intentional states we are said to be aware of. But they are just conditions of the body associated with behaviour. They are just collateral products of our genetic and environmental histories, having no explanatory force. Our behaviour and the associated conditions of our bodies have a common cause that lie in the environment. Under no circumstances can the conditions of the body we feel be considered as the causes of behaviour.[30]

Cognitive psychology, according to Skinner, conceives knowledge as private mental states representing the world outside, these private representations available to organisms through introspection. These internal representations are like internal copies of the world, and cognition may be defined as the process by which we construct mental copies of the real world. But the formation of internal copies, argues Skinner, is objectionable on the ground that these internal copies are known by the

[28]W.V. Quine, "Mind and Verbal Dispositions," in Mind and *Language: Wolfson College Lectures 1974*, ed., Samuel Guttenplan (Oxford: Clarendon Press, 1975), 92.

[29]Cf. Ibid., 93-94.

[30]Skinner, *Reflections on Behaviourism and Society*, 71.

formation of yet another internal copy and so on ad *infinitum.*[31] Some cognitivist on the other hand, argue that representations are not internal copies of the world, but a mental surrogate called the system of propositions. For Skinner, the possession of a system of propositions pre-supposes a mind with a certain system of organisations and structures. But there are no such internal organisations and structures. What is structured is only behaviour in its relation to contingencies of reinforcement. The representational theory of knowledge is modeled on practical behaviour. The so called cognitive processes are nothing but subtle and complex behaviour. For example, we *associate* things by putting them together and we *compare* them by placing them side by side in order to emphasize their differences. "These are actions of real persons. It is only in the fanciful world of an inner person that they became mental processes"[32] To know something, according to Skinner, is not to represent the object of knowledge within ourselves but to have been affected by it. Since we are nothing other than our bodies which are in direct contact with the world, we respond to it many ways and our knowledge is nothing other than the repertoire of behaviour acquired thus.

Cognitive psychology conceives of language as the expression of the internal mental process called thought. It has two components: syntax, and semantics: internally represented systems of rules and meanings. Skinner dismisses this view of language. Thought for him is an internal surrogate of behaviour: "If we say something to ourselves before saying it aloud, what we say aloud seems to be the expression of an inner thought".[33] Language for Skinner, is a behavioural *repertoire* of unique and extraordinary complexity having neither internally represented rules nor meanings. Seldom do we speak by applying rules. A person is said to speak grammatically if he behaves effectively under the contingencies maintained by the verbal community. The so called rules are just internal surrogate of behaviour. Similarly there is no internally represented meaning for a

[31]Cf. *Reflections on Behaviourism and Society,* 104.
[32] Ibid., 110.
[33]Ibid.. 51.

statement as its meaning is analysable in terms of the variables of which it is a function and these variables lie in the environment. In short, Skinner's main complaint against cognitive psychology is that it postulates an internal principle, a homunculus whose function is nothing other than that of the environment: "Having moved the environment inside the head in the form of conscious experience and behaviour in the form of intention, will, and choice, and having stored the effects of contingencies of reinforcement as knowledge and rules, cognitive psychologists put them all together to compose an internal simulacrum of organism, a kind of doppelganger, not unlike the classical homunculus, . . ."[34]

For Skinner psychology is nothing other than the science of behaviour and it should form part of biology since the behaving organism must eventually be described by anatomists and physiologists. Physiology and anatomy specify the genetic endowment of the species and the modification of this internal factor during the life of an individual, which explain the occurrence of a given response at a particular moment. The variables that lie in the environment and the response which is the function of the variables do not occur in close spatial and temporal proximity. Physiology must make up for the gap by describing the physiological processes that intervene in them. However, the appeal to physiology would not render the terms and principles of the behavioural account useless. Even when the behaving organism is understood fully at the level of physiology, argues Skinner, a science of behaviour will be needed for both theoretical and practical purposes[35]: for practical purposes because it is useful for the prediction and control of behaviour; for theoretical purposes because the behavioural analysis defines the task of the physiologist by specifying the function that the physiologist has to throw light upon.[36] As Quine clarifies it: To cite a behavioural disposition is to posit an unexplained neural mechanism, and such posits should be made in the hope of their

[34]*Reflections on Behaviourism and Society*, 109.
[35]Ibid., 70.
[36]Ibid., 123.

submitting some day to a physical explanation."[37]

Skinner argues that explanations in terms of intentional states and processes must give way to behavioural analysis. The role of behavioural analysis will eventually be taken up by physiology. Thus there are three levels of explanation with varying degrees of depth: intentional, behavioural and physiological in that order. These three levels are obviously levels of reduction in the sense that the first can be reduced to the second, which in turn is reducible to the third. However, behavioural analysis has a special status: it must be retained, as we said above, for theoretical and practical purposes. Quine too subscribes to this view. According to him, the behavioural level of explanation is ideal for the description of language, the formulation of language rules and the explication of semantic terms.[38] Though the behavioural level of explanation can ultimately be reduced to the physiological level of explanation in terms of nerve impulses and other organic processes, this ultimate reduction, according to Quine, must be resisted, because the third and the deepest level of explanation means that the mental states are identical with the states of the brain. This leads to intellectual discomfort as one may justify one's mentalistic semantics by arguing that it is a matter of physiology and may reinstate the intentional idiom which the behaviourists tried to reject at the outset.[39]

2.2.2.3 Objections to methodological behaviourism

Skinner's full-fledged skepticism about the ontology of the mental states springs from the view that only the observable and the measurable figure in explanation and prediction. The intentional states are inferred entities with just those properties required for the explanation of behaviour. Since the inferred entities are neither observable nor measurable by usual scientific practices, they must be rejected as fictional. As a result, Skinner has ended up with the study of observables

[37]Quine, "Mind and Verbal Disposition," 95.

[38]Ibid., 87.

[39]Ibid., 94-95.

namely, the Input - output relations i.e., the specification of the responses in terms of the history of stimuli. This, as Chomsky notes, is only the definition of the problem that requires explanation.[40] The definition of the problem and the collection of the data mark only the starting point of any scientific activity. It is neither scientifically unreasonable nor contrary to the accepted scientific practice in well-developed sciences like physics to postulate a set of theoretical entities with specific properties. Hence the postulation of unobservable and unmeasurable intentional states and processes for the production and explanation of behaviour cannot be ruled out as totally unscientific. Hence too, as Flanagan remarks, there is no reason to abandon the intuition, however, pre-theoretic it might be, that psychology must make reference to intentional states if it is to explain our cognitive processes and behaviour. Merely logical and *a priori* arguments against this view would not suffice. In his opinion Skinner himself seems to have realised that "a psychology which simply refused to admit the reality of any subjective, cognitive and affective, phenomena was just too incredible to satisfy the minimal plausibility constraints on an adequate psychology"[41].

Similarly, the only relevant factor for the prediction of behaviour, according to Skinner, is information on the variables that lie in the environment. Though this is perfectly all right in the case of simple organisms, yet knowledge of the external factors is not sufficient in the case of complex organisms. As Chomsky points out, we need, in addition, cognisance of the relevant internal inborn structure of the organism whose function is to process the input and to organise the response. In the absence of independent, neuro-physiological evidence for the existence of such internal structures and processes, they are postulated on the observation of inputs (events stimulating the organs) and outputs (the responses of the organs).[42] The structures and processes thus conjectured are taken to be real provided no better strategy is forthcoming for

[40]Chomsky, "A Review of B.F. Skinner's *Verbal* Behaviour," in NB I, 49.

[41]Vlanagan, *The Science of the Mind*, 87.

[42]Chomsky. "A Review of B.F. Skinner's *Verbal Behaviour,"* 49.

explanation and prediction. Skinner's conception of science is fallacious and it does not conform to well established scientific practice.

On Skinner's theory of operant conditioning prediction and explanation of behaviour turns out to be a very difficult task in everyday life, as it requires a knowledge of the entire history of the individual organism. Only a few experts who have studied the individual life history of the organism under laboratory circumstances can perform this task. The intentionaJist theory on the other hand is within the reach of the common man. It does not require us to know the entire life history of an organism. Yet it has a better explanatory power and predictive success than Skinner' s non-intentional theory of operant conditioning.

Granted that operant conditioning succeeds in explaining cognitive processes as well as the behaviour of the organism, it could legitimately be asked: Why should an organism respond to the operant conditioning at all? A proper answer to this question, it seems to me, requires us to postulate an internal mechanism within the organism with specific structures and organisation. For the production of a particular response at a given occasion, first the internal mechanism must *associate* the particular type of operant with a specific type of variable that lies in the environment in the form of contingencies of reinforcement; Second, it must *discern* that the situation encountered is similar to the one in the past; third, it should *believe* instantiation of a particular type of response will follow a consequence of a particular type as it has happened in the past. The association of the variables with responses and the identification of various variables or responses as either similar or dissimilar is possible only if there is an internal mechanism with a relational structure; without an inborn relational structure whose function is the identification of similarities and dissimilarities among variables and/or responses, operant conditioning would never be successful.

The need for an internal mechanism with relational structure for an account of the cognitive processes and for the explanation and prediction of behaviour, is in fact acknowledged by philosophers like Quine who is given to behaviouristic epistemology. He argues that, on hearing something *similar* to the old clatter of pans a dog goes to the kitchen under *similar* circumstances because of the "dog's subjective similarity ratings." Appeal

to this similarity factor is tantamount to an invocation of a dog's mental life. Qulne's defence of this internal factor, however, is only half-hearted. The internal variable in his opinion, must not be granted any ontological status. Rather it must be explained away in terms of the dog's disposition to behaviour. That is, the dog's going to the kitchen after a clatter is the basis for saying that the clatter events as well as the dinner events are similar for the dog.[43] But there is a blatant circularity in Quine's account. The dog's going to the kitchen is explained by appealing to the perception of similarity between the clatter events of the past and present on the one hand, and the perception of similarity among the old dinner events on the other. And the dog's perception of similarities in turn is explained in terms of the dog's going to the kitchen. There is only one reasonable way available for breaking the vicious circularity; take the internal similarity ratings as primitive and real. The internal similarity must be taken as the function of certain structures and organisations realised in the brain.

In operant conditioning, the behaviour is organised in relation to the contingencies of reinforcement because of the perception of certain relations existing between response and consequences. Such organisation of behaviour presupposes that the contingencies of reinforcement are somehow mentally represented. In the absence of the belief — in all probability a product of past experience — to the effect that a particular kind of behaviour is followed by specific types of consequences, the organism does not resort to the instantiation of a particular behavioural pattern of the several ones available to the organism. In Skinner's framework, an operant is strengthened because of the consequences .that occurred in the past. However, an organism's response under definite circumstances can be explained only with reference to the specific consequences or the state of affairs that are to follow. This means goals and purposes cannot be ruled out. An organism behaves in a particular way because it wants to bring about a state of affairs. Beliefs, wants, purposes etc. refer to representational mental states which are causally responsible for the

[43]Cf. Quine, "The Nature of Natural Knowledge," in Cuttenplan, ed.. Mind and *Language,* 69-70.

behaviour. If at all operant conditioning provides any behavioural laws, they make sense only on account of the mentalistic or intentional laws that underlie them.

Skinner's claim that the description of verbal behaviour can be provided in terms of operant conditioning without invoking the internal representation of a system of grammatical rules is totally vacuous. In spite of his admission that the speaker of the language can manipulate his own verbal behaviour. Skinner does not specify the variables of which verbal manipulation is a function. Instead, he argues that rules of grammar are nothing other than *internalised* contingencies of reinforcement. This is, in fact, a veiled concession to the cognitivist thesis that the grammar of the language is internalised by the speaker. As Chomsky has shown, the new behavioural events are identified as sentences not because of their formal similarity with earlier sentences nor because of the identity of the grammatical frame of two events, "but because it is generated by the grammar that each individual has somehow and in some form internalised".[44] The linguistic behaviour is better explained by the cognitivist hypothesis that the rules of the grammar are internally represented than by the behaviourist view that a speaker uses the language grammatically because of the contingencies maintained by the verbal community.

One of Skinner's purposes in developing the theory of operant conditioning is to render a description of the human creativity evidenced by the novelty of the behavioural responses, without falling back upon a miracle-working homunculus residing in one's head. But Skinner hardly succeeds in supplying a plausible account of the human responses within the framework of operant conditioning. Intuitively, the novelty of a response lies in its dissimilarity with earlier responses in the relevant respects. As Dennet rightly observes, to save his theory, the methodological behaviourist has to stipulate that the "new stimuli" and the "new response" are similar in some crucial but not yet specified respect to the old stimuli and the old response. This means the very same objection raised by

44Chomskv. "A Review of B.F. Skinner's Verbal Behaviour," 59.

Skinner against intentionalist psychology could be raised against methodological behaviourism itself. Though no record of the earlier experiences of the present kind is available, the existence of such experiences is inferred, and such postulated experiences are endowed with the properties satisfying the theory of operant conditioning. That is to say, "these postulated earlier experiences are claimed to resemble-in-whatever-is-the-crucial-respect the situation they must resemble for the Skinnerian explanation to work."[45] A careful analysis of operant conditioning shows that Skinner has taken mind out of the organism and placed it in the environment attributing to it all the properties of that form the essence of mind from intentionalist *point* of view. Just as the environment selects the biological traits in the case of evolution, it *selects* the response or behavioural pattern of the organism.

A serious defect of the behavioural analysis as a psychological theory is brought to light by Chomsky. The various technical terms used in the theory of operant conditioning are unsuited for the description of the real life behaviour. Though terms like stimulus, *response*, *reinforcement* etc. are well defined in the context of laboratory experiment, when used to characterise behaviour of the real persons they lose their objectivity of meaning and turn out to be in certain cases cover terms for intentional idioms. On the occasion of the emission of a response by the organism there could be a number of stimuli in the environment. The controlling stimuli can be identified only after the response has been emitted. The controlling variables can be specified only from the point of view of behaving organism. On this account stimuli are no longer part of the outside world. They are driven into the organism. That is to say. the "talk of stimulus *control* disguises a complete retreat to mentalistic psychology". Similarly, the term *response* is also vague as there are no criteria for the identification of the proper response in ordinary behaviour. This becomes clear in the case of verbal behaviour.[46] *Reinforcement,* the key term in Skinnerian psychology is also similarly

[45]Cf. Dennet, "Skinner Skinned" in *Brainstorms,* 67.

[46]Cf. Chomsky, "A Review of B.F. Skinner's *Verbal Behaviour,"* 53.

infected with ambiguities. Citing a number of examples from Skinner, Chomsky argues that a particular behaviour can be reinforced even in the absence of response or of impingement of reinforcing stimuli upon the organism. In order to be reinforced, it is not necessary that the contingencies should exist. It is sufficient that they be imagined or hoped. If so, *reinforcement* works as a cover term for intentional terms like wants, *desires, likes* etc.

Skinner undoubtedly scores a point when he argues that a psychological theory within the broad framework of materialistic monism cannot make any final appeal to intentional states since they have to be finally analysed in physical and mechanical terms. It does not follow from this that intentional idioms have no legitimate place in a psychological theory. The intentional idioms of a psychological theory specify certain characteristic functions of the organism that must be finally understood at the physiological level. In Dennet's opinion, the intentional idioms must be used provisionally "to map out the functions of the behaviour control system of men and animals" till we finally "cash them out" by designing mechanisms that perform functions specified by the intentional theory.[47] In this endeavour, Skinner's behavioural analysis which too specifies the functions of the organism in terms of behavioural disposition cannot be a match for intentional psychology as it rules out many relevant intentional states and processes simulated by the behaviour control system and information processing machinery. In other words, a mechanism designed to map out the functions specified by behavioural analysis would be a poor substitute for the one constructed to model the mind as described by intentional psychological theory. Though Skinner's attack on intentional psychology is unwarranted, his criticism of dualistic metaphysics and the rejection of a homuncular model in the explanation of human cognitive processes and functions is a decisive step in the development of cognitive science.

[47]Cf.Dennet, "Skinner Skinned," 61-62.

2.3 PHYSICALISM

Generally speaking, physicalism is the doctrine that all events which fall under the laws of special sciences like economics, sociology, psychology etc. are physical events and hence fail under the laws of physics, the most basic of all sciences. In the context of the philosophy of mind, it is the doctrine that "a person, with all his psychological attributes, is nothing over and above his body, with all its physical attributes."[48] On this broad construal, all psychological theories developed within the general framework of materialistic monism are cases of physicalism. Accordingly the versions of behaviourism discussed above are also physicalist theories. For our discussion we use the term in the restricted sense, namely, that the mental states, events and processes are nothing over and above some physical states, events and processes. It means that the subject matter of psychology is a part of the subject matter of physics and every phenomenon that has a psychological description in terms of mental terms like *pain, belief, desire* etc. has a description in the vocabulary of physics. Physicalism appears in two versions of event-identity thesis, namely, type-type identity theory and token-token identity theory.

2.3.1 Type-type identity theory

The type-type identity thesis (type physicalism) is the specific doctrine that the property of being in a certain *kind* of mental state is identical with the property of being in some kind of physical state. In other words, "each type of mental state or process is *numerically identical* with (is one and the same thing as) some type of physical state or process within the brain or central nervous system".[49] So the mental properties are identical with neural properties. Having pain, for example, is a mental property which according to the identity theorist, is identical with the hypothetical C-fibre firing, a neural property. When the type physicalists speak of the identity of the mental (states) with the neural (states), both

[48]Nagel, "Physicalism", in *The Mind/Brain Identity Theory,* ed., *C.V.* Borst (London: The Macmillan Press, 1970). 214.

[49]Churchland, *Matter and* Consciousness, 26.

the mental and physical states are taken as universals. capable of repeated instantiation. The mental state pain for example is instantiated in different individuals and in the same individual at various times.[50]

The identity theorists argue that there is a one to one or at least a one-to-many correspondence between mental and neural types. Consequently, the identity thesis is said to result in reductionism, the doctrine that the mental states can be reduced to certain physiological states of the brain which in the course of the development of science will be reduced to certain physical types. If this is true, psychology is reducible to neurobiology which again is reducible to physics. A psychological theory, we know, is a body of its laws. These laws contain mental state terms as theoretical terms. Since mental types are identical with neural types, the mental type terms in the psychological laws are replaceable by neural types terms. The resulting statements would be the laws of neurobiology. The inter-theoretic reduction as it is often called, proceeds as follows. Let S_1, S_2 . . . S_n be predicates of psychology. Then the laws of psychology are of the form:

(a) $S_1 x$ causes $S_2 y$.

It states that all events of x's being S_1 bring about events of y's being S_2. If the law of this form is to be reduced to a law of neurobiology, there must be a neurobiological law of the form:

(b) $N_1 x$ causes $N_2 y$

where N_1, and N_2 are predicates of neurobiology. Now a law of the form (a) is reducible to that of the form (b) only if ,the psychological kinds are identical with the neurobiological kinds. That is to say, there must be certain bridge laws which state the relevant identities for each of the psychological predicates occurring in the body of psychological laws. The bridge laws are of the following form:

(C_1) $S_1 x = N_1 x$

[50]See Lewis, "An Argument for the Identity Theory," in Philosophical *Papers,* vol.1, (New York: Oxford University Press, 1983), 99. n.l.

(C_2) $S_2y = N_2y$

They state the identities of psychological and neurological kinds. (C_1), for example, states that all events of x's being S_1 are same as the events of x's being N_1. Such identities presuppose that each natural kind predicate in an ideally completed psychology is identical with some natural kind predicate in neurobiology. This means that the psychological predicates and some neurobiological predicates are co-extensive. Since these co-extensions are lawful, psychology is reducible to neurobiology. The same argument can be used *mutatis mutandis* to show that neurobiology is reducible ultimately to physics.[51]

It is very important to note that the type identity theory is concerned with event identities. That is, all mental events are neural events. The construal of identity theory as pertaining to event identities has the advantage of circumventing certain difficulties. If we consider mental states and processes objects of our experience, viz., intentional objects or sense data, it implies that there are some mental entities. The identity thesis then means that mental entities are identical with certain neural entities. The concept of mental entities and the concept of neural entities are different. Mental entities have certain phenomenal characteristics whereas the neural entities lack them. Similarly the mental objects do not have a spatial location whereas the neural states and processes are located. Since the mental and the neural are by their very definition distinct, the identity thesis states that something which is not mental is identical with the mental, which is a contradiction. This objection, argues the identity theorist, is the result of viewing mental states and processes as the objects of one's experience. According to Smart, this objection can be overcome by dropping the idea that the mental states and processes are intentional objects or sense data. He argues,

> if it is objected that the after-image is yellowy-orange, my reply is that it is the experience of seeing yellowy-orange that is being described, and this experience is not a yellowy-orange

[51]Cf.Fodor. "Special Sciences, or The Disunity of Science as a Working Hypothesis," in NB I, 121-123.

> something. So to say that a brain process cannot in fact be yellowy orange is not to say that a brain process cannot in fact be the experience of having a yellow-orange after-image. There is, in a sense, no such thing as an after-image or a sense datum, though there is such a thing as the experience of having an image, and this experience is described indirectly in material object language, not in phenomenal language, for there is no such thing.[52]

So the identity thesis does not speak of the identities of intentional objects or sense data with the brain processes. Rather mental events like the experience of having an image are identified with brain events.

For the type physicalists, the event identities are nomologically necessary. That is, every event which consists of x's satisfying a psychological property is identical with an event which consists in *x's* satisfaction of a neurological property. Yet, these event identities are logically contingent. These are discovered through empirical investigations. Hence like any other scientific thesis they are refutable in the light of evidence to the contrary. Making use of Frege's distinction between sense and reference, the identity theorist argues that the sense of the psychological kind predicate and that of neurological kind predicate differ; yet both alike refer to the neural states which are experiences, just like the expressions 'morning star' and 'evening star, refer to the planet Mercury.[53] Therefore, identity theory does not imply that whatever is true of mental states is true of neural states nor vice versa. The statements ascribing mental properties and those ascribing neural properties would have meant the same if both the statements are necessarily equivalent. But they are not . First of all, the mental state ascriptions and the neural state ascriptions are verified differently and hence differ in meaning. Secondly, one can fessert a statement about a psychological state without any knowledge of the corresponding neurological state. Thirdly, it is perfectly conceivable that one may have a mental state, say the occurrence of pain without corresponding a neural state, say the C-fibre firing. Because of the above reasons, it is argued that the

[52]J.J.C. Smart, "Sensations and brain processes" in C.V. Borst. The Mind/Brain *Identity Theory*. 61.

[53]Cf. Herbert Feigl, "Mind-body, not a pseudo-problem", in Borst, ed., The *Mind/Brain Identity Theory,* 38.

identity thesis is not a logical truth, but a contingent truth, like the scientific hypothesis, say 'lightning is a motion of electric charges'. Since the identity thesis does not state any logical truths, there is no contradiction in the statement 'pain is not C-fibre firing'. Those who consider identity thesis to be a logical truth think that they can be dismissed purely on logical grounds. The identity thesis cannot be taken as a logical truth; and hence it cannot be dismissed purely on logical grounds. Some critics of the identity thesis take it to be a logical truth because of their failure to distinguish between the 'is' of composition and the 'is' of definition. The statement 'A square is an equilateral rectangle' expresses definitional identity. It expresses a necessary truth. 'His table is an old packing case* is a statement of compositional identity. There is no logically necessary or conceptual relation between 'table' and 'packing case' for something can be a packing case without being a table and *vice versa.* So the statement is only a contingent identity where the expressions 'table' and 'packing case' happen to refer to the same object. This can be established only through observations. The mind-brain identity thesis is a case of compositional identity. It lays down a contingent truth which is to be established or dismissed purely on the basis of scientific investigation and not on logical grounds.[54]

2.3.2 Token physicalism

Unlike type physicalism which applies to mental universals, token physicalism or the token-token identity thesis is concerned with mental particulars. According to this doctrine, each particular mental event is identical with some physical event or other. For example, if Jones' pain at t is a mental token and if Jones' C-fibre firing at *t* is a physical event, then 'Jones' pain at *t* is identical with Jones' C-fibre firing at *V* is a statement of token identity. Thus the token identity theory states that a mental event and physical event occurring in one and same person at the same time are identical. The meaning of the word 'event' plays a vital role in understanding this theory. An event in the ordinary sense of the term means an occurrence involving a change in the condition of the world.

[54]Cf. U.T. Place. "Is Consciousness a brain process?" in Borst, ed.. *The Mind/Brain Identity Theory.* 42-45.

However, token physicalists construe an event in a broader sense: any instance or realisation of a state at a time without specifying any change associated with it. Hence events are taken to mean unrepeatable dated individuals.

Suppose the psychological character of any event is identified with some aspect of its physiological character as type physicalists maintain. Then type physicalism entails token physicalism. However, it may be noted that token physicalism does not entail type physicalism as it is committed only to the minimal view that any mental event is identical with some physical event or other. Consequently, events belonging to a given mental type could be identical with heterogeneous physical events.

A powerful argument for the token identity thesis has been advanced by Donald Davidson.[55] According to him, events are classified as mental or physical on the basis of their description. An event is mental if and only if it has a mental description, one which contains at least a mental idiom essentially. A physical event is one which has a description involving a physical vocabulary essentially. These diverse descriptions suggest that there are two domains; one mental and the other physical. The laws are description dependant. Hence the laws of the mental pertain to the mental realm and the laws of the physical hold only in the physical domain. The causal laws pertain only to the physical domain; within the physical domain an event is explained by appealing to a causal law that connect it with other events and conditions that are physically described. The constitutive principle that governs the mental domain is the ideal of rationality. It requires that the various beliefs, desires and intentions of the agent must be consistent and coherent.. Because of the disparity between mental and physical descriptions, there are no lawful causal relation between the mental events and the physical events. The reason is that causal laws are applicable only to the physical events. But we know that there are causal relations between the events described as mental and the events described as physical. In the case of intentional human action, for example, the mental events cause the physical events. Similarly mental

[55]Davidson, "Mental Events," in NB I, 107-19.

events such as perceptual beliefs are produced by certain physical events. Davidson argues that the singular statement of causal relation between a mental event and a physical event does not instantiate deterministic causal laws on the basis of which mental events can be predicted and explained. The thesis that there are no causal laws linking the mental and the physical properties is known as psychophysical anomalism.

On the basis of the causal interaction between the mental and the physical and the principle of psychophysical anomalism, argues Davidson, it is possible to establish that the mental events are identical with physical events. Two physically described events related as cause and effect instantiate a causal law. In accordance with anomalism of the mental, though there exists a causal relation between the mental and the. physical, it does not instantiate a causal law, for the events belong to two different descriptions. However, the existence of a causal relation between two heteronomous events shows that the causal relation between them instantiates a causal law under proper description. If the mental event m caused a physical event p, then there is a strict causal law which *m* and *p* instantiate. But we know that the causal laws hold only among physical events. So if the mental event m falls under a physical law, then it has a physical description, which means m is identical with a physical event.[56]

A causal law relates two distinct kinds of predicate expressing physical properties. So does it not follow that a mental event which has a physical description has certain physical properties and that the predicates expressing the mental properties and the kind predicates expressing physical properties are co-extensive? If so, this could mean that mental events of a certain type are correlated with physical events of some kind. But Davidson does not accept this conclusion. He argues that "it is possible (and typical) to know of the singular causal relation

[56]Davidson concedes that, according to this argument, only those mental events which enter into causal interaction with physical events are shown to be identical with physical events. The argument does not touch mental events if there are any which do not at all enter into causal relation with the physical. To show that every mental event is a physical event, it is sufficient to show that any mental event is a member of the causal chain linked to a physical event.

without knowing the law or the relevant descriptions".[57] It is possible to know that a mental event is identical with a physical event without knowing which *kind* of physical event it is. In other words, we are not able to find the unique physical description of a mental event that brings it under a causal law. Mental characteristics are in some sense supervinient or dependent upon physical characteristics. But this does not mean that the mental characteristics can be lawfully reduced to the physical.

Fodor, another philosopher committed to token physicalism argues that in spite of the fact that a psychological event is identical with a neurological event, it is unlikely that the kind predicates of psychology are co extensive with kind predicates of neurobiology.[58] Even if there are such co-extensions, they cannot be lawful. They turn out to be only a matter of contingent fact. We can undoubtedly imagine a world in which every psychological event is paired with some neurological event or other but the psychological events of the same kind are sometimes paired with neurological events of different kinds. This requires, of course, that type distinct neurological events must be identical in respect of whatever properties are relevant for type identification in psychology. What corresponds to kind predicates in psychology may be heterogeneous and unsystematic disjunctions of kind predicates in neurobiology (or physics). Hence a given type of mental events could fall under different physical laws. As a result mental kinds cannot be correlated with physical kinds, though each mental event is identical with some kind of physical event or other.[59]

Richard Boyd explains that there could be different physical mechanisms responsible for the realisation of a given mental kind (type) by invoking the notion of *plasticity*. "By plasticity of a type of event, state or process", Boyd means "its capacity to be realised in more than one

[57]"Mental Eyents," 117-118.

[58]Fodor, "Special Sciences, or The Disunity of Science as a Working Hypothesis," 125.

[59]Cf. "Special Sciences. or The Disunity of Science as a Working Hypothesis," 124-129.

way".[60] Two factors that go into the definition of a given type of event are its configuration and its composition. By configuration of an event Boyd means its form or structural aspects, and by its composition the causal factors or the kind of substance that constitute it. Plasticity of a type-event can be understood either with reference to composition or configuration. Consequently. there are two kinds of plasticity: configurational and compositional. The configurational plasticity of a type of event means that "its possible token realisations differ in the configuration or arrangement of their constituent parts, events, substances, or causal factors".[61] Smelting of iron for example, is an instance of the type of event that has configurational plasticity since its various tokens may realise different geometrical arrangements. However, it has minimal compositional plasticity since all tokens of this type of event are realised only in iron. The compositional plasticity of a type of event, means that its possible token realisations differ in the sorts substances that constitute them. If there are types of events that are entirely configurational, then such events, according to Boyd, have maximal compositional plasticity.

According to Boyd, there is an important class of states or events, namely the computational states of a computer, that has unlimited compositional plasticity but relatively little configurational plasticity. The configurations of the various computational states are entirely determined by the machine language programs, which would specify what would be the arrangement of the causal factors for the realization of a type of computational state, say e^x for the input x - 9. As this computational state type can be realised by mechanical, electronic or hydraulic computers, it possesses a high degree of compositional plasticity. In Boyd's opinion, mental states are analogous to the computational states. What is essential to various mental states is the "information processing roles" they play with respect to the animal's nervous system and body in general, and not the mechanism by which they are realised. These various

[60]Richard Boyd, "Materialism Without Reductionism: What Physicalism Does Not Entail" in MB I. 87.

[61]lbid., 88.

types of "functional" states of the organism are purely configurational and hence they possess maximal compositional plasticity. This means that though various mental state types are neurologically realised, there could be non-neural or non-physiological realisations of them. It is logically possible that they could even be non-physically realised. The individual events of a mental type are realised in various ways. Hence mental types are not identical with physical types. Since an event of a mental type is realisable by some physical event or other belonging to different physical types, one can only speak of token identities. In short, the argument is that since mental states are type identified on the basis of their configurationality, a given mental state type which is purely configurational has a multiple realisability. That means mental states cannot be type identified on the basis of the nature of the physical factors that compose them. Since a given mental state type is realised by some physical type or other, we can only say that a particular mental token is identical with some particular physical token or other, and nothing more.

2.3.3 Objections to physicalism

2.3.3.1 Objections to type physicalism

In this section we shall discuss the various objections to the two versions of physicalism discussed above. Our first concern will be with type physicalism. There are two closely related objections to it. The central theme of these objections is the Cartesian intuition that there is no necessary relation between the mental and the physical, and since the mental can be conceived of independently of the physical, the mental cannot be reduced to the physical. The first objection says that a given mental state type can be realised in more than one way. So given any mental state type, there is no single corresponding physical state type to which the former can be reduced. We shall call this the argument from the multiple realisability of the mental. The second objection says that what is essential to a given type of mental state is its phenomenal or qualitative aspect. It is possible that the qualitative aspects of the mental states occur without the physical state type with which it is identified. We shall call it the qualia argument against physicalism. Both the objections

take it for granted that for the type physicalists, the relation between the mental and the physical is necessary. And the objection is raised from the view that there exists only a contingent relation between the mental and the physical.

2.3.3.1.1 The multiple realisability argument

The argument runs as follows. There are possible worlds where creatures appear and behave exactly like us humans. When pricked with pins for example, these creatures make loud noises and report to us that they are feeling pain and try to keep the afflicted part of the body away from the pricking pins. Such intentional behaviour is sufficient for attributing mental properties to such creatures. However, it is possible that their internal processes are radically different in kind from ours. If type physicalism is true we cannot attribute psychological predicates to these creatures because on this thesis no organism that differed in physical constitution could instantiate mental properties. This seems to be quite counter intuitive since such creatures could be attributed with mental properties at least on the basis of their intentional behaviour.

The objection stems not only from the intuition that a given mental state type could be realised by means of physically diverse mechanisms in different species but also from the view that the members of the one and the same species could realise a given mental state type by means of a variety of physiological means. As Fodor puts it,

> it is entirely possible that the nervous system of higher organisms characteristically achieves a given psychological end by a wide variety of neurological means. It is also possible that the given neurological structures subserve many different psychological functions at different times, depending upon the character of the activities in which the organism is engaged. In either event, the attempt to pair neurological structures with psychological functions could expect only limited success".[62]

Such intuitions as the above have very important consequences for psychology. The psychological laws which employ mental type laws as

[62]Fodor, "Special Sciences, or the Disunity of Science as A working Hypothesis", 125.

theoretical laws cannot be reduced to a corresponding neurological law obtainable by replacing the psychological kind predicates with neurological kind predicates. As a result, there cannot be any neurological laws isomorphic with the psychological laws. That is to say, there could be psychologically relevant generalisations of certain events whose physiological descriptions have nothing in common. The truth of such psychological generalisations does not depend upon the fact that their physical descriptions have something in common.

The identification of psychological types with certain neurological types implies that only creatures with a specific neurological organisation comes under the purview of psychological theories. A psychological theory, however, argues Fodor, must be sufficiently general, to subsume all sorts of entities and systems possessing psychological properties. There must be a level of abstraction at which the physiological differences of the systems in which the psychological properties inhere do not matter at all for psychology. There are real and perhaps also other possible information processing systems that share our psychology but do not share our physiological organisation. The psychological theories based on type physicalism fail to take into account all such systems. As type physicalism restricts the natural domain of psychological theorising, a theory based upon it would not be able to state all the interesting psychological generalisations that there are to state.

One may try to defend type physicalism against the argument from multiple realisability by saying that a given mental type is identified not with a single physical type but with disjunctions of such physical types. On this view, identity statements are of the form Tain = Brain state B_1 or Brain state B_2 or . . . Brain state B_n'. The difficulty with this strategy lies in the fact that the disjunction could be infinitely long and the disjuncts could be heterogeneous types. It is doubtful if mental types could be identified with such open ended disjunctions. It is highly unlikely that the heterogeneous disjuncts have any genuine physical property in common with which the mental property can be identified. It follows from this that mental types are not unitary ones. That is, a given mental state type, say pain, may not have anything physiological in common by virtue of which it is called pain. Moreover, there is no criterion for

the inclusion or the exclusion of any physical properties from the infinitely long disjunctions. So any physical property can be included in it. Similarly any physical type which is a possible member of the disjunctive physical types with which a given mental state is identified can occur in a different disjunction that defines a totally different mental type. It has a very odd consequence: mental types collapse into one another. This, of course, is not happy news for the type-identity theorist.[63]

2.3.3.1.2 The qualia argument against physicalism

The Cartesian idea that the qualitative aspects or the phenomenological characteristics of mental states are essential to and definitive of them forms the foundation of this argument against type physicalism. Various versions of this argument are found in the literature. I shall be concerned only with two of them, namely those of Kripke[64] and Nagel.[65]

2.3.3.1.2.1 Kripke's modal argument

Kripke's objections to type physicalism spring from his theory of modality and his general semantic thesis. He argues that natural kind terms like pain, water, cold, heat etc. are rigid designators. That is, they refer to the same kinds of entities in all possible worlds in which they exist. The natural kinds have certain essential properties which are not description dependent but belong to the very nature of the substance itself. For example, it is an essential property of a water molecule that

[63]Cf. Cynthia Macdonald, Mind-body *Identity Theories* (London: Routledge, 1992). 33-39.

[64]See Kripke "Naming and Necessity," in Semantics *of Natural Language,* ed. Donald Davidson and Gilbert Harman (Dordrecht: D. Reidel, 1972), 334-42; Kripke, "Identity and Necessity," in *Causal Theories of Mind: Action, Knowledge, Memory, Perception, and Reference,* ed. Steven Davis (Berlin, New York: de Gruyter, 1983) 333-36.

[65]Thomas Nagel 'What Is It Like to Be a Batr in *The Mind's I: Fantasies and Reflections on Self and Soul,* ed., D.R. Hofstadter and D.C Dennet (New York: Basic Books, 1981), 391-403. A closely related version of the argument is found in Frank Jackson "Epiphenomenal Qualia" *The Philosophical Quarterly 32* (1982): 127-36.

it contains one Oxygen atom and two atoms of Hydrogen. Like 'water' 'H_2O' is also a rigid designator. So if the statement 'Water = H_2O' is true, then it is necessarily true, because it refers to the same kind of thing in the actual as well as other possible worlds where 'water' or 'H_2O' has reference. Though the statement expresses a necessary truth, we do not arrive at it by an a *priori* analysis of the meaning of the term 'water' or 'H_2O' but *a posteriori* by means of scientific investigation. This means that on Kripke's account apriority and necessity do not coincide. There could be statements which express a necessary truth which are determined *a posteriori*. That is we cannot say that a statement is contingent by showing that its truth is arrived a *posteriori*.

Though the identity statement 'Water = H_2O' is necessary if true, we have very strong intuition that it is a contingent statement. Hence this intuition has to be successfully explained away. This, according to Kripke can be done by finding a genuinely contingent identity statement by replacing one or more of the rigid designators of the necessary statement by definite descriptions in sensible properties. In the case of the necessary statement, 'Water = H_2O' one of the corresponding contingent statement is: 'The cooling, tasteless, odourless, wetting liquid that quenches thirst = H_2O'. It is contingent because the definite description in terms of sensible properties is not a rigid designator. So it is conceivable that there is a world in which the definite description 'The cooling, tasteless . . . ' does not refer to H_2O but some other liquid say xyz. The apparent contingency of the identity statement 'Water' = H_2O' according to Kripke results from confusing the meaning of this statement with that of the corresponding genuinely contingent statement.

For Kripke the mental state terms are natural kind terms and hence rigid designators. Similarly the neural kind terms too are rigid designators. So the type identity theorists make *a posteriori* necessary statements. For example, 'Pain - C-fibre firing* is necessary if true. This means pain cannot be felt in a world in which C-fibre firing does not occur. However, we have a very strong philosophical intuition that pain is only contingently identical with C-fibre firing. For there could be a possible world, call it W_1, where pains are felt the way they are in the actual world without there being any C-fibre firing. Similarly, there

could be another world W_2 where there is C-fibre firing, but no feeling of pain associated with it. But Kripke argues that the kind of strategy with which we explain away the contingency of 'Water = H_2O' cannot be of any use here. Because in the statement 'Pain = C-fibre firing' it is not possible to replace the rigid designator pain with an expression in qualitative terms and get a qualitatively analogous statement which is contingent. That is, the possible worlds W_1 and W_2 are inconceivable if the identity statement is true. Since pain is identical with the C-fibre firing, the events in W_1 having the sensible property of pain which is not C-fibre firing is not pain. On the other hand, the C-fibre firing in W_2 is pain though it does not feel like pain in the actual world. The mind-brain identity theory leads to these kinds of absurdities and contradictions because at least some mental states have as their essential properties the way they feel. Thus sensible qualities of pain are essential to and definitive of it. In any possible world something that feels like pain is pain, and no pain fails to feel painful. There cannot be a world like W_1 where something feels like pain but is not pain for if anything feels like pain, then necessarily, it is pain. And there cannot be world like W_2 where pain fails to feel painful because in any possible world a natural phenomenon that is pain must feel like pain. So the type-identity theorists fail to explain away the contingency associated with the if-true-necessary mind brain identity statements. If contingency is not explained away, the Cartesian intuitions cited above would entail that pains are distinct from C-fibre firing. Consequently, the type identity theorist would land in a contradiction because he in effect argues that a mental state is identical with a non-mental state.

Richard Boyd argues that the illusion of the contingency of the statement Tain = C-fibre firing' can be successfully explained away by getting a contingent qualitatively analogous statement by replacing the rigid designator 'C-fibre firing' with a purely qualitative description that does not designate rigidly. This means there could be a possible world where there are nerve fibres which are not C-fibres but look exactly like C-fibres. It is possible that the real C-fibres in such a world do not look like C-fibres in the actual world. The firing of these C-fibre-looking nerve cells would result in the belief that C-fibres fire

without pain being felt. Similarly, the real C-fibre may fire in such a world without being detected in the ordinary way which would give the impression that pain is being felt without C-fibres being fired.[66] This strategy, undoubtedly succeeds in explaining the illusion of contingency. However, it fails to appreciate the Kripke's Cartesian intuition that pain might exist or occur without any physical type whatsoever. It is definitive of pain that it is felt in a certain way. But the essence of C-fibre firing does not consists in its being felt in a certain way. Hence pain and C-fibre firing are distinct. This objection from the Cartesian intuition is not met by arguing that pain could be identical with a physical type other than the one it is identified with. Kripke's objection to identity theorists is that mental states could occur without the occurrence of any physical states.[67]

2.3.3.1.2.2 Nagel's epistemological argument

Nagel's objection against type physicalism is very much in line with Kripke's because like Kripke he is committed to the view that phenomenological properties are essential at least to some mental states. The difference between the two lies in the fact that while the former raises a logical argument, the latter develops an epistemological version of it. However, it must be noted that as far as qualia arguments are concerned, it is very difficult to keep logic and epistemology apart from each other. Nagel's main objection against type physicalism is that it does not take into account the element of consciousness involved in the conceptions of mind. According to him, "an organism has conscious mental states if and only if there is something that it is like to *be* that organism - something it is like *for* the organism".[68] This aspect of consciousness essential to our mental life is characterised by Nagel as "the subjective character of experience". Every such subjective phenomenon is essentially connected with a single point of view. By the subjective,

[66]Boyd, "Materialism without Reductionism: What Physicalism Does Not Entail," 83-85.

[67]Cf. Cynthia llacdonald, *Mind-Body Identity Theories*. 32-33.

[68]Nagel, "What Is It Like to Be a Bat?" 392,

single or particular point of view, Nagel does not mean an individual's point of view, it is a species specific point of view and in this sense, the subjective character of experience or the single point of view is a *type* of its own as it has various instantiations within the same species. Nagel grants that there are many such species specific points of view. Just as there is something it is like to be humans, there is also something it is like to be bats or martians. In addition to various species specific (or particular) points of view, there is an objective point of view. The objective point of view is something shared by different points of view. Yet it is independent of the subjective point of view. According to Nagel, the subjective or species specific point of view cannot be translated into the objective point of view because the objective and the species-specific point of view are discrete. So only humans can know what is it like to be humans and similarly only martians can know what it is like to be martians. And their subjective experiences cannot be translated into the objective vocabulary which is by assumption common to both. Hence there is no way of explaining to a martian what it is like to be a human and vice versa. Nagel explains it with the example of bats. A bat's perception of external objects is by means of reflections from objects, of its own high frequency sound signals and it is not anything like the visual experience we humans possess as far as subjective conscious content is concerned. Assume that bats have certain neurological processes correlated or identical with perceptual processes. These neurological processes cam be explained and described in the objective vocabulary. But no idea of "the internal neurophysiological constitution of a bat" can provide us with the subjective point of view: What it is like to be a bat. The analogy of bats, argues Nagel, has its bearing upon the mind-body problem:

> For if the facts of experience - facts about what it is like *for* the experiencing organism - are accessible only from our point of view, then it is a mystery how the true character of experiences could be revealed in the physical operation of that organism. The latter is a domain of objective facts par excellence - the kind that can be observed and understood from many points of view and by individuals with differing perceptual systems.[69]

[69]"What Is It Like to Be a Bat?" 397.

The point is that by knowing the physical process of the brain, we cannot come to know the real nature of the subjective or species specific point of view. Nagel does not reject the possibility that there are physical processes responsible for the production of mental processes, but suggests that by knowing these physical processes we cannot come to know the conscious content of our experiences. It is possible that the mental states are identical with the physical states but "[w]e do not know which physical states and events they are, . . ." [70] So the mental types cannot be identified with physical types. According to Nagel, any identification make sense only within a conceptual or theoretical framework — a comprehensive framework which includes the concept of the things to be identified. But in the case of psychological identification such a comprehensive framework has not yet dawned upon us. As a result, we do not as yet know how the mental and physical terms refer to the same thing. So the usual analogies of theoretical identification in other fields does not throw any light upon the psycho-physical identification.

2.3.3.2 Type physicalism reinstated/reestablished

The above objections to type physicalism are very detrimental to the development of psychology within the framework of materialistic monism. Therefore a psychologist committed to materialistic monism must refute these objections to type physicalism. Most of the opponents of type physicalism take this doctrine as an attempt to define mental states in terms of certain physical states and as a result, they construe it as a reductionist analysis of the mental. Some of the type physicalists themselves may be responsible for such a construal, for they too sometimes give the impression that they are engaged in the definition of the mental. Type physicalism is not initially proposed as definition of the mind, but as a scientific thesis which could be verified or falsified in the course of the development of science. In what follows I shall evolve a strategy for defending a version of type physicalism against the objections raised above.

[70]"What Is It Like to Be a Bat?" 400.

It must be admitted that if type physicalism is engaged in a reductive analysis of the mental, such analysis must be true under all possible circumstances. Critics of type physicalism are convinced of this fact. That is, a definition of the mental must hold in all possible circumstances and if it can be shown that we can conceive a world where the definition does not hold, then obviously the reductive analysis fails. For example, Nagel who provides an epistemological version of the qualia argument says: "It [the qualitative character of the experience] is not captured by any of the familiar, recently devised reductive analysis of the mental, for all of them are *logically compatible with its absence"* [71]. I agree with the opponents of type physicalism that if the reductive analysis fails to capture what is essential to the mind, it ceases to be a definition of mind. A definition of mind is almost like a logical truth. Hence there should not be a world where this does not hold.

My defence of type physicalism is based on the distinction between two notions of possibility: logical and nomological. The above objections against type physicalism are the result of mistaking the latter for the former. The two notions of possibility may be clarified with the notion of possible worlds. There are logically possible worlds and nomologically possible worlds. Roughly, a logically possible world is one where the principles of logic are not violated. Usually, all those worlds which are conceivable are taken as logically possible. A nomologically possible world, on the other hand, is one where the laws of nature hold. As far as we humans, the inhabitants of the actual world, are concerned, all those worlds where the laws of our universe hold sway are nomologically possible. There may be other worlds with sets of laws that are radically different from ours. Such worlds are nomologically possible for the inhabitants of those worlds. But from our point of view, they are just logically possible worlds. A nomologically possible world does not violate any of the principles of logic. Hence the set of nomologically possible worlds is a subset of the set of all logically possible worlds. With the distinction between logical and nomological possibilities the type physicalist can meet

[71]"What is It Like to Be a Bat?" 392. Emphasis added.

the objections raised above.

The type physicalists' reply to the objection from the multiple realizability of the mental is that it steins from the consideration of various logical possibilities. The type physicalist can concede to his critics the logical possibility that a given mental type will be realised by certain physical types other than one that realises it among the humans. But the type-type identity thesis is not put forward as a logical truth, one that is true across all possible worlds. Rather, it is a scientific thesis with certain empirical commitments. Therefore, it is not refutable by arguing that the existence of possible worlds where such type-type identities do not hold can be conceived. Science never deals with the set of all possibilities. It is not concerned as to whether a given truth holds across all possible worlds. Its concern is with the set of nomological possibilities. The type physicalist makes only a minimal claim: given the laws of our universe, it turns out that each mental type is identical with, or better, is realised by some physical type. In other words, given the laws of nature, such as *like causes produce like effects,* it is highly unlikely that a given mental type can occur in any of the nomologically possible worlds, without the corresponding physical type. The function of psychology is to specify the laws that bind our psychological states and those of other species that are similar to ours in the relevant respects. We can attribute psychological properties to the members of the other species only if their nervous system resembles ours in the relevant respects. Obviously, our everyday ascriptions of mental properties do not depend upon the observation of any similarities in the central nervous system of the humans and those other creatures. However, such ascriptions are made on the ground that the behaviour of those creatures resemble ours. The intuition behind such ascriptions is that like causes produce like effects.

The above strategy can meet Kripke's qualia argument against type physicalism. His objection consists in showing that there is no way to explain away the illusion of contingency associated with the if-true-necessary mind-body identity statements. Here again our strategy is to say that the if-true-necessary statements are not true across all possible worlds. Therefore, they are logically contingent. The

if-true-necessary statements are true only in those worlds which obey the laws of nature. That is to say they are necessary only nomologically and not logically. There are possible worlds where the laws of nature do not hold. In such a world, a qualitative mental state, say pain may be realised non-physiologically and perhaps even non-physically. That, is to say, the contingency, associated with the if-true-necessary mind-brain identity statements can be explained easily: the if-true-necessary identity statements are nomologically necessary but logically contingent. But Kripke would object: Pain is a natural kind; so is C-fibre stimulation. Hence the predicate 'pain' and 'C-fibre firing' are rigid designators. And the law of identity is a logical principle obeyed in all possible worlds. Therefore the statement 'Pain = C-fibre stimulation' is true across all possible worlds and hence logically necessary. But this objection fails to take note of the meaning of the natural kind terms. The natural kind predicates are those which occur in the laws of nature. They refer to entities with a certain properties that are naturally given. In a world where the laws of nature do not hold, the meaning of natural kind predicates too differs. Hence the natural kind predicates in these worlds do not have the same kind of referents as they have in our world. Consequently, the statement 'Pain = C-fibre stimulation' may not be true at all in such possible worlds. That is to say it is logically contingent.[72]

Nagel's epistemological argument against type physicalism cannot be met in the same way. The crux of his argument is the distinction between the subjective or species-specific point of view and the species independent or the objective point of view. The latter seems to be the point of view of an omniscient Cod. This distinction is modeled after or perhaps is a version of the distinction between ideas of primary qualities and ideas of secondary qualities. On Nagel's account, it seems, what it is

[72]For Kripke. it seems that the expressions 'nomologically possible worlds* and 'logically possible worlds' would be co-extensive. Kripke is a de re modal actualist who takes the possible worlds to be the various states of the actual concrete world we inhabit. Hence, the laws of our universe must hold other possible worlds as well. This is precisely the reason why he takes natural kinds to be rigid designators. But *de re* modal actualism conceived in this manner has an odd consequence: It cannot distinguish between laws of logic and laws of nature.

like to be a human 'being or what it is like to be a bat or martian is determined by the secondary qualities of the organism (or the species) in question. The secondary qualities are species-specific. On the other hand, ideas of primary qualities are common to all species and there are objective facts corresponding to them. These facts can be approached from any of the various points of view. Nagel, for example, says that bats' "brains are designed to correlate the outgoing impulses with the subsequent echoes, and the information thus acquired enables bats to make precise discriminations of *distance, size, shape, motion and texture* comparable to those we make by vision".[73] The primary qualities are species-independent and their concepts or ideas are common to all species. But the knowledge of the objective facts does not provide us the knowledge of species-specific points of view. There may be neural processes and states responsible for the realisation of certain subjective experiences which in part constitute what it is like to be humans. But the knowledge of these objective facts does not provide us with the knowledge of what it is to like to have those experiences. For this one has to undergo those very experiences.

Our difficulty in knowing what it is like to have a subjective point of view from our study of the objective facts that realises it, arises because we approach the issue from the wrong side. It is Nagel's assumption that a set of species-specific secondary qualities determine what it is like to be a bat or martian or human, is the root cause of the problem. The assumption is not a plausible one. It is not just the ideas of secondary qualities that constitute what it is like to be humans. Undoubtedly, they form a significant aspect of what it is like to be humans. The ideas of primary qualities too have a role in determining our conscious mental states, or what it is like to be humans. I speak here only of the humans because the ideas of primary qualities that are available to us belong to the humans alone. But do not the martians have primary qualities? They may have primary qualities. But just as their ideas of secondary qualities would vary their ideas of primary qualities

[73]"What Is It Like to Be a Bat?" 394. Emphasis added.

may also vary. As a result, their understanding of the neural processes and our understanding of neural processes that realise human cognitive states could be radically different. For, the science we have is human science which is nothing other than *our* understanding of the nature of the world. Human science may not be anything like martian science.

But Nagel's martians are different from the martians we have just considered. They are attributed the same set of primary qualities that we humans have. They differ from the humans in their secondary qualities. Since the martians work with same objective concepts as we humans have, the martians — why even the bats — are human counterparts. Their point of view is, in fact, a part of the human point of view. In short, Nagel is not speaking of martians and bats but about humans themselves. We attribute human concepts and a cognitive system that is very much like ours to the members of the other species to the extent that they, or better their behaviour patterns, resemble ours in the relevant respects. This would mean that the laws, especially the psychological laws, that are applicable to us, must be applicable to the martians as well.

If the martians are radically different from us humans with a different type of cognitive system altogether, with species specific primary as well as secondary qualities, then it is true that their study of the human neurobiological processes cannot reveal to them what it is like to be humans, for their understanding of those processes would not be anything like ours. Moreover, they cannot say what these processes realise from the human point of view. The situation is not the same with the human physiologist who studies human neurobiological processes. Human neurobiology is a part of human science and, it is part of what it is like to be a human. The so called objective and the so called subjective points of view are accessible to him. The difference between them, for him, is only a matter of degree. Since both the "qualitative" and the "non-qualitative" aspects of human points of view are available to the human physiologist, he is in a unique position to say what the physiological processes are that realise a particular type of mental (qualitative) state. In other words, a mapping from the objective facts to the qualitative (or phenomenal) facts is possible as far as humans are concerned because the knowledge of the objective as well as the subjective

aspects forms part of what it is like to be humans. This is not to say that by knowing the physical processes responsible for the realisation of certain mental states we come to know what it is like to have those experiences. For that one has to undergo these very processes. But the goal of type physicalism is not to provide experiences by the study of the objective facts, but rather to understand the objective facts that nomologically realise these subjective experiences. This is possible because the subjective and the objective are part of one comprehensive species-specific point of view.

If the so called 'objective' and the 'subjective' form part of what it is like to be a human, we have already a comprehensive framework, though of course a species-specific one, which would identify the mental with the physical — a framework which includes the concepts of the things to be identified. This is not to claim that we are absolutely clear about the mental and the physical concepts. There is much more to be done in refining these concepts. This does not mean that the mental concepts will be reduced to the concepts of the physical. The identification of the physical processes that nomologically realise various mental states and processes is not a move towards reduction. A naturalistic and scientific understanding of psychology, as Chomsky notes, does not necessarily result in reduction but in the "eventual unification with the "core" natural sciences". "Large-scale reduction" he says, "is rare in the history of sciences. Commonly the more fundamental' science has to undergo radical revision for unification to proceed".[74] If this is the way science proceeds, there is no reason to dismiss type physicalism on *a priori* grounds. It can be refuted only on the basis of strong empirical evidence to the contrary. This suggests that type physicalism can be retained as a working hypothesis for pursuing scientific activity. It in fact tells us where to look for evidence, in order to achieve this unification. An inquiry in this line could result in the discovery of a new set of 'psycho-neural natural kinds*. This may require that neurobiology and psychology undergo radical revision and they may come up with new

[74]Chomsky "Language and Nature." 3.

taxonomies of neurobiologlcal as well as psychological kind terms. If we take seriously the logical possibility of multiple realizability in the scientific study of mind, that would be an impediment for the unification of psychology with natural sciences. For the possibility of heterogeneous realisation of mental types would not help us identify the candidates for the unification of psychological kinds with the physical types because each psychological type can be realised by infinitely many and heterogeneous physical types.

2.3.3.3 Objections to token physicalism

Of the two objections against type physicalism, neither the argument from multiple realisability nor any versions thereof can be raised against token physicalism for it grants in principle the multiple realisability of the mental. However, a version of Kripke's qualia argument could be raised against token physicalism. Events whether mental or physical are dated individuals. Since Kripke grants the transworld identity of the individuals, if a mental event is identical with a physical event, then it must be true in all possible worlds. So a statement identifying a mental event with a physical event, say "Jones" pain at *t* is Jones' firing of C-fibre C at *t'* is necessary if true. But we have a very strong philosophical intuition that Jones' pain at *t* is essentially a pain event, i.e., it could not have occurred without possessing its experiential character but is not essentially a physical or a neural event. We have similar intuitions regarding Jones' firing of C-fibre C at t: it could have occurred without his feeling of pain. The truth of these two intuitions would entail that the mental event. and the physical event in questions are distinct. Not to fall back upon dualism, the token-token identity theorist has to account for the intuitions of contingency without jeopardising the necessity of the statements identifying the mental and the physical events.

There are two ways of meeting this objection. The first is to maintain that while the events identified are necessarily self-identical, the mental event, Jones' pain at *t* is essentially a mental event and it could have occurred without there being his firing of C-fibre C at t. The second strategy approaches the problem from the other side. It argues that

the physical event Jones' firing of C-fibre C at *t* could have occurred without its pain experiential character, though of course Jones' pain at t, identified with his firing of C-fibre C at t, is necessarily self-identical. The first method of explaining the intuition of contingency is adopted by Richard Boyd and Colin MacGinn. The basis of Boyd's strategy is to individuate mental events in terms of their formal properties. A token mental state, for Boyd, is purely configurational. The very same formal or configurational properties could be realised by a molecular motion other than the one that realises it in the actual world. In short, the argument is that a given token mental state could have multiple realisability.[75] MacGinn makes a similar proposal. Let *a* be the name of a token mental state and Q, the property of being identical with a token brain state. Token physicalism, in MacGinn's opinion, concedes the possibility that there exists a token mental state indistinguishable from a while lacking Q. That is, a mental event in the actual world identified with a physical event is necessarily self-identical. Yet there could exist a world where very the same qualitative character could be realised by a different physical state. MacGinn illustrates this as follows:

> In this respect, token mental states are like particular tables: they can be (and be essentially) of a type such that other tokens of that type fail to have properties which they, *qua* tokens necessarilyhave.[76]

The analogy reveals that Macginn like Boyd understands a mental event in terms of its formal aspects. But this method fails to meet Kripke's objection against token physicalism. We know that events are dated individuals. But both Boyd and MacGinn individuate mental events in terms of their formal aspects. The form of a particular event as abstracted from it ceases to be an individual event and turns out to be a universal having any number of instances. This means we have fallen back upon the idea that events of a given mental type could be realised by various physical means.

[75]Cf. Boyd, "Materialism without Reductionism: What Physicalism Does Not Entail," 99.

[76]Colin MacGinn, "Anomalous Monism and Kripke's Cartesian Intuitions." in NB I, 157.

the physical event Jones, firing of C-fibre C_1 at *t* could have occurred without its pain experiential character, though of course Jones' pain at t, identified with his firing of C-fibre C_1 at *t,* is necessarily self-identical. The first method of explaining the intuition of contingency is adopted by Richard Boyd and Colin MacGinn. The basis of Boyd's strategy is to individuate mental events in terms of their formal properties. A token mental state, for Boyd, is purely configurational. The very same formal or configurational properties could be realised by a molecular motion other than the one that realises it in the actual world. In short, the argument is that a given token mental state could have multiple realisability.[75] MacGinn makes a similar proposal. Let *a* be the name of a token mental state and Q, the property of being identical with a token brain state. Token physicalism, in MacGinn's opinion, concedes the possibility that there exists a token mental state indistinguishable from a while lacking Q. That is, a mental event in the actual world identified with a physical event is necessarily self-identical. Yet there could exist a world where very the same qualitative character could be realised by a different physical state. MacGinn illustrates this as follows:

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[75]Cf. Boyd, "Materialism without Reductionism: What Physicalism Does Not Entail," 99.

[76]Colin MacGinn, "Anomalous Monism and Kripke's Cartesian Intuitions," in NB I. 157.

The second Of the two strategies for meeting Kripke's objections mentioned above is developed by Fred Feldman. Here too the concept of event plays the key role and Feldman defines events as concrete individuals which means they are necessarily physical. On this conception of event, it can be shown that a physical event identified with a psychological event could have occurred without being a psychological event. This means that the contingent psycho-physical event identity can be upheld. The contingent psycho-physical event identity thesis, according to Feldman, does not mean that for every psychological event e, there is a physical event e' such that *e* and *e'* are identical and yet there is a possible world in which *e* (or e') is distinct from itself. On the other hand, the thesis says that each mental event is a physical event which is not necessarily a mental event, (i.e., (e) *Me* > *Pe* & ~N *Me;* where N refers to the necessity operator).[77]

For Feldman events are concrete individuals. Hence they are the same in all possible worlds. Yet, a concrete physical event identified with a mental event in the actual world could have existed without being a mental event. Let a be a psychological event, Jones' being amused and b, a physical event, Jones' having stimulated A-fibres identical with *a.* Feldman's argument is that b could have occurred without the occurrence of a. That is, there is a possible world in which Jones' brain could have been in exactly the same state at the same time without his being amused. It means Jones' A-fibre stimulation is essentially a physical event, but not essentially Jones' being amused. Since Jones' being amused is the same event as Jones' having stimulated A-fibres in the actual world, it could be asked how Jones' being amused occur in a world, where Jones is not amused. Feldman replies as follows:

> Being a case of someone's being amused may not be an essential property of that event. It may be a property that the event has in this world, but lacks in other worlds . . . Similarly, if the event *a* is only accidentally a case of someone's being amused, it can just as easily exist in a world in which no one is amused.[78]

[77]Cf. Fred Feldman, "Identity, Necessity, and Events," in NB I, 152.

[78]"Identity, Necessity, and Events," 154.

Feldman's strategy of meeting the objections presents its own difficulties. It assumes that the expression 'accidental property' and "contingent property' are equivalent. Though, of course, the accidental and contingent properties do not fall into exclusive classes, the two expressions are not co-extensive. All contingent properties are not accidental properties. There are non-accidental contingent properties. When an object possesses an accidental property, it means that its possession by the object has taken place at random or by chance. But the non-accidental contingent properties are those whose realisations are in accordance with the laws of nature. They are of course, nomologically necessary but contingent from an absolute point of view, meaning that they are not logically necessary. A contingent matter of fact is one which could be explained with reference to the laws of nature.

Feldman explains Kripke's intuition on the assumption that psycho-physical event identity is an accidental identity. It is clear from his argument that if "the thesis that every psychological event is a physical event, and each such physical event is such that it is only *accidentally* a psychological event, then the identity theory entails that Jones' being amused is only *accidentally* a psychological event. From this we can infer that it is only *accidentally* a case of someone's being amused".[79] Since Feldman wants to establish contingent psycho-physical event identities, it is obvious that he uses the terms 'accidental' and 'contingent' as synonyms. If Jones' brain state could have been in exactly the same state without his being amused, then undoubtedly, his being amused is an accidental property of his brain state. But the accidental psycho-physical event identity theory has unwelcome consequences. Let b_1 , b_2 . . . b_n be Jones' brain events in the actual world, which are accidentally identical with his mental events, m_1 , m^2. . . .m_n respectively. If accidental psycho-physical event identity theory is true, then Jones' brain events b_1, b_2 . . . b_n could have occurred without their being mental events. This means Jones could have existed in a world with

[79]"Identity, Necessity, and Events," 154-55. Emphasis added.

all the same brain events but at the same time having no mental events. I assume that Jones is a man. And it is the possession of a mind (i.e., the occurrence of mental events) that make him a man. Consequently, it is only by accident that Jones is a man. If it is true of one man, Jones, that he is accidentally a human being, then it is true of all humans, that they are humans only by accident. But no one would say that humans are humans only accidentally. Certain molecules and atoms constitute a human being because they are organised in accordance with certain laws of nature. That is to say, it is not an accident but a nomological necessity that we are humans, given the kind of laws followed in our creation.

In what follows I shall outline a way for explaining Kripke's intuition in line with our strategy for explaining the contingency of type-type identity statements. It is based upon the structural view of events which Feldman rejects out right. Events, according to this view, are complex structural entities whose constituents are properties, individuals and times. On this view, two events are identical if and only if they are structures containing the same property, individual and time. The event *e* whose constituents are the individual a, the property F, and the time t, is identical with the event e' made up of the individual b, the property G, and time t_1, if and only if *a* = b, *F* = G, and $t_1 = t_1$. Feldman rejects this view on the ground that it cannot explain how the proposition that someone is amused at t if and only if he has stimulated A-fibres at t is a contingent scientific hypothesis. On the structural view of events, the predicates 'is amused' and 'has stimulated fibres' occurring in the proposition express the same property. Since the predicates expressing the same properties are synonymous, it follows that 'is amused' and 'has stimulated A-fibres' are synonymous. As a result, token-token thesis ceases to be a contingent scientific hypothesis and becomes an analytic truth. The difficulty arises because identity is construed here as definitional identity. The problem can easily be resolved if by identity we mean identity of composition. If Jones is amused, then there are some neural facts responsible for his being amused, namely having stimulated

[80]Cf. "Identity, Necessity, and Events," 149-51.

A-fibres; though the senses of the expressions 'being amused' and 'having stimulated A-fibres' are different, both refer to the same physical processes in the actual world.

When we say that the event of Jones* being amused is the same as his having stimulated A-fibres, we mean that Jones is amused if and only if he has stimulated A-fibres. Here the connective 'if and only if is not to be understood as truth functional expressing a logical equivalence. Rather it is used nomologically; given the laws of nature,the property of being amused is the result of or is realised by the possession of the property of having stimulated A-fibres. In a different world where the laws of nature does not hold, there may be an individual similar to Jones whose has A-fibre stimulation but is not amused. Similarly there could be another logically possible world where a person similar to Jones is amused but has no A-fibre stimulation. The physiologist or the psychologist who is interested in psychophysical event identity thesis as a scientific hypothesis need not be concerned about logical possibilities. They need to be concerned only with the nomological possibilities. The question is: given the laws of nature, is it possible that Jones' A-fibre stimulation can occur without his being amused or could Jones* being amused occur without his A-fibre stimulation? The answer is *no.* If we take only nomologically possible worlds into consideration, type physicalism and token physicalism are equally strong: for each can entail the other. And each can explain the element of contingency associated with identity statements by appealing to the existence of possible worlds that are not nomological in the sense that the actual world is a nomologically possible world.

2.4 Conclusion

One of the main difficulties with the two substance theory of mind is that of explaining the causal interaction between substances of two opposing natures. Various versions of behaviourism tried to overcome this difficulty within the framework of materialistic monism by providing a relational analysis according to which mind is nothing over and above a system of relations between stimuli and responses. In this process it denied the ontological autonomy of the mental and instead conceived it as a

logical construct out of the stimuli and responses. This theory has consequences that are counter intuitive. It could not account for the mental processes (i.e., the causal interaction between various mental states) we *are* aware of. Physicalism tried to overcome the difficulties associated with the two substance theory from a different angle. It identifies mental states with the states of the central nervous . system. Thus it could provide ontological status to the mental. It succeeded in explaining the mental physical causation and the causal interaction among the various mental states. However, it has a serious lacuna. It fails to explain how the mental states identified with the neural states could be about the world. Functionalism, the topic of our discussion in the next chapter successfully combines the positive aspects of both behaviourism and physicalism (central state identity theories) to emerge as the most powerful theory for the study of mind within the framework of materialistic monism. It accounts for the causal interaction among the various mental states and tries to explain how mental states would be related to the physical by granting causal relations among mental states, physical stimuli and behavioural response.

FUNCTIONALIST MODEL OF THE MIND

3.1. INTRODUCTION

Cognitive science aims at a systematic study of the process of acquisition and use of knowledge. This requires us to postulate internal mental states and processes. That is not all. The nature of the internal states and processes has a significant bearing upon the study. If the states and the processes are conceived as intangible and immaterial as the substantial dualist holds, then a scientific .study of them would remain an impossible task. Similarly, the thesis that mental states and processes are nothing other than certain behavioural dispositions or relational structures of stimuli and responses is also at a disadvantageous position as it denies ontological autonomy to mental states. For the type as well as the token physicalists the mental is identical with the physical, and as a result, a realist construal of mental states and processes is at hand. Moreover, it could account for the causal interactions among the various mental states on the one hand, and between the mental and the physical on the other, suggesting that a scientific psychology is indeed a possibility. However, it too has its own lacuna from the' point of view of cognitive psychology. We know that the cognitive mental states have two significant aspects. First, they are related to the world or in other words are about the world. Second, they function as causes of human/animal behaviour. The failure of physicalism to account for these two aspects shows that a cognitive psychology is not possible on the basis of physicalism alone. And the cognitivists have found a suitable model for the study of cognition in functionalism.

Like the other doctrines we discussed in the earlier chapters, functionalism too is concerned with the nature of the mental states. It

attempts to answer the question: what is common to all instances of a type of mental state in virtue of which they are the kind of mental states they are? For example, what is common to various instances of pain that makes them instances of pain? The common or defining characteristic, according to the functionalists, is something functional. The functions of mental states are defined in terms of their causal roles specified with reference to sensory stimuli (inputs), behavioural responses (outputs) and other mental states. This means that functionalism grants the autonomy of the mental states combining within itself their relation to the external world and to human behaviour. A mental state is about the world because it is caused by external stimuli. It produces action because of its causal relation to human behaviour. As it causally interacts with other mental states, it accounts for mental processes. This according to the cognitivists is a powerful model for the study of the human cognitive functions.

The functionalists define mental states in terms of the causal relations which structure stimuli, responses and other states. So what is essential to a mental state is its causal structure or causal role. The causal structures or roles, because of their formal character can be realised by systems made up of a variety of materials and working in an enormous variety of ways. The multiple realizability of causal roles that define mental states raise a very serious question regarding the type identification of mental states. Are the causal roles definitive of mental states type-identified in relation to the physical states that realise them? Depending upon the answers to this question, there are two kinds of functionalism — the Functional Specification Theory (FST) which answers the question in the affirmative and the Functional State Identity Theory (FSIT) which denies that mental states are type identified with reference to the physical states realising the causal roles definitive to them.

3.2 FUNCTIONAL SPECIFICATION THEORY (FST)

The theory identifies mental states with the occupant of a certain causal role. A mental state is the thing that is caused by a stimulus and causes behavioural response or another mental state or both. Suppose the mental state pain is caused by pin pricks, causes utterance of 'ouch' and

another mental State say worry. Let R be the name of this causal role. According to FST, if a neural state is found to be the occupant of the causal role R, then pain is identified with that neural state.

FST is an improvement up on logical behaviourism. Behaviourism, as we noted in the previous chapter could not account for the phenomenal characteristics of the internal mental states and processes. The identification of the internal states with physical states, it is assumed, could not explain how these physical states can have phenomenal characteristics. If it is argued that the internal physical states have irreducible mental as well as physical properties, the argument would end in double aspect theory. FST has its origin in Smart's attempt to overcome this difficulty with his "topic neutral analyses" of the mental. The mental terms are analysed in terms of the causal relations to stimuli that cause mental states. The intrinsic nature of the mental states does not figure at all in the analysis. The underlying idea is that the causal relation is a topic neutral relation. It may exist between an external physical stimulus and an internal physical state or even a soul state. The nature of the internal state is of no consequence here. On this account, the mental state of a person seeing something yellow can be analysed as follows: There is *something going on which is like what is going on when I* have my eyes open, am awake, and there is an orange illuminated in good light in front of me, that is, when I really see an orange."[1] The part of the sentence that is not in italics specifies the stimulus condition. This clause can be replaced by other clauses depending upon the kind of internal states that needs to be analysed.

Smart's topic neutral analysis was supplemented independently by Armstrong and Lewis, incorporating the causal relations among mental states themselves and between mental states and behavioural responses. The concept of a mental state, according to Armstrong, is "the concept of *a state of the person apt for bringing about a certain sort of behaviour"* and *"for being brought about by a certain sort of stimulus".*[2] The possibility

[1]Smart, "Sensations and brain processes." 60.

[2]***A Materialist Theory of Mind*** **(London: Routledge & Kegan Paul, 1968). 82. Emphasis Armstrong's.**

of some mental States occurring without eventuating in behavioural response is retained by construing them as states apt for bringing about behaviour* Lewis too provides a similar analysis. According to him, the concept of the mental state is the concept of a state "apt for being caused in certain ways by stimuli plus other states and apt for combining with other mental states to jointly cause certain behaviour."[3] The functional specification theory laid down by Armstrong and Lewis is an improvement upon logical behaviourism in the sense that they provide, in Nagel's words "causal reworkings" of the behavioural dispositions.

So far mental states are defined only in terms of their causal roles which are topic neutral. The occupant of the causal role may be a soul substance or a material substance. As physicalists, functional specification theorists wants to avoid commitment to dualism. They argue that the nature of the occupants of the causal roles defining mental states is something for science to discover, and the modern science finds that they are neural states. That is, a mental state must be identified with a neural state that occupies the causal role definitive of it. However, the concept of a mental state and the concept of a neural state are not the same. The former could be applied to a non-neural state, provided it occupies the required causal role. Thus a mental state, say pain, which is in fact a neural state could have been a non-neural state. Similarly something that is not pain could have been pain provided it occupied the role in question. This means that the mental state is only contingently identical with the neural state, though of course the neural state which is in fact a mental state is necessarily self-identical.

3.2.1 Psychophysical identification

FST defines mental states as certain causal roles. Since the referents of these causal roles are neural states, the mental states are identified with the neural states. And in Lewis' opinion, this Psychophysical identification is a special case of theoretical

[3]David Lewis. "Mad Pain and Martian Pain." in NB I, 218.

identification. In what follows, we shall briefly state Lewis' arguments for psychophysical identification. According to Lewis, mental state terms like pain, belief, desire, etc. are theoretical terms occurring in a psychological theory. If the mental states are to be identified with the neural states, it must be specified how the mental terms refer to certain neural states. The first step in the identification of the mental states with the neural states is to provide a functional definition of mental state terms occurring in psychological theory. The functional definition of the theoretical terms (mental state terms) consists in specifying the causal role of their referents involving only the logical vocabulary and the non-theoretical terms or 'the other terms' as Lewis calls them. In short, the theoretical terms of psychology are defined purely in terms of a non-mental vocabulary. For the sake of convenient exposition, it is assumed that the non-logical vocabulary of the psychological theory consists entirely of names which fall into three categories, the mental state terms (theoretical terms), stimulus terms (input terms) and response terms (output terms). Lewis' point is that the mental state terms can be defined purely in terms of the other terms.

Let the theoretical terms occurring in the theory be $t_1 \ldots t_n$; input terms $i_1 \ldots t_n$, $i_1 \ldots ik$, *and ouput term* $o_1 \ldots o_m$. The theory can be presented in a long conjunctive sentence called the postulate of the theory.

(1) $T[t_1 \ldots t_n, i_1 \ldots i_k, o_1 \ldots o_m]$.

It says that the entities denoted by the *t* terms stand in certain causal relations to one another and to those denoted *by* the other terms (o-terms). If the t-terms in (1) are replaced by the variables $x_1 \ldots x_n$, we get a formula (2) containing no t-terms:

(2) $T[x_1 \ldots x_n, i_1 \ldots i_k. o_1 \ldots o_m]$.

Any n-tuple of entities satisfying (2) is said to be the realisation of the theory. (2) does not say that the theory is realised but only that such a

[4]Cf. Lewis, "Psychophysical and Theoretical Identification," in NB I, 210-12.

realisation is possible. To say that the theory has at least one realisation. (2) is prefixed with the existential quantifier and we get the formula (3) called the Ramsay sentence or the Ramsay functional correlate of the theory:

$$(3)\ \exists x \ldots x_n [T(x_1 \ldots x_n, i_1 \ldots i_k, o_1 \ldots o_m)].$$

(3) grants the possibility of more than one realisation of the theory. Theoretical identification is possible only if the theory has a unique realisation. To say that the theory has a unique realisation, we use the modified Ramsay sentences of the theory, viz.:

$$(4)\ \exists_1 x_1 \ldots x_n [T(x_1 \ldots x_m, i_1 \ldots ik, o_1 \ldots o_m)].$$

(4) says that the theory has at least one realisation and at most one realisation.

If the theory is realised, then the theoretical terms name some n-tuple or other. This is the meaning postulate or Carnap sentence of the theory obtained by taking (3) as the antecedent and (1) as the consequent, as follows:

$$(5)\ \exists x_1 \ldots x_n [T(x_1 \ldots x_n, i_1 \ldots i_k, o_1 \ldots o_m)].$$
$$T(t_1 \ldots t_n, i_1 \ldots i_k, o_1 \ldots o_m)]$$

(5) leaves open the possibility of multiple realisation of the theory. As a result, the t-terms occurring in the theory may name more than one n-tuple of entities. But according to Lewis, a theory is a proper description and the theoretical terms of a theory must name a unique n-tuple of entities. Lewis explains this idea with (6), the modified Carnap sentence of theory:

$$(6)\ \exists_1 x_1 \ldots x_n [T(x_1 \ldots x_n, i_1 \ldots i_n, o_1 \ldots o_m)] >$$
$$T(x_1 \ldots x_n, i_1 \ldots i_n, o_1 \ldots o_m).$$

(6) is obtained by replacing the antecedent of (5) with (4). (6) says that if the theory is uniquely realised, then the theoretical terms name a unique n-tuple of entities. On the other hand, if the theory is not

uniquely realised either because it has more than one realisation or because it has no realisation at all, then the theoretical terms of the theory do not refer. This is the second meaning postulate of the theory laid down by the formula (7):

$$(7) \sim 3\, x_1[T(x_1 \ldots x_n,\ i_1 \ldots i_k,\ o_1 \ldots o_m)] > t = *$$

't = *' in (7) means that each t_1 is denotationless. Of the two meaning postulates of the theory, (6) lays down the conditions under which the t-terms denote and (7) specifies under what conditions they turn out to be denotationless. The pair of meaning postulates, argues Lewis, is logically equivalent to (8).

$$(8)\ t = \text{the}\, x_1 \ldots x_n T(x_1 \ldots x_n, i_1 \ldots i_k, o_1 \ldots o_m)$$

(8) lays down a set of definite descriptions which define the t_1. The definite descriptions involve no theoretical (mental) vocabulary but only o-terms. They specify the causal roles of the entities named by the theoretical terms without specifying the nature of the occupants of the causal roles.

The definite descriptions or functional definitions of the mental state terms are topic neutral. Their referents can have any nature. Therefore, the functional definitions of mental state terms are compatible even with dualism. However, as a materialist, the functional specification theorist wants to say that the mental state terms refer only to physical entities. This is possible only by working out a psychophysical identification which, according to Lewis, is an instance of theoretical identification. The identification takes place in accordance with either of two ways. The first one is as follows: Once the theoretical terms are introduced, we may come to know that a certain n-tuple of entities $r_1 \ldots r_n$ specified otherwise than as the entities that realise T, do realise T. This means (9) is true.

$$(9)\ T(r_1 \ldots r_n, i_1 \ldots i_k, o_1 \ldots o_m).$$

(9) is called the weak reduction premise for the theory T. It is free of t-terms, as the terms $r_1 \ldots r_n$ occurring in it may be the o-tenns or the

t-terms of some other theory that have come to our language independently of the theory we are dealing with. If the n-tuple of entities named by $r_1....r_n$, realise T, then the n-tuple of entities named by $t_1. . . t_n$, must be identical with them. That means '$t_1 . . . t_n = r_1 . . . r_n$', is true on the basis of the assumption that a true theory is a proper description with a unique realisation. In other words, the postulate of the theory T, the weak reduction premise and the functional definition together imply the identity statement '$t_1. . . t_n = r_1. . . r_n$'.

The second method of theoretical identification is based on the assumption that there is one and only one n-tuple of entities named by $r_1. . . r_n$ that realise T. This assumption is expressed by the strong reduction premise (10).

(10) (x) $[T(x_1 . . . x_n, i_1 . . . i_k, o_1 . . . o_m)]$ **if and only if** $(x_1 . . . x_n) = (r_1 . . . r_n)$.

This says that for all values of x, the theory T is true if and only if each t_1 is identical with r_1. The strong reduction premise is logically equivalent to the statement (11).

(11) $r_1 . . . r_n =$ **the** $x_1 . . . x_n\ T(x_1 . . . x_n)$

The (11) and (8) together imply that $t_1 . . . t_n = r_1 . . . r_n$. If the theoretical term $t_1 . . . t_n$ refer to mental states and $r_1 . . . r_n$ name neural states, then it follows that mental states are identical with neural states.

3.2.2 Lewis' psychophysical identification: a critical review

According to Lewis, there are two strategies for psychophysical identification. The weak reduction premise says that the n-tuple $r_1. . . r_n$ is specified otherwise than by the theory realises T. The strong reduction premise claims that the n-tuple uniquely realises T. In what follows we shall argue that neither of the above premises is useful for identifying the mental with the physical.

The psychophysical identification does not take place in accordance with Lewis' weak reduction premise. We can know that the n-tuple $r_1. . .$

r_n realises T only by means of an empirical verification. In order to verify this, we first acquaint ourselves with the causal roles specified by the theory. Then we look out for the entities that are occupants of the causal roles. This assumes that the n-tuple r_1 . . . r_n with their causal roles can be identified independently of the theory because the weak reduction premise is committed to the assumption that the n-tuple is specified otherwise than by the theory. But that the kind of entities which perform the functions specified by the theory can be specified otherwise than by the theory, does not seem to be a plausible idea. The reason is that the nature of the entities occupying the causal roles can be specified and known only through a theory. That is, the nature of the entities as well as their causal roles are theory laden.

This may be clarified as follows: Suppose a certain n-tuple of entities is identified independently of the causal roles specified by the theory. Later, by empirical investigation, it is found that the entities occupy the causal roles specified by the theory. Since the entities in question could be specified otherwise than by the theory, they, of course, are not theoretical entities of the theory in question. The terms referring to them are, in Lewis' opinion, the other terms. They are either those terms that have become the common heritage of our language or the theoretical terms of some other theory. If these terms are terms of the ordinary language, then they generally refer to entities which are empirically observable. They must be same as the entities r_1 . . . r_n referred to by the theoretical terms of the theory T. But the causal roles specified by the common sense terms and the causal roles specified by the t-terms radically differ. Hence there is absolutely no way to tell whether or not they are identical. Hence o-terms cannot be terms of the ordinary language. However the other option is left open. The other terms could be theoretical terms of a different theory, call it T_1. In such a case could there be a theoretical identification as the weak reduction premise implies? In order that theoretical identification be possible in such cases, the theoretical entities of both the theories T and T_1 must have the same set of causal roles. The identity in the causal roles of the theoretical entities of T and T_1 would imply that T and T_1 are identical. They are identical because the causal roles of the theoretical entities are

theory laden as they can be specified only in relation to a theory. The identity of T and T_1 would mean that strictly speaking, there is no theoretical identification.

Let us now come to the strong reduction premise. My point against the strong reduction premise is that strictly speaking, it does not provide a theoretical identification as claimed by Lewis. The functional definitions, we know, are topic-neutral. They do not make any commitment regarding the nature of the entities they refer to. Hence, it is possible that they lack unique referents. If the theory is to be uniquely realised, some commitments regarding the nature of the n-tuples that realise the theory must be built into it. A close examination of the strong reduction premise shows that it specifies the nature of the entities that realise the theory. In other words, the nature of the theoretical entities is assumed in the theory itself and the strong reduction premise spells it out. If this is true, Lewis' claim that psychophysical theoretical identification is not a postulation for the sake of parsimony but rather that it is a deductive inference is not acceptable. Hence psychophysical identification turns out to be a cover term for the assumption in the theory regarding the nature of the theoretical entities.

Lewis obviously would not accept that the nature of theoretical entities is assumed in a psychological theory. In his opinion, "[w]hen we come to learn what sort of states occupy those causal roles definitive of mental states, we will learn what mental states are — exactly as we found out . . . what light was when we found that electromagnetic radiation was the phenomenon that occupied a certain role". Lewis is clearly committed to three assumptions: 1. The function of a scientific theory is to specify the causal roles of its theoretical entities; 2. it is logically possible that the theoretical entities can assume any nature; and 3. the nature assumed by them is found out through empirical investigations. Light, for example, is the occupant of a certain causal role. And empirical investigation shows that the electromagnetic phenomenon occupies the same causal role definitive of light. Since one and only one kind of thing

[5]"Psychophysical and Theoretical Identification." 212.

occupies a given causal role. it follows that light and this electromagnetic phenomenon are identical. But it must be noted that nothing is achieved in this process; we have not gained any knowledge about the nature of light. 'Electromagnetic phenomenon' turns out to be just another name for light. Moreover, the method and goal of science as assumed here by Lewis are not the ones established by time-tested scientific practice. Light, for example, is not a theoretical entity. It is an empirically given phenomenon like water, stone, tree etc., the occurrence of which are explained by appealing to certain theoretical entities. On the other hand, an electromagnetic wave is a theoretical entity. The occurrence of light is explained in terms of the functions of the electromagnetic wave.

The above discussion shows the theoretical identification of light with an electromagnetic phenomenon and psychophysical identification are not analogous. In the former case, the identification is a case of explanatory reduction where the phenomenon to be explained is reduced to the theoretical entities. In the case of psychophysical identification, on the other hand, the mental states, the theoretical entities of psychology, are reduced to certain neurological states. Here, of course, mental states are not explained in terms of neural states. Rather, it is argued that the causal roles of the mental states are found to be occupied by neural states, and therefore, mental states are identical with neural states. In other words, the function of the mental states is the explanation of human/animal behaviour. The same function is performed by neural states. Hence mental states and neural states are identical. Here, of course, as noted above, there is only a terminological difference between mental states and the neural states identical with them. But this is not so when light is identified with an electromagnetic phenomenon.

Lewis assumes that the same causal role could be realised by entities of varying nature. Hence theoretical identification becomes necessary to discover the nature of the entity that in fact occupies the causal role. But it does not seem to be possible that a theory could be neutral with regard to the nature of its theoretical entities. For example, when sub-atomic physics speaks of its theoretical entities like electrons, neutrons, protons etc., the theory specifies their nature, attributing some

specific properties to them. The causal roles of these theoretical entities are defined in terms of these properties. That is, the causal role of a thing cannot be specified independently of its nature.

Lewis conceives common sense psychological theory to be more or less like a term introducing scientific theory. The theoretical terms viz., the mental state terms are analysed or defined as definite descriptions expressing specific causal roles. The occupants of the causal roles are identified with entities specified by the concepts of neurobiology. One of the main difficulties with this identification is that the causal net work specified by neurobiology is more complicated than the causal roles common sense psychology speaks of. As Thomas Nagel points out: The physical behaviour which, . . . a given intention is apt to cause, may be the product of causes whose complexity cannot be brought into even rough correspondence with the simple elements of a present-day psychological explanation".[6] In other words, the microlevel causal structure specified by neurophysiology no way corresponds to the macrolevel causal roles as laid down by folk psychological theory. This means that the mental states and the neural states cannot be identified merely on the basis of their causal roles alone. The mental states are, in fact, neural states. The identification, however, must be one of explanatory reduction. Given the laws of our universe, the macrolevel mental phenomena are realised by or are special case of microlevel neurological facts.

3.3 FUNCTIONAL STATE IDENTITY THEORY (FSIT)

Functional Specification Theory, we have noted, defines mental states in terms of their causal roles. Yet the nature of the things that occupy the causal roles is equally important for the functional specifiers. Hence they define mental states as functionally specified physiological (neural) states. The functional state identity theorists like the functional specifiers are committed to the view that certain causal roles are definitive of mental states. But they maintain that the physical states that realise the causal roles are irrelevant in the type identification of

[6]Sliomas Nagel, "Armstrong On Mind," in NB I. 203.

mental states. So the mental states are identical with causal roles or the functional states. A given mental state is defined as the property of being caused by a certain stimulus (input) and causing other states and/or behavioural response (output).

Since mental states are identified with functional states, the key to understanding FSIT lies in the clarification of the notion of 'functional state'. It is explicated with the help of the Turing Machine, an abstract computing machine devised by the logician, Alan Turing in 1934. The machine specifies a set of basic computational operations to which all other sophisticated processes of computation can ultimately be reduced. The machine is conceived of as a black box-like device consisting of a tape running through it, a scanner, and a printer. The tape can be moved both to the right and to the left. The tape though finite, is potentially infinite in length. The tape is divided into a finite number of equal squares with symbols either printed on them or not. There is a finite set of symbols acceptable to the machine called the *alphabet* of tape symbols. A symbol is said to be acceptable to the machine if it can be deciphered by the scanner or if it can be printed on the tape. The list of symbols acceptable to the machine varies from machine to machine. The function of the tape is to feed the input to the machine, to store symbols as a memory and to receive output which is the result of the computation. The function of the scanner is to scan one square of the tape at a time. The printer performs either of its two functions. It either erases the symbol which appears on the square being scanned or prints on that square some other symbol from the machine's alphabet.

The machine performs the following operations.

1. It reads the symbol on the square of the tape it is currently scanning.
2. It replaces the symbol on the square by another symbol or leaves the symbol as it is (or prints a symbol if it is blank).
3. It moves the tape one square to the right or one square to the left, or retains it in the same place.

These three operations constitute a single step in the working of the machine. The machine is supposed to have a finite number of internal

states: S_1 . . . S_n. At a given time, it can be in any one of the finite number of internal states. It can receive any one of the finite number of inputs I_1 ... I_m and emit any one of the finite number of outputs O_1. . . *0* . An internal state may be thought of as the sum of the information stored in the machine at a given time or the finite number of conditions that determine the operations of the machine.[7]

The behaviour of the machine is determined by a finite number of instructions. Each instruction consists in specifying two functions, one from input and state to output, and the other from input and state to state. Thus an instruction that determines a single step in the operation of the machine requires the specification of four items expressed in quadruples of the form: (the present state, the input, the output, and the next state). The instructions can be alternatively expressed in conditionals of the form: if the machine is in the state S_1, and receives the input I_j, it emits the output O_k and goes into the state S_1. For convenience's sake, the instructions are expressed in tabular form, and this is called the machine table for the machine. A machine table completely describes a system with a set of inputs, outputs and states related in the way specified by it. Any such system described by the machine table is a realisation of the abstract automaton. [8] The machine table does not say anything about the physical realisation of the abstract automaton as it can be variously realised by machines made up of various materials working mechanically, electrically etc.

In order to have a clear understanding of the way a Turing machine functions, we shall describe a simple Turing machine for the addition of positive integers. The alphabet of the tape of the machine consists of two symbols '1' and '0'. Any positive integers can be represented in the tape as a string of l's. The integer '3' for example is represented as three 1,s - 1110, where 0 acts as a punctuation marker for the end of the number. Two numbers to be added, for example, 2 + 1 can be represented in the input tape as follows: 11010. The operation of addition consists in replacing

[7]Cf. A.G. Hamilton. *Logic for Mathematicians* (New York: Cambridge University Press. 1978). 162.

[8]Block.Troubles with Functionalism," in NB I, 270.

the initial 1 by 0 yielding 01010 and replacing the punctuation marker with a 1, yielding 01110 and finally moving to the beginning of the string of l's representing the output as 1110. The procedures or instructions for addition by this simple machine are represented in the following machine table:

Input	S_1	S_2	S_3
1	r(1,0) sS_1	mL sS_2	mR sS_3
0	mL g S_1	r(0,1) g S_3	mL gS_4

Each S_1 in the table stands for the internal states of the machine r(x,y) means 'replace *x* by y', where *x* and y vary over the inputs, mR means move the tape one square to the right; mL, move it one square to left; sS_1, stay in the state S_1 ;and gS_1, go into the state S_1 . If the machine is to carry out its operations, the pair of input and state must be acceptable to the machine. Moreover, there must be at most one quadruple with the given pair of input and state. The machine terminates its functioning when and only when the current pair of state and input does not occur in any of the quadruples that describe the functioning of the machine. For example, the machine described by the above machine table terminates its computation when the input is 1 and the state is S_4 . The pair S_4 and 1 does not figure in the list of quadruples that describe the machine. Consequently, the machine has no instructions to proceed with its operations.

The notion of the internal state of the machine is very important. Any given state S_1 of the machine is specified in relation to the input, and the output (if any) and to the next state (if any). For example, state S_2 of the machine described above can be specified as the state that moves the tape one square to the right and remains in the same state when input is one and that replaces 0 by 1 and moves on to S_3 when the input is O. The description of the machine does not say what the internal states are. Whereas the inputs and the outputs are specified explicitly, the internal

states are specified only implicitly, i.e., only in relation to inputs and outputs. Since each or these internal states of the machine is specified or defined by means of a pair of functions, one from input and state to output, and the other from input and state to state, it is called a functional state of the machine.

In the light of the characterization of the functional states of a Turning machine, the functional state identity theorists try to elucidate their theoretical stand point. According to them, any organism can be construed as the realisation of an abstract automaton. So the internal mental states of the organism are identified with functional states or machine table states (i.e., states specified by the machine table). That is, mental states like belief, desire etc. are identified with the states of a machine table that describe the organism completely. The machine table specifies mental states in terms of their relation to outputs, inputs and other states. In spite of the differences in the nature of the machine or the organism that realises the various states, the two states of such organisms are said to be type-identical if each of them is identically related to the other states, inputs and outputs as specified by the machine table. A given organism could be a realisation of more than one abstract automaton. All such automata may not faithfully describe the system. FSIT assumes that there is at least one description that represents the working of the system most accurately. As Block and Fodor put it: "FSIT claims that for any organism that satisfies psychological predicates at all, there exists a unique best *description* such that each psychological state of the organism is identified with one of its machine table states relative to that description".[9] The psychological states pf two organisms are type identical relative to the unique best description. The advantage of identifying psychological states with functional states, according to functionalists, is that the laws of psychology are derivable from the description of the organism together with the identification statements. Moreover, the identification avoids problematic questions like 'what is a mental state if it is not a functional state?' and 'what causes a given

[9] Block and Fodor, -What Psychological States Are Not," in NB I. 240.

mental State to be always accompanied by the functional state in question?'[10]

Though the functional states are specified in terms of the relations existing among inputs, outputs and other states, such description does not specify the nature of these relations. However, an inquiry into the nature of mental states as well as the explanation of the capacities and functions of the mind require us to specify the nature of these relations without compromising the generality of FSIT. According to Block, this is achieved by construing these relations as causal. On this view, what makes a mental state what it is, is its causal role or causal properties and the mind can be defined as a system of causal roles. But this conception of mind does not result in the identification of mental states with functional states. For this we require a psychological theory. The function of the theory consists in stating the psychological states, sensory inputs and behavioural outputs and the way they are causally related. FSIT identifies the psychological states with the machine table states mentioned in the unique best description. As the functional states (or the causal roles identified with functional states) could be multiply realised, the functional state identity theorists refuse to identify mental states with physical states that realise them and argue that mental states cannot be reduced to physical states.

The functional state identity theorists claim that their theory can easily overcome the traditional problem as to how the mind can perform intelligent mental acts without postulating another intelligent behaviour, leading to an infinite regress. If the mental processes are functionally specified operations, then there exists for each mental process a corresponding Turing machine process. Since each Turing machine has a mechanical realisation, this means that any intelligent mental process is mechanically realisable by systems that are 'unintelligent' in any sense of the term. Since we have both functional and mechanical explanations at one stroke, it is possible to explain an intelligent process without postulating a homunculus who is equally intelligent.

[10]Cf. Putnam, The Nature of Mental States.- in NB I. 230-31.

3.4 ON THE DISTINCTION BETWEEN FUNCTIONAL SPECIFICATION THEORY AND FUNCTIONAL STATE IDENTITY THEORY

In what follows, we shall try to elucidate the points of difference between the two visions of functionalism discussed above. According to Block, the distinction between these two functionalist theories of mind is based on the way functionalists construe the nature of the relation between functionalism and physicalism. In his opinion, FST argues that physicalism is a true of account of mind, and functionalism supports it. FSIT, on the other hand, argues that physicalism is not a true account of the nature of the mental states and functionalism does not provide any support to physicalism. In other words, FST argues from functionalism to the truth of physicalism whereas FSIT argues from functionalism to the *falsity* of physicalism.[11]

It seems, however, that these opposing ways of construing the relation between functionalism and physicalism are not arbitrary but are motivated by certain deep rooted theoretical considerations. A close look at these two doctrines shows that they differ as to what constitutes a functional explanation. There are two models of functional explanation: the subsumption strategy and the analytical strategy. [12] It could be seen that FST is committed to the former whereas FSIT is to the latter.

When an object or a system performs certain functions, it has certain disposition or capacity to perform these functions. The possession of a disposition by an object implies that its behaviour has a law-like regularity, known as a *dispositional regularity*. Suppose the object *a* has certain disposition d, say to dissolve in water. The *dispositional regularity* means that *a* would manifest d, were any of a certain range of events called 'the requisite precipitatory conditions' to occur. The dispositional regularity is expressed in the form of a counterfactual conditional whose antecedent states the requisite precipitating conditions and whose consequent, the disposition in question. For example, a's

[11]Block, "Introduction: What Is Functionalism?" in NB I, 177.

[12]Robert Cummins, "Functional Analysis," in NB I, 185-190.

disposition to dissolve in water may be stated as follows:

> If a were put in water, a would dissolve.

In Cummins' opinion, the goal of functionalism as an explanatory strategy is to provide explanations of dispositional regularities. This can be accomplished with reference to certain facts or *structural features* special to the objects or systems whose law-like regularity we seek to explain.

In accordance with the subsumption strategy of functional explanation, the dispositional regularity of the object a is explained by showing how certain events cause a to manifest *d* by discovering some physical *fact* of a in the light of which the relation between precipitating events (causes) and manifestations of d (effects) is seen as an instance of one or more laws governing the behaviour of things in general. Cummins illustrates this strategy with the example of the disposition Brian O'Shaughnessy calls *elevancy:* the tendency of a submerged elevant object to rise in water when freed. The relevant dispositional regularity that demands explanation can be stated in the counterfactual conditional of the form:

> If an object a submerged in water were to be released, then it would rise on its own accord.

According to the subsumption strategy, the dispositional regularity is explained by subsuming it under a general law which states that whenever the mass of the water per unit volume exceeds the mass of the non-permeable volume per unit of the submerged object, then water applies net force on the object in the direction of the surface. We arrive at this general law via Archimedes' principle which states that water exerts upward force on the submerged object equal to the weight of the water displaced. Our explanation of elevancy consists in showing that in each instance of the elevation of a submerged object, the ratio of the mass of the object's per unit non-permeable volume is less than the mass per unit volume of water, and consequently, there is a net force in the direction of the surface because of which the object rises. Cummins, however, observes that subsumption strategy is not a special kind of explanation.

The analytical strategy explains the dispositional regularity "by

analysing a disposition d of a into a number of other dispositions d_1 . . . d_n had by a or components of a such that the programmed manifestations of d_1 results in or amounts to a manifestation of d".[13] By the expression "programmed manifestations of d_1", Cummins means that d_1 . . . d_n are organised in a certain way with a fixed set of instructions or rules called the program. Since the disposition or capacity of the system is explained by appealing to the capacities of the component parts and their organisation, the analytical strategy lays emphasis on the structural features of the system as a whole. The capacity of a factory to produces cars, for example, is explained by specifying the capacities of the various assembly lines, machines and workers, and the way they are organised or programmed.

The capacities of component parts are specified only in relation to the background of the capacity of the system as a whole. It means that the capacities of component parts are system-dependent. In functional analysis, three aspects or features of the system are specified: the capacities of the system as a whole, the capacities of component parts, or in other words, the analysing capacities, and the program by which the analysing capacities are organised. These three features of the system are laid down by a description of the system called the analytical account. The capacities of the component parts of the system are specified in relation to the analytical account. As Cummins succinctly puts it:

> *x* functions as a F in *s* (or the function of *x* in s is to *F)* relative to an analytical account *A* of *s's* capacity to G just in case *x* is capable of F-ing in s and *A* appropriately and adequately accounts for s's capacity to *G* by, in part, appealing to the capacity of x to F in s.[14]

The system as a whole may have more than one capacity. As a result, various alternative accounts could be equally available. The capacities of the component parts may differ relative to the analytical accounts chosen. Now which of these equally available analytical account would provide an

[13]"Functional Analysis," 186.

[14]Ibid.. 188.

adequate explanation? According to Cummins, an adequate analytical account must satisfy the following two conditions. First, the analysing capacities must be less sophisticated than and different in kind from the analysed capacities. Second, the program appealed to in the analytical account must be relatively more sophisticated. If the analysed and analysing capacities differ in kind and capacity, the program must be proportionately sophisticated to explain the difference. As the program absorbs more and more of the explanatory burden, the physical facts underlying the system becomes less and less important.[15]

The functional specification theorists argue from functionalism to the truth of physicalism because of their commitment to the subsumption strategy. The functional explanation consists in specifying the laws relative to which certain characteristically mental capacities or dispositions are explained as a special case of the laws pertaining to the things in general. In other words, the psychological laws specified by common sense psychological theory are a special case of neurobiological laws which again could be reduced to causal laws binding physical objects in general. Since in the ultimate analysis, physical laws are at work in the realm of the mental, the psychological states are identified with certain neural (physical) states. In short, the reduction of mental states to certain physical (neural) states in FST is motivated by the the latter's commitment to the subsumption strategy.

The FSIT does not grant that the mental states identified with functional states can be reduced to the neural (physical) states that realise them. This irreducibility could be seen as the consequence of FSITs commitment to the analytical strategy as- the right explanatory model in cognitive science. It tells us how sophisticated cognitive mental capacities like problem solving can be decomposed into unsophisticated capacities of the physical components of the brain. The cognitive capacity in question is the result of the programmed manifestations of the capacities of the components parts. Each analysing capacity can be further decomposed till we reach the most basic functions. FSIT. as a theory about

[15]"Functional Analysis," 189.

the nature of mind, is concerned mainly with these basic functions. This is clear from the functional description of the system. In fact, the functional description as laid down by FSIT is a version of the analytical account described above. The machine table mentioned in the functional description specifies the functional organisation. The way each state is related to the input, output and successor state can be considered as a basic structure or. a function. The machine table specifies the organisation of these basic functions into a full-fledged working system. Accordingly, the mind is a system of basic functions.

The above conception of mind as laid down by FSIT is clearly expressed in Block's formulation of Homuncular Functionalism. In essence homuncular functionalism is a version of FSIT. Block illustrates homuncular functionalism as follows:

> Imagine a body externally like a human body, say yours, but internally quite different. The neurons from sensory organs are connected to a bank of lights in a hollow cavity in the head. A set of buttons connects the motor-output neurons. Inside the cavity resides a group of little men. Each has very simple task: to implement a "square" of a reasonably adequate machine table that describes you. On one wall is a bulletin board on which is posted a state card, i.e., a card that bears a symbol designating one of the states specified in the machine table. Here is what the little men do: Suppose the posted card has a 'G' on it. This alerts the little men who implement G squares - 'G-men' they call themselves. Suppose the light representing input I_{17} goes on. One of the G-men has the following as his sole task: When the card reads 'G' and the I light goes on, he presses the output button O_{191} and changes the state card to 'M'. This G-man is called upon to exercise his task only rarely. In spite of the low level of intelligence required of each little man, the system as a whole manages to simulate you because the functional organisation they have been trained to realise is yours. A Turing machine can be represented as a finite set of quadruples (or quintuples, if the output is divided into two parts): current state, current input; next state, next output. Each little man has the task corresponding to a single quadruple. Through the efforts of the little men, the system realises the same (reasonably adequate) machine table as you do and is thus functionally equivalent to you.

[16]Block, "Troubles with Functionalism/ 276.

We see that the working of the system is analysed into a number of tasks and their organisation. Each little man performs a basic task or function. These basic functions are organised into a single system by the program. As more and more of the explanatory burden is taken up by the program, the physical facts underlying the system become less important and explanation is provided with reference to the structural features of the system alone. As a result, the mental states identified with the functional states refuse to be reduced to physical states that realise them. In short, FSIT's commitment to the analytical strategy grants that mental states could be multiply realised. Consequently, FSIT cannot argue from functionalism to the truth of physicalism.

There are certain other important differences between FST and FSIT. The former is committed to type physicalism and the latter to token physicalism. FSIT is committed to token physicalism because it is concerned about the structural *features* of a system which could be variously realised. FST is committed to type physicalism because it takes into account the physical facts underlying the system. However, a qualification must be made with regard to FST's commitment to type physicalism. The functionally specified physical states are not the same kind under all circumstances. Suppose the causal role definitive of pain specifies a neural state in humans. But it is possible that mental state pain could be realised by a type of physical state that is radically different from that which realises pain in humans. In the case of a dog for example, pain could be realised by some other type of state. This means FST is committed to species-specific type-type identification of the mental and the physical.

The species-specific type physicalism of FST can be criticized from two different angles. First of all, FST is engaged in defining mental states in terms of the definite descriptions that spell out the causal roles. Hence it is logically possible that pain may have different types of referents even among the individuals of the same species, and perhaps even in the case of an individual himself at various times. Secondly, if the causal roles could be realised by states of varying nature, it is logically possible that a non-physical state, say a soul-state, could realise the causal role definitive of pain. In the light of this, it is

doubtful whether one can argue from functionalism to the truth of physicalism. To say that functionalism supports physicalism, the functional specifiers should prove that the causal role definitive of pain could be realised by physical states only. Such a proof is yet to come from FST. In short, FST is an ambiguous doctrine as the functional definition of mental states and its commitment to the subsumption strategy of explanation do not go together.

Another important difference between the two versions of functionalism is that FST is basically a semantic thesis whereas FSIT is a scientific hypothesis that could be empirically verified or falsified. According to FSIT, mental states identified with functional states are specified in accordance with a scientific psychological theory. On the other hand, FST is concerned with the analysis of the mental concepts occurring in common sense psychological theory. Hence it is considered a semantic thesis without any empirical commitment.

3.5 FSIT AND THE COMPUTATIONAL REPRESENTATIONAL MODEL OF COGNIT

We have differentiated between two versions of functionalism. Each provides its own model for understanding cognitive mental processes. A model of cognition within the framework of functional specification theory will be dealt with in the next chapter. So we are concerned here only with the theory of cognition as propounded by Functional State Identity Theorists. FSIT states that there are internal mental states with genuine intentional properties that causally explain the interaction among the various mental states and the production of outward behaviour. This view is known as intentional realism' The various mental states are causally related to one another and to the world in a way that is sensitive to their content. Thus a scientifically adequate psychology must account for two things: (a) It should explain the causal interaction among the various mental states and the way the mental states are causally related to the world and to behaviour; (b) it also must explain how the various causal relations are sensitive to the contents of the internal mental states. The computational representational theory of mind (CRTM) within the framework of FSIT successfully meets both requirements. Since the main exponent of this model is Jerry Fodor, our discussion centers round Fodor's doctrines.

According to Fodor, CRTM is the result of two distinct doctrines of mind: the Computational Theory of Mind and the Representational Theory of Mind. We shall discuss each one of them and see how Fodor effects a union of the two.

3.5.1 Computational Theory of Mind (CTM)

According to CTM, cognitive mental processes are some sort of computations. A systematic conception of computation is provided by the Turing machine. The Church-Turing thesis states that any intuitively computable function, however complex it might be, is computable by a Turing machine. The Turing machine defines computation as rule governed symbol manipulation. The symbols appearing on the tape of the machine are read by its scanner and are altered by its printer in accordance with a set of rules or instructions called the program. The program describes the operations of the machine. At the same time it also defines the functional/computational states of the machine in relation to the inputs, outputs and other program states of the machine. The definition shows that the program states are essentially relational. The computational operations of the machine are driven by instructions that constitute the program. The program is encoded in the machine as a set of formulae. The various formulae have their causal roles in virtue of their syntactic properties and not due to their semantic contents.

Another important aspect of computation is that computational operations are operations on symbols. The machine operates upon the symbols on account of their formal properties only. So two symbols that differ in their formal properties will be operated upon differently even if they have the same semantic content. According to Fodor. these two aspects of computation — computations are driven by instructions encoded by a set of formulae, and computations are operations upon symbols — suggest that any computing machine is a symbol driven symbol manipulator.[17]

Both the sets of symbols — the formulae that drive the computational operation and the symbols upon which computations are performed — are

[17]CT. Fodor, 'Introduction: Something on the State of the Art." in Representations, 22-23.

devoid of any semantic properties. However, both sets of symbols could be semantically interpreted. It is due to the semantic interpretation of the formulae that form the program, that we say the machine's operations are rule-governed. Similarly, it is because the symbols upon which computational operations are performed are semantically interpreted that the operations of a computer are described in intentional idiom. In short, in Fodor's opinion, the semantic interpretations help us understand the computer as a "semantic engine".[18]

The functional state identity theorist argues that mental states are identical with functional/computational states and that mental processes are those operations specified by the machine table that adequately describes mental functions. This means that the mental states and processes are analogous to the states and operations respectively of a Turing Machine. And like a Turing Machine that specifies all formally specifiable symbol manipulations the mind too is a symbol manipulating device.

The identification of the mental states and processes with functional/computational states and processes has its own consequences. That the mental states are functional states of the organism means that like the program states of a machine, they too are essentially relational. It is specified in relation to the other mental states in addition to the inputs and outputs. Take, for example, the belief states, a subset of the class of mental states called prepositional attitudes. What makes a belief the belief that it is, is the pattern of relations that it enter into. Suppose the belief that *Q is* inferrable from the belief that P. Then it is, in part, definitive of the belief that -P, the belief that Q is inferrable from it and similarly it is part of the definition of the belief that Q, that it is inferrable form the belief that P.[19]

The thesis that mental processes are computational means that the mind, like a Turing Machine, is a symbol manipulating device. Computational processes are both formal and symbolic. They are symbolic

[18]"Introduction: Something cm the State of the Art," **23.**
[19]*Cf.* Ibid.. 14-17.

because they are performed on symbols. They are formal because the computational principles apply in virtue of the form of the symbols. Similarly, the mental processes are operations on some kind of symbol-like objects in virtue of the form or roughly the syntax of these symbols.[20]

This way of understanding the mental processes does not explain the semanticity and intentionality of the mental states and processes. The analogy of the computer comes to our help in this regard. We attribute semanticity and intentionality to the states and processes of a computer by semantically interpreting the symbols upon which the computations are performed. The symbols upon which mental operations are performed are the mental representations. Since symbols are, by definition, semantically interpreted objects, the symbolic nature of mental representations accounts for the semanticity and intentionality of mental states and processes.[21] However, the mental states and the system of mental representations are not identical. This raises the question: how do representational mental states like belief, desire etc., represent? The answer lies, according to Fodor in the Representational Theory of Mind.

3.5.2 The Representational Theory of Mind (RTM)

RTM tries to explain how the representational mental states such as belief, desire, hope, doubt etc. represent or have content, and how the contents of the various mental states influence causal interaction of the various mental states and the production of overt behaviour. According to Fodor, by providing a relational treatment of the prepositional attitudes, it is possible to state how they are contentful. According to the relational treatment, prepositional attitudes (PAs) are dyadic relations between the organism and its internal mental representation. The mental

[20]Fodor, "Methodological Solipsism Considered as a Research Strategy in Cognitive Psychology," in *Representations,* 226-27. According to Fodor. in specifying a formal operation, the semantic properties such as truth, meaning, reference etc.. are not taken into account. It is specified only with reference to the shape or the form of the symbols. A syntactic operation is a species of formal operation as it is specified without any reference to semantic properties.

[21]Cf .Fodor. "Introduction: Something On the State of the Art," 23-24.

state, belief, for example, represents because of its relation to the internal mental representations. The belief ascription statements are true only if the organism stands in belief-relation to the representational entities. Fodor cites two reasons in support of the relational treatment of the prepositional attitudes. First, it is intuitively plausible that prepositional attitudes are relations. The verbs of prepositional attitudes look exactly like a dyadic relation: When John believes something, it seems that John stands in a relation to something viz., the object of belief. A theory of prepositional attitudes that takes them as relations saves this appearance. Secondly, existential generalisations apply to the syntactic objects of verbs of prepositional attitudes. If John believes it is raining, then we can undoubtedly say that there is something that John believes, which shows that belief is a relation between John and something that he believes.[22] One of the advantages of this theory is that on this view different prepositional attitudes can have the same content. For example, I can doubt that it will rain or I can *desire* that it will rain. The representational entity 'it will rain' is common to both desireanddoubt.[23]

An adequate theory of prepositional attitudes must specify the nature of the representational entities, because they have a significant role to play in accounting for the semanticity, intentionality and causal efficacy of the mental states. According to Fodor, the representational entities are sentences or formulae of an internal language of thought or *mentalese*. When John believes that it is raining he stands in a relation to an internal formula F (it is raining) which expresses the proposition that it is raining. John's belief state is about rain because of a formula of the internal language of thought which is about rain.

The above assumption viz. .that the objects of PAs are not sentences of natural language but the formulae of the internal language of thought, is not an arbitrary one. It is based on certain empirical considerations. First of all, the same prepositional attitudes can be expressed in

[22]Cf.Fodor. "Prepositional Attitudes." in *Representations*. 178-79.
[23]Ibid., 180.

different natural languages. For example, the two persons uttering the statements 'Rome is a beautiful city" and 'Roma est urbs pulcra' express the same belief, that Rome is a beautiful city. If prepositional attitudes are defined as relations to sentences of natural languages, then the above two statements would have been expressions of different prepositional attitudes. Since they express the same prepositional attitude, they must be related to same sentence. And it is possible only if it is a formula of the language of thought (LoT) or of the internal representational system. Secondly, if token sentences of the natural languages are objects of prepositional attitudes, then natural languages cannot be learned; for a theory of learning presupposes such mental states and processes as beliefs, desires, expectations, etc. And we cannot have such processes and the prepositional attitudes required for the learning of natural languages if prepositional attitudes are defined as relations to sentences of the natural language. In other words, natural language learning presupposes a *LoT*. Two important properties of LoT are that it is innate and that it is universal. If it were thought that LoT is learned, then that would lead to the postulation of another set of prepositional attitudes which are relations to a different internal language and so on *ad infinitum*. The only way to avoid infinite regress is to assume that it is innate. The internal language of thought is universal in the sense that any system that possesses our psychology should have the same system of internal representations with the same syntax and semantics.[24]

According to Fodor, his theory of propositional attitudes meets all the conditions that an adequate theory of propositional attitudes is required to meet. There are basically two such conditions. First, a theory of propositional attitudes must explain the parallelism between verbs of propositional attitudes and verbs of sayings. Second, it must explain the opacity of propositional attitudes. By parallelism between verbs of saying and verbs of propositional attitudes, we mean that the complements of the propositional attitude ascribers (eg. 'it is raining' in 'John believes that it is raining") and their correspondents in verbs of

[24]Fodor, "Prepositional Attitudes," 197-200.

saying (namely, that it is raining) exhibit isomorphism in syntax, semantics and logical form or structure. The opacity of prepositional attitudes is a complex phenomenon understood in terms of the following three characteristics. First of all. statements containing verbs of prepositional attitudes are not truth functions of their complements. For example, from the truth of the free standing declarative, 'George Orwell wrote *Animal* Farm,' we cannot compute the truth of the statement 'John believes that George Orwell wrote *Animal Farm'*. Secondly, though the free standing declaratives warrant existential generalisations, a statement occurring as the object of verbs of prepositional attitudes does not warrant such existential generalisations. For example from the truth of the statement 'George Orwell wrote *Animal Farm'* we can infer: *Ox) (x* wrote *Animal Farm)* whereas from the true statement 'John believes that George Orwell wrote Animal *Farm'* we cannot make a valid inference to the effect:(3x) (John believes that *x* wrote *Animal Farm).* The third feature of the opacity of prepositional attitudes is that in the case of prepositional attitudes the principle of substitutivity fails. The principle of substitutivity says that given a true statement of identity, one of its terms can be substituted for the other in any true statement where one of the terms of the statement occur and the resulting statement will be true. 'George Orwell = Eric Blair' is a true statement of identity. Hence in the true statement 'George Orwell wrote *Animal* Farm', the term 'George Orwell' can be replaced by 'Eric Blair' and the resultant proposition will be true.[25] But in the case of the complements of prepositional attitudes, the substitutivity principle does not work. In the true statement 'John believes that George Orwell wrote *Animal Farm'* if 'George Orwell' is replaced by 'Eric Blair', the resulting statement need not be true.

Fodor argues that his version of the representational theory of mind explains both the opacity of prepositional attitudes as well as the parallelism between verbs of prepositional attitudes and verbs of saying. Since the objects of prepositional attitudes are sentence like entities, viz., the formulae of the language of thought, it is easy to explain the

[25]Cf. Quine, -Reference And Modality," in *Reference And Modality,* ed. Leonard Linsky (London: Oxford University Press, 1971), 17.

syntactic, semantic and logical parallelism between verbs of prepositional attitudes and verbs of saying. In fact, the logical, syntactic and semantic properties of the correspondents of the belief ascribers are inherited from those of the token sentences of LoT.[26] The opacity of prepositional attitudes too is explained on similar lines. The belief that George Orwell wrote *Animal Farm* and the belief that Eric Blair wrote *Animal Farm* are relations to two different formulae of language of thought and hence they are two different prepositional attitudes though if transparently construed they express the same proposition.

3.S.3 Computational Representational Theory of Mind (CRTM)

We have seen that for FSIT, mental states are functional/ computational states and that mental processes are computations over symbol like objects. It specifies only the causal roles of the mental states and maintains neutrality as to whether it is due to the content of the internal states that they interact among themselves and produce overt behaviour. So on this account the intentionality and semanticity of mental states remain unaccounted for. The representational theory of mind, on the other hand, is able to account for the intentionality and semanticity of mental states by defining them as relations to the formulae of the internal language of thought. Since these formulae have semantic and intentional properties and mental states are said to have semantic and intentional contents. It also explains how mental states interact among themselves and produce overt behaviour on account of their contents. In Fodor's opinion, these two theories of mind can be successfully combined to get the most plausible account of the cognitive mental states and processes viz., the computational representational theory of mind.

We have already noted that according to functionalism, the mental states are essentially relational. This is consistent with the representational theory of mind which defines prepositional attitudes as relations between organisms and internal formulae. So the prepositional attitudes can be construed as functional/computational relations. Again,

[26]Cf. Fodor, "Prepositional Attitudes," 188-95.

according to functionalism, mental processes are computations over semantically uninterrupted symbols with their own formal properties. This view is consistent with the thesis of the representational theory that mental states are relations to sentences of the internal language. It is obvious that the formulae of the LoT are both symbolic and formal. Functionalism is neutral with regard to the semanticity and intentionality of mental states. So the intentionality and semanticity of representational states do not conflict with functionalism. In short, the computational/representational theory states that cognitive mental states are functional/computational relations to formulae of LoT and mental processes are truth preserving operations defined over these formulae. On this account, the propositional attitudes such as beliefs, desires etc. are computational relations, and they are called belief-making relations and desire-making relations respectively.

If various propositional attitudes are just computational relations, how does a belief-making relation differ from a desire-making relation? In other words, if both belief and desire are abstract computational relations, how does desire that P differ from belief that P? These various relations, according to Fodor, are analogous to different patterns of computation. For a sentence of the language of thought, to believe that P means that the token of the internal formula F(P) which expresses the proposition P is accessible to one set of computations whereas to desire that P mean the token formula F(P) is accessible to another set of computations.

According to CRTM, mental states are type-identified on the basis of their computational relations. On the representational theory, on the other hand, mental states are type individuated — purely on the basis of the mental representations. CRTM provides a twofold way of type-individuating mental states. That is they can be individuated cither on the basis of the kind of computational relation or on the basis of the content of the representations. The belief that the earth is round is differentiated from the belief that the earth is flat on the basis of the differences in the contents of the string of symbols that express the corresponding proposition. Similarly the belief that earth is round is differentiated from the doubt that the earth is round on account of the

differences in computational relations.[27]

On the computational theory, mental states causally interact among themselves and produce overt behaviour just in virtue of the form of the internal representations. This means that for the type individuation of mental states the form of the internal representation has to be taken into account. This seems to conflict with the representational theory which requires that mental states be type-identified on the basis of their contents. This problem, argues Fodor, can be resolved by stipulating that both form and content have to be taken into account for the type identification of mental states. In other words, "two thoughts can be distinct in content only if they can be identified with relations to formally distinct representations".[28] This has a very important consequence for the study of cognitive mental processes. We do not have to be bothered about contents of mental states as such because they are exhausted by the formal aspects of the mental representations. Mental processes have access only to the formal properties of representations. They have no access at all to their semantic properties such as the property of being true, having referents, of being representations of the environment, etc.[29]

The idea that the content of a mental state can be reconstructed as aspects of its form i.e., mental states have different content only if they are relations to formally distinct mental representations, successfully explains opacity of prepositional attitudes. The difference in the contents of mental states implies that the internal representations are formally distinct. This means that if mental states differ in content, they are functionally different, because they have functional relations to formally different tokens of the formulae of the internal language. To be more precise, the mental states that differ in content differ in their causal roles. This explains how prepositional attitudes are opaque. Suppose that S_1 and S_2 are formally distinct tokens of the sentences of the internal language. On the basis of any logical relation (except identity)

[27]Cf. Fodor. "Methodological Solipsism Considered as a Research Strategy in Cognitive Psychology." 226.

[28]Ibid., 227.

[29]Ibid., 231.

between S_1 and S_2, it is not possible to infer from 'the tokens of S_1 have the causal role *R'* to "the tokens of S_2 have the causal role *R'*. By exploiting the notions of computation and content together, it is possible to explain how mental states are sensitive to their content in the causal interaction of the various mental states and the production of overt behaviour.[30] In short, the sum and substance of the computational representational theory of mind is that for 'explanations in cognitive psychology, we need to take into account only the formal aspects of the mental states. Semantic notions such as truth, meaning, and reference do not have any explanatory role in cognitive sciences because the semantic notions do not figure in the psychological categories. The idea that mental processes are basically formal, according to Fodor,. is in a sense the reformulation of the Cartesian claim that the character of mental processes is somehow independent of environmental causes and effects.

According to CRTM, mental processes are rule-governed manipulations of the formulae of LoT. This would suggest that for the manipulation of the internal representations, an organism has to represent these rules internally. This idea of rule-following would lead to the "homunculus regress". But in Fodor's opinion, rules are obeyed not in virtue of their interpretation but as a result of the causal organisation of the brain just as a computational machine obeys rules on account of the causal organisation of the hardware. And it is from the causal powers of the underlying physical mechanism that the intentional mental states derive their causal powers.[31] In short, CRTM tries to answer two important problems which were vexing philosophers from the time of Descartes: how intelligent mental processes can be explained "without postulating further intelligent processes, and how the mental and the physical could causally interact.

3.5.4 Objections to CRTM

Fodor, we have seen, combines both the computational theory of mind and the representational theory of mind to develop his version of the more

30Cf.. "Prepositional Attitudes," 191.

[31]Cf. Editors' "Introduction" to *Meaning in Mind: Fodor and his Critics,* ed. Barry Loewer and George Rey (Oxford: Basil Blackwell, 1987), xvi.

comprehensive CRTM. In the process, however, the computational theory of mind seems to take the upper hand due to the emphasis he lays on the formal features of mental states and processes. His claim that the content can be reconstructed in terms of or reduced to certain formal aspects clearly implies that for the explanation of cognition and the production of behaviour, the content of the mental states need not be taken into account in the ultimate analysis. In what follows I shall briefly discuss a few of the glaring difficulties embedded in Fodor's thesis that cognition is rule-governed symbol manipulation.

Cognition, in my opinion, is essentially a creative process. Therefore, a theory of cognition should explain how we come to have new contentful mental states. In other words, a cognitive theory should explain the productivity of mental states. How does cognition as a rule-governed symbol manipulation explain the productivity of mental states? It seems that by cognition, Fodor means just the application of the rule of substitution over a given set of symbols. In Fodor's words:

> That is, one might think of cognitive theories as filling in explanation schema of, roughly, the form: *having the attitude R to proposition P is contingently identical to being in computational relation C to the formula (or sequence of formulae) F.* A cognitive theory, in so far as it was both true and general, would presumably explain the productivity of prepositional attitudes by entailing infinitely many substitution instances of this schema: one for each of the prepositional attitudes that the organism can entertain.[32]

On this account, symbols are formulae of the internal code. In order to explain productivity by means of the application of the rule of substitution, all the possible infinitely many primitive formulae of the internal code, each of them expressing a distinct primitive proposition, must be available to the organism. If the organism selects a few of the infinitely many formulae available in order to stand in computational relations of belief and desire, then cognition is only a selection process and we can hardly explain the productivity of prepositional attitudes.

[32]Fodor, *The Language of* Thought (Cambridge. Mass.: Harvard University Press, 1975), 77.

This means that cognition is analogous to deriving theorems or logical truths within an axiom system with only one transformation rule viz., the rule of substitution. A cognitive theory that explains the productivity of cognitive mental states, on the other hand, must explain how out of a few finite innate elements it would be possible to construct infinitely many cognitive mental states by applying a finite set of rules for their permutations and combination. Fodor fails in explaining this productivity as he in principle grants an infinite number of primitive innate formulae each one expressing a distinct primitive proposition.

The seeming plausibility of Fodor's thesis that cognition is a rule-governed symbol manipulation is derived from his equivocation on the word 'symbol'. On the one hand, he conceives symbols as semantically interpreted objects. This means they are representational entities. As representational entities, they are about or stand *for* certain things. Hence by definition they are meaningful entities. But this is not the only sense in which Fodor uses the term 'symbol'. By symbol he also means a formal structure devoid of any semantic content. It is defined roughly on the basis of the shape or the syntax. In the thesis that cognition is a rule-governed symbol manipulation, however, he uses the term only in the latter sense, meaning that it is a *meaningless* symbol manipulation on the basis of its formal aspects. Fodor' s cognitive theory, however, gives the impression that it successfully explains the semantics of internal mental states and processes. This results from his use of the word 'symbol' as a representational entity.

Because of the equivocation over the term 'symbol', cognition as symbol manipulation can be understood in two alternate ways. It can be either conceived as the manipulation of formal structures or shapes devoid of content or it may be considered as the manipulation of representational entities. On neither interpretation is a plausible and adequate cognitive psychology possible.

Fodor's excessive emphasis on formal features of the mental states and processes and his argument that the content of mental states can be exhausted by their form would imply that for the explanation of cognition, we need not be bothered about the content of mental states. On this account, cognition is just the process of rule-governed symbol

manipulation, and does not take into account the meaning of the formal symbols. But the fact is that cognition is not just a manipulation of formal symbols. This has been persuasively argued by Searle.[33] According to him, rule-governed symbol manipulation is not a sufficient condition for cognition. Take for example, the process of natural language understanding. If natural language understanding is just a rule-governed symbol manipulation, a computer instantiating an appropriate program must be capable of understanding a natural language. Suppose computer programmers have developed a program that would make a computer simulate the understanding of Chinese. Such a computer would work as follows. If a question in Chinese is given to the computer, it will match the question against its data base or memory and produce an appropriate answer indistinguishable from the one given by a native Chinese speaker. According to Searle, in spite of providing such an answer, the computer cannot be said to understand Chinese and the reasons are illustrated with the following thought experiment.

Suppose a man who knows English but does not understand Chinese is locked up in a room with several baskets full of Chinese symbols. The man can identify the various symbols of Chinese purely on the basis of their shape. The man is given a set of rules in English for manipulating the symbols. The rules enables the man to arrange, replace and correlate various sets of symbols entirely on the basis of their form or shape. The rules are of the form: if a squoggle-squoggle sign is passed into the room, then reach into Basket 1 and take out the squiggle-squiggle sign and place it next to the squoggle-squoggle sign and pass them back. The symbols passed into the room are called 'questions' by native Chinese speakers and those passed back 'answers'. Even if the string of symbols passed back is indistinguishable from the answers given by the native Chinese speakers for the same set of questions, no one would say that the man inside the room knows or understands Chinese in the literal sense of the term.

[33]Cf. John Searle, "Minds, Brains, and Programs," in *The Mind's I: Fantasies and Reflections on Self and Soul*. 353-373; Searle, *Minds, Brains and Science* (Cambridge, Mass.: Harvard University Press, 1984), 31-35.

Searle's point is that just as the man inside the room does not understand Chinese, a computer or any other symbol manipulating device does not understand Chinese for, like the man in the Chinese room, what such a device has is a formal program or a set of rules and a set of uninterpreted symbols. Cognition cannot be a rule-governed manipulation of uninterpreted symbols because such a strategy fails to appreciate the distinction between syntax and semantics, i.e., "between manipulating syntactical elements of language and actually understanding the language at a semantic level".[34] In addition to the program which is by definition formal or syntactical, the explanation of the cognitive mental processes has to take into account the interpretation of the formal symbols which is the function of semantics. The computer as a symbol manipulating device cannot be a proper model of mind, for a computer instantiating a program performs only the syntactic operations. The human mind, on the other hand, is more than syntactical. It is semantical in the sense that it has contentful states. Fodor's claim that the semantic contents of mental states can be exhausted by the syntactic features of LoT is not acceptable at least from the point of view of natural languages because the same content cam be expressed in syntactically diverse expressions and similarly different contents can in principle be expressed in the same syntactic form.

Fodor argues that a computer is a semantic engine and that it is the interpretation of the formal symbols that makes it a semantic engine. The interpretation makes the states and processes of a computer intentional and meaningful. Symbols when semantically interpreted become representational entities. The concept of 'representation' in the case of the computer turns out to be problematic. That the internal states and processes of a computer are representational means that they are about certain states of affairs which means that they are intentional and meaningful. As Searle rightly points out: "Such intentionality as computers appear to have is solely in the minds of those who program them and those who use them, those

[34]Searle, "Minds and Brains without Programs," in *Uindwaves: Thoughts on Intelligence, Identity and Consciousness,* eds. C. lakemore and S. Greenfield (Oxford: Basil Blackwell, 1987), 214.

who send in the input and those interpret the output".[35] The point is that there are no intrinsically representational entities. As Dennet clarifies "something is a representation only *for* and *to* someone; any representation or a system of representations requires at least one *user* of the system who is external to the system".[36] The moral of the story is that even if cognitive mental processes are conceived as the manipulation of representational entities, such a conception would not give a plausible cognitive psychology, for in order to make the system of symbols representational, they are to be interpreted by a user. It means that Fodor's system of internal language of thought is to be interpreted by an internal agent or user outside the system of representation. That means Fodor's cognitive theory postulates "undischarged homunculi" and as Dennet opines: "Any psychology with undischarged homunculi is doomed to circularity or infinite regress, hence psychology is impossible".[37]

In spite of Fodor's attempt to bring together the computational and representational models of mind, his computational representational theory is torn apart by the tension between the two constituent models. On the one hand, he takes mental processes exclusively as uninterpreted symbol manipulations at the expense of semantics. On the other hand, in an attempt to incorporate semantics, he conceives symbols as representational entities leading to an infinite regress of undischarged homunculi. The way out of this difficulty, it seems to me, is to conceive mind as a syntactico-semantic system where both formal and non-formal aspects of cognition are taken into account. Mind consists among other things of two predominant subsystems: a semantic system and a syntactic system, and cognition may be explained as the interaction between these two subsystems. More precisely, the cognitive or contentful mental states can be defined as a function from the syntactic system to the semantic system or vice versa. Just as there are certain innate formal structures granted in Fodor's system, the new strategy requires the postulation of a finite set of innate

[35]Searle, "Minds. Brains, and Programs," 368.

[36]Dennet, "A Cure for the Common Code?" 101.

[37]Ibid

components of semantics. The working of the system or the cognitive processes must be explained mechanically or at the subpersonal level to avoid homunculi regress. The strategy, of course, is far less than an outline of an alternative to Fodor's system and requires further elaboration. I don't attempt to work out the details of this strategy here *as* there is no space for this within the limited scope of this thesis.

3.6 GENERAL OBJECTIONS TO FUNCTIONALISM

In what follows we shall raise three objections against the idea that the essence of a mental state is its causal role or causal structure of a certain kind. These objections or their variants have already appeared in the current literature on the mind-body problem. However, my attempt here is to construe these objections as a kind of Cartesian attack on the theories of mind developed within the general framework of materialistic monism. Descartes has three important, plausible intuitions regarding mind. The first is about its nature, the second, about the mind-body relation, and the third pertains to the creativity of the mental acts. My point is that none of his intuitions are successfully incorporated into functionalism.

For Descartes, what is essential to mind or mental processes is the conscious thinking process. According to him, "there can be nothing in the mind, in so far as it is a thinking thing, of which it is not aware ... "[38] Mental processes like perceiving. imagining, willing, etc., are modifications of conscious thought, and they have phenomenal characteristics. From the Cartesian point of view, materialist theories of mind are in danger of losing what is essential to the mind viz., its phenomenal experiences or conscious states and processes. Mind slips out of materialism; this holds for every variant of materialism. Functionalism being one of the materialist theories of mind, it is also open to this charge.

The Cartesian intuition of the relation between mind and body is that most of our mental states, events and processes are correlated with certain

[38] *Fourth Replies,* CSM II. 171.

brain states, events and processes. But the mental states, events and processes could have existed without their correlates in the brain and *vice versa*. We have seen that Descartes provides a modal argument to prove that the mental processes and the brain processes are distinct and separable. It is logically possible that the mental states and processes exist and occur independently of the brain states and processes usually associated with them. In the same way it is also logically possible that the brain states and processes could take place without the occurrence of the accompanying mental states and processes. Thus the correlation between the mental and the physical is not necessary.

The third Cartesian intuition pertains to the working of the human mind. A proper model of mind must be able to account for creativity as evidenced in its functioning. The two marks of creativity exhibited by an organism possessing mind, according to Descartes, are its ability to produce different arrangements of words to express its thoughts appropriate to the context, and its capacity to produce actions appropriate to the situation "in all contingencies of life", not from the disposition of its organs but through understanding of the situation.[39]

I shall briefly show how these Cartesian intuitions work against functionalism. The objections I discuss below were originally raised against logical behaviourism. They come up against functionalism because both varieties of functionalism could be seen as refined and sophisticated versions of behaviourism, accommodating physicalism within its framework. Though functionalism has made an advance over behaviourism by granting internal states and processes having certain causal powers, many of the difficulties that confront behaviourism seems to haunt functionalism as well.

One of the main arguments against behaviourism is that it cannot successfully explain the first person account of mental states and processes. That is, it cannot behaviouristically explain phenomenal experiences or qualitative states a person is said to be introspectively aware of. Similarly we have seen that none of the reductionist versions of

[39]Cf. Descartes, *Discourse on The Method*. *CSM* I. 139-40.

physicalism can account for the conscious subjective point of view.

Functionalism, which is a blend of behaviourism and central state identity theory, is subject to an objection from the same view-point. It appears in the form of absent or inverted qualia argument initially raised by Block and Fodor.[40] In functionalism, mental states are type-identified only with reference to their relations to inputs, outputs and to successor states. But the absent or inverted qualia argument based on the Cartesian intuition regarding the nature of mind viz., that phenomenal or qualitative characteristics are essential to and definitive of mental states, states that at least some mental states cannot be type-identified without reference to their qualitative characteristics. Therefore, even if a mental state is functionally related to inputs, outputs and other mental states, if the state in question lacks the phenomenal or qualitative character, the mental state does not seem to be type-identified. No mental state is called a token of the type "pain state" unless it is felt like pain, even if it is related to all other psychological states and also to inputs and outputs in whatever ways pains are related. This argument against functionalism based on the Cartesian intuition that phenomenal aspects are essential to mentality is developed in two stages: the first stage is called the inverted qualia argument and the second stage, the absent qualia argument.

Suppose that two mental states S and S* of the organism *O* and *O** respectively are identically related to their inputs, outputs and to other states. But it is logically and perhaps even empirically possible that S and S * qualitatively differ. In other words, let pain be identical to a machine table state - a state related to inputs, outputs and other states in a specified way. But if the same state described by the machine table is felt differently by different organisms either slightly or grossly, there is qualia inversion. This can be clarified with the idea of interpersonal spectrum inversion. Suppose two persons A and B from their birth have their colour spectra inverted to each other, say for example, whatever *A* sees as red, B sees as green and vice *versa,* and so on. Both of

40Block and Fodor, "What Psychological States Are Not," in NB I, 244-45.

them have identical stimuli - the presence of green and red objects in the visual field - and identical behavioural responses i.e., they utter the same statements "I see something green" or "I see something red". When red things are in the visual field, though both their internal states feet differently to them, they utter the statement 'I see something red" and in the presence of green stimuli, 'I see something green*. Thus, both of them have identical stimuli and identical responses which are identically related to the internal states the qualitative aspects of which differ among both of them. That is, mental states are functionally identical but they differ with respect to their qualia. Qualia inversion is an inevitable consequence of the topic neutral analyses of the mental employed in functionalism which only require that there be internal states without specifying their nature. Qualia inversion, according to Block and Fodor, is incompatible with functionalism because qualitative characteristics are essential to at least some mental states. If mental states are qualitatively different for different organisms, it follows that qualitative characteristics are not essential to mental states.

The functionalist can meet this argument in two ways. One is to argue that if two mental states are functionally identical, they are also qualitatively identical. So the slight or gross differences of mental states with regard to their qualia imply their functional differences. This is a definitional truth - an instance of "blatant apriorism". This reply to the objection is not acceptable as there are no empirical data to support the view[41] nor are there any plausible arguments in support of the view.

The second response to the inverted qualia argument is that phenomenal or qualitative properties are irrelevant for the type-identification of mental states. Two functionally identical psychological states are type-identical, independent of their qualitative content. This manner of meeting the inverted qualia argument paves the way for the absent qualia argument which is much more damaging. According to this argument, from the irrelevance of qualitative characteristics for the type-identification of

[41] "What Psychological States Are Not," pp.244-45.

mental states it follows that a given functional state can exist without its qualitative content. Out of the two states that are functionally identical it is quite possible that only one has qualitative content. Tor all that we know, it may be nomologically possible for two psychological states to be functionally identical (that is , to be identically connected with inputs, outputs and successor states), even if only one of the states has a qualitative content".[42] Once such a possibility is granted, we cannot rule out the possibility that a given functional state, say pain, may exist without ever having any qualitative content at all. An organism may be in pain even if it feels nothing at all.

According to this argument, functionalism considers qualitative contents of the mental states to be accidental properties. The argument is advanced from the Cartesian point of view that phenomenal or qualitative characteristics form the essential features of the mind. If mental states are defined as functional states and functional states can exist without having qualitative contents, then functionalism, like behaviourism and physicalism fails to capture what is essential to mental states.

The second objection to functionalism is that there is no necessary or conceptual relation between sensory inputs and the mental states on the one hand, and mental states and behavioural outputs on the other. This objection is based on the Cartesian intuition that there is only a contingent relation between the occurrence of a mental state and behaviour that ensues from it. This objection is an extension of the Cartesian attack mounted on logical behaviourism by Hilary Putnam.

Putnam's objection to behaviourism is raised from a functionalist point of view. It is an irony of fate that the very same objections could be raised against functionalism. For the functionalist, any given mental state is conceptually .related to the behaviour produced by it, the stimulus that causes it, and the successor state that it gives rise to. When a mental state is defined as a machine table state or an abstract causal structure among sensory stimuli, behavioural responses and other states, it is, in fact, argued that the notion of mind is conceptually related to the

[42]"What Psychological States Are Not."

notions of sensory stimuli, behavioural responses, and other states. Such conceptual relations retained in functionalism can be seen as a remnant of behaviourism. Therefore, an argument in line with Putnam's argument against behaviourism can be advanced against functionalism, to show that there is no such conceptual or logical relation (a) between mental states and behavioural responses, (b) between stimuli and mental states, and (c) between given mental states and their successor states.

For the functionalist, mental states and behavioural responses are distinct. Yet he maintains that there is a sort of conceptual relation between them. Functionalist Armstrong agrees with behaviourists that "our notion of a mind and of individual mental states is *logically tied to* behaviour".[43] However, as Putnam has convincingly shown, there can be a community of 'super-spartans' or super-stoics whose members have the ability to suppress all involuntary pain behaviour. Such logical possibilities undermine the idea that there is some sort of conceptual relation between the notion of mental states and that of behavioural responses usually associated with it. However, one could argue that though pain does not produce any pain behaviour in the case of Putnam's super-spartans, they are disposed to exhibit pain behaviour under suitable circumstances, and that pain can be identified with the disposition in the realist sense of the term. So the conceptual relation is implicit in the case of super-spartans. The conceptual link between pain and pain behaviour can be severed if it can also be shown that what we generally take to be pain behaviour produced by pain can otherwise be produced. The case of an actor who pretends to be in pain shows that pain behaviour is, in fact, caused by some other cause than pain itself. In other words, pain can occur without pain behaviour , and pain behaviour if there is such, can be produced even in the absence of pain.

According to the functionalists, mental states also are conceptually tied to stimuli and other mental states. This is clear from the emphasis they lay on the causal relation to stimuli and other states in the definition of mental states. In order to show that the concept of mental

[43]"The Nature of Mind," 175. Emphasis Armstrong's.

states does not imply such a conceptual relation, we need only to show that it is logically possible that a given mental state occurs without the stimuli and the successor states usually associated with it. Putnam's argument to the effect that there could be a world in which the inhabitants feel pain in the presence of a magnetic field shows that the mental states stand in no necessary relation to stimuli. Similarly, there is no conceptual relation between a mental state and the successor state. It may be said, for example, that the mental state of worry is caused by a pain state. But it is conceivable that worry is caused by mental states other than pain or by some stimuli. All these suggest that mental states are logically tied neither to sensory stimuli, successor states nor to behavioural responses.

The basic defect in the above argument against functionalism, one might object, is that it assumes the deterministic Turing machine to be the proper model of mind. However it cannot be, he would argue, a viable model of mind, for the concepts of mental states are cluster concepts. The concept of the mental state pain, for example, is a cluster concept in the sense that pain can produce a number of behavioural responses and\or other states and in that it may be produced by a number of stimuli. The meaning of pain may be explained with reference to any of the cluster of responses, and any of the cluster of stimuli and any of the cluster of other mental states. Therefore, a proper model of mind is not the deterministic Turing machine but the probabilistic automaton. In the case of the deterministic Turing machine, for each pair of state and input, there is an associated output and successor state. For each pair of state and input of a probabilistic automaton on the other hand, there is a range of outputs and successor states. The identification of mental states with the machine table states of a probabilistic automaton means that there is some sort of conceptual relation between mental states and the range of responses and the range of stimuli. The reason for such conceptual ties is that the transition probabilities are limited and are within a definite domain of stimuli, responses and states.

Are such conceptual relations possible between mental states, and the range of stimuli, the range of responses and the range of other states? In other words, can mental states be defined with reference to the clusters of

stimuli, responses and other mental states? We shall argue that the kind of conceptual relation permissible within the framework of the probabilistic automaton too, cannot be granted because of the kind of reasons cited above. That is to say, the mental state pain, for example, may be caused by any one of an indefinite or infinite number of stimuli that do not belong to the range of inputs to the probabilistic automaton, and that pain may cause any one of the infinite responses and/or other states which the transition probabilities of the machine table describing the probabilistic automaton does not give. But can we define pain as the state that produces some responses which may or may not belong to the cluster of responses and say that it is produced by stimuli which may or may not belong to the cluster in question? Even such wider characterizations cannot be counted as constituting the definition of pain, as a person may have pain without eliciting any response at all as in the case of Putnam's super-spartans and without any stimuli at all, as in the case of pain hallucinations.

A functionalist might argue here that a mental state can be characterized by incorporating all its possible stimuli, responses and other states. Depending upon the number of stimuli, responses and other states for the characterization of a given mental state, there can be various causal structures, and mental states can be defined as disjunctions of these causal structures. As it is possible to have infinite stimuli, responses and other states for the characterization of any mental state, there can be an infinite number of causal structures for characterizing a particular type of mental state. We have an instance of a type of mental state if any one of the abstract causal structures is realized. But if there are many causal structures for the characterization of pain, we cannot identify pain with any one of the abstract causal structures. The causal structure may vary for each instance of pain. Thus, causal relations or causal roles seem to be accidental properties by which we refer to pain. It is quite possible that it has neither the usual causes nor the usual effects. In a different possible world, the same causal structure might characterize a state quite different from a pain state. That is, causal roles or causal structures can only help denote certain mental states under some definite circumstances. They do not define mental

states bringing out their nature. Viewed in this way factionalism fails to specify what mental states are — what is common to all pains, or that because of which they are pain states. Since it cannot be a causal structure or a causal role, we may say that what is common to all pains is some phenomenal characteristics and for type-identification mental states, phenomenal characteristics are to be taken into account.

If there is no necessary relation between stimuli, responses and mental states, it follows that a given mental state cannot be identified with the causal role definitive of it, as the functionalist claims, because the mental can occur without the typical causal role characteristic of it under normal circumstances. The functional specification theorist, like Lewis, tries to overcome this difficulty by taking into account the nature of the physical states that realize the causal role. But as we have seen in our discussion of functional specification theory, there is no necessary relation between causal roles and the physical states that realize them, as the same roles could be realized by a wide variety of physical states. Thus, functionalism faces an odd situation: neither the causal roles (or functional states) nor the physical states that realize them are essential to and definitive of mental states.

Lewis tries to defend functionalism against this attack by arguing that a successful description or definition of mental states is by disjunction of their characteristic causal roles and the physical states that normally realise them. Satisfaction of any one of the disjuncts by an organism is sufficient for the ascription of the mental state in question to the organism. It in effect means that neither the causal role nor the physical state that realises it are essential to the mental state. If so, how do we define a mental state? Suppose we want to define the mental state pain. According to Lewis, this can be accomplished by introducing the notion of pain simpliciter, defined with reference to an appropriate population. An organism is said to be in pain if it occupies the causal role of pain for the appropriate population or if it has the physical state that occupies the causal role for the appropriate population.[44]

44Cf."Mad Pain and Martian Pain," 219.

But what is an appropriate population? In Lewis' opinion, it is one which fulfills most of the following four conditions: (a) The human population must be the appropriate population as the mental concepts we define belong to them; (b) if the mental states of the particular organism x is under discussion, the appropriate population is one to which *x* belongs; (c) an appropriate population is one to which *x* is not an exception; (d) an appropriate population should be a natural kind.[45] Since ordinary human beings fulfill all four conditions, humans are considered an appropriate population. Suppose we want to define the mental state of an unexceptional member of a non-human species, say that of the dog. Then the condition (a) is outweighed by other three conditions. Hence the species of dog can be considered as the appropriate population.

Suppose a particular mental state of an exceptional member of the human population is to be defined. He is an exceptional member because though he has the same type of physical states that occupy the mental states for the rest of us, the occurrence of these physical states are not accompanied by the normal causal roles. In such a situation, on Lewis strategy, the human population is considered the appropriate population as the condition (c) is outweighed by the other three. Lewis clarifies it with the example of the hypothetical mad man who on having pain, i.e., having the C-fibre firing like the rest of us humans, instead of grinding his teeth, groaning, flinching, clenching his fist etc., concentrates more and more on mathematics. He is said to have pain because he shares with other humans, the appropriate population, the physical state that realise pain in them.

Suppose there is a non-human species, say martians. The mental state pain of martians plays the same causal role as in the case of humans but its physical realisation is different in them. When the martian is in pain, the cavities in his brain are inflated and he has no C-fibre firing. According to Lewis, the martian is in pain because he shares with humans the causal roles characteristic of pain in the normal human being. Here of course, humans are considered the appropriate population. However, the

[45] "Mad Pain and Martian Pain." 219-20.

martian population too can be considered the appropriate population since the condition (a) can be outweighed by the other three conditions. But the difficulties associated with Lewis* strategy for defining mental states become apparent, when a subpopulation of martians is considered. In the case of an exceptional subpopulation of martians, according to Lewis, the conditions (b) and (d) outweigh the condition (a) or (c) by itself, and consequently, the subpopulation can be considered an appropriate population. Suppose the subpopulation shares with the other martians the physical states which realise pain in them. However, their pain does not exhibit causal features definitive of pain for the rest of martians. Even if the martian population is considered the appropriate population, it does not seem that mental concepts like pain can be applied to the subpopulation of martians. The reason is that Lewis tacitly assumes that the non-human species have mental states only in so far as they are similar to the human population with respect to the internal physical states and/or behaviour outputs. If humans are not the appropriate population any physical state or any causal role could be counted sufficient for the ascription of mental states to an organism, for in such cases there is an undecidedness about what constitutes an appropriate population.

The undecidedness shows that neither the causal role nor the physical state that realises it is a necessary condition for the ascription of a mental state to an organism. Because a mental state, according to Lewis, is contingently associated with the causal role, similarly it is contingently associated with the physical realisation.[46] Nor do they form a sufficient condition as has been shown by the absent or inverted qualia argument discussed above. Since, on Lewis' account, there could be a number of appropriate populations, there are different ways of filling in the relativity to population, and relative to each appropriate population, there is a distinct sense for a given mental state term. The net outcome is that we cannot say what is essential to and definitive of a given mental state. Mental states can be defined neither in terms of the causal roles *nor* in terms of the physical states, *nor* in terms of their disjunction. In

42Ibid., 220-21.

my opinion, if at all we are to define mental states, this has to be done in terms of the qualitative/phenomenal features of the mental states. These states are nomologically correlated with or identical to certain physical states but they are not conceptually related to these physical states or the causal roles that normally accompany them.

Our third objection to functionalism is that it fails to account for the creativity of the human mind. As Block and Fodor points out, the creativity or productivity of mental states is not captured either by the deterministic Turing machine or by probabilistic automaton, because the set of states that constitute either of them is, by its definition, a list. But a given person has infinitely many type-distinct nomologically possible psychological states. There are, for example, infinitely many non-equivalent declarative statements and when they become the objects of prepositional attitudes such as believing, desiring, thinking etc. we get infinitely many type-distinct mental states that cannot be in one-to-one correspondence with the machine table states.[47]

There are certain structural similarities among the various mental states. In Block and Fodor's opinion, the productivity and the structural features of mental states are two sides of the same coin. This becomes clear when the structural similarities among the sentences and their productivity are considered. The sentences are structurally similar because they are constructed from a fixed set of vocabulary items by reiterated application of a fixed set of rules. The productivity of the sentences is also explained in the same way, i.e., by describing them as a generated set from a fixed set of lexical items by reiterated application of a finite set of fixed rules. The structurally similar sentences are also similar in the way they are produced, because they share either the lexical items or paths in their derivation or both. The structural similarities among the mental states too can be explained by arguing that they are a generated set and their structural similarities correspond, at least in part, to the similarities in their derivation.[48] Functionalism, we

[47]Cf.Block and Fodor. "What Psychological States Are Not." 246-47.

[48]Cf. "What Psychological States Are Not," 247-48.

have noted, Cannot account for the productivity of mental states. Similarly, it cannot account for the structural similarities among mental states for these similarities or differences cannot be represented by machine table states.

3.7 CONCLUSION

In the previous chapter we noted that the mental states and processes cannot be reduced to certain physical states. Such reductive analyses cannot account for the phenomenal aspects of our mental life. Functionalism, like physicalism, fails to characterise the nature of mental states. The functionalist's defining elements of a mental state such as stimuli, responses and other states are neither essential to nor definitive of a given mental state. If so, how shall we understand the mind? For this, in my opinion, we must combine two approaches to the study of mind. The first may be called the phenomenological approach and the second, the scientific approach. Within the phenomenological approach the mind can be studied in itself. That is, it is possible to pursue an objective understanding of the mind in its own right. The subject matter of this objective phenomenology, as Nagel says, is certain phenomenal experiences and qualitative aspects of the mental states that admit of a sort of objective description.[49] The definition of mental states and processes is, in fact, the work of objective phenomenology. The phenomenological approach is only one side of the story. It just defines the problem that demands a scientific understanding. Hence the phenomenological approach must be complemented by a scientific study. The function of the scientific approach is to specify the physical mechanism which realises the mental states and processes described in objective phenomenology. I am not arguing that mental states should not be functionally characterised at all. It might provide certain intuitions that would help us in our scientific understanding of the nature and function of mind within a limited domain. My point is that functional characterisation should not be mistaken for the definition of mental states and processes.

[49]Cf. Nagel, "What Is It Like to Be a Bat?" 402.

QUALIA AND PERCEPTION

4.1. INTRODUCTION

One of the major difficulties with functionalism as noted in the previous chapter is that it fails to accommodate the qualitative features of mental states. More precisely, it does not provide identity-conditions for their type identification. Two mental states are said to be type identical if and only if they satisfy the same functional definition. But there can be alternative functional definitions for a given mental state. Consequently, two states that are type-identical on a given functional definition could be type-different on another such definition. According to Sydney Shoemaker, among the various alternative functional definitions available to us, only a "maximally good" functional definition can properly type-identify mental states. That is, two mental states are type-identical only if they satisfy the maximally good functional definition. And a functional definition *D* is a maximally good definition of the mental state M, "if it is not possible to formulate an alternative functional definition *D'* of M such that there are logically possible cases that are counter examples to D but not to D' and none that are counter examples to D' and not to D"[1]. In other words, a maximally good functional definition is one which cannot be further improved in the light of counter examples, because there cannot be counter examples to such a definition.

In the light of the maximally good functional definition, we may state

[1]Sydney Shoemaker. "Absent qualia are impossible - a reply to Block." in *Identity, Cause and Mind* (Cambridge: Cambridge University Press, 1984). 312. Shoemaker assumes that there is only one such maximally good definition. See Ibid.. 317. n. 14.

the qualia centred objections to functionalism as follows. The inverted qualia argument says that if a mental state type-identical to a qualitative state on a maximally good functional definition, can differ from the latter either slightly or grossly in its qualitative character. then the qualitative mental states cannot at all be functionally defined. The absent qualia argument states that two states may satisfy the same maximally good functional definition, yet one of them may lack qualitative character while the other possesses it. The bearing of these two objections to functionalism is that a set of important aspects of mental states cannot be accommodated within the framework of the most plausible materialistic model of the mind.

The failure of functionalism to account for qualitative states has a very crucial implication: it cannot satisfactorily explain one of the most fundamental cognitive functions of the human mind viz., perception. The perceptual mental states of humans are essentially qualitative states. Hence, according to a very influential line of thinking in contemporary philosophy of mind, without involving qualia and relations of similarities and differences among them, the perceptual processes cannot be given a functional account. Therefore, in order to provide a plausible model of the mind, functionalism has to evolve a strategy for providing functional definitions of qualitative states. Shoemaker has developed a strategy for accommodating qualia into functionalism and the present chapter is a discussion of this strategy.

The absent qualia argument implies that the qualitative characteristics are not essential to mental states and hence the occurrence of cognitive mental states *can* be explained without reference to their qualitative or phenomenal aspects. But this is not true at least in the case of the human cognitive system. Therefore it must be shown that the cases of absent qualia are impossible. The way Shoemaker accomplishes this task will be dealt with in the first section of the present chapter. In the second section. Shoemaker's defense of functionalism against the inverted qualia argument is discussed. In the process of defending functionalism against qualia centred arguments Shoemaker has provided a functionalist account of perception within the framework of functional specification theory. This forms the subject matter of the third section.

In the final section, we shall make a review of Shoemaker's project.

Before we go into the details of Shoemaker's strategy, one clarificatory remark is in order. In order to give a functional definition of qualitative or phenomenal aspects of mental states, Shoemaker assumes that there is a set of ontologically autonomous qualitative mental states or pure qualia. I do not subscribe to this view. It does not mean that I deny the qualitative or phenomenal features of our mental life. My point is that they do not form a separate autonomous class of their own as each of our cognitive mental states has phenomenal aspects. I present Shoemaker's position here, because it is against the position he adopts that I defend my thesis on the unity of consciousness according to which there is a conceptual relation among the three features of consciousness, namely, phenomenality, intentionality, and awareness. Because of this conceptual relation, there are no pure phenomenal states called qualia separable from the features of awareness and intentionality. This is a view I defend in the fifth chapter. Hence I do not intend to go into the details here.

4.2 THE IMPOSSIBILITY OF ABSENT QUALIA

That cases of absent qualia are not possible means that, of two states that are functionally equivalent, if one of them has qualitative content, the other also must possess the same qualitative character. If a mental state were connected to inputs, outputs and other mental states the way a pain state is related to them, it is nomologically necessary that the state in question itself must be a pain state. Shoemaker's argument to this effect revolves round the idea that there is absolutely no way of knowing the possible cases of absent qualia, whereas the cases of present qualia can, undoubtedly, be known. In Shoemaker's opinion, the cases of absent qualia are impossible, because a maximally good functional definition of a qualitative state must refer to the awareness of qualia which they give rise to. We shall characterise this argument as the epistemological argument against absent qualia.

4.2.1 The epistemological argument against absent qualia

It is undoubtedly true that if there are cases of absent qualia. we cannot know them. But from the knowledge of the existence of qualitative

states how do we say there are no possible cases of absent qualia? To answer this question, we must specify the way we have of knowing qualitative states. In one's own case, one comes to know the existence of qualitative states through introspective awareness. If I am having an introspective awareness of pain, then I must be in pain. The flaw in the absent qualia argument, according to Shoemaker, is that it fails to take note of introspective awareness in one's *own* case. In his opinion, "introspection, whatever else it is, is the link between a man's mental states and his beliefs about (or his knowledge or awareness of) those states."[3] The qualitative states give rise to introspective awareness of themselves. Shoemaker characterises the introspective awareness of one's own qualitative mental states as 'qualitative belief.

The absent qualia argument seems to be based on the assumption that the qualitative characteristics belonging to one's mental states are necessarily inaccessible to introspection. It means that they are in principle unknowable. The assumption, however, has very odd consequences. Suppose at a given time I am in the qualitative mental state, pain. But the inaccessibility assumption would imply that in spite of being in pain, I do not and cannot know whether I am in pain. In Shoemaker's opinion, such odd consequences can be avoided if the causal power of qualitative states to produce qualitative beliefs or introspective awareness of themselves is acknowledged. And a qualitative mental state can be functionally defined provided its maximally good functional definition makes reference to qualitative beliefs in addition to sensory inputs, behavioural outputs and other mental states like beliefs, desires etc. Shoemaker's point is that if the qualitative . belief is included in the other mental states referred to in the functional definition, the cases of absent qualia are in absolutely no way possible.

[2]Introspective awareness is not available to one in finding out whether others are in qualitative states or not. However, it could be known indirectly either from their verbal report *or* from their non-verbal behaviour characteristic of the qualitative states in question. But Shoemaker admits that behavioural evidence is not conclusive in determining whether one is in a qualitative state or not.

Shoemaker, "Functionalism and qualia" in *Identity. Cause and Mind.* 189.

The qualitative States are accessible to introspection and form a significant aspect of one's knowledge of mind. If qualitative states such as the ways things look, smell, sound, etc. are knowable in introspection just as human feelings are knowable, then. Shoemaker argues, it is not nomologically possible, perhaps not even logically possible that a state lacking qualitative character is functionally equivalent to a state possessing qualitative character.[4] Shoemaker's epistemological argument, he says, is based upon the causal theory of knowledge and the causal theory of reference. The causal theory of knowledge holds that the states and features that lack causal powers are in principle unknowable. Similarly the causal theory of reference maintains that the states and features of things independent of their causal features are in principle unnameable and hence cannot be referred to at all. The qualitative mental states are knowable because they have the causal powers to produce introspective awareness of themselves and to influence overt behaviour, whether verbal or non-verbal, in certain ways. Again because of their causal powers, these states are nameable and hence accessible to reference. Since qualitative states are knowable and nameable, it is not nomologically possible (that is, given the psychological laws that relate one's psychological states to one another and to inputs and outputs) that a state lacking qualitative character is functionally identical to a state that possesses it.

In the functional definition of a mental state, each mental state is defined in terms of its causal relation to other mental states in addition to inputs and outputs. It is a requirement of the functional definition of a mental state that the 'other mental states' referred to must themselves be functionally defined. In the light of this, observes Shoemaker, there is a possible objection to the epistemological argument. A maximally good functional definition of qualitative states must make reference to 'qualitative beliefs' in addition to Inputs, outputs and other mental states. But the 'qualitative beliefs' Involved in the functional definition of qualitative states cannot themselves be functionally defined. So, the definition of qualitative mental states that makes reference to

[4] "Functionalism and qualia," 190-91.

qualitative beliefs is not a functional definition at all.

In reply to this objection. Shoemaker maintains, in his "Functionalism and qualia". that the qualitative beliefs themselves can be functionally defined in terms of their tendency to produce verbal behaviour. However, in his "Absent qualia are impossible - a reply to Block" he maintains that his argument in "Functionalism and qualia" is directed against a particular version of the absent qualia argument and adds that the functional undefinability of some of the mental states referred to in the functional definition need not be of much concern to the functionalist.

Shoemaker identifies two versions of the absent qualia argument: 'Absent Qualia Thesis One' (AQT-1) and 'Absent Qualia Thesis Two' (AQT-2). The two theses are differentiated on the basis of a distinction between a strong and a weak sense of the maximally good functional definition. A maximally good strong functional definition is one in which the 'other mental states' occurring in the definition are functionally definable. In a maximally good weak functional definition, on the other hand, it is not specified whether the 'other mental states' themselves are functionally definable or not. So the weak definition retains the possibility that some of the mental states referred to in the maximally good functional definition are not themselves functionally definable. The thesis that qualitative states cannot be functionally defined even in the weak sense of the maximally good functional definition, is called AQT-1. The other thesis namely, AQT-2 states that the qualitative states are not functionally definable in the strong sense of the maximally good functional definition.[5]

AQT-1 is a stronger thesis than AQT-2. Shoemaker clarifies it with the help of the notions of the "ersatz" mental state and the "imitation man". A token of the mental state of the type M is said to be ersatz M if it is not a genuine token of M inspite of its satisfying either a weak or a strong maximally good functional definition of the type M. And AQT-1 grants that there could exist a creature whose qualitative states are ersatz but whose non-qualitative mental states such as beliefs, desires

[5]Cf."Absent qualia are impossible - a reply to Block.- 311-12.

etc. are genuine. Shoemaker names such a creature an "imitation man"- AQT-2 also would grant the possible existence of creatures whose states satisfy maximally good functional definitions of mental states but whose qualitative states are ersatz. While both the theses grant the possible existence of creatures whose qualitative mental states are ersatz, the difference between them lies in that AQT-1 clearly states that the non-qualitative mental states of the creature satisfying the maximally good functional definitions are genuine whereas AQT-2 does not specify whether the non-qualitative states are genuine or not. Therefore, the imitation man AQT-1 holds to be possible would satisfy AQT-2 as well. Hence AQT-1 entails AQT-2. However, the falsity of AQT-1 does not guarantee the falsity of AQT-2. That is, even if an imitation man is impossible, AQT-2 would be true if there could be a 'super imitation man', a creature whose states satisfy maximally good functional definitions of various mental states but all of whose mental states — qualitative as well as non-qualitative — are ersatz.

Shoemaker maintains that his argument against the possibility of absent qualia is a refutation of the stronger thesis of the two namely, AQT-1. In other words, he defends the thesis that qualitative states are functionally definable in the weak sense in terms of their causal powers to give rise to genuine mental states such as qualitative beliefs, desires etc. AQT-1 is not true because if qualitative mental states can be functionally defined in terms of their causal relation to some genuine mental states like qualitative beliefs, then it is not possible to

[6]Cf. "Absent qualia are impossible - a reply to Block," 313. Shoeaaker maintains that the denial of AQT-2 — viz. qualitative states are functionally definable in the strong sense — would mean the correctness of functionalism as a general philosophy of mind. For it implies that all or most mental states are functionally definable in the strong sense. But the denial of AQT-1 i.e., the thesis that qualitative states are functionally definable in the weak sense is compatible with the falsity of functionalism as it grants the possibility that at least some non-qualitative states are not functionally definable even in the weak sense. It is also compatible with the view that no mental states are functionally definable in the strong sense. That is, if mental states are functionally definable only in the weak sense it is possible that no mental states are functionally definable in the strong sense.

distinguish cases of genuine pain from the cases of ersatz pain on the basis of their causal features. One of the causal features of pain is that it gives rise to introspective belief about its occurrence on the part of its possessor. As a result the organism in question has knowledge of pain and its qualitative character. Since both genuine pain and ersatz pain have the same functionally relevant causal features, it must be true of ersatz pain that it also gives rise to the same qualitative beliefs and the same behavioural outputs in an imitation man. That is, ersatz pain too gives rise to the knowledge of pain with its qualitative content. It follows that the distinction between ersatz pain and genuine pain is baseless.[7] If there is no possible way to distinguish between cases of genuine and ersatz qualitative states, the distinction between genuine man and imitation man too cannot be maintained. If so, AQT-1 cannot be true.

One could argue that the distinction between genuine and ersatz mental states can be maintained on the basis of the 'total causal role' though not on the basis of the maximally good functional definition. An important causal factor outside the maximally good functional definition but well within the total causal role is the physical factors that realise the mental state in question. Shoemaker argues that if mental state terms are considered natural kind terms in line with the Kripke-Putnam view about natural kinds, then there is a possibility of distinguishing genuine mental states from ersatz ones. On this view, since mental state terms are natural kind terms, they are rigid designators having their references fixed to certain physiological (neural) states. On the basis of this, it is possible to argue that only the neural states that realise the maximally good functional definition of mental states in humans are genuine mental states. Consequently a distinction can be maintained between ersatz qualitative states and genuine ones, implying that the cases of absent

[7]The possibility of ersatz pain. Shoemaker argues, gives rise to insurmountable epistemological difficulties. How could we know that the pains of the people we come across and interact in our day to day life are not ersatz and that the other people are not imitation men? Or how could I know I myself am not an imitation man? Cf. "Absent qualia are impossible — a reply to Block," 316.

qualia in the sense of AQT-1 are possible.[8]

According to the above discussion, a genuine mental state must satisfy two conditions: (1) it should satisfy the maximally good functional definition; (2) it should be realised by the kind of neural states that realise it in humans. On this view, the human mental states become paradigmatic. In Shoemaker's opinion, this is a parochial view. He identifies a restricted and an unrestricted version of the parochial view. If it is held that the qualitative and non-qualitative mental states are realised by the human neural states, it is called an unrestricted version of the parochial view. The restricted version of the parochial view maintains that the qualitative states are genuine only if they are realised by the neural states of the sort that realises them in humans. On this view, the non-qualitative states are genuine even if they are non-neurally realised. According to the restricted version of the parochial view, a qualitative state is ersatz if it is not realised by the neural state of the type that realises them in human. It does not matter at all whether the qualitative state is causally related to the multiply realizable yet genuine non-qualitative mental states in addition to inputs and outputs. It could be maintained that AQT-1 is committed to the restricted version of the parochial view.

Shoemaker illustrates this point with the example of hypothetical martians. Suppose the martian psychology is isomorphic with ours. Yet on account of a radical difference in their biochemistry and neurobiology, the martian states functionally equivalent to our mental states are physiologically realised quite differently from the way they are realised in us. The physiological differences between them and us are such that, according to the restricted version of the parochial view, their non-qualitative mental states are genuine but their pains and other qualitative states are ersatz. This means by discovering the physiological differences between the states that realise pain in humans and those that realise pain in martians it is possible to find out that martian pains are

[8]Cf. "Absent qualia are impossible — a reply to Block," 317-21.

ersatz.[9] A distinction between genuine and ersatz qualitative states on the basis of their physiological differences can prove that AQT-1 is true.

According to Shoemaker, even on the above line of thinking, it is not possible to distinguish ersatz qualitative states from the genuine ones by appealing to the total causal role. The way of distinguishing ersatz and genuine qualitative states on the basis of their physiological differences is faced with very serious epistemological difficulties. If humans can discover that their pains are genuine and martian pains are ersatz cm account of their physiological differences, the discovery of the same physiological differences must reveal to martians that their own pains are ersatz and human pains are genuine. But this is not a plausible view. Suppose that our qualia words like 'pain' have their references fixed a la Kripke to a class of physiological states that humans have and martians lack. If martians also speak English, then, on this assumption, it is possible to argue that qualia words like 'pain' in martian language refer to the neural states that realise pain in the humans and that they are systematically mistaken in their introspective beliefs while claiming to have pain. However, this odd consequence, in Shoemaker's opinion, is ruled out by the causal historical account of reference advanced by Kripke and Putnam. Accordingly, the qualia terms like 'pain' in martian language refer to the physiological states that martians have and we lack. For it is with their physiological states that martian qualia terms would be causally connected in ways that make for reference. Similarly qualia words in human language refer to the human physiological states which martians lack and with which our qualia words are causally connected in ways that make for reference. Hence, while our philosophers could say that there is nothing it is like to be martians, theirs could say that there is nothing it is like to be humans. And each would claim their own qualitative states to be genuine and those of others to be ersatz.

The moral of the story, according to Shoemaker, is as follows. On the assumption that martians have a common sense psychology isomorphic with ours and that they share our non-qualitative mental states, there is no

[9]Cf. "Absent qualia are impossible — a reply to Block.- 321-22.

possible criterion on which it could be said that martian pains lack qualia while human pains possess qualitative contents. So it turns out that the distinction between a genuine pain and an ersatz pain is spurious because if martian (common sense) psychology is isomorphic with ours and they share our non-qualitative mental states, then martians too must have qualia. However, in Shoemaker's opinion, the conclusion that martians have qualia must be entertained with a caution. Because of the differences in physical make up, their qualia are bound to be different from our qualia. That is, their pain need not feel to them the way our pain feels to us. So the claim that martians have qualia does not mean that they have our qualia but only that they have some qualia or other.[10]

4.3 QUALIA INVERSION AND FUNCTIONAL DEFINITION

For Shoemaker, cases of absent qualia are impossible because a functional isomorph of a creature having qualitative states must have some qualia or other if not the same. However, he concedes that qualia inversion is a logical possibility. Despite such a possibility qualia are functionally definable. But there is a sense in which qualia are functionally definable and another in which they are not.

4.3.1 The sense in which qualia are functionally undefinable

If the talk of defining functional states is equivalent to the talk of defining names or 'rigid designators' for various types of qualitative states, then, argues Shoemaker, qualitative states do not seem to be functionally definable.[11] He clarifies it with the idea of spectrum inversion, a special case of qualia inversion. Spectrum inversion pre-supposes that there is a set of colour qualitative states corresponding to various perceivable colours and that every determinate shade is mapped onto some determinate shade, and at least some shades are mapped onto shades other than themselves. The shade onto which a shade is mapped is called the inverse of the shade. There is *intersubjective* spectrum

[10]Cf. Absent qualia are impossible — a reply to Block," 322-24.

[11]"Functionalism and qualia," 193-95.

inversion if the way each determinate shade of colour looks to a person is the same as the way its inverse looks to another. A person is said to have intrasubjective spectrum inversion if a shade of colour appears to him Just the way its inverse appeared to him previously.[12]

The functional analysis of the colour qualia 'being appeared blue to associated with blue colour can be stated as follows. A person S is in the state being appeared-blue-to if he is in a state associated with blue colour produced in him by an object of blue colour under standard conditions. However, the logical possibility of intersubjective or intrasubjective spectrum inversion shows that a colour quale type cannot be functionally defined in this way because the role of the *type* of colour quale currently involved in the perception of blue things in a person could be played in a different person S' by colour quale of a different type, say one involved in perception of yellow things in S, due to intersubjective spectrum inversion. Similarly intrasubjective spectrum inversion shows that the role of a colour quale in the perception of blue things could be played at a different time by a different type of colour quale, say the one usually associated with the perception of yellow things in one and the same person. From the possibility of intrasubjective and intersubjective spectrum inversions Shoemaker concludes that the individual qualitative types like being appeared-blue-to are not functionally definable.

4.3.2 The sense in which qualia are functionally definable

Shoemaker argues that though particular qualitative types cannot be functionally defined, there is a sense in which a class of them can be functionally defined. Of the two kinds of spectrum inversion, it is the seeming conceivability and detectability of intrasubjective spectrum inversion that points to the possibility of the intersubjective spectrum inversion. Again the seeming conceivability and detectability of intrasubjective spectrum inversion suggests that a class of qualia are functionally definable. The intrasubjective spectrum inversion is conceivable only on the assumption that there are degrees of similarities

[12]Cf."Functionalism and qualia,- 195-98.

and differences among one's colour qualia analogous to those among determinate shades of colour. The relations of similarity and difference holding among the qualitative states are called qualitative similarities and differences. Following Quine. Shoemaker names the qualitative states corresponding to the determinate shades of colour, the "quality space" of colours. The quality space and its structure, according to both Quine and Shoemaker, are innate.[13]

The intersubjective spectrum inversion, if there is any, is undetectable since it is neither available to anyone in introspection nor does it manifest itself in one's behaviour, as two persons whose colour spectrum are inverted relative to each other can make the same colour discriminations and the same judgments of colour similarity or difference. The intrasubjective spectrum inversion, on the other hand, is detectable. First of all, it would reveal itself in introspection or in introspection cum memory. So the subject can report that he has undergone spectrum inversion. Secondly, there can be non-verbal discriminatory behaviour which will reveal that the person has undergone spectrum inversion. If there can be no such evidence, then Shoemaker argues, we have no reason to think that spectrum inversion of any sort is even logically possible:

> To claim that spectrum inversion is possible but that it is undetectable even in the intrasubjective case would be to sever the connection we suppose to hold between qualitative states and introspective awareness of them (between them and the qualitative beliefs to which they give rise), and also their connections to perceptual beliefs about the world and, via these beliefs, to behaviour.[14]

Shoemaker argues that intrasubjective spectrum inversion is manifested in non-verbal behaviour. When two experiences (token qualitative states) of a person are co-conscious (two experiences are said to be co-conscious if a person is actually having them both at the same time or if he correctly remembers them), the similarities between them tend to give rise

[13]See Shoemaker, "Phenomenal similarity." in *Identity,* Cause and Mind. 177 and also Quine. "Natural Kinds," in *Ontologlcal Relativity* and *Other* Essays (New York: Columbia. 1969), 123.

[14]"Functionalism and qualia," 197-98.

to belief about Objective similarities in the physical world. Similarly, the differences between them tend to give rise to the belief about the objective differences in the physical world. These beliefs together with one's other mental states such as desires, wants, etc. give rise to appropriate overt behaviour. If intrasubjective spectrum inversion takes place, one's experiences would give rise to a set of mistaken beliefs because those beliefs represent things different from the way they are actually in the world. The behavioural manifestations of these mistaken beliefs will be an evidence for the occurrence of spectrum inversion.

In addition to the non-verbal behavioural evidence, the occurrence of spectrum inversion can be reported by the subject. This assumes that the intrasubjective spectrum inversion is accessible to introspection. The relations of qualitative similarity and difference that hold among one's co-conscious experiences tend to give rise to 'qualitative beliefs' to the effect that such relations hold among one's qualitative states. It is because of these qualitative beliefs that the victim can report that he has undergone spectrum inversion.[15]

Despite the logical possibility of spectrum inversion, its detectability, according to Shoemaker, shows that a class of qualitative states ordered by relations of qualitative similarity and difference can be functionally defined. A class of them is functionally definable because relations of qualitative similarity and difference holding among them can themselves be functionally defined. That is, these relations holding among one's experiences is causally related to sensory inputs, behavioural outputs and other mental states. When relations of qualitative similarities and differences hold among one's qualitative states, they tend to produce the belief that there are objective similarities and differences among things in the world. They also tend to give rise to the belief that qualitative similarities and differences hold among one's own experiences. Shoemaker calls the beliefs of the latter kind 'qualitative beliefs'. The beliefs of the former kind, we shall name 'objective beliefs'. The objective beliefs give rise to certain recognitional and discriminatory

15Cf."Functionalism and qualia," 198-99.

behaviour. This overt behaviour reveals that it has been affected by qualitative similarities and differences among one's experiences via objective beliefs. The verbal behaviour of a person, on the other hand, is influenced by the qualitative similarities and differences via qualitative beliefs. That is, one's qualitative beliefs enable a person to make verbal report to the effect that qualitative similarities and differences hold among one's mental states.[16] In short, what makes the relations among one's experiences the relations of qualitative similarity and difference is their causal roles in the production of perceptual awareness of objective similarities and differences, and in the introspective awareness of qualitative similarities and differences among one's experiences.

Shoemaker's strategy is to provide type-identity conditions for a class of qualitative states on the basis of the causal roles of relations of qualitative similarity and difference. A functional duplicate of a creature having qualitative states will have a quality-space structured by relations of qualitative similarity and difference isomorphic with the relations of qualitative similarity and difference holding among the states of the creature of which it is a functional duplicate. Qualia inversion being a logical possibility, it cannot be a condition for the functional equivalence of two organisms that a set of the same type of qualitative states must be common to both. However, it is required that the functional duplicate of an organism must have some set of qualitative states or other. and that the sets of qualitative states belonging to those of organisms must have the same structure, even though the individual members are of varying nature. More precisely, a functional isomorph of an organism having quality space will itself have a quality space with the same structure though the nature of the individual qualia forming the quality spaces could vary in both organisms.

The conceivability and detectability of intrasubjective spectrum inversion, we have seen. suggest the possibility of intersubjective spectrum inversion. There is a natural line of argument from intrasubjective spectrum inversion to the conclusion that intersubjective

[16]Cf. Shoemaker. The inverted spectrum,' in *Identity*. Cause, *mud Mind*. 340.

spectrum inversion actually exists. Suppose a person S undergoes intrasubjective spectrum inversion at time *t* and others do not. It would have been true that either before or afterwards (or both) his colour experiences must have been radically different from those of others. Thus there is intersubjective spectrum inversion in the cases where intrasubjective spectrum inversion takes place. If so, it is logically possible that there is intersubjective inversion without intrasubjective inversion because we can conceive of two persons whose colour spectra are inverted relative to each other from their birth.[17]

In order to say that the colour spectra of two persons are inverted to each other, relations of qualitative similarity and difference must hold intersubjectively. The functional account of relations of qualitative similarity and difference considered so far applies only when these relations hold intrasubjectively. There must, however, be a way of saying that the qualitative states of two creatures are similar or different in the interpersonal cases. Qualia types can be shared by different persons because they are realised in other properties shareable by different people. Functional states can have physical realisation. They can be realised in the physical states of an organism that play the causal role definitive of them. Since there is a sense in which qualia can be functionally defined, qualia too have physical realization; there are physical states that realise the 'causal roles' definitive of qualitative similarity or difference. The physical properties that realise qualia could be instantiated in different people. Consequently, their experiences could be qualitatively similar or different depending upon the kind of physical states that realise them. This account makes it possible that qualitative similarities and differences in the interpersonal cases could be discovered by appropriate empirical investigations.[18]

The above account does not guarantee that the colour experiences of any two different creatures are qualitatively comparable in spite of having states that play the causal roles definitive of qualitative similarity and

[17]Cf.The inverted spectrum." 328-29.

[18]Cf. Ibid., 342,

difference. Even if martian psychology is isomorphic with ours, if their qualia are realised radically differently from the way they are realised in us humans because of the difference in neurophysiology and biochemistry, martian qualia and human qualia are not comparable. None of the properties that realise qualia in humans could be instantiated in martians and *vice versa*. So the question whether qualitative states of two creatures are comparable or not, can be settled by an empirical inquiry as to whether the relevant physiological similarities hold between the brains of two different creatures. Science has not made sufficient progress to make such discoveries of the relevant physiological similarities. In the absence of such evidences, argues Shoemaker, the members of the same species could be presumed to have the relevant physiological similarities. The reason is that the members of the same species have a common evolutionary history. Hence they share a common genetic endowment. Martian evolutionary history and their genetic endowment for that reason are totally different from those of humans. Hence it is not possible for us to say that the human and the martian qualia are qualitatively comparable.[19]

4.4 THE ROLE OF QUALIA IN PERCEPTION

Cognition may partly be defined as the mental process directed towards the production of certain beliefs about the objective world. We shall call such beliefs objective beliefs. Shoemaker has provided a model of cognition within the functional specification theory. On this model, cognition takes place as a result of the interaction between the organism and the environment on the one hand, and the causal interaction among the various mental states of the organism on the other. 1 shall elucidate this point with reference to a reconstruction of Shoemaker's causalist model of perception. Perception is an important cognitive process through which objective beliefs are formed. We shall call the objective beliefs formed through perception perceptual beliefs. On Shoemaker's account of perception, qualia are essential for the production of perceptual beliefs. Our experience of the world and the resultant perceptual beliefs would not

[19]Cf.The inverted spectrum." 343-50.

have been as they are, and perhaps would have been impossible, if no qualia were involved in perception.

An account of visual perception can be traced in Shoemaker's attempt to give a functional definition of qualia. On his weak version of the maximally good functional definition of mental states, if a state is functionally type-identical to a state having qualitative character it is nomologically necessary that the former itself must have the qualitative character. A close examination of the functional definition of qualitative states shows that it provides a functionalist account of perception. Qualia are those essential properties of sensory or perceptual states which give them their phenomenal characteristics. On this account, qualia have a very important role to play in perception because for perception to occur, there must be some qualitative states or other.

The role of qualia in perception can be explicated taking the case of visual perception. An account of visual perception involves reference to colour qualia. Shoemaker defines a colour quale as "being appeared-to in a certain way".[20] "Being appeared-blue-to" for example, is a type of particular colour quale. If a person looks out at the clear sky on a summer day it looks blue to him and in Shoemaker's terminology he is said to be appeared-blue-to. However, the occurrence of the colour quale being appeared-blue-to does not guarantee that the person *sees* something blue because he could be appeared blue to both in the case of visual perception of something blue and in the case of illusion and hallucination. Therefore, Shoemaker uses the expression 'appeared-blue-to' as an abbreviation for the locution 'sees or seems to see something blue'.

Each organism has a repertoire of qualitative states or what might be called "quality space". For the explanation of visual perception, Shoemaker identifies a subset of qualitative states - the set of colour qualia that are isomorphic with the visual spectrum. An organism is able to perceive only those colours for which it has the corresponding colour qualia. The set of colour qualia is related to the colours of objects in the world in such a way that visual stimulation by an object of a certain

[20]"Functionalism and qualia," 193.

colour Under Standard conditions produces in the organism the associated qualitative state. Each member of the set of colour qualia is similar or different from other ones in various degrees. Hence, as noted earlier, the set of colour qualia are structured by the relations of qualitative similarity and difference. The degrees of qualitative similarity and/or difference correspond systematically with the degrees of similarity and/or difference among the associated colours. It is because of the systematic correlation between qualia and the qualities of the objects seen that we see the objects as coloured. Under this strategy a person sees something blue if and only if the following three conditions are satisfied together:

(a) He is in a state associated with the colour blue produced in him as a result of visual stimulation by a blue object;
(b) the state tends to give rise to the objective belief that there is something blue before him; and
(c) the state tends to give rise to the qualitative belief that one is oneself in the qualitative state, being appeared-blue-to.[21]

Since qualitative states produced as a result of visual stimulation by external objects reflect the objective similarities and differences, the qualitative states stand in relations of phenomenal similarity and difference. The qualitative similarities and differences tend to give rise to two types of belief: the objective belief to the effect that the perceived objects are similar or different in varying degrees with respect to their properties and the qualitative belief to the effect that one's qualitative states themselves stand in relations of qualitative similarity and difference. Objective beliefs, Shoemaker maintains, are not always accompanied by qualitative beliefs. However, by mere shift of one's attention from external objects to one's internal states one comes to have qualitative beliefs.

For the exercise of the perceptual faculty, an organism must be endowed with a quality space. The innate subjective quality space structured by relations of qualitative similarity and difference "accords

[21]Tunctionalism and qualia." 193.

well with the functionally relevant grouping in nature" because of which our inductive generalisations turn out to be successful. Quine explains the success of induction in behavioural terms, i.e., in terms of the dispositions of an organism to respond to conditioning. Shoemaker, on the other hand, thinks that the success of inductive generalisation is due to the fact that the relations of similarity and difference that hold between one's experiences reflect corresponding relations that hold between things in nature. In other words, our inductions based on experiences of things in nature come out true because of a sort of "pre-established harmony" with experiences causally related to things they are of, in such a way that, *ceteris* paribus, similarities and differences in experience reflect significant similarities and differences in nature.[22]

On Shoemaker's account, the similarity of experiences yields the experience of similarity. The phrase "experience of similarity" is understood intentionally. When the experiences are similar and are co-conscious, they jointly are of objective similarities. However, to have experience of similarity, the objective similarities need not actually exist in the world. The objective similarities are those which can exist in the world.[23]

To become aware of objective similarities, we do not have to become aware of the similarities between our perceptual experiences. The mere fact that our qualitative states stand in determinate relations of qualitative similarity and difference by itself would not give awareness of similarity relations among our experiences. Had it been so, whenever the similarity relations hold among our experiences, or at least when we become aware of objective similarities, we would have become aware of the qualitative similarities among our experiences. Since awareness of objective similarities is possible only because our experiences stand in relations of qualitative similarity, Shoemaker is of the opinion that whenever we are aware of the objective similarities, by mere shift of our attention we can have direct or immediate awareness of phenomenal

[22]"Phenomenal similarity." 167-68.

[23]Cf. Ibid., 180-81.

similarity.[24] The same is true mutatis *mutandis* of the awareness of objective difference as well as of qualitative difference.

The experience of similarity and difference (i.e., the awareness of objective similarity and difference) is explained in causal terms. However the awareness of phenomenal similarity and difference, argues Shoemaker, cannot be causally explained, for such an explanation would run into infinite regress. A causal account of the awareness of phenomenal similarity and difference would posit an experience of experience, an experience of experience of experience and so on ad *infinitum* with an infinite hierarchy of "quality spaces". There is a second reason why a causal account of the awareness of qualitative similarity and difference is not tenable. There is an asymmetry in the epistemic status of our awareness of objective similarity and difference and that of qualitative similarity and difference. The awareness of objective similarity and difference is fallible. But our awareness of qualitative similarities and differences cannot be mistaken in any analogous way. That is, "if someone believes two of his present experiences to be phenomenally similar then, *ceteris paribus,* they will be phenomenally similar"[25].That is, if one's two experiences stand in the relationship of phenomenal similarity, it i*pso facto* implies an awareness of phenomenal similarity.

Shoemaker claims that we are endowed with the ability to have the direct (i.e., immediate and non-inferential) awareness of the similarities of our perceptual experiences: "our ability to be aware of experience similarities is implicit in, and is a sort of shadow or reflection of, our ability to be perceptually aware of objective similarities in nature".[26] Reflexivity of our experiences is a function of the system of concepts involved in the perception of objective facts. The concepts of "oneself", 'seeing' etc. result from the sophistication of our conceptual architecture. It is because of the sophistication of our system of concepts that we become aware of the fact that we perceive. This does not

[24]"Phenomenal similarity." 168.

[25]Ibid., 174.

[26]Ibid., 181.

mean that whenever We perceive we become aware of the fact of perception. Our non-awareness of our own perception, in Shoemaker's opinion, is in no way analogous to blindness. "It is not by an inner sense, which I might have lacked without lacking the ability to see, that I am aware that I see".[27] We can perceive something to be the case without being aware that we perceive. Yet we possess the capacity to be aware of our own perception. This capacity can be exercised if we decide so.

4.4.1 Phenomenal similarity and intentional similarity

Our objective beliefs are about things in the world. Hence they can be called intentional beliefs. Qualitative beliefs, on the other hand, pertain to the qualitative states of the mind. They may be called phenomenal beliefs. Parallel to these two kinds of beliefs, Shoemaker makes a distinction between intentional similarity and phenomenal similarity. Intentional similarity is the similarity in the representational contents of one's mental states. They may be said to represent the similarity ordering among the stimuli. The experience "as of red" or "as of green" is an instance of an intentional or representational mental state. Phenomenal similarity means similarity of 'experiences' or sensory (representational) states by virtue of certain of their intrinsic features. Two instances of being appeared-blue-to, for example, are qualitatively similar. The phenomenal similarity among one's experiences is innate and does not get modified by the external stimuli.

The distinction between intentional and phenomenal similarities is based on the seeming conceivability of intrasubjectlve qualia inversion. The intentional contents and hence the intentional similarity among our mental states depend upon the way they are related to the environment. The qualitative character of our mental states and the phenomenal similarity among them are not so related to the external factors. Hence the intentional or representational content of one's experience can remain the same before and after qualia inversion.[28] Shoemaker Illustrates this as

[27]"Phenomenal similarity," 182.

[28]Cf. Shoemaker, "Qualia and Consciousness." *Mind* 100 (1991): 518.

follows. Suppose a person living in a yellow painted house undergoes a total spectrum inversion. After the inversion the yellow coloured objects look blue to him and the blue coloured objects look yellow. Suppose after a period of time he gets himself accommodated to this change such that his verbal behaviour is no evidence for the spectrum inversion. That is, his accommodation to the colour change shows that he uses the word 'yellow' to refer to the yellow coloured objects and 'blue' to blue coloured objects though in fact they appear to him blue and yellow respectively. After the spectrum inversion and the subsequent accommodation there is a sense in which his house 'looks the same' to him: his experiences before and after the inversion are of the same objective colour. This, according to Shoemaker, is the intentional sense of 'look the same'. There is however a different sense, namely, the phenomenal sense in which his house does not look the same to him. In this sense, the house no longer looks yellow to him but blue. Spectrum inversion is specified with reference to the qualitative sense of the expression 'look the same'.[29]

According to Shoemaker, it is by virtue of the phenomenal similarity and difference among one's experiences that they have the representational content they do. The structure of the quality space makes one sensitive to the similarities and differences in the world. The phenomenal similarities represent objective or intentional similarities because there is a sort of parallelism between the similarities and differences among one's experiences and those among the causes of one's experiences.[30] A change In the structure of quality space resulting in a different similarity-difference ordering among one's experiences would imply that the similarity-difference relations among the intentional contents of one's experiences too would undergo a corresponding change. Shoemaker illustrates this point with the example of Frank Jackson's Fred who can discriminate between two shades of red which an ordinary member of our species cannot. The two shades are not phenomenally alike for Fred, whereas our experiences of the shades are exactly alike with regard to

[29] *Cf.* "Inverted spectrum," 335.

[30] Cf. "Qualia and Consciousness." 518-19.

their phenomenality. Fred's experiences are phenomenally different. Consequently they have different representational content. Since we are not able to distinguish between the shades, our experiences of them have the same (similar) representational content. Hence Shoemaker concludes that the phenomenal similarity of our experiences underlies the similarity of their intentional content.

Because of the determination of intentional similarities and differences by phenomenal similarities and differences, the possibility of an alternative quality space would imply that there could be alternative sets of intentional similarities and differences. This means that the secondary qualities and the similarities and differences among them are perceptual system relative. And they could perhaps vary from species to species. For example, colours that are phenomenally similar to a set of observers with a certain type of quality space could be phenomenally different for another set of observers with an alternative type of quality space. However this, according to Shoemaker, does not mean that possessors of alternative quality spaces misperceive the objective similarity-difference relations among the colours.[31] Relative to an observer with a certain perceptual system, the objects are really similar or dissimilar under certain aspects, say colour, because they are apt to produce experiences that are phenomenally similar or dissimilar.[32]

We have seen that the perception of objective similarities and differences are perceptual system relative. This does not mean that objective similarities and differences do not exist in the world. Nor is it the case that the similarity-difference relations together with the properties because of which they hold, are projected on to the world. (According to the projectivist thesis the objects look in a certain way because we perceive them as having a qualitative character that in fact belongs to the experience.) In Shoemaker's opinion, though qualia are purely mind-dependent, there are mind-independent secondary qualities corresponding to them. The secondary qualities are not anything over and

[31]Shoemaker. "Qualities and Qualia: What's in the Mind?" Philosophy and *Phenomenological Research* 50 (Supplement. 1990): 119.

[32]Cf. "Qualia and Consciousness." 519.

above certain physical properties. Yet, there is no straightforward identification of a secondary quality with a physical property because the physical property with which the secondary quality is identified must be highly disjunctive. What gives unity to the disjuncts is not their intrinsic nature which makes them natural kinds but rather their relation to creatures with perceptual systems like ours.

Shoemaker, however, concedes that there is a sense in which we project similarities and differences among our experiences on to the world: "what similarity and difference relations we perceive in the world is a function of what relations of phenomenal similarity and difference relations hold among our experiences, . . ."[33] The similarity/difference relations we perceive, in fact, hold among the objects but they hold relative to observers like us. The similarity/difference relations holding among the perceived objects are not solely grounded in objects but also in the similarity-difference relations among our experiences. The same is true of the secondary qualities. The colours we perceive, for example, do not merely depend upon the qualitative features of experience, but also upon the properties of the external objects. So when the experiences represent them as red, blue, etc. they normally represent them correctly.

To sum up: Perceptual states are qualitative states. In the absence of qualia it is not possible to specify what it is like to perceive. For example, if one does not possess the colour qualia, say being appeared-blue-to, one cannot experience what it Is like to see blue objects. Similarly, without qualia, and the relations of similarity and difference among them, the perception of objective beliefs and differences is not possible. Hence qualitative features are essential for the production of objective or perceptual beliefs.

4.5 A CRITICAL REVIEW OF SHOEMAKER'S THEORY

Each of us is aware of the existence of qualitative features of mental states. Hence a theory of mind that fails to accommodate and account for them would be intuitively unacceptable. It is in this context that

[33]"Qualities and Qualia: What's in the Mind?"

shoemaker's Strategy for functional definition of qualia becomes very appealing. However, a close look at the strategy reveals some of its glaring weaknesses. In this section. I shall deal with the difficulties that confront Shoemaker's approach. Shoemaker's functionalist account of qualitative states is based upon two assumptions. First, qualitative states and awareness states are distinct and separable states. Second, though intentional states are causally dependent upon qualitative states, they too are distinct and the two can occur independent of each other. My basic objection to Shoemaker is that these assumptions are false and therefore, his functionalist account fails to define qualia.

Qualitative mental states are essentially conscious mental states. That is, the occurrence of qualitative mental states is invariably revealed in our awareness. But, in Shoemaker's functionalist account of qualia there is a clear-cut bifurcation of qualia and awareness of them. Consequently, for Shoemaker the qualitative states can occur without awareness of them. Though qualitative states tend to give rise to awareness of themselves, they do so only in the absence of countervailing factors. This means that there can be *unconscious qualia.* But we do not have even the slightest idea as to what unconscious qualia are, or what it is like to have unconscious qualia. It makes no sense to say that I am in a qualitative state but I am quite unaware of being in such a state. It would be a contradiction to say. for example. ˙I am feeling pain but I am completely unaware of it'. On account of the separation of qualia from awareness, qualia cease to have their phenomenal aspects. Hence, it turns out that the qualitative states whose functional definition Shoemaker tries to provide are not genuine qualitative states but only proxies for them.

The above objection is based upon the idea that qualia and awareness of qualia are inseparable. They are inseparable because they are identical. The reasons for it can be cited as follows. One cannot be in a qualitative state without one's awareness of being in such a state. Take for example, the qualitative state pain or being appeared-blue-to. It makes no sense to say that I feel pain without being aware of my pain. Similarly, I cannot be appeared-blue-to without my awareness of being appeared-blue-to. To be aware of pain is to feel pain. To be aware of being appeared-biue-to is, in fact, to be appeared-blue-to. Pain may be

considered as a feeling in a certain way. Similarly, being appeared-blue-to is being appeared to in a certain way. Feeling in a certain way and being appeared to in a certain way etc, cannot occur and cannot be conceived without awareness; they may be called modes of awareness.

Shoemaker identifies awareness of something with the belief that something is the case. To be aware of my pain would be. on this account, to believe that I am in pain. The awareness of *or* the belief about the occurrence of qualitative states. in Shoemaker's terminology, are qualitative beliefs. Since awareness states and belief states are identical, beliefs states also can be considered modes of awareness. We have already seen that qualia and awareness of qualia are identical. Hence it follows that qualia, and the qualitative beliefs that reveal the contents of our mental states are identical. That is, the occurrence of pain and the belief that one is oneself in pain are is one and the same. This view is, in fact, supported by Shoemaker's own position that we become immediately and non-inferentially aware of qualia.

In short, I have been arguing that the ontological distinction between qualitative states and qualitative beliefs is not tenable. The distinction would mean that one could exist without the other, and Shoemaker, we have seen, grants that qualitative states can occur without the occurrence of qualitative beliefs. The odd consequence of this position, as noted above, is that there can be unconscious qualia. On the other hand, the possible occurrence of qualitative beliefs without the occurrence of qualia is rather inconceivable. If I am, for example, in the qualitative belief that I myself am in pain, then I am in pain Because I cannot have the qualitative belief that I myself am in pain without being in pain. If qualia and qualitative beliefs are Identical, Shoemaker's functional definition of qualia in terms of their tendency to give rise to qualitative beliefs, among other things, turns out to be circular. That is since qualitative beliefs with reference to which we define qualia are Just another name for qualia. Shoemaker's strategy amounts to defining qualia In terms of qualia.

Shoemaker's reply to the above objection, would be on the following lines. There are two sets of qualitative beliefs. the first is the set of

qualitative beliefs in Whose prepositional content there is reference to a particular qualitative content. The qualitative beliefs which I have identified with the qualitative states, he would argue, belong to this category. These beliefs, he would concede, cannot be functionally defined, as each of them states that one is oneself in a specific qualitative state. But there is a second set of qualitative beliefs whose prepositional contents does not make reference to any specific qualitative states. Instead they just quantify over qualitative states. And these beliefs, Shoemaker argues, can be functionally defined. However he suggests that the qualitative beliefs of the first sort can be functionally defined provided they are quantified over; what is essential for the functional definition of mental states is quantification over them. So it can be built into the functional definition of a qualitative state, say pain, that being in pain gives rise to *some* qualitative belief to the effect that one has a specific qualitative state without specifying the nature of the qualitative state the belief is about.[34] It must be noted that Shoemaker does not argue that the qualitative states referred to in the prepositional contents of the qualitative beliefs that are quantified over, must themselves be quantified over. But in effect, his proposal demands it, as it is not specified what particular qualitative contents are referred to in the prepositional contents of these qualitative beliefs. In other words, a quantified belief is a belief to the effect that one is in some specific qualitative state without saying what qualitative state it is. We must incorporate into the functional definition of pain, for example, that being in pain gives rise to some qualitative belief to the effect that one is in a specific qualitative state. Since it is not pin-pointed what specific qualitative state it is, this amounts to the quantification of qualitative states referred to in the prepositional content of qualitative beliefs. Therefore, we say, in effect, that pain gives rise to some belief to the effect that one is in some particular qualitative state.

Shoemaker's strategy of quantifying the qualitative beliefs which make reference to individual qualia. does not seem to make any advances

[34]Cf. "Functionalism and qualia," 202.

Instead, the move leads him into a dilemma: the functional account becomes either empty or illegitimate. It is empty as it fails to functionally define qualia. If there are no specific qualitative states with specific contents, then the qualia which are contents of the qualitative beliefs turn out to be abstract. But it is absurd to say that there are abstract qualia. This means Shoemaker's strategy fails to define the phenomenal characteristics of our experiences. It cannot specify, for example, what it is like to see something blue. In short, the strategy does not accommodate the subjective point of view or the first person account of our mental states. Though Shoemaker starts with a promise of the first person account of qualia, he ends up with providing a third person account of qualia. If Shoemaker tries to remedy this difficulty by trying to define qualia with reference to the particular or specific qualitative beliefs they give rise to, then his strategy becomes illegitimate, for the particular qualitative states are nothing other than qualia themselves. In short, the totality of one's introspective and behavioural evidence unambiguously points to the fact that one is in a specific qualitative state. But ironically enough in the functional definition, reference cannot be made to a particular qualitative state one is in.

In this context, let us examine Shoemaker's claim that though individual qualia cannot be functionally defined, a set of them structured by the relations of phenomenal similarity and difference can functionally be defined. They are functionally defined because the relations themselves yield to functional definition. It is important to note that when my qualitative states resemble or differ, they do so in terms of specific qualitative or phenomenal characteristics. Similarly, the similarities and differences among the objects of the external world are in terms of the specific qualities they possess. This means that neither the objective similarities and differences nor the qualitative similarities and differences can be specified in abstract terms. So just as the objective similarities and differences are specified in concrete terms, the qualitative beliefs which our qualitative states give rise to must specify the relations of qualitative similarity and difference with regard to their specific qualitative aspects. But Shoemaker does not allow reference to such specific qualitative aspects. Consequently, be talks of the

differences and Similarities among qualia in general and abstract terms.

I shall make a closely related point which again suggests that Shoemaker's strategy fails to accommodate the first person point of view of one's mental life. Shoemaker concedes that in spite of the isomorphism among the quality spaces of two species, say martians and humans, they may have entirely different types of qualia. In other words, the functional equivalence between two sets of qualia does not guarantee that they are type-identical. That means the experiences referred to in the individual qualitative beliefs of martians and humans are different in nature. Consequently, these qualitative beliefs themselves must be type-distinct. What is common to the particular qualitative beliefs of a sort possessed by both humans and martians is only their name. That is, as Shoemaker allows, what it is like to have martian pain is different from what it is like to have human pain; for, that martians have qualia does not mean that they have same type of qualia as we humans possess. This means that what it is like to be a human could be radically different from what it is like to be a martian. In short, in spite of Shoemaker's thorough-going exercises in factionalism, the phenomenal aspects of mental states defy any functional definition.

Let us now come to the second assumption Shoemaker makes viz., that the qualitative states and intentional states are distinct and separable. The way we become aware of phenomenal similarities and differences, according to Shoemaker, is different from the way we become aware of objective similarities and differences. The intentional states viz., the beliefs about the objective similarities and differences are produced by the qualitative states caused by sensory stimulation. So it may be said that on Shoemaker's account, the awareness of objective similarities and differences is mediate and inferential because it is through qualitative similarities and differences that we come to know objective similarities and differences. The awareness of qualia and the similarities and differences among them cannot be causally explained as such an explanation leads to infinite regress. Hence Shoemaker assumes that the awareness of qualitative similarity and difference is immediate and non-inferential in the sense that they are directly accessible to us in awareness.

If it is true that we become aware of objective similarities and

differences only through qualitative similarities and differences, then it is not possible to become aware of the former without being aware of the latter as Shoemaker claims. In other words, in the process of becoming aware of qualitative similarities and differences, we became aware of objective similarities and differences. So it is not true that we mediately or inferentially become aware of objective similarities and differences. The awareness of objective similarities and phenomenal similarities is given to us simultaneously. In the presence of a blue object in the visual field, a subject does not become aware of the qualia, being appeared-blue-to, and then make an inference to the effect that he sees something blue. On the other hand, being appeared-blue-to and the awareness of the blue object are present at the same time. On similar terms, the qualitative similarities and differences as well as the corresponding objective similarities and differences are known simultaneously and immediately.

On the basis of the above discussion, we can make the following observations: (a) the awareness of qualitative similarities and differences and that of objective similarities and differences are given simultaneously; (b) we become aware of both kinds of similarity-difference relations immediately and non-inferentially; (c) we cannot become aware of objective similarities and differences without becoming aware of qualitative similarities and differences; and (d) similarly, we cannot become aware of the qualitative similarities and differences without at the same time becoming aware of objective similarities and differences. In the light of these observations, it is clear that the awareness of objective similarities and differences (objective or intentional beliefs) and awareness of qualitative similarities and differences (qualitative or phenomenal beliefs) are inseparable and are in fact one and the same state.

According to Shoemaker, when we perceive something, we have an objective belief. But by a mere shift of attention we can have a qualitative belief that reveals the qualitative aspects of our mental state. On this account, it seems that, at a time we can pay attention either to qualitative or phenomena) states or to intentional aspects. That is, we can have either objective beliefs or qualitative beliefs but not both at the same time. But when we turn our attention to qualitative

states and become aware of them, do we cease to be aware of their intentional aspects? The answer is clearly no. However, for the sake of an argument, let us grant that on becoming aware of the phenomenal aspects, we cease to be aware of the qualitative aspects and vice versa. That we become aware of the intentional aspects of our mental states means that we are aware of the existence of external objects and the objective similarities and differences among them. Our awareness of the existence of external objects with their similarities and differences does not mean that they are given to us directly in awareness. On the other hand, it is quite reasonable to conclude that when we became aware of the external objects and the similarities and differences among them, we are in fact aware of qualitative states and the phenomenal similarities and differences among them, for it is only these internal states that are available to us. So when we pay attention to external objects and become aware of them, it is through the internal states with qualitative features that we pay attention to them. At the same time, we cannot become aware of these qualitative states as such because whenever we become aware of the qualitative states we become aware of the external objects. In short, the objective beliefs and the qualitative beliefs are not distinct states, for intentionality and phenomenality are inseparable features of our experience.

What threatens the unity of phenomenality and intentionality is the logical possibility of qualia inversion. If phenomenality and intentionality are inseparable features of our experience, then the logical possibility of qualia inversion would Imply that the same set of qualitative states would have different intentional content before and after the inversion, meaning that phenomenality and intentionality are separable. By the inseparability of phenomenality and intentionality, we do not mean that qualia inversion is not logically possible. On the other hand, whether it is before or after the inversion, the qualitative states can occur only with intentional content. That is, qualitative states occur with some intentional content or other.

The second reason for the apparent separability of phenomenahty and intentionality is that we speak of them in abstract terms While considering qualitative states we say that they have some qualia or other that stand in the relationships of qualitative similarity and difference

without Specifying Under what aspects they are similar or dissimilar. Similarly, with regard to the external objects we say that there are objective similarities and differences without caring what these specific similarities and differences are. If, on the other hand, particular qualitative beliefs and particular objective beliefs are specified, it can be seen that neither phenomenality nor intentionality could occur independently. For example, I cannot have the qualitative belief 'I am appeared blue to' without the objective belief 'I see something blue'. A possible objection to this would be from the point of view of illusions and hallucinations. It might be argued that in hallucinations and illusions, one can have only the qualitative belief 'I am appeared blue to' without the objective belief 'I see something blue'. But this is not true. When one has the hallucination of blue objects, one is appeared blue to and has the qualitative belief to that effect. At the same time, the person has the objective belief 'I see something blue'. The main difference between the perception and the hallucination of blue objects lies in the fact that the objective beliefs they give rise to differ in their truth-value. In the case of the former they are true while they turn out to be false in the latter.

Qualia, according to Shoemaker, are the "non-intentional features of experiences that somehow underlie their intentional features". Yet he thinks that the qualia and the intentional features of experience are distinct and separable. One of our arguments against Shoemaker is that this is not true. The ways things feel, look, sound etc., no doubt involve qualitative features. But they are at the same time intentional or representational states as well. Since the looks, sounds, feel etc. are of something, when I am appeared red or blue to. 1 have colour quale but there are no pure colour qualia. As Shoemaker himself observes, "[i]f 1 am aware that my experience is as of something red, I am aware of the intentional property of it."

Shoemaker's arguments against absent qualia and qualia inversion as well as his account of perception are based on the assumption that awareness, intentionality and phenomenality are separable from each other. My criticism of Shoemaker has been from the point of view of the unity of

consciousness. I agree With Shoemaker that cases of absent qualia are not possible, and qualitative aspects are essential to our perceptual states. However. I disagree with his claim that qualitative aspects are functionally definable. My point is that qualia, intentionality and awareness are three inseparable features of our conscious mental states. In the next chapter, I shall discuss in detail some arguments for the separability of these features of consciousness and my arguments against them.

CONSCIOUSNESS :

AWARENESS, INTENTIONALITY AND PHENOMENALITY

5.1 INTRODUCTION

Shoemaker explains phenomenality or the qualitative aspects of our mental states as a function of the special class of mental states called qualia. Qualia succumb to functional definition in terms of their consequences such as qualitative beliefs and objective beliefs in addition to their behavioural responses. Qualitative beliefs are identified with awareness of qualia, a subset of our internal mental states. On similar lines, objective beliefs are defined as awareness of objects in the external world. Since the latter are about the external objects, they can rightly be called intentional states. In the process of functionally defining qualia, Shoemaker grants ontological autonomy to three varieties of mental states: qualia, qualitative beliefs and intentional states, and assumes that they are distinct and separable states. Shoemaker does not present any arguments to establish this position. His strategy just assumes it. There are, however, other philosophers who advance arguments in support of this view. Nelkin. for example, argues that consciousness is not an indivisible, unitary state, but consists of three varieties of states: the phenomenal, the intentional and the introspective. In his opinion, each of the component states is dissociable from others and no one state has any more priority over others in being considered as *the* consciousness.[1]

The chapter is divided into three sections. In the first section, I shall rehearse Nelkin's arguments for the disunity of consciousness and try

[1]*Cf.* Norton Nelkin. "What is Consciousncssr *Philosophy of* Science 60 (1993). 419.

to bring out their basic defects. Nelkin's arguments merit due consideration because they are a *posteriori*. That is, they are based primarily on empirical considerations. The position that he advocates assumes significance because of his claim that the division of consciousness into introspective awareness, phenomenality and intentionality is the first step towards a viable scientific study of consciousness. The division, he argues, facilitates a proper inquiry into the salient features of each component and the way they causally interact among themselves.

The aim of this chapter is to defend the thesis that awareness, intentionality and phenomenality are conceptually interlinked and are inseparable features of each of our various mental states. However, there is a sense in which consciousness is divisible and it must be distinguished from the sense in which it is not. This will be pointed out with reference to Daniel Dennet's brilliant distinction between personal and subpersonal levels of description of consciousness. The talk about the unity of consciousness is a talk at the personal level. Nelkin's basic mistake is that he fails to take proper note of the above distinction and his division of consciousness into phenomenality, intentionality and introspective awareness emanates from the confusion of these two levels of talk. As against Nelkin I shall make an argument for the unity of consciousness at the personal level. Dennet's distinction between personal and subpersonal consciousness and my arguments for the unity of consciousness at the personal level constitute the subject matter of the second section.

In the third and final section, I shall sketch an outline of a theory of consciousness at the personal level which follows from my arguments for the unity of consciousness. The position defended here is that awareness states are basically intentional states, and that there is something it is like to have these intentional states. Hence there is no distinction between belief-laden kind of consciousness, described as purely intentional, and the so called qualitative or phenomenal consciousness The qualitative consciousness is a species of, or a subclass of, intentional states. Hence, there are no qualia in the sense Shoemaker speaks of them. Moreover, there is no introspective mechanism which can report the existence of qualia or intentional states. The denial of an

independent introspective faculty would imply that there is no second order consciousness.

5.2 NELKIN'S ARGUMENTS FOR THE DIVISIBILITY OF CONSCIOUSNESS

As noted already, Nelkin conceives consciousness to be of composite nature with ontologically autonomous and dissociable states of intentionality, phenomenality and introspective awareness. To defend the independence and ontological autonomy of each of the above states, it must be demonstrated that the following three theses are plausible;

1. The intentional states can exist without phenomenality and without introspective awareness.
2. The phenomenal states can exist without being intentional and without being accessible to introspective awareness.
3. Introspective awareness can take place in the absence of both phenomenal and intentional states.

In what follows, I shall discuss all the three above. While Nelkin defends 1 and 2. he does not actually seem to be defending 3 inspite of his talk about the independence of introspective awareness. Rather he is committed to a thesis slightly different from 3. But if the independence of introspective awareness is to be conclusively proved. 3 above has to be established together with 1 and 2.

5.2.1 Independence of intentionality

By 'intentionality' we mean that feature of our mental states which consists in their "being *directed* at, being about, being of, or *representing* certain other entities and states of affairs",[2] And by 'independence of intentionality' we mean that there are some Intentional mental states which can occur or exist without other features like phenomenality and introspective awareness. The independence or the ontological autonomy of the intentional mental states is established without any doubt only if we obtain the conjunction of two theses: (a] Intentional states can exist or occur without awareness and (b) intentional

[2]Searle, "Intentionality and Its Place in Nature." Synthese 61(1984) 3

states can occur without phenomenality. According to Nelkin, there are empirical reasons that support each of these two theses. By citing empirical evidences Nelkin wants to show that the independence of an intentional state is not just a logical possibility but an actuality. We shall consider each of the two theses one after the other briefly stating the empirical evidence cited by Nelkin in support of them.

5.2.1.1 Intentionality without introspective awareness

Nelkin tries to establish this thesis by citing blind sight cases and cases of semantic priming and unconscious problem-solving. The victims of blind sight have large blind areas called scotomata in their visual field due to brain damage in the post geniculate region. However, given appropriate instructions these patients can make accurate judgments or draw accurate pictures with respect to the contents of their scotomata and in this they function very much like normally sighted people without there being anything experiential or phenomenally conscious going on in their scotomata. This, according to Nelkin, is sufficient to think that intentionality can occur without introspection. The forced guesses of these patients, in Nelkin's opinion, make sense only if unintrospected perceptual judgments have been made on the presentations of their blind field. Such judgments indicate that the patients *see* the object under some "aspect" or point of view. The phenomenon of completion associated with blind sight too corroborates the thesis of independence of the intentional states from the states of introspective awareness. Certain experiments have shown that if a semicircle is presented in the scotoma with another semicircle presented in the visual field, being attached to it. the patients reported that they saw a full circle. In Nelkin's opinion, the subjects saw a complete circle just because they saw a semicircle in the blind field the contents of which are not available to Introspective awareness. This means intentional processes are involved in the visual processing of the contents of the blind field, though one is not oneself conscious of these intentional processes.

[3]See Nelkin, "What is Consciousness?". 421-426.

Semantic priming by the words shown in the scotomata and human creative thinking or problem solving are viewed by Nelkin as additional support to the separability of intentional states from awareness. Experiments conducted by Marcel show that if the patients were auditorily asked to associate the word 'bank' on the presentation of the word 'river' in the blind field, they tended to associate it more with a body of water than with money. Nelkin explains this fact saying that semantic or intentionality characterised processes took place in the blind field whose contents were inaccessible to awareness. Similarly it is a common experience that on having got stuck while solving a problem a person leaves it out for sometime just to find later, to his own surprise, that he has come out with a full-fledged solution. The solution is the result of semantic or intentionality characterised processes unavailable in awareness. This means that intentional states or process can exist or occur without awareness.

5.2.1.2 Intentionality without phenomenality

Let us now consider the second thesis namely, the intentional states can exist or actually do exist without phenomenality. By phenomenality we mean the qualitative aspects of our mental states: what it is like to have them. Like Shoemaker, Nelkin too believes that it is due to the existence of autonomous mental states called qualia. that our mental states have phenomenal features. The feeling of pain or what it is like to have pain, for example, is due to the existence of the qualitative content or pain qualia. The intentional states, Nelkin thinks, can exist without any phenomenal aspects of the mental states usually associated with them. Therefore, intentional states are separable from the phenomenal ones. The blind sight cases discussed above themselves render support to this thesis The processing of information with regard to the objects presented In the scotomata do not "look" or "appear* in any way to the subjects. The same could be said about the prepositional attitudes we humans possess. The intentional states like beliefs and desires do not feel to us in any way We have, for example, introspective awareness of the content of the oocurrent thought that a Chiliagon has more sides than a figure with 999 sides. The fact that such thoughts do not "feel" to us indicates that

there could be intentional states without the accompaniment of phenomenal states.[4]

5,2.2 Independence of phenomenal states

To prove that phenomenality can occur apart from both introspective awareness and intentionality, Nelkin has to substantiate a conjunction whose conjuncts are the theses: (a) Phenomenal states can occur without introspective awareness; and (b) the phenomenal states can occur without intentionality.

5.2.2.1 Phenomenality without introspective awareness

Nelkin defends the first thesis as follows: There are indirect evidences provided again by cases of blind sight that buttress the view that there could be unintrospected perception which undeniably involves qualitative states. Colour discrimination is possible only if visual perception takes place and visual perception involves colour qualia in an essential way. The experiments conducted by Stoerig and Cowey showed that their blind sight subjects were able to make colour discriminations just as the normal perceivers do, though they denied seeing any colour. Since colour discriminations involve qualia in an essential way, these patients must have discriminated them on the basis of qualia that were unavailable to them in introspective awareness. Another evidence for the separability of phenomenal states from introspective awareness is based on the distinction between attention and introspection. Though paying attention and introspection are totally different processes. In Nelkln's opinion they coalesce in the case of sensation. Consequently, when attention is paid to a sensation, we become introspectively aware of the sensation. Our introspecting does not by itself seem to create the phenomenal qualities nor does it change their nature. The phenomenal qualities we discover through introspection are present all along whether we introspect them or not. Hence phenomenal states can occur and exist independent of introspective awareness.[5]

[4]"What is Consciousness?" 427.

[5]Ibid., 428-29.

5.2.2.2 Phenomenality with no intentionality

Nelkin, it seems to me, has not made a strong case for this thesis. Without sufficient support for this thesis it is not possible to assert the independence of phenomenal states. If it is true that intentionality occurs in blind sighted patients without being "felt" *or* "appeared to" in any way, then intentionality must be separable from phenomenality. But to prove the separability of phenomenality and intentionality in addition to the argument in section 5.2.1.2. we must produce an argument to the effect that phenomenal states can occur without intentionality. The colour discrimination occurring in the case of blind sighted subjects is interpreted by Nelkin as an instance of the occurrence of phenomenal states unavailable to awareness. If there are unintrospected qualia and if they occur in the case of colour discrimination in the blind sighted cases, then it can. in my opinion, be seen as an instance of the intentionality of phenomenal states. The qualia or phenomenal states if there are any, involved in colour discrimination must be *of* some entities, viz., coloured objects, if there are to be any discriminations at all. So we may conclude that Nelkin's empirical evidences are not sufficient to prove the dissociability of phenomenality from intentionality.

5.2.3 Independence of introspective awareness

To demonstrate the independence of introspective awareness from both intentionality and phenomenality, as in the above cases here too it must be shown that a conjunction of two theses is obtainable. The conjunction in question is: Introspective awareness can occur without intentionality and it can occur without phenomenality. Even if It is granted that both intentionality and phenomenality can occur without introspective awareness, it is quite possible that introspective awareness cannot occur without either intentionality or phenomenality or both. Hence, Nelkin must prove that the above conjunction is obtainable. However, he does not attempt to do it. Instead, he proceeds to provide an indirect proof for the independence of introspective awareness. Nelkin claims that he has already proved the following four theses,

1. Intentionality can occur without introspective awareness.
2. Intentionality can occur without phenomenality.

3. Phenomenality can occur without introspective awareness.
4. Phenomenality can occur without intentionality.

From (2) and (4) it follows:

5. Phenomenality and intentionality are distinct and separable.

Nelkin's argument is that 5 in conjunction with 1 and 3 entails the independence of introspective awareness. In other words, since intentionality and phenomenality are separable from each other and since either can occur without introspective awareness, one can be introspectively aware of phenomenal states without being aware of one's intentional states and one can introspect one's intentional states without being aware of one's phenomenal states. But the theses 1 to 5 do not entail the independence of introspective awareness. They only imply that introspective awareness can be exercised without either intentionality *or* phenomenality, though not without both. As Nelkin puts it: "Of course, introspectibility cannot occur apart from both the others, though we have reasons to think it can exist apart from each of the others"[6] In other words, he is concerned only with the proof of the disjunction: Introspectibility can occur without intentionality *or* it can occur without phenomenality but not without both.

If introspectibility cannot occur without either of the other two features, then it depends on either phenomenality or intentionality or both for its occurrence. Both of them are not necessary but either of them is sufficient. So the independence of introspectibility that Nelkin speaks of is only a relative independence. From the theses so far discussed, it does not follow that the three features (intentionality, phenomenality and introspectibility) characterise different states of human beings, as Nelkin claims rather than being three features of a simple, non-composite state To prove the absolute independence of introspectibility, the conjunction 'Introspective awareness can occur without phenomenality and it can occur without intentionality' must be obtained, Nelkin has not provided an argument to this effect. The central thesis in Nelkin's argument is the separability of phenomenality and intentionality. Unfortunately, Nelkin has

[6]"What is Consciousness?" 421.

not provided any valid reasons to suggest that phenomenality can occur without intentionality. These failures cast doubt on the thesis of the disunity of consciousness as Nelkin conceives it.

5.3 THE UNITY OF CONSCIOUSNESS

In this section, I shall make an argument for the unity of consciousness as against Nelkin's thesis of disunity. The unity thesis I defend here states that awareness, intentionality and phenomenality are inseparable features of our mental states and acts. Dennet has made an illuminating distinction between personal level talk and subpersonal level talk about consciousness. Since my argument for the unity of consciousness is centred on this distinction. I shall briefly explicate this distinction. This is followed by a brief discussion of Dennet's sub-personal theory of consciousness. The aim of this discussion is twofold: first, to show what a subpersonal theory would be like, and second, to show that the talk of the disunity of consciousness at the subpersonal level is consistent with the talk of unity of consciousness at the personal level. Finally I shall provide certain arguments for the unity of consciousness at the personal level.

5.3.1. Personal and subpersonal levels of explanation

By personal level of explanation Dennet means the explanation of the behaviour of an agent by appealing to his mental states and processes. The explanation is obviously couched in psychological vocabulary. The talk of the mental properties like awareness, intentionality and phenomenality belong to this level. Explanation at this level takes place by identifying the principles employed in the performance of actions The principles appealed to are themselves constitutive of the action we intend to explain. The behaviour and other cognitive features of humans have a subpersonal level of explanation as well. This is basically a mechanical or causal explanation. "Subpersonal theories", says Dennet. "proceed by analysing a person into an organisation of subsystems (organs, routines, nerws. faculties, components — even atoms) and attempting; to explain the behaviour of the whole person as the outcome of the interaction of these

systems".[7] They tell us how the specific functions described at the personal level are realised in a mechanical structure. And, as Dennet rightly points out, every cognitivist - functionalist theory is a subpersonal theory.

Dennet observes that in an important but narrow sense, "the personal level of explanation is the only level of explanation when the subject matter is human minds and actions".[8] Take, for example, our pain talk. It is basically non-mechanistic personal level talk. The explanation of pain at this level appeals to the occurrence of a sensation of a certain sort which is responsible for locating the pain and the production of pain behaviour. No further explanation of pain can be given in terms of unanalysable pain sensations. If a more thorough going explanation is required as to how the sensation of pain and pain behaviour occur, we must switch over to the alternative model of explanation, namely, the subpersonal level of explanation in terms of events and processes in the brain. As a result, mental talk is replaced by physical talk which is about the organisation of the nervous system and the events and processes in the brain. But none of these events and processes which are said to realise pain is entitled to the name 'pain', as in the strict sense we cease to talk about mental states and processes at the subpersonal level. This thinking has an odd corollary: in an important sense, analysis of pain at the subpersonal level is not at all an analysis of pain.

Thus, for Dennet, abandoning personal level talk in favour or subpersonal level talk is tantamount to abandoning mental talk altogether. That is to say, mental talk does not make sense at the subpersonal level of explanation. Consequently, the mental does not seem to be identifiable with the physical. Then what is it that we explain at the subpersonal level? Dennet's answer is that at the subpersonal level we purport to explain the behaviour of the organism. However, the two levels of explanation cannot be two watertight compartments. The subpersonal level must somehow be continuous with the personal level of explanation. For it

[7]Dennet, "Toward a Cognitive Theory of Consciousness," in Brainstorms, 153.

[8]Dennet. *Content and* Consciousness, (London. Routledge and Kegan Paul. 1969; 2nd ed.), 95.

is not the case that there is absolutely no relation at all between pains and neural impulses or between beliefs and neural states. Our failure to bridge the gap between these two levels of description would end up in substantial dualism. Dennet is quite aware of this difficulty. His solution consists in construing the mental terms occurring in the personal level description as non-referential. That is. the mental terms like pain, beliefs etc. do not refer. The advantage of this move is that we do not have to bother as to whether mental states and processes are identical *or* non-identical with neural states and impulses.[9]

Dennet'*s move is motivated by an ontological bias towards physicalism. The difficulty with this move, however, is that it implies that the mental states and processes described at the personal level have only the ontological status of fictional entities. Since it, in a sense, rejects the ontology of the mental, we are not in a position to say that the personal level of explanation is related to and is continuous with the subpersonal level. This way of dealing with the problem, I think, must be resisted. For people do feel pain, have beliefs, desires, etc. These states influence their actions, reactions and decisions. Hence the ontological status of mental states cannot be denied outright. So the question is not how personal level explanation can be replaced by subpersonal level explanation but rather how personal level description and subpersonal level description refer to the same state of affairs. In the case of pain, for example, it is true that at the subpersonal level we explain pain behaviour: how, for instance, a person withdraws his hand from a hot stove. But the talk of pain behaviour does not seem to be at the subpersonal level. The withdrawal of a hand from a hot stove makes sense and can be described as pain behaviour only at the personal level. Hence there is a need to identify the mental phenomena described at the personal level with the phenomena described in the physical vocabulary at the subpersonal level. I do not claim that such an identification must be a straightforward one-to-one identification. Corresponding to simple mental state type, say pain, described at the personal level, there may not be any single mental state type, say C-fibre firing. in the subpersonal

[9]*Content and Consciousness*. 91-96.

vocabulary. This is not to say that the type identity theory is wrong. Rather, a mental state type like pain must be identified with the functional organisation of certain types of neural states and processes. Both the functional organisation and the kinds of neural states and processes are essential for providing subpersonal account of the personal phenomenon of pain. That is, as far as human minds and actions are concerned, the phenomena described at the personal level and those described at the subpersonal level are identical, though the terms of description vary.

5.3.2 Dennet's subpersonal theory of consciousness

The cognitivists or the functionalists try to explain the cognitive functions such as perception, problem solving, language use etc., by providing subpersonal theories. Since each such cognitive function is somehow linked with the concept of consciousness, the cognitivist must provide a theory of consciousness. Dennet takes up the challenge and tries to provide a cognitivist theory of consciousness.[10] I shall briefly state his theory which, he claims, unifies and is continuous with the subpersonal theories of cognitive functions.

Dennet makes a distinction between personal consciousness and subpersonal consciousness. The personal consciousness Is the consciousness proper or what we refer to generally by the term 'consciousness' In ordinary language. The key concept, according to him, in the definition of consciousness whether personal or subpersonal, is that of access. There is much that happens in and to a person which he has access to. What a person has access to is that of which he is conscious. Dennet calls this sort of access "the access of personal consciousness", and "the subject of that access (whatever it is) which exhausts consciousness is the person, and not any of the person's parts".[11] Dennet distinguishes the access of personal consciousness from the access of subpersonal consciousness which, according to him, is nothing other than computational access. The computational access is clarified with the notion of a computer program baring

[10]See Dennet. Toward a Cognitive Theory of Consciousness." 149-73.
[11]"Toward a Cognitive Theory of Consciousness." 150

subroutines. It is quite possible that the outputs or computational results of one subroutine function as the inputs of another subroutine which means that there is an information link between them. The access of a subroutine to the computational results of another subroutine for further computation is called computational access. There is no direct relation between personal access and computational or subpersonal access, as what is accessible to a subroutine is not necessarily accessible to the personal consciousness. The various parts of our nervous system, for example, may have access to very many things which are not accessible to our personal consciousness. That is, there are many things happening in and to us of which we have little awareness.

Making use of the subpersonal notions of access, Dennet proposes to construct "a full-fledged 'I'" or a person out of the subpersonal systems specified by a cognitivist theory. According to him, a theory of consciousness must account for six functional areas or information processing components. They are: (1) the perceptual system, (2) problem solving system, (3) a buffer memory called M, (4) an attention system, (5) control or the higher executive, and (6) the speech centre known as *PR* (Print Routine). All these information-processing components are systems at the subpersonal level.

The functions of the various components are as follows. The *perceptual system* analyses the sensory stimuli. The analysis takes place in a series of different levels starting with the stimulation of the sense organs and culminating in highly interpreted information about the perceived world. The outputs of the various levels of information are accessible to the problem solving system as well as to the short-term memory storage M. The *problem solving* component receives inputs from both M and the perceptual system. The postulation of this component is necessitated by the fact that perceptual experience is not the only conscious experience we have. We are also conscious of our thinking when we set out to solve problems. M is a special hypothesized short-term memory location. It has an information link with the system for perceptual analysis, with the problem solving component, and with the higher executive or the control. The pool of information accessible to *PR i*s from M. The information that reaches *PR* for communication is mediated through the control or the higher executive. The *higher* executive functions as

follows. It directs a question to the M and retrieves an answer. Once the answer is retrieved, it censors the answer, or interprets it. or makes inferences from it *or* sends it to *PR* as such without any further processing. The functions Dennet attributes to the executive suggest that it is basically a semantic system. Dennet does not, in fact, hypothesize a separate attention *component*. It is seen as one of the functions of the higher executive itself. It is roughly the allocation of "the available cognitive resources to the sensory modality or topic of most current importance".[12] This notion of attention is only indirectly connected to personal consciousness as it grants unconscious attention. The *PR or* the speech centre is the output component. It takes input orders to perform speech acts and executes them. The command to express speech acts is executed either in phonological or graphological mode depending upon the intention to speak or to write.

The subpersonal systems described above provide for a theory of consciousness, because in Dennet's opinion, there is something it is like to be a system organised as he claims the mind to be. However, most of the working of the system would not be transparent to itself. What is accessible to the personal consciousness are the results of the processes of the subpersonal systems and not the processes themselves. These results which are the immediate products of perceptual analysis or problem solving, inhabiting M, constitute our experience. The results that reach M may be either final or intermediate products of perceptual analysis or problem solving. But by the time these results reach PR. they are prepositional in nature. The propositions or judgments are the intentions or the semantic content of our speech acts. We have access of personal consciousness only to the prepositional acts or the thoughts we make and not to the process of producing these thoughts. Our "prepositional episodes, these thinking that P, are our normal and continuous avenues to self knowledge," and "they exhaust our immediate awareness. . . ."[13] It must be noted that on the theory discussed so far, there is nothing wrong or contradictory about the notion of unconscious or subliminal perception. Whatever enters M

[12]"Toward a Cognitive Theory of Consciousness,". 157.

[13]Ibid." 165.

constitutes the content of one's experience. The contents of *M* may not always reach *PR,* for before reaching *PR* they might decay. And what we have access to at the personal level is whatever is accessible to *PR* from M: "One's access to one's experience is accomplished via the access relations between M and *PR".*[14]

We have the feeling of a special authority in offering introspective reports. It is generally attributed to the working of an introspective faculty. But Dennet does not think that the feeling of special authority is the product of an "inner eye" that scans the contents of our consciousness. Rather, it arises from the fact that we judge our verbal productions against prepositional episodes or semantic intentions. As a result, we can judge whether we have communicated our intentions correctly or not. The question whether we (as well as others) have consciousness or not, is not answered by examining whether we possess any introspecting faculty or inner light. What answers the question, in Dennet's opinion, is a consideration of our current capacities and past activities.

5.3.3 Arguments for the unity of consciousness at the personal level

Dennet is of the opinion that our study of the subpersonal account of consciousness reveals that consciousness is not just one feature of mind but several.[15] The talk of several features or types of consciousness, in my opinion, makes sense only at the subpersonal level. In spite of the divisibility of consciousness at the subpersonal level, we can talk of the unity of consciousness at the personal level. In other words, the unity of consciousness at the personal level and the division of the cognitive faculty into various subsystems is consistent. The subpersonal systems interact among themselves to contribute to the overall functioning of the cognitive faculty and produce conscious states and acts From the personal point of view each of these conscious states has three features phenomenality. intentionality and awareness These features are conceptually related to one another. Hence personal consciousness cannot be subdivided into awareness, phenomenality and intentionality The

[14]Toward a Cognitive Theory of Consciousness," 170

[15]Dennet, *Content* and Consciousness. 99.

results produced by each of the information processing subpersonal systems that reach the *PR* will have all these three features of personal consciousness. Nelkin's attempt to divide consciousness into three independent and separable states of awareness. phenomenality and intentionality results from the confusion of the two levels of explanation. In what follows, I shall provide an argument for the unity of personal consciousness.

To establish the unity of consciousness at the personal level, we must prove the contraries of the theses discussed by Nelkin. They are as follows:

1. Awareness cannot occur without either intentionality *or* phenomenality.
2. Intentionality cannot occur without phenomenality.
3. Intentionality cannot occur without awareness.
4. Phenomenality cannot occur without intentionality.
5. Phenomenality cannot occur without introspective awareness.

In what follows we shall briefly examine each of these theses and see whether we can meaningfully subscribe to the view that personal consciousness is unitary, with the inseparable features of phenomenality. intentionality and awareness.

5.3.3.1 The dependence of awareness on Intentional states or phenomenal states.

Let us for the time being assume that intentional states and phenomenal states are distinct and separable states, and the awareness we speak of is introspective awareness. On this model, introspective awareness cannot be exercised without the occurrence of either phenomenal states or intentional states. I am sure Nelkin would agree with this thesis, as it is a restatement of his view that introspective awareness occurs with either intentional states or with phenomenal states but not without both. The non-occurrence of awareness without intentional or phenomenal states shows that awareness is dependent upon either phenomenal states or intentional states for its occurrence. In other words, the occurrence of intentional states or phenomenal states is a necessary

condition for the occurrence of introspective awareness. Nelkin has already conceded that there is no evidence whatsoever few the occurrence of introspective awareness without one of the phenomenal *or* intentional states. From this we come to the conclusion that introspective awareness is dependent on either phenomenality or intentionality.

One could, however, adopt the following line of argument to save the independence of introspective awareness. Though introspective awareness may not occur without either phenomenal or intentional states, the former is an independent faculty of its own which depends upon the latter only *Tor* its exercise or functioning. In other words, introspective awareness exists as a capacity or a potentiality *Tor* summoning up intentional or phenomenal states that have been present in the mind all along. This position may be illustrated with the analogy of sight. Despite the possession of a normal capacity for visual experience, if no objects are presented in the visual field, one's visual faculty would never be called into action. From this it is illegitimate to conclude that the faculty of sight is dependent on external objects for its existence. Just as the visual faculty depends upon external objects for its exercise, either phenomenal or intentional states are necessary for the exercise of introspecting faculty. And neither intentional nor phenomenal states are sufficient for the occurrence of introspective awareness. In addition, an independent faculty for introspective awareness is to be granted* This view is characterised as the perceptual model of introspective awareness.

The perceptual model of introspective awareness is defective on two grounds. First of all, it conceives the introspective faculty as an inner eye which scans the contents of one's mind. It is viewed as a mechanism where the inputs are phenomenal states and Intentional states, and the outputs are qualitative beliefs and objective beliefs. If the internal states of phenomenality and intentionality are perceived with some sort of inner eye, the internal states produced by the Inner eye will have to be perceived by yet another inner eye and so on ad *Infinitum*. leading to an infinite regress. Secondly, the awareness states *of* the mind are acts or operations. So the state of introspective awareness is an act and not a Potentiality. The human mind undoubtedly has a potentiality or capacity for such acts. But this does not mean that it is an independent faculty residing on its own. The above considerations suggest that the states of

introspective awareness cannot occur on their own and cannot be considered independent mental states. Since there is no introspective faculty, I conceive awareness as a feature of intentional and/or phenomenal states. Hence in the discussion that follows I shall not use the term 'awareness' in the sense of introspective awareness as Nelkin uses. For me awareness is the present capacity of mental states to reveal themselves.

5.3.3.2 Inseparability of intentionality from phenomenality

To show that intentionality could occur without phenomenality Nelkin has cited blind sight cases and the representational states of belief, desire, etc. Though the objects present in the scotomata do not 'look', 'appear' or 'feel' in any way_t the subjects process information with regard to them and come out with judgments about them. The information processing, according to him, are intentional. The cause of blind sight, according to Nelkin, is a defective introspecting mechanism. Hence the objects presented do not 'look' or 'appear' in any way. However, blind sight can have a more plausible alternative explanation even on the model provided by Nelkin. The blind sight is the result of a defective perceptual system rather than a defective introspective mechanism. But the question is how the subjects are able to process information about the objects presented in the scotoma. This, in my opinion, is due to problem-solving on the basis of the information available to the subjects from the periphery of the scotomata and the verbal suggestions given to them. The information processing with regard to the content of the scotoma is not the perceptual type of information processing. Moreover, the thesis that perceptual intentional states can occur without quaha contradicts Nelkin's own view that perceptual states involve qualia in an essential way. Even if we subscribe to the model of consciousness presented by Nelkin, intentionality is not separable from phenomenality, as intentionality in the case of perceptual beliefs is a function of qualitative or phenomenal states. In Shoemaker's model, for example, without phenomenal states and the relations of phenomenal similarity and difference, our perceptual states cannot have any intentionality. The mistake of Nelkin as well as of Shoemaker Is that they consider phenomenal or qualitative states to be preceding and causally responsible for the production of intentional states. What it is like to have a perceptual

state, say seeing something blue, does not precede the perceptual state but is part and parcel of our visual experience. Hence the qualitative aspects and intentionality of our perceptual experiences are inseparable.

But what about our non-perceptual mental states like desire, hope, non-perceptual beliefs, etc-? In my opinion, these non-perceptual intentional states have their own phenomenality for there is something it is like to have such states. Obviously, there is something it is like to believe that water quenches thirst, that the earth is round, that 2+2 = 4, etc. Such beliefs and desires do not, of course, feel in any way, just as the appearance of blue objects do not in any way feel to us. Our various beliefs and desires are not distinguished from one another on account of any felt qualities just as we do not discriminate colours on the basis of colour qualia. Our ability to discriminate colours, and to distinguish between various beliefs and desires is not analysable at the personal level of description. This does not mean that they lack phenomenality. They do have phenomenality. But what it is like to have a perceptual intentional state is different from what it is like to a have non-perceptual intentional state.

5.3.3.3 Inseparability of intentionality from awareness

The thesis that intentionality cannot occur apart from awareness assumes much significance for two reasons. First of all. Its contrary thesis, viz., that there are unconscious mental states unavailable to awareness, has a long tradition since the time of Freud. Secondly, many contemporary philosophers, cognitive scientists, and linguists accept the existence of unconscious intentional states as an explanatory category In order to account for the verbal as well as non-verbal behaviour of humans Hence the thesis that that there is conceptual relation between intentionality and awareness has many implications for contemporary studies on mind.

The conceptual link between intentionality and awareness, 1 think, is convincingly defended by Searle. So in what follows 1 shall merely restate his position. But before we proceed, some terminological clarifications are in order. In his discussion of intentionality Searle uses the term 'consciousness' and argues that intentionality cannot be defined without reference to consciousness. Nelkin considers Searie's use *of*

'consciousness' as equivalent to his own use of introspective awareness. However, Searle denies that when he uses the expression 'consciousness', he speaks of introspective awareness. Introspective awareness, we have already noted, is not an independent state or faculty of its own but an inseparable feature of the phenomenal or intentional states. And I think when Searle speaks of the conceptual link between intentionality and consciousness, he means this inseparable feature of our mental states. In the discussion of Searle's thesis, instead of 'consciousness* I shall be using the term 'awareness'. By awareness I do not mean a system for scanning the contents of the mind, but an inseparable feature of any state worth the name 'mental state'. I think, my use of "awareness* comes at least very close to Searle's use of consciousness, if it is not identical with it.

For Searle, intentionality and awareness are inseparable because any intentional state is either an actual or potential state of awareness. The distinction between intentionality and awareness made in contemporary literature on the philosophy of mind and psychology implies that one could occur without the other. The postulation of unconscious beliefs, desires etc. is based on the separability of awareness and intentionality. The inseparability thesis means that there cannot be any unconscious intentional states in the strict sense. The intentional mental states, according to Searle, have two distinctive but related features their intrinsicality and "aspectual shape". By intrinsic intentionality Searle means the intentional features of mental states which are accessible to awareness. It is the intrinsic forms of Intentionality that are closely connected to the ideas of thinking and experiencing The intrinsic form of intentionality is to be distinguished from the as *if* form of intentionality. Searle does this with the example of water flowing down the hill. This, he thinks, is an instance of the 'as If' form of intentionality. The water behaves as if it has intentionality it tries to reach the bottom of the hill, in doing so it seeks the line of the least resistance, and it does *information processing* in order to calculate the size of the rocks, the angle of the slope, the pull of gravitational force. etc., etc. If we consider water to be mental just because It possesses the

•as if form of intentionality. then, argues Searle, eyerjthing is mental.[16]

The other distinguishing feature of intentional mental states is their "aspectual shape". The aspectual character of intentional mental states like beliefs, desires etc. is exhibited in the truth- functionally opaque nature of these states. That is, the intentional mental states represent their conditions of satisfaction under certain aspects, When I desire water, for example, this desire is under an aspect, and this desire is different from the desire for H_2O even though there is no way to satisfy one without the other. The aspectual feature matters only to the subject of those intentional ascriptions. Hence aspectual shape refers to the subjective point of view from which an organism considers the content of intentional mental states. Only a subject can think of something as water without thinking of it as H_2O.[17]

There are two ways in which unconscious mental states can be conceived. First, unconscious mental states are those mental states which are never accessible to awareness. Second, though they are not actually accessible to awareness, the so called unconscious states are possible contents of our awareness states. If we take unconscious mental states in the first sense, then they do not deserve to be called mental. They neither possess intrinsic intentionality nor aspectual shape. Their inaccessibility to awareness forbids us to attribute intentionality to them, because we cannot say at which entities or states of affairs they are directed. They lack aspectual shape, because at the level of the unconscious there is no relevant subjective point of view from which their aspectual shape can be considered. The subjectivity of unconscious mental states does not make any sense because we do not know what it is like to have such unconscious mental states.

If we adopt the second conception of unconscious mental states as the possible contents of awareness or consciousness, then we can certainly make sense of the philosopher's talk of the unconscious According to Searle, the talk of unconscious intentional states is meaningful only on this

[16]Cf. Searle, "Consciousness. Unconsciousness. and Intentionality." *Philosophical Topics* 17 (1989): 197-98.

[17]Cf. lbid., 199-200.

conception of the unconscious. An unconscious mental state, in order to be intentional, must preserve its aspectual shape. The unconscious intentional states are like "fish in deep sea:. Just as the fish underwater possesses exactly the same shape they have when they surface, the unconscious intentional states have the same aspectual shape as the ones accessible to awareness. Thus the unconscious intentional states are considered on the model of awareness states: "Our idea of an unconscious state is the idea of a mental state that just happens then and there to be unconscious, but we will understand it on the model of a conscious state in the sense we think of it as being just like a conscious state and as one that in some sense could have been conscious."[18] So for Searle, the notion of an unconscious mental state is parasitic upon the notion of a conscious state. If there is an unconscious intentional state, such a state must preserve its aspectual shape. The only way to conceive the aspectual shape of an unconscious intentional state is to treat it as a possible content of our awareness state.

The above description of unconscious mental states allows us to speak of an ontology of unconscious mental states in terms of their relation to awareness: "When we describe something as an unconscious Intentional state we are characterising an objective ontology in virtue of its causal capacity to produce subjectivity".[19] The moral of the story Is obvious: intentionality cannot be defined or understood without awareness, for there is a conceptual relation between intentionality and awareness. Note that Nelkin's discussion of semantic priming, problem solving and blind sight cases do not contradict the inseparability of intentionality from awareness. The judgments made by the blind sight subjects on the objects presented in their scotomata, as we have already noted, can be conceived as the result of a sort of problem solving. The same is true of semantic priming as well. It is true that the roost processes of problem solving are inaccessible to awareness. However, what makes these processes Intentional is that their results are accessible to awareness.

[18]"Consciousness. Unconsciousness, and Intentionality." 195

[19]"ibid., 202.

5.3.3.4 Inseparability of phenomenality from intentionality

When we say that phenomenality is inseparable from intentionality we mean that all our phenomenal states are invariably intentional states. This view is quite contrary to Nelkin's thesis that phenomenality can come apart from intentionality. However. Nelkin does not seem to provide any substantial evidence nor a convincing argument in support of his thesis. Let us grant (of course for the sake of argument) that in the blind sight cases there are phenomenal states unavailable to awareness. In such cases, there is absolutely no way at all to know whether phenomenal states occur with or without intentionality. Nelkin has cited blind sight cases in support of his view that phenomenal states can occur without being accessible to awareness. The same cases, I think, can be used to establish that phenomenality occurs only with intentionality. Nelkin's argument for the occurrence of phenomenal states without the feature of awareness is as follows. The phenomenal states of the blind sight patients are inaccessible to awareness. Yet they can make colour discriminations. Colour discrimination essentially involves qualitative states. Therefore, these colour discriminations must have been made on the basis of phenomenal or qualitative states unavailable to awareness. Note that I am not here addressing the question whether a phenomenal state can occur without coming to the awareness level. My point Is that if the blind sight patients are to make discriminations, their phenomenal states though not accessible to awareness, must be *of* the coloured objects in the world. The object-directedness of the phenomenal states shows that they cannot exist independent of intentionality. This is true of any one of the so called individual qualia as well. Take, for example, the colour quale, being appeared-blue-to. The occurrence of this colour qualia Is the same as the appearance of something blue out there. This, in a sense, blurs the distinction between phenomenal states and intentional states What it is like being appeared blue to is the same as the appearance *of* something blue. This means phenomenal states cannot occur without having the feature of intentionality.

5.3.3.5 Inseparability of phenomenality from awareness

Are all phenomenal states awareness states? Nelkin answers this question in the negative. In his opinion, there are phenomenal states we

arc not aware of. The phenomenal states exist all along. In order to become aware of them, we need to just apply our attention and introspect (note that for Nelkin, paying attention and introspection coalesce in the case of phenomenal states). I am unable to make any sense out of this thesis. Take for example, the occurrence of pain, While haying a pain, I am in a phenomenal state because there is something it is like being in pain, or being in pain is felt in a certain way. However, if Nelkin's view is correct, then pain can occur without my awareness of it. So in accordance with Nelkin's view if I feel pain and am aware of it, I do not have to go for any pain killers to alleviate my pain. There is another easy way. I need to just stop introspecting or paying attention to my pain! The pain might persist, but I will be quite unaware of it. But does it make any sense to say that I have a pain but I am unaware of it? If there is unconscious pain, there is no way to say whether I am in pain or not. Even if such an unconscious pain is accompanied by pain behaviour, I would not consider myself to be in pain. If pain occurs without feeling in a certain way characteristic of pain, then that pain is no pain. *Feeling In a certain way* is undoubtedly an awareness state. So my pain state cannot occur without my awareness. Similarly my other phenomenal states like being appeared-blue-to, being appeared-yellow-to. etc.. cannot occur without my awareness. Being appeared-blue-to, for example, is nothing other than the appearance of something blue. But blue objects cannot appear to me without my awareness of them. If there can be qualitative or phenomenal states that we are unaware of, then there can be any number of such phenomenal states within us. and we will not be in a position to determine which qualitative state we are in This makes the postulation of independent qualitative states vacuous with no explanatory power whatsoever.

We have already noted the similarity in the positions of Shoemaker and Nelkin with regard to the relation between qualia and awareness Shoemaker, like Nelkin. conceives qualia as independent of awareness states. The production of qualitative beliefs, for him, is the result of the interaction between introspective awareness and qualitative states. Though both qualia and awareness states can exist independent of each other, if something is to be called a qualia or phenomenal state, it must, in Shoemaker's opinion, be accessible to awareness. So. according to

Shoemaker, qualia are defined only in relation to awareness or consciousness. However, he maintains: the requirement of accessibility to consciousness is not due to a special link between the notion of qualitative character and consciousness, but rather to a general link between the notion of consciousness and the notions of the family of folk psychological states with which the notion of qualia is intimately bound up."[20] This means that the notion of qualia is only indirectly connected to awareness because of its connection with the folk psychological states which are by definition conscious mental states. That is, strictly speaking, qualitative states are not states of awareness. So Shoemaker thinks that we do not become explicitly aware of qualia, say the looks, feels, sounds etc. of things. However, we are implicitly aware of them. Had it not been so, it would not have been possible for us to adjust our perceptual beliefs in the light of information about our situation by using our tacit knowledge of the principles of perspective and the effects of lighting on the appearance of things.[21] The judgments about the properties of things in the external world are sensitive to qualia, and the qualitative similarities and differences among our mental states.

The conclusion that we are only implicitly aware of qualia led Shoemaker to construe the notions of qualia and those of qualitative similarities and differences among them as theoretical concepts implicit in folk psychology. As theoretical concepts they are not contents of our states of awareness. They are used to explain the application of the concepts like 'looking the same' employed in folk psychology. Since qualia are not directly given to us in awareness, their existence is Inferred from the judgments we make about the properties of things in the external world.[22] Thus qualia are theoretical entities postulated for the explanation of our experience. They form part of the theoretical entities of our folk psychological theories.

Shoemaker's conception of qualia or phenoroenological states as theoretical entities is quite unacceptable. For qualia are not theoretical

[20]Shoemaker, "Qualia and Consciousness," 513.

[21]Cf. Ibid.. 515.

[22]"Oualia and Consciousness," 521

entities that explain the occurrence of phenomenal experience. Rather they are part and parcel of our experience. How can one say that the concept of pain or the concept of the colour qualia. being appeared-blue-to is a theoretical concept? My having pain or something's appearing-blue-to me is an experience and not a theoretical entity. The qualitative character is a feature of our conscious mental states. The qualia are made theoretical entities by separating qualitative aspects from our awareness states. It must be noted that Shoemaker's intention was not to make qualia theoretical entities. He wanted to account for our phenomenal experiences and to provide a functional definition of qualitative mental states. But in the process, the explanandum or the definiandum has been turned into explanans or definians. By this move neither are qualitative states explained, nor are they defined. So Shoemaker's separation of phenomenality from awareness is quite unjustifiable.

Shoemaker does not consistently maintain that qualitative states are theoretical entities unavailable to us in awareness. He sometimes maintains that qualia are the potential objects of our immediate and uninferred knowledge.[23] As potential objects of immediate and unlnferred knowledge, they must be available to us in awareness at some time or the other. Or at least they must in principle be accessible to us in awareness. The potential objects of our immediate or uninferred knowledge can hardly be theoretical entities, for theoretical entities never become immediate objects of uninferred knowledge. Take, for example, the visual perception of a table. I see a table when I become immediately and non-inferentially aware of the existence of the table Observable entitles like tables, chairs, trees and on are not theoretical entities. Similarly phenomenal aspects forming part of our experience are not theoretical entities. In construing qualitative features of our experience which are self evident in awareness as theoretical entities. Shoemaker contradicts the well established methodology of science.

Shoemaker has an ambivalent attitude towards the relationship between qualia and awareness. On the one hand, qualia are theoretical entities unavailable to awareness, and on the other they are potential objects of

[23]"Qualia and Consciousness." 521.

immediate and uninferred knowledge or awareness. As potential objects of immediate awareness, qualia can be defined only in relation to awareness. Hence, for Shoemaker, there *is* a conceptual relation between qualia and awareness. A creature lacking states of awareness would lack qualia as well as belief states. Only creatures with full-fledged awareness will have full-fledged qualia and full-fledged beliefs. Bats for example, argues Shoemaker, do not possess any consciousness worthy of the name. Hence they have only quasi qualia and quasi-beliefs. This observation of Shoemaker's that there is a conceptual relation between phenomenality and awareness contradicts his own position that qualia are theoretical entities unavailable to consciousness. The conflict in Shoemaker clearly indicates that he, like Nelkin, confuses the personal and subpersonal levels of description.

I have not proved that both intentionality and phenomenality are essential features of each of our awareness states. The thesis discussed in section 5.3.3.1 states that awareness occurs with intentionality or with phenomenality. But the discussed in 5.3.3.3 and 5.3.3.4 together with the one discussed in 5.3.3.1 entail that awareness states occur only with both phenomenality and intentionality. In other words, if phenomenality and intentionality are inseparable and if it is stated that awareness occurs with either of them, then it follows that awareness occurs with both phenomenality and intentionality. So each of our conscious mental states is a unitary state with the inseparable features of awareness. intentionality and phenomenality.

5.4 TOWARDS A THEORY OF PERSONAL CONSCIOUSNESS

In the previous section, we have argued that at the personal level description, awareness, intentionality and phenomenality are inseparable features of our unitary conscious mental states This view encompasses a theory of consciousness which I shall try to elaborate below. I shall elucidate the concepts of phenomenality. awareness and intent tonality and how they are interwoven with one another. The exercise such as the one 1 undertake here is necessitated by the conception of the unity of consciousness argued in the previous section, because the way we understand the concepts of phenomenality. intentionality and awareness undergo a change with our talk of the unity of consciouness. A proper

characterisation of personal consciousness is necessary because without such characterisation we cannot have an adequate subpersonal theory that can account for it.

5.4.1 Phenomenality

According to a dominant trend in contemporary philosophy of mind, phenomenality of our mental states is a function of a separate set of pure phenomenal states called qualia. They are generally understood as the raw feel we undergo such as feeling of pain, being appeared-blue-to etc. One of my aims in this section is to renounce this view of phenomenality. When I say there are no separate independent phenomenal states of their own called sensations or qualia, I do not intend to deny the phenomenal features of our mental states. The talk of qualitative features do make sense at the personal level description of consciousness. Like Nagel, 1 take phenomenality to be what it is like to be an X. say a human being, a martian or a bat. So the expressions 'phenomenality' and 'what it is like to be an X' are synonyms or equivalents. However, my conception of phenomenality is different from that of Nagel's, for whom phenomenality Is a function of the secondary qualities or 'raw feels'. On the contrary I conceive phenomenality to be the function of an organism's conceptual system. So phenomenality is an essential feature of each of the cognitive mental states of an organism for whose production the conceptual system of the organism plays a vital role. Hence each cognitive mental state has its own phenomenal features.

Qualitative or phenomenal mental states, we have seen, cannot be separated from awareness and intentionality. So the definition of a phenomenal state is possible only in terms of awareness and intentionality. So we may define qualitative mental states as the awareness states of the qualities of the external objects or of our bodily states. Such awareness states are Intentional because they represent, or are directed at, certain qualities of the objects or bodily states. They are phenomenal because there is something that it like to have such states. To have a pain, for example, is to feel a pain and to feel a pain is to be conscious *of* a bodily sensation. Similarly when someone sees or seems to see a coloured object, one undergoes a visual experience To undergo a visual experience, as Michael Tye observes, is to be conscious of something

visually.[24] A qualitative mental state is the awareness of a particular quality. The quality may belong to the objects in the *world* or to our various bodily states. My definition of qualitative states comes very close to Shoemaker's understanding of qualitative beliefs. But there is an important difference, Shoemaker defines qualitative state as the awareness of an internal phenomenal state called qualia. My awareness of my being appeared blue to, for example, is such a qualitative belief. In my opinion, there are no such pure qualia which are the objects of my qualitative beliefs. The qualitative state is nothing other than awareness of a particular quality that belongs to the objects in the world or to the various bodily states of the organism.

5.4.1.1 Phenomenality and belief-laden consciousness

Tye makes a distinction between two types of consciousness: "a belief-laden kind of consciousness" and "a more primitive kind of consciousness". The former is tied to our prepositional attitudes or representational mental states. The latter is connected to our feelings and sensory experiences and goes with the talk of what it is to be like. This type of consciousness, he says, is transparent to introspective awareness. This primitive consciousness could rightly be called qualitative or phenomenal consciousness. The phenomenal consciousness itself could be further divided into two types, one for perceptual experiences and the other for bodily sensations.[25]

Tye admits that consciousness is *intrinsic* to our perceptual experience and the phenomenal consciousness Involved in our experiences is always consciousness of something or other. That is. phenomenal consciousness has representational contents. These contents are the appropriate secondary qualities of the objects or our bodily sensations Various species of perceptual experience are differentiated on the basis of their contents. If the object of our consciousness is something blue we have the conscious mental state of being appeared~blue-to The same is

[24]Michael Tye, "Blind Sight, the Absent Qualia Hypothesis, and the Mystery of Consciousness." Philosophy supplement: 34 (1993). 35.

[25]Ibid., 35. See also the footnote n. *23*.

true with regard to other visual qualities as well as qualities pertaining to other sense modalities. Phenomenality here is explained in terms of consciousness and the representational content.[26] Once we differentiate various species of consciousness on the basis of their representational content (i.e.. appropriate secondary qualities), then Tye's proposal *for* a two fold division of phenomenal consciousness — one for perceptual experiences and the other for bodily sensations — is not tenable, because the perceptual experiences differ on account of the differences in contents of the conscious states. They are not two different types of consciousness.

Belief-laden consciousness, according to Tye. is radically different from phenomenal consciousness because mental states like beliefs, desires etc. do not feel or appear in any way, as phenomenal consciousness is not intrinsic to them. Such beliefs may or may not be conscious. But when they are conscious they become conscious via formation of second order beliefs. Such second order beliefs, according to Tye, are not intrinsic to having perceptual experiences and bodily sensations. A simple creature, say a bat, does not have introspective awareness. Yet it has sensations and has them consciously without even having first order beliefs.[27] There cannot be unconscious qualitative mental states because they cannot occur without phenomenal consciousness. But there could be unconscious non-qualitative mental states like beliefs for two reasons first, phenomenal consciousness is not intrinsic to non-qualitative mental states. second, we may not always have second order consciousness about first order belief and desire states. From Tye's strategy it is clear that second order beliefs are the products of introspective awareness

In my opinion, the distinction between phenomenal consciousness and belief-laden consciousness is spurious. Hence I shall argue that there is no radical difference between phenomenal consciousness and behef-laden kinds of consciousness. Phenomenal conscious states are intentional states and are individuated on the basis of their representational contents. They

[26]Cf. "Blind Sight, the Absent Qualia Hypothesis, and the Mystery of Consciousness," 36.

[27]Cf. Ibid.. 35.

cannot be unconscious as phenomenal consciousness is intrinsic to than. Though introspective awareness is not intrinsic to them, they seem to be transparent to introspective awareness. Given this, it can be *seen* that the belief laden consciousness is obviously analogous to phenomenal consciousness. Take, for example, any belief-laden conscious state, say the belief that the earth is round. Like phenomenal conscious states, the belief laden conscious states too are intentional. Hence they cannot differ on the basis of their *object* directed/less. Just like phenomenal consciousness, the belief-laden conscious states can only be differentiated on the basis of their representational contents. Just as we cannot have an unconscious phenomenal state because of the existence of phenomenal consciousness, we may say that there are no unconscious beliefs because of the belief-laden consciousness. But one could argue that there could be a difference between two types of consciousness on the following basis: we are conscious of the qualitative states, say perceptual experiences, whenever we have them, whereas we are not always conscious of the beliefs we have. The belief states could be dispositional states whereas phenomenal states like perceptual experiences are always occurrent states. But here too we cannot make a clear cut distinction because an intentional dispositional state is defined only in relation to consciousness, as Searle points out. On the basis of the accessibility to introspective awareness too, Tye cannot differentiate between phenomenal consciousness and belief-laden consciousness because he says that they are sometimes conscious and sometimes not conscious. So Tye does not clarify what exactly is the distinction between the two types of consciousness. He merely states them. In the light of our discussion on the similarities between two types of consciousness and the conclusion reached in the previous section that conscious mental states are unitary states. I conclude that there is no radical difference between the two types of consciousness.

However, one can maintain a sort of distinction between phenomenal consciousness and belief-laden consciousness. They are distinct not because the phenomenal consciousness is a more primitive consciousness and belief-laden consciousness is an altogether different type of consciousness, but because they differ in the kinds of representational contents. The representational content of the phenomenal states are

secondary qualities in the sense that they are directed at secondary qualities of objects. The representational contents of the belief-laden consciousness, on the other hand, are propositions in the sense that they are directed at the states of affairs represented by the propositions. The phenomenal conscious states like being appeared-blue-to, feeling pain, and so on differ on account of the difference in their contents. Similarly the belief-laden kind of consciousness differs from both perceptual experience and bodily sensations in that it has propositions as its objects and not qualities. Since belief-laden consciousness and phenomenal consciousness differ only in the type of their contents, we may say that there is only unitary generic type consciousness and that both the species of consciousness refer only to two major ways of modifying the same consciousness by their representational contents. One consequence of this view is that a person becomes aware of his beliefs just as he becomes aware of his pain. That is, in order to become aware of one's beliefs, the formation of second order beliefs is not required.

A closer examination of the distinction between belief-laden consciousness and phenomenal consciousness shows that strictly speaking even this distinction on the basis of the types of content does not hold. The basis of our distinction has been that the belief-laden kind of consciousness takes propositions as its contents whereas phenomenal consciousness takes qualities as its contents. But it is quite possible to construe that the representational contents of even phenomenal consciousness are propositions because of the intentionality involved in phenomenal consciousness. Take, for example, the phenomenal conscious state being appeared-blue-to. The appearance is always *to* somebody and *of* something. So being appeared-blue-to is an abridged form of the statement from the point of view of a person who is undergoing the visual perception of a blue object. It says: "I see (or seem to see) that there is something blue". It clearly shows that the representational contents of perceptual states or other phenomenal conscious states are propositions Hence there cannot be any radical difference between phenomenal consciousness and belief-laden consciousness, for the former itself is in the form of the latter.

If there is only one generic type of consciousness with each of its particular states having a proposition as its representational content, how

can we differentiate among the various cognitive state like seeing, believing, desiring etc? It is a brute fact that we can differentiate between them. But it is doubtful whether we can have any personal level criteria for differentiating them. The only personal level criterion we have for differentiating between believing and desiring seems to be that the objects of my mental acts of belief can be true or false, whereas we speak of the mental acts of desire not in terms of the truth conditions of their prepositional contents but in terms of their satisfiability or non-satisfiability. My belief that it raining now is either true or false. If I desire that it will rain in the evening, my desire will be satisfied only if it rains in the evening. This way of differentiating between belief and desire is not available with regard to the distinction between perceptual belief states and non-perceptual belief states. The propositional contents of both perceptual and non-perceptual belief states can be either true or false. The reason for this is that the perceptual belief states are a subclass of our belief states in general. In spite of their close affinity, we can and do differentiate between them. 1 do not think that we have a personal level description or account of this fact. So, for an explanation of this, we must resort to the subpersonal level of description. At the subpersonal level, we know mind has different information processing components like the problem solving component, reasoning component, perceptual system, desire system, memory, etc. Postulation of these various systems is not arbitrary but is based on very strong intuition regarding the differences in mental acts at the personal level. On this account those propositional acts which are the products of our desire system we call acts of desire. If the results are the products of other information processing systems, they are called beliefs. Perceptual beliefs are the results of the working of the perceptual system. The propositional acts produced by perceptual system are mainly about secondary qualities in the objects. The results of the working of the memory, problem solving, reasoning etc., we may call non-perceptual beliefs. The perceptual beliefs are generally considered to be simple But they are in fact a complex of many beliefs both perceptual and non-perceptual. Take, for example, the perceptual belief: I see that there is a cat in front of me. The perception of a cat is not the result of a perceptual analysis alone; in its production other subsystems like problem

solving, memory etc, are involved. The perceptual belief that there is a cat in front of me is thus a cluster of beliefs whose prepositional components are: there is something grey; it has yellowy patches *or* stripes on it; it has four legs, a tail and a head with glowing eyes, etc.

The position that there is only one generic type of consciousness, and that perceptual beliefs and non-perceptual beliefs belong basically to belief-laden consciousness in the sense that they are prepositional in nature, has one important consequence. Both our non-perceptual belief states and our perceptual belief states have their own phenomenality. As various perceptual states have different secondary qualities as their intentional objects, their phenomenality also differs. The phenomenal aspects of colour experience, for example, would be different from the phenomenality of pain or pleasure. Similarly the non-perceptual belief states too have their own phenomenality. But their phenomenality is different from the phenomenality of perceptual belief states as the intentional objects of these states differ. It is true that my non-perceptual beliefs do not 'feel', 'appear' "smell' or 'taste' in any way at all to me. Yet there is something that it is like to have these beliefs. With regard to the perceptual states of seeing the Taj Mahal, for example, we can meaningfully raise the question 'what it is like to see the Taj Mahal'. In the same fashion, we can meaningfully ask 'what it is like to believe that 2+2 = 4' or 'what it is like to know that the earth is round'.

So far we have been trying to understand phenomenality in terms of intentionality and awareness. This sort of phenomenality we have seen is the product of our conceptual system. Our emphasis here has been on the intentionality of mental states. As the representational contents of our mental acts vary, their phenomenality too varies. This approach is totally different from the approaches of Shoemaker and Nelkin. For them there are independent phenomenal states which are involved in our perceptual states. According to them only our perceptual states or bodily sensation states have phenomenality and their phenomenality is a function of the existence and occurrence of qualitative states. Thus there could be two approaches to phenomenality: one in which qualitative states are given ontological autonomy and the other in which phenomenality is a feature of our awareness states which are intentional.

5.4.1.2 Two approaches to qualia

We are concerned here with the ontological status of qualia. Shoemaker, Nelkin and Tye would argue that they are independent phenomenal states. (We may note that for Tye the phenomenal states are conceptually tied to intentionality. But the intentionality of the phenomenal states is different from the intentionality of belief laden consciousness. Both these types of states are distinct from states of introspective awareness). On the other hand, our argument for the unity of consciousness denies any ontological status for qualia or phenomenal states. The question about the existence of qualia is akin to the question about the ontological status of mental images. Dennet maintains that there could be two approaches to mental images which are consistent with each other: a *scientific* approach and a *phenomenological* approach as he calls them. In line with Dennet's approaches to mental images, 1 shall argue that there could be a scientific approach and a phenomenological approach towards qualia. My argument is inspired by and is modeled on Dennet's strategy for dealing with mental images. So I shall briefly state his approaches to mental imagery prepare the ground for the discussion of the two approaches to qualia.

According to the scientific approach, the mental images have typical causes and typical effects. On asking whether an equilateral triangle is equiangular, a person may try to answer the question by forming mental images of triangles, instead of drawing them on a piece of paper. The formation of mental images has certain causal antecedents like hearing the question, understanding it, desiring to answer it, deciding not to draw diagrams, and finally attempting to form mental images. The causal ancestry ends in the production of the mental image. The mental image produced is itself the typical cause of certain sorts of effects. The most notable among them is the apprehension of the mental image which according to Dennet is a conscious act of the mind. One is said to have a conscious apprehension of a mental image only if one believes that the mental image has occurred and that it is in virtue of its occurrence that owe apprehends it. Either the apprehension of the mental image can be identified with the belief that a mental image has occurred or both the apprehension and belief can be considered as separate mental acts. In the latter case, we may say

that the apprehension of a mental image caused the belief about its occurrence. In either case, the belief that the mental image has occurred Is the typical effect of the occurrence of a mental image. The belief in question may give rise to further beliefs about mental images.

Dennet expresses the general scheme of his scientific approach as follows. Let the set of letters A, B, C, ... be the various variables standing for the causal antecedents of any mental image α. And let β be the manifold of beliefs about α caused by α itself. The scientific strategy is succinctly expressed by Dennet as follows:

A —> B —> *C* —> . . . —> α —> β.

Here '—>' stands for the expression 'causally produces'. β manifold may consist of a number of beliefs, and people might disagree as to what particular beliefs constitute a given β-manifold. However, it is uncontroversial that the belief that a has occurred is undoubtedly a member of α's β-manifold. It is, in fact, the link between α and **b**. In the scientific approach we are interested only in this connection between a and β. Within the scientific approach, those who assert the existence of mental images (iconophiles) and those who deny them (iconophiles) differ regarding the nature of the occupants of a role. The iconophiles believe that a the normal cause of β-manifold is an event having the nature of an image. So the occupant of the a role is an image in the literal sense of the term. The iconophiles, on the other hand, believe that the occupants of a do not have the nature of a picture. Whether the occupant of the a role has an imagistic nature or not, is in Dennet's opinion an empirical question, to be settled by scientific inquiry. Hence the image havers do not have any special authority about the nature of their own mental images.[28]

Unlike the scientific approach, the phenomenological approach is not concerned with the normal causes of the β-manifolds. Within this approach. the mental images are the intentional objects of the β-mamfolds. They exist as specified by the β-manifolds. that is, with the very same features attributed to them by the image havers. So the image havers have a special authority with regard to the features of their mental images. But these

[28]Cf.Dennet, Two Approaches to Mental Images.' in *Brainstorms*. 174-80-

images are just logical constructs out of the β-manifolds.

The introspective declarations, avowals, confessions etc. of the image havers reveal the nature of the 3-manifolds. The phenomenologist's function, according to Dennet. is to provide a phenomenologicai description of the β-manifolds by systematising the beliefs and specifying their logical structure. They try to provide a logical construction of the intentional objects of the belief-system. The phenomenologicai inquiry proceeds independently of any search for the causes of β-manifolds. Once the belief-manifolds are specified and systematized, a scientist might enquire into the normal causes of these beliefs. The belief-manifolds themselves might give clues to their normal causes. But it must be noted that the intentional objects of β-manifolds cannot be identified with their normal causes because the essential traits of the causes of the b-manifolds and of their intentional objects differ radically. While the phenomenologists would view mental images as the intentional objects of the β-manifolds, the image havers take these intentional objects to be real. In the process of systematization of β-manifolds by the phenomenologist some subjects (i.e. image havers) may alter their beliefs such that they no longer could be said to consider mental images to be real. Like the phenomenologist, they may also come to consider them as logical constructs or intentional objects of their beliefs. Within the phenomenologicai approach such subjects would turn out to be iconophiles. The β-manifolds are not uniform from subject to subject. They differ in their report regarding the nature of their imagery and have different theories about their mental images. All these, according to Dennet, suggest that the β-manifolds of various subjects differ in content. A change in the β-manifold, or the awareness that the β-manifold is composed of false beliefs may eradicate mental images from the phenomenologicai point of rtew.[29]

Parallel to Dennet's two approaches to mental images, it is possible to devise what may be called a scientific approach as well as a phenomenological approach toward qualia. In accordance with the scientific approach there are certain causal antecedents for the occurrence of qualia.

[29]Cf. "Two Approaches to Mental Images." 180-86.

Visual stimulation, for example, is a causal antecedent for the occurrence of colour qualia. Similarly tissue damage and the associated physical processes would lead to the occurrence of pain qualia. The occurrence of qualia has certain typical causal consequences too. We are interested in the most proximate causal consequence of qualitative states, namely, qualitative beliefs. The occurrence of qualitative beliefs seems to be uncontroversial among the lovers of qualia (qualiaphiles). Within the scientific approach we are interested in the nature of the occupants of the role of qualia and not in the qualitative beliefs. The question is whether the occupants of the role of qualia have the qualitative attributes and whether they deserve to be called qualia. We shall name the role played by qualia ϕ role and the manifold of beliefs caused by ϕ the ψ-manifolds. With regard to the nature of the occupants of the α-role. Dennet maintains that it is an empirical question to be answered by scientific and experimental probing. In all probability, the empirical inquiry, it seems to me, would reveal that the occupants of the α-role do not have an imagistic nature. 1 do not, of course, have any argument to this effect. My view is only intuitive: it is difficult for me to believe that in my various acts of cognition, my brain is inhabited by physical images of elephants, horses, trees etc. Well, my concern here is not with the nature of mental images but with the nature of the occupants of the role of qualia, the ϕ-role. To determine whether the occupants of the ϕ-role have a qualitative nature, we da not have to make an empirical inquiry. Philosophy is sufficient to do this job. And philosophy's answer is that the occupants of the ϕ-role do not and cannot have the phenomenological or the qualitative characteristics we attribute to qualia The answer Is based on the distinction between personal level and subpersonal level descriptions. The specification of the occupants of the ϕ-role is done at the subpersonal level whereas the talk of qualia and other phenomenal aspects makes sense only at the personal level. Hence my point is that the scientific approach to qualia suggests the non-existence of qualia

On the phenomenological approach, qualia are just the intentional objects of our qualitative beliefs. They are not the real cause of our qualitative beliefs but the logical constructs out of them. Consequently, any change in the qualitative belief would effect a change in their Qualitative content. On this view qualia exist but only as the intentional

objects of our qualitative beliefs. This account, it must be noted, does not permit a separate, independent existence for qualia. A slightly different but closely related proposal would be to consider qualitative beliefs themselves as qualia. The qualitative beliefs constitute qualia or in other words, qualia are the content of our qualitative beliefs.

The tension as well as the confusion between the two approaches to mental images, according to Dennet, leads to a "spurious third approach", a temptation that must be resisted. The third approach treats mental images as "both incorrigibly known and causally efficacious". They, it is supposed, inhabit a medium called *phenomenal space.* The objects in phenomenal space are taken to be better known than the objects in the ordinary physical space. The phenomenal space is considered to be more actual and concrete than the logical space of possible worlds and other logical constructs. According to Dennet, the third approach is illegitimate and the postulation of phenomenal space is unjustifiable. If the mental images are real, they can exist in the physical space in the brain. On the contrary, if they turn out to be unreal, they can reside in the logical space of intentional objects.[30]

A spurious third approach to qualia or phenomenal states too is discernible in contemporary literature. Shoemaker's conception of qualia discussed in the previous chapter, I think, is the best instance. Following Quine, Shoemaker postulates a "quality space". The expression, however, is very misleading within the context of Shoemaker's discussion. I do not know how to make sense of this expression except by conceiving quality space as a space for qualia. So I take Shoemaker's "quality space" as the phenomenal space of qualia. Moreover, for Shoemaker, qualia inhabiting the quality space are causally efficacious in the production of qualitative beliefs, and their occurrence is known incorrigibly through these beliefs. Following Dennet's argument against mental images inhabiting phenomenal space, we may say that if qualia are the real cause of our qualitative beliefs, then they can exist in the physical space of the brain. If they are not real, they can exist in the logical space as intentional objects or logical constructs of our qualitative beliefs

[30]Cf. Dennet "Two Approaches to Mental Images," 186

Our discussion so far clearly suggests that there is no independent ontological status for qualia. On the other hand. Shoemaker and Nelkin. we have seen, grant ontological autonomy to qualitative states. On Shoemaker's account for example, we are able to make colour discrimination because of the occurrence of various colour qualia. But in accordance with the position defended here it is not on account of the awareness of various qualia that we can discriminate between colours. We just distinguish some sensation as the sensation of a blue coloured object. This capacity of ours does not yield to any analysis at the personal level. The same is the case with our identification and location of pain. We do not locate pain on the basis of pain qualia or the raw feels. We just locate them. However from the subpersonal point of view our ability to locate pain or to make colour discrimination is a very complex fact which can be further decomposed or analysed.

5.4.1.3 Qualia and perceptual experience

For Shoemaker, perceptual states are essentially qualitative states as without qualia no perceptual experience is possible. So in a sense qualia determine our perceptual states. This does not mean that there is a determinate qualia for the each type of perceptual state. Since qualia inversion is a logical (perhaps even an empirical) possibility, the qualia associated with the perception of blue objects may come to be associated with the perception of red objects and vice-versa. When Shoemaker says that qualia are essential for perceptual states, he means that the occurrence of some qualia or other is a necessary requirement for the occurrence of perceptual experience. Shoemaker conceives qualia inversion to be a consequence of the ontological autonomy of the qualitative states We have seen that Nelkin also grants an independent existence to qualia and also concedes the logical as well as the empirical possibility of qualia inversion. From this he comes to the conclusion that qualia (he calls them sensations or raw feels) are the least important element in the perceptual experience. It is not the nature of the sensations that determines the perceptual experience. On the contrary, the nature of the experience determined otherwise, determines the nature of qualia. Since qualia are not essential for perceptual states or experiences, the perceptual states

cannot be considered essentially qualitative.[31]

I agree with Nelkin that the occurrence of qualia or sensations is not necessary for the occurrence of perceptual experiences. So qualia do not determine the nature of perceptual experiences. *On* the contrary, the nature of qualia is determined by the nature of experience- But I do not agree with Nelkin's conclusion that since qualia do not determine perceptual experiences, qualia are not essential to them and hence they can occur without being qualitative or phenomenal states. Nelkin is entitled to conclude only that occurrence of qualia is not a pre-requisite for the occurrence of perceptual experiences. From this it does not follow that perceptual experiences occur without phenomenality or qualitative aspects. In my opinion, perceptual experiences are essentially qualitative states in the sense that qualia are necessary accompaniments or collateral products of the sensory experiences. The qualia as noted above are just logical constructs or intentional objects of our qualitative beliefs. No qualitative beliefs can occur without its intentional objects. Qualitative beliefs are important constituents of our perceptual experiences. So perceptual experiences cannot occur without qualia which are intentional objects of our qualitative beliefs.

Cognitivists are of the opinion that qualia are program resistant. And I fully concur with them. But it is not because of any specific features of qualia that they defy functional definition. Rather it is because qualia or raw feels do not have any ontoiogical status of their own that they defy functional characterization. Qualia are intentional objects or logical constructs. No such intentional objects can be functionally defined. Our perceptual processes are basically processes of information processing. Such processing is associated with qualia. Take for example, vision. Vision involves visual qualia. It is not humans alone who have vision. Birds, frogs, cattle etc. too have visual information processing So one might argue that when they have visual experiences, they have the same visual qualia as we have. But this is not true When they have vision, their visual qualia can be radically different from ours. Suppose

[31] Cf. Nelkin, "How Sensations Get Their Names." *Philosphical Studies* 51 (1987), 325-26.

a human being, a cow, and a butterfly see the same beautiful rose. It is highly unlikely that all of them have the same visual qualia. The visual experiences each of them has differ not because each species has certain raw feels that are radically different in kind from those of the others but because they differ in their conceptual structures. Due to the differences in their conceptual structures, the same flower produces in them radically different perceptual beliefs. And it is natural that the intentional objects of these beliefs of various kinds also will be different. Since qualia are nothing other than logical constructs of these various types of perceptual beliefs, the difference in the kind of perceptual beliefs implies a difference in qualia. Only creatures with sophisticated conceptual system can have sophisticated perceptual beliefs. Since qualia are logical constructs of our perceptual beliefs only creatures with our conceptual sophistication can have the kind of qualia we humans possess.

Our perceptual states are not just abstract cognitive states. Each of our perceptual experiences is a combination of a cognitive state, namely the perceptual belief, an affective state, namely liking or disliking, and an overt behavioural state. Following Nelkin we shall call this combination an *attitude*.[32] Take again, for example, the visual perception of a rose. The belief that I see a rose is part of the visual experience produced in me. In addition to this cognitive state, an affective state and a behavioural state are part of my visual experience of the rose. The cognitive state gives rise to the affective as well as the behavioural states. The perception of a rose could induce in me a liking for the flower and the desire to detach it from the plant and offer It to the person I love most. The cognitive states in collaboration with the affective and behavioural states produce certain flower directed behaviour.

The perceptual belief which is the most important element of our perceptual experience is not an abstract belief This is a belief with a particular content. While seeing a rose, 1 believe that 1 see a particular rose and not some rose or other. When I see a particular rose, I am aware of its specific colour, texture, size. etc. In other words, my belief that I see this rose is not a single belief but a cluster of beliefs which is a

[32]Nelkin, "How Sensations Get Their Names." 326

series of inter-related beliefs about the particular rose. And what we call qualia are the intentional objects or logical constructs of these particular perceptual beliefs which belong to the cluster.

5.4.4 Pain states and qualia

In their discussion of phenomenality philosophers often cite pain as the classic model of a phenomenal mental state. So it is obligatory to give due consideration to the analysis of pain states before I conclude this discussion. Moreover one might argue that though qualitative aspects of other mental states could be explained as intentional objects of perceptual beliefs, this strategy is not available in the case of qualitative states of pain because pain is a raw feel — an unanalysable brute fact. 1 do not agree with the view that pain is unanalysable. On the other hand, I think that Nelkin is right in his observation that pain is basically an attitudinal state like a state of visual experience. It is a perceptual state, and like any perceptual state, pain is in fact a combination of cognitive, affective and behavioural states: the cognitive state gives rise to the affective state, i.e., a dislike for the pain and the desire to get rid of it. The cognitive and affective states together give rise to pain behaviour. As Nelkin observes, what is important in our analysis of pain is how we believe, feel affectively and act.[33]

Of the three elements of a pain state, the behavioural and affective states do not require much elaboration. Pain is almost always accompanied by certain behavioural manifestations. Even when such overt behaviour is suppressed, it is undeniable that we have a very strong tendency to produce pain behaviour. By the affective aspect of pain, we mean the hurt we feel, the dislike we have towards this feeling and the disturbances it Induces in the normal functioning of the body and in the working of the cognitive mechanism.

A person who undergoes pain has a special authority with regard to the occurrence of the pain experience. This authority emanates from his awareness that he is himself in pain. This awareness we call pain belief

[33] Cf. Nelkin, "Pains and Pain Sensations." *Journal of* Philosophy 83 (1986): 139.

The occurrence of pain belief shows that the pain state necessarily involves a cognitive state. The influence of cultural factors in our feeling of pain gives credence to the fact that pain belief is a necessary element in our pain experiences. As an instance of the influence of cultural differences, Nelkin discusses the case of Mediterraneans and Nordics. Certain experiments conducted on these cultural groups show that they feel pain at different levels of noxious stimulation. The level *or* the intensity of stimulation at which they become aware of the stimuli is the same. But they differ with regard to the level at which they consider their experiences to be painful. The Nordics feel pain only at higher level of noxious stimulation, whereas the Mediterraneans start feeling pain at a lower level.[34] Nelkin cites another experiment which also establishes that the cognitive aspect is essential to the experience of pain. A group of people dealing with a word list was given mild shocks whenever they made mistakes. The subjects never found the shocks painful unless the word pain or one of its synonyms was on the list.[35]

The idea that pain is basically an attitudinal state like other perceptual states led Nelkin to the view that pain qualia are not essential to pain experiences. The example, cited above, of the influence of cultural differences in feeling pain shows that both Nordics and Mediterraneans have the same qualia or raw feel. The fact that only one group finds them painful, according to him. confirms this position. Just as one can be in pain without having pain qualia. the occurrence of pain qualia does not entail that one is in pain. In support of this view. Nelkin cites the cases of two groups of patients those who have had prefrontal lobotomies and those who were administered morphine after the onset of pain. Both the groups report that they feel pain but it no longer hurts them. This, according to Nelkin is an evidence of the fact that pain qualia can occur without there being any pain. These results seem to be counter-intuitive but the root of this seeming counter-intuitiveness. in Nelkin's opinion, lies in the idea that one is in pain only if one has the

[34]See "Pains and Pain Sensations." 136. "How Sensations Get Their Names" 332.

[35]"Pains and Pain Sensations," 136-37.

pain qualia or pain sensations. The knowledge as to how sensations or qualia get their names is the right antidote to this counter-intuition. The same qualia may occur with different attitudinal states and different sensations may occur with the same type of attitudinal state at different times. The sensation that is constantly associated with a given attitudinal state would come to be named after that attitudinal state. A pain sensation is one that is constantly associated with the occurrence of the attitudinal state of pain.[36]

Nelkin's view that pain qualia are separable from pain states does not seem to be a sound thesis. The morphine and lobotomy cases, in my opinion, do not prove that pain sensation occurs without pain. They only show that of the three elements of a pain state only the cognitive element is present. But it must be noted that this cognitive element viz., the cognitive belief cannot occur without pain qualia or sensations. The subjects themselves report that they feel intense pain but do not mind it. This means whenever we have pain beliefs, we have pain qualia. If pain belief and pain qualia are inseparable then Nelkin's argument that pain occurs without pain qualia is not true. Pain qualia do not determine or cause pain beliefs. On the contrary, it is the pain beliefs which determine pain sensations. In Nelkin's opinion, raw feels or bare sensations occur and they are interpreted as pain or tickling by the subject as his cultural situatedness or the cognitive state he is in determine. I do not agree with the view that there are bare sensations or raw feels which are causally responsible for our pain beliefs Pain sensations or qualia are just intentional objects of our pain beliefs Therefore no pain beliefs can occur without pain sensations The Idea that pain can occur without pain sensations is the result of a tacit assumption that our pain beliefs are abstract. When I undergo pain, 1 am not experiencing some general or abstract pain There is no such abstract pain. On the contrary, 1 have a very specific experience on any given occasion of pain feeling. Hence my pain belief is a particular cluster-belief. The various members of this cluster are I am undergoing this pain, this pain is intense, it is awful, etc etc What we call pain

[36]See "Pains and Pain Sensations." 139-40; "How Sensations Get Their Names"

qualia are logical constructs out of this cluster-belief. The position defended here supports the view that the maxim esse est *percipi* holds in the realm of pain. Pain is not just the occurrence of pain belief. But it is the most essential element of pain. Pain may be conceived as pain belief plus whatever ensues from it such as affective and behavioural aspects.[37]

According to Nelkin, the cultural differences of Nordics and Mediterraneans influence their feeling of pain. The sensation which is interpreted by one group to be a pain sensation is not a pain sensation for another. Hence a given sensation can be associated with different perceptual states. However, I think, there is a more plausible interpretation for the cultural differences in feeling pain. It is quite possible that, in spite of having the same level of noxious stimulation. only Mediterraneans feel pain or have pain sensations or qualia. It is not because they have interpreted the same sensation differently but rather that only Mediterraneans have pain beliefs, and the Nordics totally lack them. So they do not have pain sensations. Hence it is not true that both the groups have the same sensations or qualia and that only one group finds them painful.

Pain like any other perceptual state is an attitudinal state. This conception of pain state, according to Nelkin. accommodates a great deal of our common intuitions about pain. Moreover if pain is an attitudinal state, it can be dealt with as a functional/computational state, just as cognitive scientists treat the states of visual perception (pains and pain sensations). But the qualitative aspects of our pain states must be construed as the intentional objects of our beliefs, and as intentional objects they are essential features of our experience of pain

5.4.2 Intentionality

We have been arguing that the phenomenality of our mental states can be explained in terms of their intenticnality and awareness One point that emerges from the discussion is that mtentionality is a basic feature

[37]See Dennet. "Why You can't Make a Computer that Feels Pain." in Brainstorms, 225-26.

of all our mental states. This feature is conceptually related to our states of awareness. In other words, intentionality cannot be conceived independent of consciousness. Philosophers are divided on the use of the word 'awareness'. For, some intentional states are first order conscious states and 'awareness' refers to second order consciousness. Others use the expression 'aware of' only in its intentional sense. Whenever we are aware, we are aware of something. Even if one grants second order consciousness, this consciousness or awareness is *of* something. So a second order conscious state or awareness state is understood only as an intentional state. The difference, however, is that the objects of the second order consciousness are certain mental states and entities, whereas the first order conscious states or intentional states are directed at various objects in the world or states of affairs. At the outset, let me state clearly that I do not subscribe to the existence of second order consciousness. In my opinion, even if one grants second order consciousness, such conscious states can be understood only as intentional states. So intentionality i.e., their object directedness or representational capacity is a basic function of the conscious mental states. It is not humans alone who are endowed with consciousness and intentionality. It is generally held these days that non-humans are also aware of and hence possess intentional mental states The question whether dumb animals possess intentionality is judged from their reaction to the environment. A bird is said to possess intentional states, as it flies off on becoming aware of the cat about to spring upon it Hence it is a fact that the bird becomes aware of the cat as we humans do A pertinent question in this context, however, is whether the bird becomes aware of the cat as cat in the way we humans are aware of it In my opinion, it is highly unlikely that the bird has become aware of the cat as *cat.* The bird is seeing the cat in all probability as some danger In other words, though intentionality of the perceptual states of the bird and those of the humans are directed towards the same object, the propositional contents of perceptual beliefs formed by the bird and those formed by humans radically differ. The difference ID the contents of the perceptual beliefs resulting from the perception of one and the same object can be accounted for only in terms of the difference in the conceptual systems of humans and of birds. We see a cat as a cat because of the sophistication

of our conceptual structure. The birds do not see it as a cat because they lack so sophisticated a conceptual system as we humans possess. Consciousness and therefore intentionality — more specifically intentional content, is a function of the conceptual system. The degree of consciousness an organism possesses is directly proportional to the level of sophistication and complexity of its conceptual system. So the birds whose conceptual system is far inferior to that of humans possess only a lower degree of consciousness or intentionality.

According to Dennet, intentionality can be understood in two ways, — the intentionality of speech acts and the intentionality of behaviour. Intentionality of speech acts consists of what one can directly or non-inferentially report whereas the intentionality of behaviour is the awareness state which is a necessary condition for the successful direction of behaviour. Since all awareness states are intentional states, awareness states in both the above senses can be construed as prepositional attitudes. Making use of this construal Dennet defines the two senses of awareness or intentionality as follows:

1. *A* is aware$_1$ that *P* at time t if and only if *P* is the content of the input state of *A's* 'speech centre' at time t
2. *A* is aware$_2$ that *P* at time t if and only if *P* is the content of an internal event in *A* at time *t* that is effective in directing the currentbehaviour.[39]

Dumb animals in Dennet's opinion, are only aware$_2$ that *P* because they lack a speech centre whose input is a propositional content Human beings, on the other hand, are aware$_1$as well as aware$_2$and hence possess both forms or grades of intentionality. Both awareness$_1$and awareness$_2$. It seems, are used at personal level. However, their definitions, argues Dennet, bridge the gap between personal and subpersonal levels of explanation, for both awareness$_1$ and awareness$_2$ have subpersonal criteria

We have already noted that there is a conceptual relation between awareness and intentionality such that they are inseparable Yet

[38]See Dennet. *Content and* Consciousness. 118-20.

39Ibid., 118-19.

philosophers very often sever the connection between intentionality and awareness. They often employ notions of tacit knowledge and unconscious beliefs in the explanation of human behaviour.[40] Such states are certain dispositions unavailable to us in consciousness. But the intentional states of knowledge, belief, desire, etc., as we have already seen, can be understood as possible conscious states. If so, the only way to make sense of philosophers' use of the expressions like 'tacit knowledge', 'unconscious belief etc. is to construe them as metaphorical expressions. The referents of these expressions are just theoretical constructs for the explanation of verbal and non-verbal behaviour. These states are unavailable to us for reporting.

The view that intentionality is an inseparable feature of our conscious mental states is hardly uncontroversial. One might even argue that intentionality need not be mental and can be understood independently of consciousness. The intentionality of the linguistic expressions may be cited as the best of examples of non-mental intentionality If language has an intrinsic intentionality of its own then it can be understood independently of consciousness. Philosophers agree that both language and conscious mental states are intentional. But they disagree as to which intentionality is primary: linguistic or mental? Some philosophers conceive the intentionality of language to be primary and take the intentionality of mental states to be derivative This is Fodor's strategy, which we discussed in Chapter 3. An alternative strategy is to derive intentionality of language from the intentionality of conscious mental states. A sentence written on a piece of paper does not have any intrinsic intentionality of its own. for it is only a set of meaningless symbols. It acquires meaning and intentionality only in relation to a conscious organism, a language user who can read and understand the sentence. Similarly the so-called unconscious intentional mental states are intentional only in so far as they can become conscious Hence it is not possible for us to understand intentionality apart from consciousness or awareness.

[40]Fodor. "The Appeal to Tacit Knowledge in Psychological Explanations." in *Representations,* 63-78.

5.4.3 Awareness vs. introspection

The talk of the availability or accessibility of intentional states to consciousness or awareness is quite misleading. It deludes one into thinking that awareness is something like an inner light, and that intentional states can exist in the mind without being illuminated. As a result, philosophers talk of unconscious intentional states. But this does not go well with the conceptual relation between consciousness and intentionality defended earlier. One way of dealing with the difficulty would be to do away with the talk of the unconscious altogether. But this is not appealing, as we have a number of intentional states that are not available to us for report, that still somehow direct or influence our behaviour. A better alternative is to say that an intentional state not available for report is also a conscious mental state or an awareness state by virtue of its being intentional. The only difference between the conscious and the so-called unconscious mental states is that the intentional state unavailable for report is of a lower degree of consciousness. Thus consciousness or awareness admits of degrees. On reaching its highest degree, the conscious states do not cease to be intentional or phenomenal. On the contrary, their intentionality and phenomenality become much more evident at higher stages of consciousness.[41]

A similar position has been held by Dennet. He is of the opinion that consciousness as a capacity to become aware that *P* admits of degrees like any other capacities. If consciousness is taken as the present capacity to become aware that *P.* then a person in coma is unconscious to a greater

[41]Thethesis that consciousness itself has degrees is not a new one It has been advocated by philosophers like Kant. According to him, in order to have representations (sensations) there must be a certain degree of consciousness. If our representations are obscure, it does not mean that we do not have consciousness but only that we have a very low degree of consciousness. On the other hand, a given representation of ours is clear only if there is a high degree of consciousness sufficient to make us aware of the distinction of this representation from others Since representations or sensations for Kant are empirical consciousness of objects, the same may be said about the intentionality of our memal states with regard to their obscurity and clarity. See Immanuel Kant. Imanuvel *Kant's Critique of Pure Reason,* trans. Norman Kemp Smith (London: Macmillan, 1980), 373, n. a.

degree and a person who is asleep, on the contrary, is unconscious only to a lesser degree. The latter can wake up, which, in Dennet's opinion, is a behavioural response to the incoming information. So if consciousness is understood in the sense of awareness$_2$, then dumb animals, and people who are asleep or in coma, are conscious.[42] In the sense of awareness$_1$, however, only human beings who speak or possess the present capacity to speak are conscious. Since consciousness admits of degrees, I think. Dennet's awareness$_1$can be conceived as a higher degree of consciousness than awareness$_2$. This would become evident if we look at the way Dennet defines awareness$_1$and awareness$_2$. In both cases the object of awareness$_2$ is a prepositional episode. In the case of awareness$_1$, the occurrence of the prepositional episode can be reported but the object of awareness cannot be reported in the same way. We can conceive of prepositional episodes only in the case of animals that can report them. So when we say that P is the content of an internal event in a dumb animal, we only mean that if such an event were to occur in humans, its occurrence could be reported *ceteris paribus*.

Dennet,s concept of awareness$_1$, the highest degree of consciousness in humans, seems to be very narrow: one is aware$_1$ that *P* only if one speaks On this conception, a person having a visual experience of a book on the table but who does not speak is only aware$_2$ that P Similarly if a person is having a dream experience, then he is only aware$_2$ that P On the other hand, if he speaks while having the dream experten e. then he is aware$_1$ that P. Dennet's conceptions of awareness$_1$ and awareness$_2$ do not capture all our common intuitions regarding consciousness, especially those of our conscious experiences at the very moment of having them Obviously there exists a difference between the person who reacts to the visual stimuli but does not speak and the dumb animal which too reacts to the same visual stimuli but cannot speak. The conscious experiences in these two cases are different and hence should not be categorised under the title 'awareness$_2$" In the same way. there is a lot of difference between the talk of a person in his sleep and his talk at waking moments These differences do not permit us to categorise these two experiences under the name 'awareness$_1$'.

[42] Dennet, *Content and Consciousness*. 127-28

In my opinion, the criterion for awareness$_1$ or the highest degree of consciousness is not the capacity to speak or to make verbal utterances but the capacity to report. While asleep, one may be displaying certain verbal behaviour but he is not reporting anything. Hence he cannot be said to be aware$_1$ that P. But if a person who does not speak while having a dream experience is aware$_1$ that *P* provided he is in a position to report his dream experience. It must be noted that in order to be aware$_1$ that P. one does not have to report, but one only needs to possess the present capacity to report. In this sense, a person who is having a dream experience and a person who is undergoing a visual experience but does not report it are aware$_1$ that P, for they possess the present capacity to report though they do not exercise it.

The thesis that consciousness as a capacity admits of degrees and that awareness$_1$ is the highest degree of consciousness, leads us to conceive the so-called introspective awareness or the second order consciousness in an altogether novel way. What we call introspective awareness is nothing other than the highest degree of consciousness. Hence there is no independent status for awareness states as separate from phenomenality and intentionality. The mental states which are by their very nature intentional as well as phenomenal become sometimes more luminous and sometimes less luminous. It is this greater or lesser luminosity that we call degrees of consciousness. At the highest level or degree of consciousness our mental states become reflexive when an intentional mental state exhibits reflexivity at higher levels of consciousness, we call such states introspective states. Only reflexive states and acts are recorded in memory and are available for report and further examination later.

From the above discussion, I conclude that there is no independent introspective mechanism within one's mind — an information processing system which takes phenomenal states and intentional states as inputs and produces various beliefs as outputs To state this in a slightly different fashion, there are no qualitative states independent of and separable from awareness which because of its interaction with them produces awareness of qualia or qualitative beliefs In the same way. there are no sentence tokens or proposition-like mental objects which on account of their interaction with awareness produce Objective beliefs about the world. When

I believe, for example, that the earth is round, there is no proposition like the mental state 'the earth is round" which causes in me the corresponding belief. I do not mean to say that our reflexive intentional mental states are not prepositional in nature. I only just deny the dichotomy that is supposed to exist between the belief that the earth is round and the prepositional like mental state 'the earth is round'. There is only a unitary conscious state viz., the belief that the earth is round which may be considered as a particular modification of our consciousness on account of its intentional content. When such beliefs are of higher degree consciousness, their intentionality and reflexivity become much more evident.

The reflexivity of our conscious mental states means that we are aware of our own mental states. We may call this awareness self-awareness. Since the reflexivity of the conscious mental states is directly proportional to the degree of consciousness, there are degrees of self-awareness as well. As Kant says, the faculty of being conscious of the self also admits of degrees[43] . Though one becomes aware of oneself in each of one's conscious mental acts, in the process the self does not get divided into subject and object.[44] In the case of self-knowledge both the subject and the object of our knowledge is one and the same This means that one does not become conscious of oneself in the way one becomes conscious of external objects. One becomes aware of oneself only in relation to one's objects of thought. That is, consciousness of oneself is necessarily bound up with the consciousness of things outside As Kant rightly observes, "the consciousness of my existence is at the same time an immediate consciousness of the existence of other things outside me'[45] Thus in each act of thought both the subject and the object are revealed simultaneously. The objects are revealed because of the intentionality of

[43]See Kant, *Immanuel Kant's Critique of Pure Reason,* 373

[44]Kant illustrates this point as follows One becomes conscious of external objects by summoning up their representations under certain categories or forms of understanding. But in self-consciousness there is no representation of the self or a manifold of inner intuitions to which categories are applied. One becomes aware of the self only when one becomes aware of an external object See *Critique of Pure Reason. 168-69*

[45]Critique *of Pure Reason,* 245

our mental acts and the subject because of the reflexivity of these very same acts. On this view, there is no introspective faculty which perceives the internal representations in the mind. That is, mind is not divided into representations and a mechanism for their perception.

The view of consciousness emerging from the above discussion implies that there is no second order consciousness. The assumption that there is a second order consciousness has led philosophers to the view that there are second order beliefs. The belief that *P* is a first order belief. But when such beliefs occur in me I sometimes non-inferentially believe that I believe that P. The latter kinds of beliefs are called second order beliefs. According to Nelkin. the second order beliefs are the products of second order consciousness or "attitudinal consciousness", "a scanning device which, on many occasions, is able to report back to the organism what prepositional attitudes the organism has, . . ."[46]

Though second order beliefs are non-inferential beliefs caused *by* certain prepositional attitudes, they are. according to Nelkin, not infallible. It is quite likely that I mistakenly believe that I believe that P whereas I do not in fact believe that P.[47] 'I believe that P' and '1 non-inferentially believe that I believe that P', in Nelkin's opinion. express two different propositions. This distinction is suggested by the possibility of unconscious beliefs. So if unconscious beliefs exist then I can believe that P without at the same time becoming aware that 1 believe that P.[48] In other words first order beliefs and second order beliefs are two different mental acts or prepositional episodes Consequently, the non-inferentiality and fallibility of the second order beliefs, according to Nelkin, do not go hand in hand. Consequently the second order beliefs can be false. That is, though I do not believe that P. it is possible that I believe that I believe that P.

Nelkin's distinction between first order beliefs and second order beliefs is not tenable. When 1 believe, my belief is an act of the mind

[46]Nelkin, "Prepositional Attitudes and Consciousness " Philosophy and *Phenomenological Research* 49 (1989) 429

[47]Cf. Ibid., 425.

[48]Cf. Ibid., 426.

Each act of the mind is the result of the information processing at the subpersonal level. Each mental act is a conscious act, though the processes that lead to the act themselves are unconscious. One of the characteristics of the conscious acts is that they are reflexive: we are aware of our own acts. When a belief that P occurs, it is because of the reflexivity of the belief that I believe that P. The reflexivity of my belief tempts me to think that there is a second order belief of the form, 'I believe that I believe that P'. Since there is no second order consciousness or introspective mechanism for scanning the contents of the mind, there is no distinction between 'I believe that P' and "I believe that I believe that P'. Both of them refer to one and the same mental act, Hence the conscious mental acts must be incorrigible.

I have various types of prepositional attitudes. I believe P, desire P, fear P, hope P, wish P etc. If I can have second order beliefs, then it is quite reasonable to hold that I can as well have second order hopes. desires etc. But the mental state 'I hope that I hope that P' does not make any sense at all. But one could argue that though there are no second order hopes or desires, there could be second order beliefs, hence the proposition 'I believe that I hope P' is perfectly sensible. I do agree that the mental acts of desire, hope etc. can be rendered in this form But such rendering only refers to the reflexivity of these mental acts So, 'I desire that P' and '1 believe that I desire P' are the same act

Since by second order beliefs, I mean only the reflexivity of our mental acts, Nelkin's claim that second order beliefs are not incorrigible is unacceptable to us. Because of the reflexivity of the mental acts, if I believe that I believe that P, then that 1 believe that P is undeniable Moreover, it seems to me that the case of 'I believe that 1 believe that P' is analogous to that of 'It is possible that it is possible that P' If the proposition 'it is possible that P' is false, then 'it is possible that it is possible that P' also must be false Similarly, if 'I believe that P' is false then '1 believe that I believe that P' a so must be false From the incorrigibility of 'I believe that I believe that P' I do not wish to establish that there are second order beliefs, but only that our first order conscious mental states are incorrigible because of their reflexivity.

According to the theory of personal consciousness sketched above, consciousness cannot be divided into independent and separable states of phenomenality, intentionality and awareness. These are features of each of our unitary conscious mental states. All these three features must be construed as a function of our conceptual structure. All our conscious mental states are basically intentional states such that their occurrence can be conceived as propositional episodes. Since these reflexive episodes are our only avenues to self-knowledge, there is no introspective faculty within our mind that scans the contents of the mind. The denial of the existence of an introspective faculty is significant as it leads to the rejection of second order consciousness and hence second order beliefs. The advantage of this rejection is that it helps us overcome an infinite regress resulting from the confusion of personal and subpersonal theories of consciousness.

CONCLUSION :

IN DEFENCE OF A SPECIES-SPECIFIC PSYCHOLOGY

Our discussions so far have been centred on two inter-related themes that have significant bearing upon cognitive science: 1. the nature of mental states and processes; and 2. the nature of the mind-body relation. With regard to the first theme, it has been maintained that mental states and processes are conscious states with inseparable features of intentionality. phenomenality and awareness. The mental states cannot be defined without reference to these features. Given the narrow scope of this thesis, the theme has been discussed rather elaborately. Hence I do not want to dwell further upon it. Instead, because of its implications for psychology or science of the mind. I shall concentrate on the nature of the relation between the mind and the brain. A position with regard to this problem has already been adopted in the second chapter, where a version of type physicalism has been defended. The aim of these concluding remarks is to clarify the position in the light of our discussions in the other chapters and to argue that the psychology built upon this foundational thesis is species-specific as opposed to the universal psychology contemporary cognitive science aims at.

In the first chapter, we provided an alternative read g of Descartes' mind-body problem. It was argued that the mind-body dualism need not be taken as substantial dualism as is generally understood Rather it can be seen as a conceptual distinction between the mind and the body By conceptual distinction we mean the logical possibility of their separate existence. The logical possibility does not forbid the realisation of the mind by the structure and organisation of the body, particularly by the brain and nervous system. It is from this angle that we criticise the multiple realisability of mental properties as advocated by token

physicalists and functionalists. The token physicalists fail to take note of the fact that the intuition of multiple realisability is based upon the logical possibility of the separate existence of the mind and the body. Often they confuse logical possibility with nomological possibility. The functionalists, like their behaviourist predecessors, are concerned with the definition of mental states. The functional specification theorists define them in terms of their causal roles and the physical states that realise them. The functional state identity theorists, on the other hand, identify mental states with machine table stables defined in terms of their inputs, outputs, and other machine table states. Both the doctrines are committed to multiple realisability of mental states and processes, though, of course, the former is committed to species-specific type-type identities. Both the versions of functionalism fail miserably in their endeavour to define mental states, as these definitions leave out conscious aspects of our mentality such as phenomenality, intentionality and awareness. A plausible definition of the mind has to take into account these essential and irreducible features of our mental states and processes.

The irreducibility of phenomenal or conscious features of mental states could end up in substantial dualism. To avoid this, it has been maintained that in the actual world, the conscious mental states and processes are realised only in creatures with systems of neurons organised into certain neural net works interacting among themselves As Searcle rightly observes, "the mental states are both caused by the operations of the brain and *realised in* the structure of the brain (and the rest of the central nervous system)".[1] On this view human beings who are endowed with a mind are, to use Chomsky's phrase. "Complex organised biological system[s]" with mental and physical properties[2] However, it must be noted that this is not a version of property dualism — the view that there are two and only two types of properties in the universe- the mental and the physical. On the view defended in the thesis, mental properties form a

[1]Searle, *Intentionality: An* Essay in the *Philosophy of Mind* Cambridge Cambridge University Press, 1983). 265

[2]Chomsky, "Language and Nature" 7-8

subclass of the physical. In addition to the chemical and biological properties, the physical world consists of the mental properties as well So the mental states and events like pains, itches, beliefs, desires, etc. are real and refuse to be reduced to something non-mental. By the reality of mental states and processes, I do not mean that they are entities on their own existing in a cabinet we call the mind. As Ryle rightly points out, the mind is not a place that phantom-like entities like pains, itches, beliefs, desires.etc., inhabit. Instead, in my opinion, there are only mental acts and experiences such as believing, desiring, feeling pain, having itches and so on. They are realised in the neural structures and processes of the brain.

Our discussion in the above has been revolving around two points. First, the mental states and processes cannot be reduced to neurological states and processes. Second, they are generated by and realised in the neural structures and processes of the brain. These two theses seem to contradict each other. Searle makes an attempt to resolve the apparent contradiction by identifying and appealing to two levels of description, one the macrolevel description of mental states and processes and the other, the microlevel description of neural states. processes. and structures. The mental phenomenon at the macrolevel, say pain or visual perception, is said to be caused by and realised in mi rolevel neural structures and processes. The two levels of description and the relation of causation and realisation do not pertain to mind alone Any physical or biological phenomenon has both micro and macro levels of description and could be related by causation and realisation The various macrolevel properties of water like liquidity, for example, are caused by and realised in the molecular structure of H_2O Similarly, the temperature in a gas is caused and realised by the mean molecular kinetic energy Since the mental properties are caused by and realised in structures and processes of the brain they can rightly be characterised as the features of the bra Neither the physical properties at the microlevel nor the mental properties at the macrolevel can be reduced to something else Hence both are considered to be real It is the very same causal powers that are described at cither level of description. In other words both the higher level description and the lower level description are causally real levels

of description.[3] An important semantic consequence of this position is that the mental terms occurring in the macrolevel description and the neurological terms occurring in the microlevel description do refer and as a matter of fact they refer to the same entities.

Distinctions analogous to Searle's macro and micro levels of description have been made by other thinkers like Dennet and Chomsky. In the previous chapter, we discussed Dennet's distinction between two levels of explanation: personal and subpersonal levels. Similarly Chomsky too is committed to a distinction between personal and subpersonal levels of description. [4] However, it seems to me that Dennet and Searle differ with regard to the semantics of these descriptions. According to Searle the terms occurring in both the descriptions do refer and hence both the descriptions are descriptions of real phenomena. Dennet. on the other. hand thinks that the terms of the macro/personal level of description do not refer. Therefore, mental states and processes are not real in the final analysis and they must ultimately give way to subpersonal description in terms of physiological states and processes. The mental states and processes are attributed to any organisms/systems provided such attributions contribute to the predictive success of the organisms'/systems' behaviour. As a result, Dennet is given to the view that mental states and processes could be realised multiply Chomsky also sides with Searle's view that mental states and processes are as real as any other physical states and processes and they are caused by and realised only in the structures and processes of the brain Hence both of them would agree that the mind can be possessed only by neuro-biological systems like humans.

Dennet, Searle and Chomsky unanimously hold the view that the confusions between the higher and the lower levels of description would lead to some conspicuous category mistakes As already noted in the previous chapter, in Dennet's opinion, mental states like pain are attributed only to a person and not to the neural networks or circuits that

[3]See Searle, *Intentionaliy*. 264-267. his "Minds and Brains without Program," in *Mind Waves*. 223-227

[4]See Chomsky, "Language and Nature." 8-9

realise it. According to Searle, just as the liquidity of water is not found at the level of individual molecule, mental states like visual perception, thirst, etc., should not be sought for at the level of the individual neuron or synapse.[5] In the same vein. Chomsky remarks: *"People* in certain situations understand a language; my brain no more understands English than my feet take a walk. It is a great leap from common sense intentional attributions to people, to such attributions to parts of people or to other objects".[6] The temptation to attribute personal level properties to subpersonal parts or to other objects must be firmly resisted. Otherwise, we would end up attributing mind to anything and everything. Consequently, 'mind' would turn out to be a vacuous term and we would not be in a position to determine the domain of inquiry appropriate to cognitive psychology.

The thesis that the mental phenomena are caused by and realised in systems of neurons organised into certain neural structures has an important consequence. The neural structures and the various types of interactions among them are causally sufficient conditions for any type of mental phenomenon. Searle calls it "the principle of neurophysiological sufficiency".[7] The principle entails that the neural structures and processes are not necessary for the realisation of mental phenomena The latter thesis could be very appealing to the token physlcalists and functionalists who think that the mental states and processes can be realised multiply, as the thesis grants the possibility of alternate causal principles sufficient for the realisation of the mental phenomena But we could talk of alternative causal principles sufficient for the realisation of mental phenomena only from an absolute point of view In other words the possibility of alternative causal principles is a logical passibility and not a nomological one. In a logically possible world where the laws of nature do not hold, it is possible, as Searle points out, 'to produce consciousness, intentionality, and all the rest of it using some other

[5]Searle. *Intentionality*. 268.

[6]Chomsky,"Language and Nature," 8.

[7]Searle, "Minds and Brains without Program." 229

sorts of chemical principles than those that human beings use".[8] But in the actual world, as well as in the other nomologically possible worlds, where the laws of nature hold, the neuronal structures and processes are causally both necessary and sufficient conditions for the realisation of the mental phenomena. That is, the mental phenomena are realised only by neurological processes and structures in the actual as well as other nomologically possible worlds. That is, given the laws of nature, the mental phenomena are necessarily realised by the structure of the brain and the central nervous system. The aspect of necessity associated with the realisation relation is clearly brought out by Michael Tye as follows:

> The realisation relation is at least in part one of determination- The lower level property or type synchronically fixes the higher level one (so that the tokening of the former at any time t necessitates the tokening of the latter at *t* but not conversely). The relevant notion of necessity here is both nomological and strict (that is, without any *ceteris paribus* qualifications).[9]

Such observations clearly indicate that the tokenings of the mental type and the corresponding lower level property are not two discrete event. They are the same event described in two different vocabularies In other words, the mental phenomena and the neurological phenomena that realise them in the actual world, though conceptually distinct, are not so ontologically. Hence the mental states and the brain states do not causally interact as the substantial dualist maintains

The theory of the mind-brain relation emerging from our discussion is a version of type-type identity thesis When mental types are identified with certain neurological types, the identity in question is not a definitional one. What makes such identification possible is a system of laws pertaining to the microlevel phenomena In other words, the higher level mental types are said to be identical with lower level physiological types. The type-type identity thesis is true only in relation to a system of laws in accordance with which neurological processes take place Once such laws are identified, we can easily find out what microlevel stales and

[8]Searle, "Minds, Brains and Programs." in *The Mind's I, 368*

[9]Tye, "Blind Sight, the Absent Qualia Hypothesis, and the Mystery of Consciousness," 31.

processes realise the macrolevel mental phenomena. As Searle rightly observes: "If one knew the *principles* on which the system of H_2O molecules worked, one could infer that it was in a liquid state by observing the movement of the molecules, but similarly if one knew the *principles* on which the brain worked one could infor that it was in a state of thirst or having a visual experience". Thus we arrive at psychophysical type-type identities on the basis of a system of laws and certain observed facts.

The type-type identity thesis as advocated here is not a naive thesis of the form 'pain = C-fibre firing' though undoubtedly the C-fibre firing is part of the cause of some kind of pain. The pain state is not realised by a single physiological type like C-fibre firing but by a combination of various physiological types. It is not necessary that each instance of pain is realised by the same set of physiological types. There may be different combinations of physiological types that substantiate what we generally call pain. This, one might argue, is nothing other than token-token identity thesis, a more sound doctrine than type physicalism But this observation is not correct. In my opinion, from the fact that pain is realised by various combinations of physiological types, only the impatient would hasten to conclude that mental types are realised multiply

There is absolutely no problem with the type-type identity thesis as such. One of the reasons for the temptation to accept token physicalism arises out of the fact that common sense psychology lacks a rich vocabulary adequate to characterising our various phenomenal experiences Neither token physicalism nor eliminative materialism (the doctrine that the terms and categories of common sense (folk) psychology must be eliminated in the course of our scientific advance, in favour of the terms and categories of a matur neuroscience) is a proper response to this problem. To overcome this difficulty. we must accomplish two things. First of all phenomenological experiences must be subjected to a thorough analysis. Secondly, on the basis of the analysis of the phenomenological effects common sense psychological theory must be complemented by a richer and more fine-grained taxonomy of psychological concepts and categories so as to develop a powerful and comprehensive or personal level psychological

[10]Intentionality, 268. Emphasis added.

theory. The identification of seventy three distinct phenomenological varieties of pain by Hahnemann, a nineteenth century investigator is a fine example of a study in this direction.[11] In short in *order* to achieve proper type-type identification both macrolevel psychology and microlevel neurobiology have to make further advances.

The thesis that each of the types or mental states is realised by distinct neurological types or combinations of such types has certain implications for psychology and cognitive science: the proper domain of psychology and cognitive science consists only of human beings and other organisms with neural structures similar to those of humans. To put it more precisely, a proper study of psychology and cognitive functions is species-specific. This conclusion goes counter to the assumption of cognitive science that mental properties are realised multiply. The idea of a species-specific psychology and cognitive science defended here does not rule out the possibility of a world with a different system of rules governing it where the same types of mental features are realised in non-neural structures and processes. But the cognitive scientist must not be preoccupied with the realm of the logically possible His concern must be with nomologically possible systems that realise cognitive capacities and functions characteristic of humans. In this respect, an inquiry into the structures, organisations and functions of the human brain becomes very illuminating and forms a significant part of the study of mind and cognition. Investigations must be carried out at the subpersonal level with the aim of discovering how the subpersonal parts and systems of the brain are organised and interact among themselves so as to realise personal level cognitive mental states and processes Such a study is important because it cannot be an accident that the mental properties are exhibited only in creatures with sophisticated nervous systems like ours.

The species-specific nature of psychology and cognitive science may be objected to on the grounds that it is a chauvinistic doctrine The doctrine is branded as a sort of "neural chauvinism" contemporary literature. The doctrine is not chauvinistic as it grants other possible worlds with creatures realising the same types of mental properties la

[11]See Dennet, "Why You Can't Make a Computer that Feels Pain." 193, n.2.

non-neural structures and processes. But one might maintain that this reply would not suffice as there are nomologically possible Don-neural systems that realise mental properties and hence the doctrine advocated here is a form of chauvinism. I do not agree with this view because nomologically possible non-neural systems like computers are said to possess mental properties only in a metaphorical sense. If the thesis that, given the laws of nature, only creatures with neuronal structures and processes realise mind is considered as a chauvinistic doctrine, then I think we must whole-heartedly embrace chauvinism, because without this sort of a chauvinistic doctrine it is not possible to have a science of the mind. Science after all is chauvinistic in its approach.

The contemporary cognitive scientist is not satisfied with the nomologically possible systems that realise the mental properties. He resides most of the time in the realm of the logically possibles. He forgets his main concern, viz., the study of human psychology and the cognitive functions, and sets out to investigate the psychology of bats. computers and martians. His concern with all the logically possible systems that are supposed to instantiate mind springs from his eagerness to develop a universal, species-independent psychology — a psychology true not only of humans but also of dogs, bats, computers and martians The motivation for such a psychology springs from his commitment t a form of dualism. This becomes clear if we examine the functionalist theories of mind upon which modern cognitivist theories are generally based

The functional specification theorists, we have seen, are of the opinion that the mental states can be defined as certain functional or causal roles. But at the same time they are also committed to type physicalism. Hence, according to them, mental states are certain functional states realised in certain types of physical states. The causal roles definitive of mental states can be multiply realised and this foes against their commitment to type-type identity thesis The specification theorists try to ease the tension resulting from their commitment to two opposing theses by stipulating that the type-type identities are species-specific. The mental state type pain, for example is realised by the C-fibre firing in the case of humans but it may be instantiated by a silicon state or some other physical state in the case of martians. Hence referents of mental terms like pain differ in the case of humans and

martians. But how could pain in martians and pain in humans mean the same when they actually refer to totally different sorts of things? In other words, are we entitled to christen the silicon state in martians 'pain' just as the C-fibre firing in humans is named "pain"? Their answer to the question is that the pain in humans and the pain in martians mean the same because in both the cases pain is defined by the same causal role. This implies that the physiology of humans and martians can differ; yet they can have the same psychology. The psychological states can be conceived independent of physiological states and the same type of psychological states can be realised by systems and organisms with different physiologies. That is, physiology has no impact whatsoever upon the psychology of an organism. This is a dualistic assumption which makes universal species-independent psychology possible.

The dualistic assumptions are much more evident in the case of functional state identity theory. Unlike the functional specification theory, it is not committed to species specific type-type psychophysical identities. It is not at all concerned about the referents of mental terms. Such terms will have some referents or the other but not any specific type referents. On this view, the mental states are just functional or computational states, and cognition is nothing other mere manipulation of formal symbols governed by a set of rules called the program. Any system that instantiates or runs a program which is a proper description of the human mental states and operations will have beliefs, thoughts, feelings etc. as we humans have The chemical or the biological structures of the organism do not matter at all in this regard. The right program or the proper functional organisation is sufficient for realising mental properties. One of the consequences of this view, as Searle points out, is that "there is nothing essentially biological about the human mind".[12] This is the result of a very strong form of dualism to which functional state identity theory is committed Their dualistic assumption, according to Searle, is that 'the mind is separable from the brain both

[12]"Minds and Brains without Program," 210

conceptually and empirically . . ."[13] This is radically different *from* the doctrine defended in the thesis, namely, the mind is conceptually independent of the brain but not empirically.

The functionalists understand mind to be a *formal* device and mental processes to be formal operations. As *form* can be conceived apart from matter, the functionalists are not bothered at all about the material constitution of the formal structures we call mind. They attribute the mental properties such as awareness, intentionality and phenomenality to any system that realises the relevant functional organisation irrespective of its physical constitution. The problem with this thesis, as we have already noted, is that it would end up attributing mental properties to anything and everything in the universe. In opposition to this thesis, it has been maintained that for a scientific study of the mind, in addition to the formal aspects, the material causes involved in the production of mind in the natural world also must be taken into account. Given the laws of nature, the mind is made up only of certain systems of neural circuits If it is true, then the plausible psychology is species-specific

The functionalists' argument against the species-specific psychology would be that certain cognitive functions which were once supposed to be characteristic of humans are performed by modern computers For example, computers can engage in problem-solving, perhaps more efficiently than humans — a function which was exclusively in the domain of human cognition some fifty years ago. So there is absolutely nothing wrong in attributing mental properties to a computer that performs these genitive functions But we must note that a computer solves problem or does a piece of calculation only in relation to a conscious intelligent organism which interprets the operations of the computer as computation or problem solving. So no computer engages in problem solving in the strict sense The computer is said to solve problems only in a derivative sense Similarly when the computer is said to have thoughts beliefs, desires etc., the terms such as 'thoughts' 'beliefs' etc. are used only metaphorically. It is not argued here that the human thoughts cannot be

[13] "Minds, Brains, and Programs" The dualistic assumptions of functionalism are brought out by Searlein this paper. See pp. 371-73.

simulated by the machines. The machines do simulate thoughts. When they do so, we do not say that the machines really have thoughts just as we humans have them. Simulation is just a way to find out something about the functions of the mind, and hence a methodological strategy for the study of human cognitive functions. The computer simulation of human cognition is nothing other than construction of models for understanding the cognitive activities of the mind. The computer simulations do not duplicate the cognitive capacities and functions. They are duplicated only if their (material) causes are duplicated.

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