Naturalistic Theories of Consciousness:
A Critical Study
With Special Reference to David Chalmers and Daniel Dennett

Thesis submitted to the University of Hyderabad in fulfillment of the requirement for the award of the Degree of Doctor of Philosophy in the Department of Philosophy

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CERTIFICATE

This is to certify that Mr. Sirajul Muneer.C embodied the present thesis titled *Naturalistic Theories of Consciousness: A Critical Study With Special Reference to David Chalmers and Daniel Dennett,* **submitted to the University of Hyderabad in fulfillment of the requirements for the award of the degree of *Doctor of Philosophy* in the Department of Philosophy is a original research work and completed under my supervision and guidance. To the best of my knowledge, the thesis has not been submitted to any other University or Institution for the award of any degree.**

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DECLARATION

I hereby declare that the present thesis entitled *Naturalistic Theories of Consciousness: A Critical Study With Special Reference to David Chalmers and Daniel Dennett,* **submitted to the** University of Hyderabad **in fulfillment of the requirements for the award of degree of** Doctor of Philosophy in the Department of Philosophy **is a original research work done by me under the supervision and guidance of Prof. R.C. Pradhan. The thesis has not been submitted to any other University or Institution for the award of any degree.**

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INTRODUCTION

Naturalism is the view that everything that exists belongs to the realm of nature. Naturalism entails that non-natural causes of events within the natural world - that is, supernatural causes do not exist. Most naturalists would agree that naturalism at least entails that nature is a closed system determined by the causal laws. It also holds that human beings come into being as a result of natural processes.

One version of naturalism is the idea that philosophical issues should be dealt with through the use of the methods of natural science. If this is accepted, and if it is true that following the methods of natural science leads plausibly to an approval of materialism, then at least some presuppositions in favor of materialism might follow.

The naturalistic theories of mind guided by the physical sciences always have some difficulties in making space for consciousness. Consciousness seems to us to be something that is essentially subjective. This resists the kind of objective descriptions of the mind we get from science. The subjective feature of consciousness seems to point to a limit in our scientific conception of the mind. It is undeniable that there is something subjective about our conscious mental life. Yet subjectivity looks to be something which escapes the scientific descriptions of mind.

Naturalism and its various offshoots have dominated contemporary philosophy in general and philosophy of mind in particular. Therefore the objective methods of science

have been applied to the study of all phenomena, including the mental phenomena. The naturalist theories of mind and the world have dominated the contemporary philosophy of mind.

In philosophy of mind the naturalistic views have been prominent and highly controversial in recent times. Many theorists hold that the categories, concepts, and vocabulary needed to explain consciousness, experience, thought, and language are those of the natural sciences. This view comes from a number of directions, including developments in biological sciences, linguistics, artificial intelligence, and cognitive science. To many theorists the mind is as fully a part of nature as anything else.

There are various versions of naturalism in the philosophy of mind. Eliminative Materialism (Paul Churchland), Multiple Draft Model (Daniel Dennett), Biological Naturalism (John Searle), Transcendental Naturalism (Colin McGinn), and Naturalistic Dualism (David Chalmers) are some examples of naturalistic theories of mind. Of these some are strongly naturalistic while others are less strongly so.

Paul Churchland and Daniel Dennett are the supporters of 'strong naturalism', the thesis that science and science alone should dictate the terms of our ontology. Eliminative materialism claims that our ordinary, commonsense understanding of the mind is deeply wrong and that some or all of the mental states posited by commonsense do not actually exist. For Churchland, cognition should be understood as a complex collection of vector-to-vector transformations of neural activation patterns in the brain. In these transformations, consciousness appears to play no role.

There are some philosophers who argue that physicalism cannot adequately account for consciousness. Let us call them the ‘weak naturalists’. By using series of thought experiments, the weak naturalists aim to show that there is no entailment from physical facts to facts about conscious experience.

My thesis has five chapters. In chapter 1 I set out what I understand to be the commitments of naturalism. I sketch various forms of naturalistic theories in the philosophy of mind. Then, I go on to present various arguments against materialism. The series of arguments against materialism show that our naturalistic explanations of mind leave out what is essentially subjective about our experiences. Then, I examine Searle’s biological naturalism and McGinn’s transcendental naturalism as a solution to the mind-body problem.

According to Searle, consciousness is a biological phenomenon common to humans, and higher animals. He calls his theory “Biological Naturalism” because it emphasizes that the right level to account for the very existence of consciousness is the biological level. We do not know the exact process of the brain, but we know that the processes that produce it are neuronal processes in the brain. By “Naturalism”, Searle means that consciousness is part of the natural world along with other biological phenomena such as photosynthesis, digestion or mitosis.

Collin McGinn argues that to be in a conscious state is not just to be in a certain sort of neural state or a state defined by its causal role. He argues that for solving the problem of consciousness we lack the concepts needed to close the "explanatory gap" between spatially situated brain processes and a non-spatial conscious experience. They

must be radically different properties, of a kind we deeply do not understand. He calls his view the Transcendental Naturalism. Transcendental naturalism accepts the full reality of consciousness, but disputes our ability to find this explanation. Consciousness has an epistemologically transcendent natural essence. According to him, we have no clue about consciousness. However, he shows that we have a clue about why we have no clue about consciousness.

Chapter 2 presents Chalmers' theory of consciousness. Chalmers attempts to formulate a naturalistic and yet non-reductive approach to consciousness. According to him, there is an explanatory gap between physical processes and conscious experience and we need some extra ingredient for explaining consciousness. He argues for a careful attention both to physical processing and to phenomenology so as to find systematic regularities between the two and explain the connection between the two in terms of a simple set of fundamental laws. The new fundamental principles postulated by a non-reductive theory give us the extra ingredient that we need to build an explanatory bridge. In this way we may eventually arrive at a truly satisfactory theory of conscious experience.

In Chalmers' view, consciousness cannot be reductively explained, but there can still be a theory of consciousness which is a non-reductive one. That is, we need to give up trying to explain the existence of consciousness wholly in terms of something more basic, and instead admit it as fundamental, giving an account of how it relates to everything else in the world.

Chapter 3 presents Dennett's theory of consciousness. Dennett's project is to explain consciousness without admitting phenomenal consciousness. According to him, there is no such thing as phenomenal consciousness as an extra property of the world. On his view, we need only explain why people think there is phenomenal consciousness.

Dennett aims to dissolve rather than solve the problem of consciousness. His attack is specifically directed at the notion of qualia i.e., the 'what it is like' aspect of experience. He argues that the notion of qualia is confused and unintelligible. Through a series of thought experiments, Dennett tried to prove that the conception of qualia is incoherent.

Dennett's attack on qualia is the first move in the demolition of phenomenal consciousness. If successful, an explanation of consciousness would require 'only' an account of mental content (or representation) and an explanation of why it appears as if there is phenomenal consciousness. He criticizes 'Cartesian Materialism'. Cartesian materialism is the view that there is a crucial finish line or boundary somewhere in the brain, marking a place where the order of arrival equals the order of 'presentation' in experience because what happens there is what you are conscious of. This is important for him, and he explicitly maintains that consciousness cannot be identified with particular types of brain states or processes.

Dennett gives a diachronic account of consciousness for explaining intentionality in terms of the prior causal processes of natural selection. He admits that genes are too stupid to design anything. In fact, they are merely the beneficiaries of the design process.

Chapter 4 describes various reductive and non-reductive positions in the philosophy of mind. Reductionism is an approach to understand the nature of complex things by reducing them to the processes from which they are composed. The aim of reduction is to show that some phenomena are resultants of more fundamental things.

Ernest Nagel conceptualizes the reduction between two theories in terms of one theory explaining the other. He holds that reduction consists in the derivation of the reduced theory T2 from a reducing theory T1. On his approach, logical derivability is fundamental to any theory of reduction. If no such derivability can be established between the two theories, there is no reduction between them. Given these difficulties with the Nagelian approach to reduction, a different model is in order. Fodor offers this model.

Instead of classical reductionism, Fodor offers an alternative, less strict account of the relation of the special sciences to physics, and defends a corresponding weaker claim: *token physicalism.* He proposes a new account of how physics is related to the special sciences. His view is that any event that falls under any scientific law also falls under a law of physics, and is therefore a physical event.

For refuting Fodor's disunity of psychology, Jaegwon Kim offers a new method called the local reduction. Kim holds that mental properties are determined by, or supervenient on, underlying physical properties. Kim's claim is that if mental properties are multiply realizable, mental kinds are not causal kinds, and hence are disqualified as proper scientific kinds. And at the same time he maintains that mental properties are

locally nomic. His view is that multiple local reductions, rather than global reductions, are the rule, even in areas in which we standardly suppose reductions are possible.

Paul Churchland and Patricia Churchland are the proponents of eliminative materialism. They claim that the irreducible features of the mind do not exist. They are simply illusions. They argue that there is no need for a reduction of mental states, because mental states, as described by commonsense psychology, do not really exist. According to this view a complete neuroscience will one day displace all the folk concepts.

The argument from multiple realizability entered the scene and appeared to block both theory reduction and the type identity theory. Multiple realizability arguments seemed plausible, and provided the philosophical justification for the autonomy and irreducibility of the mental states. Some philosophers like Thomas Nagel, Joseph Levine, Ned Block, John Searle, Chalmers, etc. have argued in different ways that the reductive approach cannot be applied to solve the problem of mind. We cannot use physical phenomena to thoroughly explain mental phenomena. Thus, we cannot reduce mental concepts to physical concepts.

Reductionists philosophers use several examples from science, like water = H_2O or lightning = electrical discharges etc for establishing the success of reduction. According to Nagel, the usual examples do not help us to understand the relation between mind and body. At present, we have no conception of what an explanation of the physical nature of a mental phenomenon would be. Nagel's argument is that any reductive analysis of the mental is logically compatible with the absence of the subjective character

of experience. Therefore, any reductive analysis of the mental would fail to capture the subjective character of experience.

Joseph Levine argues that consciousness still poses a special epistemological problem for a reductive science of the mind. According to him, no matter how much we know about neurophysiology, the argument goes, the qualitative character of pain is not explained, and there remains an explanatory gap.

Ned Block presents a 'harder problem of consciousnesses'. He claims that there is an epistemic tension between phenomenal realism and naturalism. Phenomenal realists face an epistemic tension that they have no conception of a rational ground for believing that other creatures, who do not relevantly share our physical nature, are conscious or not.

John Searle argues that consciousness is causally reducible. Consciousness is entirely caused by neuronal processes, and it has no causal powers beyond those of the neuronal processes. Though consciousness is causally reducible, he denies that consciousness is ontologically reducible. According to him, we cannot do an ontological reduction of consciousness to more fundamental neurobiological processes for the reason that consciousness has a subjective or first-person ontology. The neurobiological causal basis of consciousness has an objective or third-person ontology. We cannot show that first person-ontology is nothing but third-person ontology.

Chalmers argues that the failure of phenomenal consciousness to logically supervene on the physical shows an explanatory problem. No matter what we find out about the physical and functional basis of the mind, we are still left with an open question: why are

these processes accompanied by phenomenal experience? There is an explanatory gap between the physical and functional, and the phenomenal properties. Therefore, Chalmers concludes that consciousness poses a hard problem for reductive explanation.

In Chapter 5 I offer a critical evaluation of Chalmers' and Dennett's naturalistic theories of mind. Naturalism cannot adequately account for consciousness. The series of arguments against materialism show that our naturalistic explanations of mind leave out what is essentially subjective about our experiences. I argue that the explanatory gap is genuine, and the reason it exists is that naturalistic explanations of mind do not seem to make room for the existence of facts that essentially involve us as conscious subjects.

Dennett's model is able to explain many problems within the psychological aspect of mind. However, the rejection of conscious experience does not follow from his model. Consciousness is a fundamental feature of the world. All other properties may be reducible to the basic properties, but the basic properties do not reduce to anything else.

To establish naturalism's failure, I analyze various thought experiments put forward by recent philosophers. The analysis shows, why no naturalistic theory can adequately explain consciousness. Then, I consider whether liberal naturalism is a viable option. Liberal naturalists are those who accept naturalism without materialism. Here, I critically examine Chalmers' theory of consciousness and the possibility of panexperientialism.

Then, I consider Husserl's phenomenological project. Husserl describes various conditions that are necessary and sufficient for an objective world to be experienced and thought by us. His phenomenology studies the process by which consciousness

constitutes its intentional objects while bracketing the objects of our thoughts and experience.

Husserl argument against naturalism is, in essence, that we cannot use the theories of the natural sciences to explain the intentional directedness of our conscious mental states. We cannot appeal to the elements of which the natural world is composed to account for the existence of consciousness. It is consciousness and the intentional mental states of which it is composed that explain the existence of the natural world for us and not other the other way round.

The last part of chapter 5 looks towards a non-naturalist theory of consciousness. If we take phenomenological model in the present context, we can consider consciousness as a fundamental reality co-exists with the material world, but not causally conditioned by it. Consciousness is a fundamental reality.

INTRODUCTION

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Chapter 1

NATURALISM AND NATURALISTIC THEORIES OF MIND

1. Introduction:

Naturalism is the view that everything that exists belongs to the realm of nature. According to this view nature is a closed system of natural causes and their effects. In other words, naturalism at least entails that non-natural causes of events within the natural world - that is, supernatural causes do not exist.

Naturalism also holds that human beings are parts of the natural world. There is nothing supernatural about us. Human beings come into being as a result of natural processes. Science shows that each and every aspect of human beings is causally connected to the natural world, and is understandable in terms of those connections.

Arthur C. Danto defines naturalism as "…a species of philosophical monism according to which whatever exists or happens is natural in the sense of being susceptible to explanation through methods which, although paradigmatically exemplified in the natural sciences, are continuous from domain to domain of objects and events... [thus, there cannot] exist any entities or events which lie, in principle, beyond the scope of scientific explanation."[1] Danto characterizes the natural objects in terms of our scientific knowledge of them rather than in terms of their ontological status.

Most naturalists would agree that naturalism at least entails that nature is a closed system determined by the causal laws. Fundamentally, naturalism is a metaphysical position about what sorts of causal relations exist. It is a position that every caused event within the natural world has a natural cause.

Roughly, naturalism includes: (1) different aspects of a naturalist epistemic attitude; (2) an etiological account of how all entities whatsoever have come to be, constituted by a causal story described in natural scientific terms; and (3) a general ontology in which the only entities allowed are the ones that bear a relevant similarity to those thought to be characterized within a completed form of physics.[2]

The earliest forms of naturalism were the various versions of materialism. Materialism maintains that everything that exists within nature is physical and influenced by physical causes. Materialists in general believe that the physical forces alone can account for whatever exists or happens in the world.

The main characteristic mark of materialism and physicalism is that it eliminates the subjective approach to the natural world because the only correct method of studying the natural world is the objective methods of the physical science. The objective methods of science do not take into account the subjective experience. As Nagel holds, "…if we acknowledge that a physical theory of mind must account for the subjective character of experience, we must admit that no presently available conception gives us a clue how this could be done."[3]

Naturalism and its various offshoots have dominated contemporary philosophy in

general and philosophy of mind in particular. Therefore the objective methods of science have been applied to the study of all phenomena, including the mental phenomena. The naturalist theories of mind and the world have dominated the contemporary philosophy of mind.[4]

To sum up in the words of Schafersman, "…naturalism is the philosophy that maintains that (1) nature is all there is and whatever exists or happens is natural; (2) nature (the universe or cosmos) consists only of natural elements, that is, of spatiotemporal material elements--matter and energy--and non-material elements--mind, ideas, values, logical relationships, mathematical laws, etc.--that are either associated with the human brain or exist independently of the brain but are still somehow immanent in the physical structure of the universe; (3) nature operates by natural processes that follow natural laws and can, in principle, be explained and understood by science and philosophy; and (4) the supernatural does not exist, i.e., only nature is real."[5] Thus naturalism offers a broad spectrum of metaphysical and epistemological issues which have dominated the recent philosophy of mind.

2. Various Forms of Naturalism

Naturalism is often characterized by two themes—an ontological one that is committed to an exclusively scientific conception of nature, and a methodological one that is about the nature of inquiry.

Ontological naturalism is a claim about what really exists. We can understand such naturalism in terms of this core view: “every real entity either consists of or is

somehow ontically grounded in the objects countenanced by the hypothetically completed empirical sciences (that is, in the objects of a natural ontology)."[6] As a general position about what actually exists, ontological naturalism is a metaphysical view, and not an epistemological view about how we know about the reality.

Methodological naturalism is a claim about methods of acquiring knowledge and not the same as claims just about what exists. It picks out a range of views about the nature of legitimate inquiry that are independent of ontological naturalism. The core position is that "every legitimate method of acquiring knowledge consists of or is grounded in the hypothetically completed methods of the empirical sciences (that is, in natural methods)."[7]

In other words, methodological naturalists claim that the hypothetically completed methods of the empirical sciences define or otherwise ground the only sorts of inquiry that yield knowledge, justified or warranted beliefs, and even evidence for a belief.

Colin McGinn holds that ontological naturalism is the only solution for the mind-body problem. He maintains that naturalism about the mind is true, in that there is nothing ontologically strange about consciousness. So, as McGinn puts it: "One wants to insist, consciousness cannot really be miraculous, some kind of divine parlor trick. It must fit into the natural order of things somehow. Its relation to matter must be intelligible, principled, law governed. Naturalism about consciousness is not merely an option. It is a condition of understanding. It is a condition of existing."[8]

The ontological naturalism includes various forms of naturalism, which may be characterized as follows:

(i) Eliminative ontological naturalism: every real entity is capturable by the ontology of the hypothetically completed empirical sciences, and language independent of those sciences is eliminable from discourse without cognitive loss.

(ii) Non-eliminative reductive ontological naturalism: every real entity either is capturable by the ontology of the hypothetically completed empirical sciences or is reducible to something capturable by that ontology.

(iii) Non-eliminative non-reductive ontological naturalism: some real entities neither are capturable by the ontology of the hypothetically completed empirical sciences nor are reducible to anything capturable by that ontology, but all such entities supervene on entities capturable by that ontology.

Paul Churchland and Patricia Churchland are the proponents of eliminative ontological naturalism. They claim that our ordinary, common-sense understanding of the mind is deeply wrong and that some or all of the mental states posited by common sense do not actually exist. There is nothing more to the mind than what occurs in the brain. According to this view, a complete neuroscience will one day displace all the folk concepts.

Jaegwon Kim is one of the main proponents of non-eliminative reductive ontological naturalism. Kim points out that his aim is to accommodate naturalistic background assumptions about the nature of the world while not explaining away the

mental and human values. "The shared project of the majority of those who have worked on the mind–body problem over the past few decades has been to find a way of accommodating the mental within a principled physicalist scheme, while at the same time preserving it as something distinctive – that is, without losing what we value, or find special, in our nature as creatures with minds."[9]

Kim supports causal closure of physics: the thesis that every physical event or state is completely causally explainable on the basis of physical laws plus prior physical states and events. But he rejects psychophysical type-type identity theory. He holds that mental properties are determined by underlying physical properties. According to him, the casual efficacy of mental properties is essential for realism about the mental.

Anomalous monism, proposed by Donald Davidson, is an example of Non-eliminative non-reductive ontological naturalism. Davidson states that all events are physical events. But he does not deny that there are mental events. The distinctive feature of anomalous monism is that mental events are anomalous – the claim that although mental events are physical events, there are no strict psychophysical laws. So mental events cannot be explained or predicted on the basis of strict physical laws.[10]

Ontological naturalists typically, but not always, support some kind of physicalism about reality. So, something is physical, according to some philosophers, if and only if it is extended in space. This approach describes materialism as the view that everything that actually exists is extended in space.

However, McGinn argues that for solving the problem of consciousness we lack

the concepts needed to close the "explanatory gap" between two domains: a spatially situated domain (brain processes) and a non-spatial one (conscious experience). “One aspect of consciousness that invites attention is its odd relation to space. The brain is clearly a spatially defined entity, occupying successive regions of space as it moves around, and made up of spatial parts with size, shape, solidity and so on. But consciousness is not like that: your mind has no specific size; it is not spatially decomposable; experiences do not have shape, size, solidity (though they may of course represent such spatial properties). Spatial concepts do not apply to the mind in any natural and systematic way.”[11]

According to McGinn, we do not need extra dimensions or more curvature or a noneuclidian geometry; rather, we need a whole new way of conceiving of the manifold into which both matter and mind coherently fit.[12]

3. **Naturalism in Philosophy of Mind**

In philosophy of mind the naturalistic views have been prominent and highly controversial in recent times. Many theorists hold that the categories, concepts, and vocabulary needed to explain consciousness, experience, thought, and language are those of the natural sciences. This view comes from a number of directions, including developments in biological sciences, linguistics, artificial intelligence, and cognitive science. To many theorists the mind is as fully a part of nature as anything else. They hold that mental life can ultimately be explainable by the methods of the sciences. According to the naturalist, the mind is not 'outside of nature'. It operates in accordance with principles fundamentally like those that govern other natural phenomena. Here,

again, the naturalist need not be a reductionist physicalist.

There are various versions of naturalism in the philosophy of mind. Eliminative Materialism (Paul Churchland), Multiple Draft Model (Daniel Dennett), Biological Naturalism (John Searle), Transcendental Naturalism (Colin McGinn), and Naturalistic Dualism (David Chalmers) are some examples of naturalistic theories of mind. Of these some are strongly naturalistic while others are less strongly so.

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There are some philosophers who argue that physicalism cannot adequately account for consciousness. Let us call them as 'weak naturalists'. By using series of thought experiments, the weak naturalists aim to show that there is no entailment from physical facts to facts about conscious experience. According to David Chalmers,

consciousness cannot be reductively explained, but there can still be a theory of consciousness which is a non-reductive one. That is, we need to give up trying to explain the existence of consciousness wholly in terms of something more basic, and instead admit it as fundamental, giving an account of how it relates to everything else in the world. [13]

The major problem which the naturalist theories try to solve is the mind-body problem raised by Descartes. Dualism and monism are the two major schools of thought that attempt to resolve the mind-body problem. Dualist asserts the separate existence of mind and body and can b traced back to Plato and was most precisely formulated in modern terms by Descartes in the 17th century. Dualism is opposed by the monists who accept only one substance as either mind or matter. Naturalism is a close alley of the materialist monism in philosophy of mind, and here it offers the dualistic theories of mind.

4. Theories about the Mind-Body Problem

4.1 Dualism.

Dualism is a set of views about the relationship between mind and matter, which begins with the claim that mental phenomena are, in some respects, non-physical. The best-known version of dualism is Cartesian Dualism, which holds that the mind is a nonphysical substance. Descartes was the first to clearly identify the mind with consciousness and self-awareness and to distinguish it from the brain. Hence, he was the

first to formulate the mind/body problem in the form in which it exists today. Dualism can be divided in to two - substance dualism and property dualism.

4.1.1 Substance Dualism.

Substance dualism is a type of dualism most famously defended by Descartes, which states that there are two fundamental kinds of substance: mental and material. The mental does not have extension in space, and the material cannot think. In his Meditations on First Philosophy, Descartes states that he could doubt whether he had a body, but he couldn't doubt whether he had a mind. This gave Descartes the idea that the mind and body were different things. The distinction between mind and body is argued in Meditation VI as follows: "I have a body, which is very closely conjoined to me, yet because, on the one hand, I have a clear and distinct idea of myself, in so far as I am a thinking and not an extended thing, and, on the other, a distinct idea of the body, in so far as it is only an extended and not a thinking thing, it is certain that I am really distinct from my body, and can exist without it."[14]

So, Descartes argues, the mind, a thinking thing, can exist apart from its extended body. And therefore, the mind is a substance distinct from the body, a substance whose essence is thought.

The central claim of substance dualism is that the immaterial mind and the material body which are ontologically distinct substances causally interact. Mental events cause physical events, and vice-versa. But this leads to a problem for Cartesian dualism. How can an immaterial mind cause anything in a material body, and vice-versa? This has

often been called the 'problem of interactionism'. The difficulty here is how a material thing (our body) can influence our non material thing (our mind). By Descartes' definition mind is immaterial, having no dimension, mass etc. But the problem remains: how can something which has no physical property influence a physical thing.

4.1.2 Property Dualism

Property dualism asserts that when matter is organized in the appropriate way (i.e. in the way that living human bodies are organized), mental properties emerge. These emergent properties have an independent ontological status and cannot be reduced to, or explained in terms of the physical substance from which they emerge.

Searle explains three main features of property dualism. First, according to property dualism mind really exists, but it is not a separate substance, rather it is a property of the brain. Property dualism holds that there are two mutually exclusive metaphysical categories that constitute all of empirical reality: they are physical phenomena and mental phenomena. "Physical phenomena are essentially objective in the sense that they exist apart from any subjective experiences of human or animals. Mental phenomena are subjective, in the sense that they exist only as experienced by human or animal agents."[15]

Second, the property dualist argues that mental states are not reducible to neurobiological states; they are something distinct from and 'over and above' neurobiological states. The irreducibility of the mental to the physical, or consciousness

to neurobiology proves that the mental is something over and above the neurobiological processes.

Third, mental phenomena do not constitute separate objects or substances, but rather are features or properties of the composite entity. So any conscious being, will have two sorts of properties, mental properties and physical properties.[16]

4.2 Materialism.

The most influential family of views in the philosophy of mind throughout the twentieth century and leading to the twenty-first century is one version or another of materialism. Materialism is a general theory that the ultimate components of reality are material or physical bodies, elements or processes. It is a form of monism that holds that every existing thing is reducible to material or physical in nature. It is opposed to dualistic theories which claim that body and mind are distinct, and is directly antithesis to philosophical idealism that denies the existence of matter.

An implication of materialism is that the different qualitative experiences we have are ultimately reducible to quantitative changes in objects or in our physiological functioning. All the properties of things, including persons, are reducible to properties of matter. Although the terms referring to mental states such as intention, belief, desire and consciousness itself have different sense and use than terms referring to material events, a materialist would deny that mentalistic terms have reference to anything other than physical events or physiological changes in our brains.

Many recent philosophers like Daniel Dennett, Jerry Fodor and Jaegwon Kim try to accommodate mental states within a broad physicalist or materialist framework. Paul and Patricia Churchland have advocated a more extreme position, eliminative materialism, which holds that mental phenomena simply do not exist at all. There is a natural sequence that leads from behaviourism to the eliminative theory of the mind. Now we can have a short list of that progression.

4.2.1 Behaviourism.

The earliest influential form of materialism in the twentieth century was called behaviourism. In its crudest version, behaviourism says the mind is just the behaviour of a person. There is nothing over and above the behaviour of a person that is constitutive of the mental.

Behaviourists hold that the only sort of evidence that we can have concerning any one's mental states, including our own, lies in people's outwardly observable behaviour, both verbal and non-verbal.[17] There are two types of behaviourism - Metodological behaviourism and Logical behaviourism.

Methodological behaviorism is a normative theory about the scientific conduct of psychology. It claims that psychology should concern itself with the behavior of organisms. Psychology should not concern itself with mental states or events or with constructing internal information processing accounts of behavior. Mental states are private entities which, given the necessary publicity of science, do not form proper objects of empirical study. "Methodological behaviourism is the doctrine that the data on

which a psychological science must rest are behavioural data - or, at the very least, publicly observable data - not the private data provided to introspection by the contents of an observer's consciousness."[18]

Methodological behaviorism is a dominant theme in the writings of John Watson (1913). Watson argued that the subject matter of psychology should not just be restricted to humans, but should include other animals. He states that "Psychology as the behaviorist views it is a purely objective experimental branch of natural science. Its theoretical goal is the prediction and control of behavior. Introspection forms no essential part of its methods, nor is the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness."[19]

Methodological behaviourism attempted to put psychology on a respectable scientific footing, along with other natural sciences, by insisting that psychology should study only objectively observable behaviour. The laws that such a discipline was suppose to discover were laws that should correlate the input stimulus to the organism with the output response behaviours; and for this reason behaviourist psychology was sometimes called stimulus response psychology. Psychology was no longer the 'science of mind' but the 'science of human behaviour'. This view was called Methodological Behaviourism because it proposed a method in psychology rather than a claim about the existence or non-existence of mind.

Logical behaviourism was primarily a movement in philosophy, and it made much stronger claim than methodological behaviourism. Logical behaviourism is a theory within the philosophy about the meaning or semantics of mental terms or

concepts. They maintain that what it is to ascribe a mental state to a person is nothing more nor less than to ascribe to that person some appropriate behavioural disposition. A 'behavioural disposition' means a person's tendency or propensity to behave in a certain way in certain specified circumstances.[20]

Logical behaviourism "…is the doctrine that talk about mental phenomena is really talk about behaviour, or tendencies to behave."[21]When we attribute a belief for someone, we are not saying that he or she is in a particular internal state or condition. Instead we are characterizing the person in terms of what he or she might do in a particular situation.

Logical behaviourism therefore holds that any mental term can be understood in terms of observable physical processes or events. In other words, all meaningful psychological statements are translatable into statements which refer only to physical concepts, without any loss of mental content. So, according to Logical behaviourism, all conscious experiences can be reduced to mere behaviour.

There are some objections to behaviourism. First objection is that some mental states could have no behavioural consequences. A stronger version of this objection involves mental states the expression of which is somehow blocked. Perhaps someone could be in pain but, because of the circumstances cannot express it. Here the person has mental states without behavioural dispositions.

Second, behaviourists have trouble in accommodating consciousness. Individuals can behave as if they are conscious without having consciousness. Individuals know

more about their own mental states than those of others who observe their behaviour. Another objection is that behaviourists deny that mental states ever cause behaviour. It is central to the idea of a mental state that they sometimes are the cause of our actions.[22]

Behaviourism as a naturalistic theory of mind, did not survive the onslaughts of cognitive psychology which introduced internal causal properties of the cognitive consciousness.

4.2.2 Functionalism

Functionalism is a theory of mind in contemporary philosophy, developed as an alternative to both the identity theory of mind and behaviourism. Like behaviorism, functionalism takes mental states out of the realm of the private or subjective, and gives them status as entities open to scientific investigation. Its core idea is that mental states, such as beliefs, desires, being in pain, etc are constituted by their causal relations to other mental states, sensory inputs, and behavioral outputs.

The difference between functionalism and behaviorism:

1. Functionalism replaces behaviorism's "sensory inputs" with "sensory inputs and mental states."

2. Functionalism replaces behaviorism's "disposition to act" with "disposition to act and have certain mental states."

3. Thus, functionalism individuates mental states partly in terms of causal relations to other mental states while behaviorism denies that mental states really exist.

Jerry Fodor argued that mental phenomena are multiply realizable and hence, it cannot be identical with brain states. Multiple realizability is the thesis that the same mental property, state, or event can be implemented by different physical properties, states or events.

The identity theory is viable only if there is a one-to-one correspondence between mental kinds and physical kinds. Fodor denied that mental kind correlates with only one physical kind. Rather, they argued that there are many ways that pain and other mental kinds can be realized in the physical. In short, mental kinds are not identical to physical kinds because there are many and diverse physical kinds that can give rise to the same mental kind.[23]

According to Searle, functionalism explains mental states such as beliefs are not defined by any intrinsic features, rather they are defined by their causal relations, and these causal relations constitute their function. "Beliefs, for example, are caused by perceptions and together with desires they cause actions. Such causal relations are all that there is to having a belief. And what about the leftover reference to desires and perceptions? They too will be analyzed functionally."[24]

Functionalism is often introduced by an analogy between mental states and mechanical devices. Consider the notion of a clock. A clock can be made out of any number of physical materials, but the defining feature of a clock is that it is any physical mechanism that enables us to tell the time.[25] Similarly, argue the functionalists, with the mind. The possession of mental states does not depend on the physical make-up of the brain; it depends only on its displaying the right causal structure. Since organisms with

very different sorts of biological make-up, like some animals and humans, can have states with the causal role of pain, say, it follows from functionalism that animals and humans can both be in pain.

Functionalism is open to a number of criticisms. One central objection is that it cannot accommodate the conscious, qualitative aspect of mental life. Another objection to functionalism is that it cannot account for mental representation. Functionalism focuses on the way mental states enter into causal structure. But it is doubtful that mental representation can be explained in purely causal terms. As McGinn puts it: "….functionalism would be true of everything but the mental! The claim that mental states are not uniquely identified by their causal role is often pressed by considering cases in which we acknowledge that functional description stays constant while the phenomenological character of the person's inner states varies."[26]

Some functionalists, most notably Hilary Putnam, in his early writings appealed to an analogy with computers to add correctness to the idea of a causal role. Putnam pointed out that any programmed computer can be abstractly characterized as a Turing machine, independently of its 'hardware' or physical make-up; he then argued that any two systems will share mental states as long as they have the same Turing machine description.[27]

Strong Artificial Intelligence states that thinking is merely manipulations of formal symbols. Thus by designing the right kind of programmes with the right input and output, we can create conscious intelligence. In other words, computer is not merely a tool in the study of mind, rather, appropriated programmed computer is a mind, in the

sense that computers having the right program can literally be said to understand and have other cognitive states. It was also called 'Computer Functionalism'.[28]

Computer Functionalism is the one of the important theories of mind in the 1980's. This may be due to the attraction of the computer metaphor, which played upon the notion of a technology that was rapidly gaining public recognition and technological applications. By this time, computers had influenced the understanding of the mind through their role in the science of cognition and in artificial intelligence.

Functionalists in general believed that the brain is a digital computer and what we call the "mind" is a digital computer program or set of programs.[29] In brief the computer model of mind states that mind is the program and the brain is the hardware of a computational system. This can be shown as follows:

Mind		Brain
----------	=	---------
Program		Hardware

With the advent of the computer model of mind, it seemed we had a perfect solution to the traditional mind body-problem. The relation of mind and body seemed mysterious, but the relation of programme to the computer hardware, the relation of the software to its physical implication, is not in the least mysterious. It is a relation that is understood by every student of computer science.

The supporters of Strong Artificial Intelligence believe that a correctly programmed computer is not simply a simulation or model of a mind; it actually would count as a mind. That is, it understands, has cognitive states and can think. In contrast Weak Artificial Intelligence holds the view that brain processes (and mental processes) can be simulated computationally. According to Weak Artificial Intelligence, the principal value of the computer is the study of the mind that gives us a very powerful tool.

However, the 'Chinese Room' argument by John Searle is a direct attack on the claim that thought can be represented as a set of functions. The thought experiment asserts that it is possible to mimic intelligent action without any understanding through the use of a purely functional system. Searle describes a person who knows only English, is in a room with only Chinese symbols in baskets and a rule book in English for moving the symbols around. The person is then ordered by people outside of the room to follow the rule book for sending certain symbols out of the room when given certain symbols. Further suppose that the people outside of the room are Chinese speakers and are communicating with the person inside via the Chinese symbols. According to Searle, it would be absurd to claim that the English speaker inside knows Chinese simply based on these syntactic processes. This thought experiment attempts to show that systems which operate merely on syntactic processes (inputs and outputs, based on algorithms) cannot realize any semantics (meaning) or intentionality. Thus, Searle attacks the idea that thought can be equated with following a set of syntactic rules; that is, functionalism is an insufficient theory of the mind.[30]

4.2.3 Identity Theories

The identity theory of mind holds that states and processes of the mind are identical to states and processes of the brain. The theory also brings the mind within the scope of modern science. Proponents of identity theories believe that neuroscience will reveal the secrets of the mind.

The identity theory of mind holds that each and every mental state is identical with some state in the brain. My desire, my feeling happy, and my believing etc, are all states of my brain. The view is not that mental states and brain states are correlated but that they are one and the same.

Type Identity Theory asserts that mental events are type identical to the physical events in the brain with which they are correlated. In other words mental states or properties are neurobiological states or properties. Two events that always occur together at the same time in the same place, without any temporal or spatial differentiation at all are not two events but the same event. So, all sorts of our mental states would be identical with certain sorts of brain states.

Now, in contemporary philosophy of mind, type–type identity theories have been called into question on the grounds that types of mental state are 'multiply realizable'. For instance, it is urged that it is implausible to suggest that pain of a certain type is identical with a certain type of neuronal activity, because it seems that creatures with very different types of neural organization might be capable of experiencing pains of exactly the same type.

The theorists' favourite illustration - 'Pain = C-fibres firing' - is a type-type identity statement. The problem is that different types of state might occupy the pain-role in different creatures. Perhaps it is C-fibres firing in humans but D-fibres firing in dolphins. But dolphins with their D-fibres firing would then be just as much in pain as we are when our C-fibres are firing.[31] But the identity theorist cannot allow both that pain = C-fibres firing, and that pain = D-fibres firing.

Identity claims might instead mean only that every instance of a mental state is identical with an instance of a bodily state, of some type of other. On this account, the various types of mental state would not have to correspond to types of bodily state. Instances of a single mental type might be identical with token of distinct bodily types. This claim is known as token identity theory.

Token identity theorists simply say that for every token of certain type of mental state, there is some token of some type of physical state. They did not require, for example, that all token pains had to exemplify exactly the same type of brain state. The type/token distinction can be illustrated by the following example. If it is asked how many letters there are in the word 'tree', the correct answer is either three or four, depending on whether one is concerned with letter-types or letter-tokens, because it includes one token of each of the letter-types 't' and 'r', but two tokens of the letter-type 'e'.[32]

Token identity theory admits that it is possible that brains may not function in exactly the same way to produce mental states. So, suppose that it is not possible to identify certain types of mental activity – such as seeing a red bus or feeling angry – with

a certain type of brain state. Also suppose that it is possible that different people who are in the same mental state have different brain states. They might be token of different types of brain state even though they were all token of the same mental type, pain. For that reason they were called "token-token" identity theories as opposed to "type-type" identity theories.

There are several objections to identity theory. Some philosophers objected that the identity theory violates Leibniz's Law that if x = y, then x and y share all properties, on the ground that mental states and brain states differ in their properties. An after-image is, say, yellow and in front of my face, but my brain states are not yellow, and are inside my head.[33]

Some philosophers hold that though experiences are brain processes they nevertheless have fundamentally non-physical properties, sometimes called 'qualia'. The theory simply states that when we experience something it is exactly reflected in a corresponding neurological state in the brain (such as the interaction of certain neurons, axons, etc). But from this it does not follow that the qualia are identical with the neurological states.

4.2.4 Eliminative Materialism

Eliminative materialism claims that our ordinary, common-sense understanding of the mind is deeply wrong and that some or all of the mental states posited by common sense do not actually exist. Like dualists, eliminative materialists insist that ordinary mental states can not in any way be reduced to or identified with neurological events or

processes. However, unlike dualists, eliminativists claim there is nothing more to the mind than what occurs in the brain. The reason mental states are irreducible is not because they are non-physical; rather, it is because mental states, as described by common-sense psychology, do not really exist.

Churchland's aim is to show that our assumption about ourselves needs to be radically revised in light of the natural sciences. "Is our basic conception of human cognition and agency yet another myth, moderately useful in the past perhaps, yet false at edge or core? Will a proper theory of brain function present a significantly different or incompatible portrait of human nature? . . . I am inclined toward positive answers to all of these questions."[34]

Paul Churchland presents several arguments for explaining folk psychology like beliefs, desires, thoughts etc in terms of neuroscience. He states: "There is no distinct "self" in there, beyond the brain as a whole. On the other hand, almost every part of the brain is being "watched" by some other part of the brain, often by several other parts at once."[35]

According to eliminative materialism our concepts of mental states can be re-framed by the advancement of neuroscience and a complete neuroscience will one day displace all the folk psychological concepts. However, eliminative materialism is not without difficulties because eliminating the mental itself presupposes the mental as something irreducible.

5. Arguments against Materialism

The materialist account leaves out some of the essential features of mind such as consciousness and intentionality. The materialist analysis fails to give a proper account of the mental phenomena. We can discuss various reasons for supposing that materialism is not true.

Absent Qualia:

The term qualia is most commonly used to characterize what may be called the qualitative, phenomenal or 'felt' properties of our mental states. Frank Jackson criticizes materialism by showing that "...certain features of the bodily sensations especially, but also of certain perceptual experiences, which no amount of purely physical information includes."[36]

The existence of qualia is a main challenge to the Artificial Intelligence program. If human beings can be described computationally as it assumed by research program of Artificial Intelligence, a robot could in principle be built that was computationally identical to human. Each conscious state is a quale, because there is a certain qualitative feel to each state. The problem of functionalism and computationalism is that it leaves out qualia. Qualia really exist, so any theory that denies their existence, either explicitly or implicitly is false. Let us have a more powerful argument made by Thomas Nagel.

What it is Like Aspect: One of the earliest well-known arguments against materialism was advanced in an article by Thomas Nagel called, **'**What is it Like to Be a Bat?'. According to Nagel, the real difficult part of the mind-body problem is the

problem of consciousness. He argues that consciousness has essential to it a subjective character, a 'what it is like aspect'. He states that "…an organism has conscious mental states if and only if there is something that it is to be that organism—something it is like for the organism."[37]

Suppose we have a fully, functionalist, materialist, neurobiological account of various mental states: belief, desires, hopes, fears etc. Therefore, such an account would not explain consciousness. Nagel suggests that the subjective aspect of the mind may not ever be sufficiently accounted for by the objective methods of reductionistic science. He claims that "…if we acknowledge that a physical theory of mind must account for the subjective character of experience, we must admit that no presently available conception gives us a clue how this could be done."[38]

Nagel illustrate this with an example of a bat. Bats have a different life style from ours. They sleep all the day long, hanging upside down, and they fly around at night navigating by detecting echoes. Now, says Nagel, some one might have a complete knowledge of all functional mechanisms that enable the bat to live and navigate, but all the same, there would be something left out of this person's knowledge: what is it like to be a bat – what does it feels like and this is the essence of consciousness.

For any conscious being, there is a 'what it is like aspect' of existence. And this is left out of any objective account of consciousness because an objective account cannot explain the subjective character of consciousness. Let us examine in this connection Frank Jackson's Knowledge argument against materialism.

What Mary Didn't Know:

A similar argument was put forward by the Australian philosopher, Frank Jackson called the knowledge argument. Jackson imagines a neurobiologist Mary, who knows all there is to know about color perception. She has a complete knowledge of physics of light and color spectrum. But she has been brought up entirely in a black and white environment. She has never seen anything colored, except only black, white and shades of gray. Now, says Jackson, it seems clear that there is something left out of her knowledge.

Jackson asks: "What will happen when Mary is released from her black and white room or is given a colour television monitor? Will she *learn* anything or not? It seems just obvious that she will learn something about the world and our visual experience of it. But then it is inescapable that her previous knowledge was incomplete. But she had *all* the physical information. *Ergo* there is more to have than that, and Physicalism is false."[39]

Jackson's arguments against materialism can be summarized as follows:

1 Before her release, Mary was in possession of all the physical information about colour experiences of other people.

2 After her release, Mary learns something about the colour experiences of other people.

3 Before her release, Mary was not in possession of all the information about other people's colour experiences, even though she was in possession of all the physical information.

4 There are truths about other people's colour experience which are not physical.

Therefore,

5 Materialism is false.

The Chinese Room Argument:

John Searle formulated his challenge to strong Artificial Intelligence in his paper 'Minds, Brains and Science', published in 1984. Ever since it has been a chief argument against the possibility of what Searle called the 'Strong Artificial Intelligence'. According to Strong Artificial Intelligence by designing the right kind of programmes with the right input and output, we can create conscious intelligence.

The supporters of Strong Artificial Intelligence believe that a correctly programmed computer is not simply a simulation or model of a mind; it actually would count as a mind. Hence for the purpose of refuting Strong Artificial Intelligence, Searle introduces the Chinese Room Argument. The argument is as follows:

A monoglot English speaking person is confined in a room containing a typewriter keyboard, a printer and an operation manual written in English. The keyboard is design to produce Chinese characters rather than letters of Roman alphabet. Out side the room, a monoglot Chinese speaking person has another such keyboard and printer, allowing him to sent messages written in Chinese in to the room. The Chinese speaker is permitted to ask whatever questions he likes in these messages. On receiving the message, the English speaker inside the room has to consult the operation manual, which tells him what string of Chinese character to type out in response. Let us suppose that the

manual has been so written that, when the Chinese speaker receives the responses to his questions, he is unable to distinguish them from those of a native Chinese speaker. In that case, it seems the Turing test has been passed. As a result, the Chinese speaker outside the room ought to conclude that he is communicating with an intelligent Chinese knowing person inside the room. However, the English speaker inside the room has no understanding of Chinese whatsoever. The implication is that passing the Turing test demands no understanding of the questions posed in the course of that test. Consequently, the test is not a test of genuine intelligence, since genuine intelligence does demand understanding.[40]

Let us examine the claims of Strong Artificial Intelligence in the light of this thought experiment. Strong Artificial Intelligence claims that the programmed computer understands the stories and that the program in some sense explains human understanding. As regards the first claim, it is obvious that, the English speaker doesn't understand a word of the Chinese stories. He has inputs and outputs that are in distinguishable from those of the native Chinese speaker, but still he understand nothing. As regards the second claim we can see that the computer and its program do not provide sufficient condition for understanding since the computer and program are functioning, and yet there is no understanding.[41]

The Chinese Room argument is based on the point that just manipulating the symbols is not by itself enough to guarantee cognition, perception, understanding, thinking and so forth. Searle puts forward a new view about mind and it is called 'biological naturalism'. Let us discuss the details of biological naturalism.

6. Biological Naturalism

At the very beginning of the book The Rediscovery of the Mind Searle presents a solution to the mind body problem which, is a major starting point for the rest of his arguments. He states that "Mental phenomenon are caused by neurophysiological processes in the brain and are themselves feature of the brain."[42] He says that "Mental events and processes are as much part of one biological natural history as digestion, mitosis, meiosis or enzyme secretion."[43] He calls his theory of mind, "Biological Naturalism".

Biological Naturalism is neither Dualism nor Materialism:

Searle's position is differ from materialism and dualism. He thinks that both materialism and dualism are trying to say something true, but end up with saying something false. According to him, it is important to carve out the true part in each from the false parts. Let us examine the difference between Searle's view and the traditional view.

Materialism tries to say truly that the universe is entirely made up of physical particles that exist in the field of force and are often organized into systems. But it ends up saying falsely that there are no ontologically irreducible mental phenomena. Dualism tries to say truly that there are irreducible mental phenomena. But it ends up saying falsely that there is something apart from the ordinary physical world, i.e., that they are something over and above the physical world.[44]

According to materialism, 'consciousness is just brain processes'. Searle also argues that 'consciousness is just brain processes'. But the materialist says that consciousness as an irreducibly qualitative, subjective, first-person phenomena does not really exist. There exists only objective third-person phenomenon. But what Searle says is that consciousness precisely as an irreducible qualitative, subjective, first person phenomenon is a process going on in the brain.[45]

According to dualism, 'consciousness is irreducible to third-person neurobiological processes'. Searle also argues that, 'consciousness is irreducible to third-person neurobiological processes'. But the dualist takes this to imply that consciousness is not a part of the ordinary physical world but is something over and above it.[46] But what Searle holds is that consciousness is causally, but not ontologically, reducible. It is part of the ordinary physical world and is not something over and above it. For a better understanding let us examine how Searle defines consciousness and its essential features.

Consciousness:

Searle defines consciousness by showing that "conscious states are those states of awareness, sentience or feeling that begin in the morning when we wake from a dreamless sleep and continue throughout the day until we fall asleep or otherwise become "unconscious"." [47] It includes all of the enormous variety of the awareness that we think of as characteristics of our waking life. It includes everything from feeling a pain to perceiving objects visually, to states of anxiety and depression, to work out cross word puzzle, trying to remember something, arguing about something, etc. Dreams on this

definition are a form of consciousness, though, of course, they are in many respects quite different from waking consciousness.

This definition is not generally accepted and the word consciousness is used in a variety of other ways. Some authors use the word consciousness only to refer to a state of self-consciousness. According to Searle, consciousness has four aspects that make it different from other biological phenomena, and indeed different from other phenomena in the natural world. These four aspects are qualitativeness, subjectivity, unity and intentionality. They are not separate because they are logically interrelated, that is, the first implies the second and the second implies the third. Let us identify its essential features one by one.

Qualitativeness:

Every conscious state has a certain qualitative feel to it. For every conscious experience there is something that it feels like, or something that it is like to have that conscious experience. Nagel made this point in his famous article 'What is it like to be a bat'. Nagel argues that consciousness has essential to it a qualitative character, a what it is like aspect. This distinguishes consciousness from other features of the world, for a non-conscious entity there is nothing that it is like to be that entity.

Searle has rejected the notion that the problem of qualia is different from the problem of consciousness itself, arguing that consciousness and qualia are one and the same phenomenon. According to him, some philosophers describe this feature of consciousness with the word 'qualia' and they say there is a special problem of qualia.

But as far as Searle is concerned, qualia are just a plural name for conscious states. Because 'consciousness' and 'qualia' are coextensive, this seems to be in point on introducing a special term.[48]

Subjectivity:

Conscious states exist only when they are experienced by some human or animal subject. In that sense, they are essentially subjective. Conscious states are subjective in this sense that it has a 'first person ontology' as opposed to the 'third person ontology.' Subjective conscious state has first person ontology because they only exist when they are experienced by some human or animal agent.

Searle distinguishes two different senses of the objective and subjective distinction. In one sense, the epistemic sense, science indeed objective. Scientists seek truth that are equally accessible to any observer and that are independent of the feelings and attitudes of the experimenters. Searle give examples of an epistemically objective claim, 'A person has 219 pounds weight.' An example of the epistemically subjective claim would be 'A is in pain'. The first is objective because its truth or falsity as settleable in a way that is independent of the feelings and attitudes of the investigators. The second is subjective because it is not objectively settleable. Searle argues that there is another sense of the objective and subjective distinction and that is the ontological sense (existence). Some entities, such as pains, tickles and itches, have a subjective mode of existence in the sense that they exists only as experienced by a conscious subject. Others, such as mountains and molecules etc have an objective mode of existence in the sense that their existence does not depend on any consciousness. Searle argues the fact

that science seeks objectivity in the epistemic sense should not blind as to the fact that there are ontologically subjective entities that are as much matter of scientific investigation as any other biological phenomena. We can have epistemically objective knowledge of a domains that are ontologically subjective.[49]

Unity:

All conscious experiences at any given point in an agent's life come as part of one unified conscious field. A conscious state is by definition unified, and the unity will follow from the subjectivity and the qualitativeness, because there is no way we would have subjectivity and qualitativeness except with that particular form of unity. Searle give an example for this unity that when we speak a sentence we have to be able to remember the beginning of the sentence at the time we get the end if we are to produce coherent speech.

Intentionality:

Most important conscious states typically have intentionality, that is, the property of being about the states of affairs in the world. According to this usage, beliefs, hopes, intention, fear, desires and perceptions all are intentional. So if we have a belief, we must have a belief about something.

On Searle's account "not all conscious states are intentional and not all intentionality is conscious"[50] Undirected anxiety lacks intentionality, and the beliefs a man has even when he is asleep lack consciousness then and there. According to Searle, many of the important evolutionary functions of consciousness are intentional.

The Irreducibility of Consciousness

According to Searle all our conscious states are realized in the brain as higher level or system features. Everything that has a real existence has it in a single space/time continuum. Consciousness exists is in human and animal brains. But conscious experiences do not exist at the level of individual neurons. Consciousness is caused by neuron firings and they exist in the brain as a feature of the system at a higher level than that of individual neurons.[51]

Searle argues that consciousness is an ordinary biological process and thus it can be given a materialist account, but at the same time he claims that it is irreducibly subjective, which demands a dualist account. He criticizes the traditional views of the mind body-problem. The traditional assumption is that mind and body, as ordinary understood, are exclusive metaphysical categories. If something is mental, then it cannot be physical and if it is physical it cannot be mental. On the traditional conception if anything is mental it has the left hand features, if physical, the right hand features in the following table[52]

Mental	**Physical**
1. Subjective	Objective
2. First-person ontology	Third-person ontology
3. Qualitative	Quantitative
4. Intentional	Non-intentional

5. Not spatially located &	Spatially located &
6. Non-extended in space	Spatially extended
7. Not explainable by physical processes	Causally explainable by micro-physical processes.
8. Incapable of acting causally on the physical.	Acts causally and as a system is causally closed.

According to Searle, this is one of the deepest mistakes in our philosophical tradition. The first half of the left hand column, 1-4, does not imply the second half, 5-8. Consciousness does indeed have features 1-4. It is irreducibly subjective and in that sense has a first-person ontology. But consciousness does not have features 5-8. The traditional notion of the mental, that distinguishes it from the physical, contains a serious mistake. The essence of consciousness, that it is subjective, qualitative, first-personal and intrinsically intentional does not prevent it from being an ordinary part of the physical world with spatial locations and extensions and cause and effect relations, just like anything else.[53]

The first and most important step in overcoming the traditional mind-body problem is to recognize that the intrinsic features of consciousness, its subjectivity, first-person ontology and intentionality do not prevent it from being a biological feature of the world and thus located spatially in the brain and caused by brain process while itself capable of acting on other brain and bodily processes. Consciousness, though irreducibly

mental (features 1-4 on the left), is, in that very respect, physical (features 5-8 on the right). Searle suggests to give up the traditional terminology of "mental" and "physical" and just say that consciousness is a higher level biological feature of brain systems.

Searle argues that consciousness is causally reducible, because it is entirely caused by neuronal processes, and it has no causal powers beyond those of neuronal processes. Though consciousness is causally reducible, Searle denies that it is ontologically reducible. Causal reduction generally leads to ontological reduction. But in the case of consciousness we are unwilling to make the ontological reduction. Consciousness is entirely caused by neuronal behavior, but all the same we are unwilling to say that consciousness is nothing but neuronal behavior.[54]

Causal reduction may suggest ontological reduction as well. But, according to Searle, as consciousness has a first-person ontology, we are unwilling to carve off this ontology and redefine it in terms of its third-person causal basis. In the case of consciousness the causal reduction does not lead to an ontological reduction by redefinition, because the redefinition would take away the point of having the concept in the first place.[55]

Searle says that consciousness is caused by brain processes. But if consciousness is really caused by brain processes, then there must really be two different things there: the brain processes as a cause, and the consciousness as an effect. And that is dualism. But, on his view, this does not require that, first, the brain behave in a certain way and then, later, consciousness exists, rather the conscious states are realized simultaneously with the neuron firings.

To have a name, Searle baptized this viewas Biological Naturalism. He calls it "Biological" because it emphasizes that the right level to account for the very existence of consciousness is the biological level. Consciousness is a biological phenomenon common to humans, and higher animals. We do not know the exact process of the brain, but we know that the processes that produce it are neuronal processes in the brain. By "Naturalism", Searle means that consciousness is part of the natural world along with other biological phenomena such as photosynthesis, digestion or mitosis. "Sometimes philosophers talk about naturalizing consciousness and intentionality, but by "naturalizing" they usually mean denying the first person or subjective ontology of consciousness. On my view, consciousness does not need naturalizing: It already is part of nature and it is part of nature as the subjective, qualitative biological part."[56]

According to some philosophers, consciousness is not simply one kind of emergent biological property with no deeper question than that raised by the nature of digestion or the like. Collin McGinn argues that to be in a conscious state is not just to be in a certain sort of neural state or a state defined by its causal role.

McGinn argues that for solving the problem of consciousness we lack the concepts needed to close the "explanatory gap" between spatially situated brain processes and a non-spatial conscious experience. The brain is clearly a spatially defined entity made up of spatial parts with size, shape, solidity and so on. But consciousness is different from other phenomena. It has no shape, size, solidity etc. So, spatial concepts do not apply to the mind in any natural and systematic way.

For McGinn, the formulation would go something like this. Conscious experience, which is non-spatial, must somehow emerge from the brain, which is spatial. But for consciousness to emerge from the brain, the brain must have the kind of properties from which the non-spatial can emerge. They must be radically different properties, of a kind we deeply do not understand.[57] He calls his view as Transcendental Naturalism.

7. Transcendental Naturalism

According to McGinn, the problem is "how would you set about constructing subjective states from the cellular structures that compose the brain? Until we have some idea how to answer that, and in particular some grasp of the architectural principles involved, as we do for other biological traits and organs, we are faced with a gaping explanatory hole in our theory of how the world works. That hole is called 'the mind-body problem'."[58]

On McGinn's view, the range of positions that philosophers have entertained is inadequate to the mind-body problem. He is dissatisfied with the usual sorts of positions and would like to see a way out. He calls the failed positions as DIME shape positions: D for deflation, I for irreducibility, M for magic, E for elimination.

Deflation: This position tries to domesticate the object of puzzlement by providing a reductive or explanatory theory of it. Materialism and functionalism are the most obvious deflationary positions today: to be in a conscious state is just to be in a certain sort of physical state - a neural state or a state defined by its causal role. This

position also included the ideas such as consciousness is just a kind of self-monitoring or higher-order belief state. It also included that consciousness is simply one kind of emergent biological property among others, raising no deeper question than that raised by the nature of digestion or the like. The objection to such position is that they miss the psychophysical link.

Irreducibility: Irreducibility theses suggest that we must accept that psychophysical correlations, biological emergence and physical supervenience are all simply brute facts, admitting of no explanation. It is simply an inexplicable fact that irreducible conscious states have the kinds of relations to the physical world that they have. We must accept the duality without perplexing ourselves about its possibility. Objection to this position is that "this is a radical irreducibility thesis, a rejection of the hunger for theoretical explanation."[59]

Miracle: This position provides a magical story or image of what seems so puzzling. On this view, "we need to acknowledge the pervasive presence of the supernatural. Consciousness is taken to be the direct expression of God's will, or at least a sign that there is more to reality than natural forces. Consciousness is the immortal soul made manifest. Thus there is something magical in the world, something beyond the reach of reason and science."[60]

Elimination: On this account, there is no such thing as consciousness. There is no room for consciousness in our emerging scientific view of the world; and what resists scientific integration had better be eliminated altogether. By denying its existence they sidesteps the mind-body problem altogether. The usual response to eliminative theses is

plain incredulity: to deny that one is conscious requires one to deny what is self-evident.[61] Now we shall discuss how transcendental naturalism responds to the problem.

McGinn explains transcendental naturalism thus "Reality itself is everywhere flatly natural, but because of our cognitive limits we are unable to make good on this general ontological principle. Our epistemic architecture obstructs knowledge of the real nature of the objective world."[62] According to transcendental naturalism, the question Q with respect to certain phenomena P has three properties: (i) reality, (ii) naturalness, and (iii) epistemic inaccessibility to that phenomena. In the case of consciousness, the question Q does not lead to an illusion (hence (i)), nor does it refer to entities or properties that are intrinsically non-natural (hence (ii)), yet the answer to question is beyond the creatures capacities (hence (iii)).

According to McGinn, there exists some property of the brain that accounts naturalistically for consciousness. But the natural principles which mediate between brain processes and conscious states are inaccessible to human reason. We would need a conceptual revolution in order to solve the mind-body problem, but it is not a revolution our intellects can effect. The human cognitive system is weak precisely where the problem of consciousness arises. The requisite theory does not come within the scope of our mental modules.[63]

Cognitive Closure:

Cognitive closure refers to the possibility that certain problems cannot be explained by the human mind. According to McGinn, the phenomenon of consciousness

is in itself perfectly natural and unmysterious, but it so happens that we humans are cognitively closed to it--we lack the cognitive powers to solve the mind-body problem. McGinn's theory is a variety of what we may call epistemic mysterianism. On this view, what makes the problem of consciousness so difficult for us has to do primarily with the poverty of our epistemic equipment, not with the way the world is. "Epistemologically, consciousness outruns what we can comprehend, given the ways our cognitive systems are structured--in rather the way that theoretical physics is beyond the intellectual capacities of the chimp. Ontologically, however, nothing can be inferred from this about the naturalness or otherwise of the object of our ignorance: what cannot be known about is not thereby supernatural in itself."[64]McGinn's claim is that we cannot understand consciousness in the very same way chimpanzee cannot understand theoretical physics.

What exactly is meant by cognitive closure? McGinn offers the following definition: "A type of mind M is cognitively closed with respect to a property P (or a theory T) if and only if the concept-forming procedures at M's disposal cannot extend to a grasp of P (or an understanding of T)."[65] Extending to a grasp of P presumably means being capable of forming the concept for P. For a mind M to be cognitively closed to a property P is thus for M's concept-formation faculty to be incapable of forming the concept of the property P.

We certainly do possess the concept of consciousness, so the property of consciousness is not cognitively closed to us. But McGinn's claim is not that the property of consciousness is cognitively closed to us. On the contrary, he thinks it

is open to us introspectively; that is, we can use introspection to form a concept of consciousness. The property that is cognitively closed to us is that property of the brain which is causally responsible for generating consciousness. The concept we are missing is therefore not the concept for consciousness, but the concept for its causal origin in the brain. The problem of consciousness is one we can formulate but not solve.

The unsolvability may be rooted in the perceptual basis of our casual understanding. "Conscious states are simply not potential objects of perception: they depend upon the brain but they cannot be observed by directing the senses onto the brain. In other words, consciousness is noumenal with respect to perception of the brain."[66]

For McGinn, the difficulty is something like this. Conscious experience, which is non-spatial, must somehow emerge from the brain, which is spatial. But for consciousness to emerge from the brain, the brain must have the kind of properties from which the non-spatial can emerge. "Conscious phenomena are not located and extended in the usual way; but then again they are surely not somehow 'outside' of space, adjacent perhaps to the abstract realm. Rather, they bear an opaque and anomalous relation to space, as space is currently conceived. They seem neither quite 'in' it nor quite 'out' of it. Presumably, however, this is merely an epistemological fact, not an ontological one."[67]McGinn does not argue for extra dimensions or more curvature or a noneuclidian geometry; rather, for a whole new way of conceiving of the manifold into which both matter and mind coherently fit.

Transcendental naturalism accepts the full reality of consciousness (unlike Eliminativism), denies that it is miraculous (unlike Miracle), insists that it has an

explanation (unlike Irreducibility), but disputes our ability to find this explanation (unlike Deflation). Consciousness has an epistemologically transcendent natural essence.

There are limits to human knowledge. But the "limits of our minds are just not the limits of reality. It is deplorably anthropocentric to insist that reality be constrained by what the human mind can conceive"[68] According to McGinn, we have no clue about consciousness. However, he shows that we have a clue about why we have no clue about consciousness.

According to David Chalmers, transcendental naturalism is a pessimistic view about the nature of consciousness. On Chalmers' view the problems of explaining consciousness is a puzzle rather than mystery. "This is not the place to give up; it is the place where things get interesting."[69] There is an explanatory gap between the brain function and the subjective experience. We need an explanatory bridge. To explain the problem of consciousness we need a new approach. In the next chapter we will discuss Chalmers' optimistic attitude for addressing the problem of consciousness.

Chapter 11

CHALMERS' THEORY OF CONSCIOUSNESS

1. Introduction:

In this chapter we will discuss David Chalmers' attempts to formulate a scientific and yet non-reductive approach to consciousness. First, we will present the hard problem of consciousness, i.e. why a scientific approach to consciousness is difficult to formulate. Then we will argue following Chalmers that consciousness is irreducible to matter. Then we will discuss some recent works that use reductive methods to address consciousness.

According to Chalmers there is an explanatory gap between physical processes and conscious experience and we need some extra ingredient for explaining consciousness. There is a direct correspondence between consciousness and awareness. It is this isomorphism between the structures of consciousness and awareness that constitutes the principle of structural coherence.

Finally we will discuss his Double aspect view of Information (Phenomenal and Physical aspects). We will pay careful attention both to physical processing and to phenomenology. And find systematic regularities between the two. Then we will explain the connection between the two in terms of a simple set of fundamental laws. Chalmers suggests to take experience itself as a fundamental feature of the world, alongside mass, charge, and space-time. For Chalmers, there are basic psychophysical principles that do

not interfere with physical laws, but are a supplement to the physical theory. The new basic principles postulated by a non-reductive theory give us the extra ingredient that we need to build an explanatory bridge. Once we introduce fundamental psychophysical laws into our picture of nature, the explanatory gap has itself been explained. In this way we may eventually arrive at a truly satisfactory theory of conscious experience.

2. Facing Up To the Problem of Consciousness

In his article *Facing up to the Problem of Consciousness* Chalmers makes an interesting observation: "There is nothing that we know more intimately than conscious experience, but there is nothing that is harder to explain".[1] According to him, consciousness is the biggest mystery. It may be the biggest outstanding obstacle in our scientific understanding of the universe.[2]

Even today, after centuries of scientific progress in explaining nature, consciousness still remains as perplexing as ever. As Chalmers puts it, when it comes to questions about consciousness such as: "Why does it exist? What does it do? How could it possibly arise from lumpy gray matter?"[3] or questions such as "'How could a physical system such as a brain also be an *experiencer*? Why should there be *something it is like* to be such a system?'[4], "We do not just lack a detailed theory; we are entirely in the dark about how consciousness fits into the natural order."[5] This puzzlement is not a cause for despair; rather, it makes the problem of consciousness one of the most exciting intellectual challenges of our time. Because consciousness is both so fundamental and so ill understood, a solution to the problem may profoundly affect our conception on the universe and of ourselves.[6]

We *know* consciousness is real, although we cannot point to some empirical fact, which would adequately prove its existence. But in case of consciousness we don't need proof, as it rather seems to be something that comes before all attempts to prove something: "We know about consciousness more directly than we know about anything else, so 'proof' is inappropriate."[7] Proof is appropriate only in cases in which conceptions of the phenomenon to be proven could be wrong.

Chalmers summarizes the difficulty of knowing consciousness as follows: "We know consciousness far more intimately than we know the rest of the world, but we understand the rest of the world far better than we understand consciousness."[8]

3. The 'Easy' Problem and 'Hard' Problem:

There is not just one concept of mind. Chalmers distinguishes between a phenomenal concept of mind and a psychological concept of mind. Many mental concepts have a psychological and phenomenological meaning at the same time. Pain is such a mental concept: "The term is often used to name a particular sort of unpleasant phenomenal quality, in which case a phenomenal notion is central. But there is also a psychological notion associated with the term: roughly, the concept of the sort of state that tends to be produced by damage to the organism, tends to lead to aversion reactions, and so on. Both of these aspects are central to the commonsense notion of pain."[9] Thus the phenomenal mind refers to the experiential phenomena, the psychological mind refers to functional aspect of the mental phenomena.

According to Chalmers the psychological notion of consciousness makes up the

easy problems of consciousness and concerns cognitive functions and abilities such as:

- the ability to discriminate, categorize, and react to environmental stimuli;
- the integration of information by a cognitive system;
- the reportability of mental states;
- the ability of a system to access its own internal states;
- the focus of attention;
- the deliberate control of behavior;
- the difference between wakefulness and sleep.[10]

All these phenomena are straightforwardly vulnerable to scientific explanation in terms of computational or neural mechanisms, Chalmers would argue.[11] But the *hard problem* of phenomenal consciousness resists these explanations.[12] "The really hard problem of consciousness is the problem of experience. When we think and perceive, there is a whir of information-processing, but there is also a subjective aspect."[13] While we usually would tend to assume that consciousness arises from matter, we don't have an explanation for how and why it arises.[14] "Even after we have explained the physical and computational functioning of a conscious system, we still need to explain why the system has conscious experiences."[15]

The easy Problems have something in common. They are all defined in terms of cognitive and behavioral functions. To explain these phenomena, all we need to do is

explain how some system in the brain performs some functional role. And when it comes to explaining the performance of functions, we have a methodology for doing this. What we do is to specify a mechanism which can perform the function. And in these case of Easy Problems once we explained how the functions are performed, we explained everything.

The easy problems are not so easy. When David Chalmers introduced the hard/easy distinction, he wrote, "Of course, 'easy' is a relative term. Getting the details right will probably take a century or two of difficult empirical work".[16] But unlike the hard problem, the easy problems present no obvious difficulty for the application of standard cognitive science methodology.

The distinction is that for the easy Problem, we can explain certain functions - how the brain performs a role - is enough to explain the phenomena. But in the case of hard Problem, there remains a further question. Even once we explained all the functions - discrimination, integration, access, report and so on - there remains something else to explain. We still need to explain how the performance of these functions is accompanied by subjective experience. An answer to the easy Problem does not guarantee us an answer to the hard Problem.

The basic problem of subjective experience can be put this way. The standard methods of neuroscience and cognitive science have largely been developed to explain the structure and function of the cognitive states. The structure and function of neurons, for example, gives us a story about the structure and dynamics of how these functions are performed. Reductive methods are successful in most domains because what needs

explaining in those domains are structures and functions. But the problem of experience is not just a problem of explaining structure and function, so the standard reductive methods are incomplete.

Some people suggest that to get the subjective experience into the picture, one needs some extra physical ingredient: maybe more physics, quantum mechanics, chaos theory. But Chalmers argues that all these methods ends with similar problems. They will gives us more complex structure and dynamics. It shows that more physics and more processing are not enough to bridge the gap.

The hard problem has long been appreciated in some form or other. T. H. Huxley remarked "how it is that anything so remarkable as a state of consciousness comes about as aresult of initiating nerve tissue, is just as unaccountable as the appearance of the Djin when Aladdin rubbed his lamp".[17] Thomas Nagel's 1974 article "What is it Like to be a Bat?" helped clarify the limitations of objective, physical explanations of experience. Nagel argues that the subjective aspect of the mind may not ever be sufficiently accounted for by the objective methods of reductionistic science. He claims that "if we acknowledge that a physical theory of mind must account for the subjective character of experience, we must admit that no presently available conception gives us a clue how this could be done."[18]

Collin McGinn argues that the problem of consciousness is too hard to our limited minds. His ideas might have developed out of Nagel's views about the ineffability of bat experience. He states that "consciousness cannot be seen or touched, or studied under a microscope; yet it is for each of us the most obvious reality in the world. No matter how

delicately you probe the brain you will not encounter it in the crevices and corners of that greyish dumpling. Where is it? It seems a queer sort of phenomenon, an anomaly--a miracle even. It refuses to slot into our general scientific picture of the universe."[19]

McGinn argues that in explaining physical events, we never need to infer non-physical entities, and in analysing phenomenal experience we never need anything except phenomenal entities. "Intuitively speaking, we would need to conceive of the brain 'from the inside' in order to understand how it could generate an inner life; but that could amount to nothing more, for us, than thinking of the subject's experience from his point of view. If we think of the brain from the outside point of view, then we fail to capture consciousness; but if we try the inside point of view, we just get experience itself. The fact is that no point of view permits us to integrate the observable features of the brain with its invisible conscious features."[20]

McGinn's transcendental naturalism tells us that, although consciousness can be seen as a natural, emergent property of the brain, we lack the biological capacity to articulate such a relation. He argues that "There exists some law-like process by which matter generates experience, but the nature of this process is cognitively closed to us. The problem is therefore insoluble by us, but not because consciousness is magical or irreducible or nonexistent; it is insoluble simply because of our conceptual limitations."[21]

According to Chalmers, this pessimism is premature. The problem of explaining consciousness has the character of puzzle rather than mystery. There is an explanatory gap between the brain functions and the subjective experience. We need an explanatory bridge. According to Chalmers the usual explanatory methods of cognitive science and

neuro science cannot answer the subjective aspect of consciousness. They are concentrating only the so called easy problem of consciousness. To explain the hard problem we need a new approach."This is not the place to give up; it is the place where things get interesting. When simple methods of explanation are ruled out, we need to investigate the alternatives. Given that reductive explanation fails, *nonreductive* explanation is the natural choice."[22] Let us discuss his criticisms of the reductive methods for addressing consciousness and see how he proves the existence of an explanatory gap.

4. The Irreducibility of Consciousness:

Reductionism is a viewpoint that regards one phenomenon as entirely explainable by the properties of another. The remarkable progress of science over the last few centuries has given us good reason to believe that that there is very little that is utterly mysterious about the world. For almost every natural phenomenon above the level of microscopic physics, there seems in principle to exist a reductive explanation: that is, an explanation wholly in terms of simpler entities. In these cases, when we give an appropriate account of lower-level processes, an explanation of the higher-level phenomenon falls out.[23]

The question is: Can phenomenal consciousness be given a reductive natural explanation? Exponents of an 'explanatory gap' between physical or functional facts, on the one hand, and the facts of phenomenal consciousness, on the other, argue that there are reasons of principle why phenomenal consciousness cannot be reductively explained.[24]

It is natural to hope that there will be a materialist solution to the hard problem and a reductive explanation of consciousness, just as there have been reductive explanations of many other phenomena in many other domains. But according to Chalmers consciousness seems to resist materialist explanation in a way that other phenomena do not. To use a phrase due to Levine (1983), there is an explanatory gap between such accounts and consciousness itself. Even if the appropriate functional organization always gives rise to consciousness in practice, the question of why it gives rise to consciousness remains unanswered.[25]The main arguments for the irreducibility of consciousness are given in the next section.

5. Arguments for the Irreducibility of Consciousness

1. The Explanatory Gap Argument:

The first argument is grounded in the difference between the easy problems and the hard problem, as characterized above. The easy problems concern the explanation of behavioral and cognitive functions, but the hard problem of phenomenal consciousness resists these explanations. One can argue that by the character of physical explanation, physical accounts explain *only* structures and functions, where the relevant structures are spatiotemporal structures, and the relevant functions are causal roles in the production of a system's behavior. And one can argue as above that explaining structures and functions does not suffice to explain consciousness. If so, no physical account can explain consciousness.

We can summarize this argument as follows:

(1) Physical accounts explain at most structures and functions.

(2) Explaining structures and functions does not suffice to explain consciousness

(3) No physical account can explain consciousness.

If this is right, then while physical accounts can solve the easy problems (which involve only explaining functions), something more is needed to solve the hard problem. It would seem that no reductive explanation of consciousness could succeed.[26] It is useful to examine some closely related arguments that also aim to establish that materialism about consciousness is false.

2. Logical and natural supervenience on the physical:

According to Chalmers, materialistic theories require that all facts, including macrolevel facts, either are reducible to microphysical facts or supervenient logically on microphysical facts. Supervenience, according to Chalmers is a relation between two sets of properties: B-properties - intuitively, the *high-level* properties - and A-properties, which are the more basic *low-level* properties.[27] In case of supervenience, there are no two worlds identical in respect to their A-properties, but differing in their B-properties. [28] "When we fix all the physical facts about the world - including the facts about the distribution of every last particle across space and time - we will in effect also fix the macroscopic shape of all the objects in the world, the way they move and function, the way they physically interact. If there is a living kangaroo in this world, then *any* world that is physically identical to this world will contain a physically identical kangaroo, and that kangaroo will automatically be alive."[29]

According to Chalmers, we further need to distinguish logical from natural supervenience. "B-properties supervene *logically* on A-properties if no two *logically possible* situations are identical with respect to their A-properties but distinct with respect to their B-properties."[30] What Chalmers means by logical supervenience seems to be conceptual inclusion. In many cases the definition of concepts is performed by reference to other concepts. It therefore becomes logically incoherent to ascribe different features to the same concept. Given that we know the features of hydrogen and oxygen, it is logically impossible that these features change - i.e. the features of the components - as soon as H and O form a H_2O molecule. In such cases we assume logical supervenience between hydrogen and oxygen and H_2O. Given everything we know about hydrogen and oxygen, we cannot even *conceive* of H_2O behaving in contradiction to what we know about its low-level properties.

As we will attempt to argue, consciousness is not logically supervenient on matter. But if consciousness is not logically supervenient, it cannot reductively be explained, i.e. it cannot be explained in terms of something else, something more fundamental.[31]

Yet even if consciousness is not logically supervenient on matter, according to Chalmers it seems that consciousness is naturally supervenient on the physical. He makes a distinction between logical and natural supervenience by way of the following metaphor, deriving from Kripke. If A-properties supervene logically on B-properties, then once God creates a world with certain B-facts, the A-facts come along as an automatic consequence. However, this is not in cases of natural supervenience. If A-

properties supervene naturally on B-properties, then after fixing the B-facts God still has something else to do in order to fix the A-facts: He has to make sure there is a law relating the B-facts and the A-facts.

According to Chalmers, in the case of logical supervenience, supervenient facts are necessary consequence; in a case of natural supervenience, they do not. Rather, in the latter case, supervenient facts are determined by the connecting bridge principles. He believes that "almost all facts supervene logically on the physical facts (including physical laws), with possible exceptions for conscious experience, indexicality, and negative existential facts."[32]

3. The Conceivability Argument:

Chalmers asks us to conceive of physically identical beings to us. They are not only to behave exactly the way we do, but also to be physiologically identical to us, being a molecule-to-molecule replica of us. The only difference we ought to imagine between such beings and us is that they lack experience or what we have so far called "consciousness."[33] Such beings we could call "zombies." They would be functionally identical to us, but have no experience.

These systems will look identical to a normal conscious being from the third-person perspective: in particular, their brain processes will be molecule-for-molecule identical with the original, and their behavior will be indistinguishable from that of the original. But things will be different from the first-person point of view. What it is like to be an invert or a partial zombie will differ from what it is like to be the original being.

And there is nothing it is like to be a zombie.[34]

In addition to physiological identity we would have to assume historical identity, i.e. these beings having had the same past as us and further being surrounded by the same environment.[35] The crucial question for our discussion is whether such beings are *logically conceivable*. There is little reason to believe that zombies exist in the actual world. But many hold that they are at least conceivable: we can coherently imagine zombies, and there is no contradiction in the idea that reveals itself even on reflection. As an extension of the idea, many hold that the same goes for a *zombie world*: a universe physically identical to ours, but in which there is no consciousness.[36]

Chalmers summarize his arguments as follows. "Let *P* be the complete microphysical truth about the universe: a long conjunctive sentence detailing the fundamental microphysical properties of every fundamental microphysical entity across space and time. Let *Q* be an arbitrary truth about phenomenal consciousness: for example, the truth that somebody is phenomenally conscious (that is, that there is something it is like to be that person). Many puzzles of consciousness start from the observation that there is an apparent *epistemic gap* between *P* and *Q*: a gap between knowledge of *P* and knowledge of *Q,* or between our conception of *P* and our conception of *Q*."[37]

Again he asks us to conceive of an *inverted world*: one that is physically identical to ours, but in which some conscious states differ from the corresponding states in our world. If this is right, then there is a gap between conceiving of *P* and conceiving of *Q*. It appears that *P*&~*Q* is conceivable, where *Q* is a truth such as 'Someone is phenomenally

conscious' (in the first case), or a truth specifying a particular state of phenomenal consciousness (in the second).[38]

According to Chalmers if there is a metaphysically possible universe that is physically identical to ours but that lacks consciousness, then consciousness must be a further, nonphysical component of our universe. We can put the argument, in its simplest form, as follows:

(1) It is conceivable that there be zombies.

(2) If it is conceivable that there be zombies, it is metaphysically possible that there be zombies.

(3) If it is metaphysically possible that there be zombies, then consciousness is nonphysical.

(4) Consciousness is nonphysical.

A somewhat more general and precise version of the argument appeals to P, the conjunction of all microphysical truths about the universe, and Q, an arbitrary phenomenal truth about the universe.

(1) It is conceivable that P&~Q.

(2) If it is conceivable that P&~Q, it is metaphysically possible that P&~Q.

(3) If it is metaphysically possible that P&~Q, then materialism is false.

(4) Materialism is false.[39]

From conceivability argument it would follow, that consciousness is not *logically* supervenient on the physical. Therefore it follows that any theory that denies the reality of consciousness is false.

4. Knowledge Argument:

To further illustrate the epistemic asymmetry associated with consciousness Chalmers follows Jackson in conceiving of a brain scientist called Mary, who - living in an age of advanced scientific knowledge - has discovered everything there is to know about color-vision. Yet she has never experienced color-vision herself, as she lives in a room emptied of colors altogether. The crucial question in this thought-experiment is whether Mary in the state of *knowledge about* color experience could have anticipated anything about *what it is like to experience color*. Chalmers argues that in her state of never having known color from experience, Mary could never deduce the quality of color-experience from propositional knowledge about the brain alone.

Despite all her knowledge, it seems that there is something very important about color vision that Mary does not know: she does not know what it is like to see red. Even complete physical knowledge and unrestricted powers of deduction do not enable her to know this. Later, if she comes to experience red for the first time, she will learn a new fact of which she was previously ignorant: she will learn what it is like to see red.[40] Jackson's version of the argument can be put as follows (here the premises concern Mary's knowledge when she has not yet experienced red):

(1) Mary knows all the physical facts.

(2) Mary does not know all the facts

(3) The physical facts do not exhaust all the facts.

One can put the knowledge argument more generally:

(1) There are truths about consciousness that are not deducible from physical truths.

(2) If there are truths about consciousness that are not deducible from physical truths, then materialism is false.

(3) Materialism is false.[41]

It appears that Mary may know *P* and may have no limitations on powers of a priori reasoning, but may still fail to know *Q*. This suggests that the truth of *Q* is not deducible by a priori reasoning from the truth of *P*. More specifically, it suggests that the material conditional $P \rightarrow Q$ is not knowable a priori.[42]

All of the three arguments above can be seen as making a case against an a priori entailment of Q by P. If a subject who knows only P cannot deduce that Q (as the knowledge argument suggests), or if one can rationally conceive of P without Q (as the conceivability argument suggests), then it seems that P does not imply Q. The explanatory argument can be seen as turning on the claim that an implication from P to Q would require a functional analysis of consciousness, and that the concept of consciousness is not a functional concept.[43]

After establishing an epistemic gap, these arguments proceed by inferring an ontological gap, where ontology concerns the nature of things in the world. The conceivability argument infers from conceivability to metaphysical possibility; the knowledge argument infers from failure of deducibility to difference in facts; and the explanatory argument infers from failure of physical explanation to non-physicality. One might say that these arguments infer from a failure of epistemic entailment to a failure of ontological entailment.[44]

The general form of an epistemic argument against materialism is as follows:

(1) There is an epistemic gap between physical and phenomenal truths.

(2) If there is an epistemic gap between physical and phenomenal truths, then there is an ontological gap, and materialism is false.

(3) Materialism is false. [45]

So far we have argued that physical facts do not logically entail facts about experience[46] and we therefore have to assume that consciousness is irreducible, "[...] being characterizable only in terms of concepts that themselves involve consciousness."[47] There is an "explanatory gap" between physical properties and consciousness.[48] That consciousness accompanies a given physical process is a *further fact* not explainable simply by telling the story about the physical facts.[49] The form of the basic argument behind this claim was: "'One can imagine *all* the physical holding without the facts about consciousness holding, so the physical facts do not exhaust all the facts.'"[50]

What Chalmers has been claiming so far is that from mere observation of physiology we cannot immediately deduce whether someone is thinking "correctly," i.e. whether he is deducing correctly, or whether his thought is meaningful at all.

What Chalmers has expressed with his thought-experiments is that whatever we might take for granted intuitively anyway, that there is no immediate way of deducing the character of conscious experience from physiology. We can put it the other way round: we can never observe a logically necessary connection between consciousness and matter, as we on the other hand can observe a logically necessary connection between say mass and the properties of molecules. If so, materialism - the claim that *everything* and thus consciousness too is logically supervenient on the physical – is false. Chalmers himself summarizes the arguments against the reducibility of consciousness to matter in the following way:

1. In our world, there are conscious experiences.

2. There is a logically possible world physically identical to ours, in which the positive facts about consciousness in our world do not hold.

3. Therefore, facts about consciousness are further facts about our world, over and above the physical facts.

4. So materialism is false.[51]

Or, as Chalmers puts it, "We can use Kripke's image here. When God created the world, after ensuring that the physical facts held, he had more work to do. He had to

ensure that the facts about consciousness held.[52] Chalmers admits he himself once had the hope that consciousness could be explained through reference to something more "basic" and physical. "Unfortunately, there are systematic reasons why these methods must fail. Reductive methods are successful in most domains because what needs explaining in those domains are structures and functions, and these are the kind of thing that a physical account can entail. When it comes to a problem over and above the explanation of structures and functions, these methods are impotent."[53] We will discuss some responses to irreducibility of consciousness, in the following section.

6. Critical Responses to Irreducibility of Consciousness:

In discussions about the explanatory gap between physical processes and consciousness, philosophers have reacted in many different ways. Some deny that any explanatory gap exists at all. Some hold that there is an explanatory gap for now, but that it will eventually be closed. Some hold that the explanatory gap corresponds to an ontological gap in nature. Chalmers presents his discussion under the different categories, namely, 1.Type A Materialism, 2.Type B Materialism 3.Type C Materialism, 4. Type D Dualism, 5.Type E Dualism and 6 Type F Monism. Let us discuss one by one.

1**.** Type A Materialism.

Type-A materialists include Dennett (1991), Dretske (1995), Harman (1990), Lewis (1988), Rey (1995), and Ryle (1949).[54] According to this view, there is no epistemic gap between physical and phenomenal truths; or at least, any apparent epistemic gap is easily closed. According to this view, it is not conceivable that there be

duplicates of conscious beings that have absent or inverted conscious states. On this view, there are no phenomenal truths of which Mary is ignorant in principle from inside her black-and-white room (when she leaves the room, she gains at most an ability). And, on this view, on reflection there is no "hard problem" of explaining consciousness that remains once one has solved the easy problems of explaining the various cognitive, behavioral, and environmental functions.[55]

The problem with type-A materialism is that it denies consciousness. Chalmers argues that we have the various functional capacities of access, control, report, and the like, and these phenomena are in need of explanation for a science of consciousness. But he argues that, in addition, it is a further truth that we are conscious, and this phenomenon seems to need a different kind of explanation, for consciousness cannot be explained with the help of the function.

2. Type B Materialism:

Type-B materialists include Block (1999), Levine (1983), Papineau (1993), Perry (2001), and Tye (1995).[56] According to this view, there is an epistemic gap between the physical and phenomenal domains, but there is no ontological gap. So, zombies and the like are conceivable, but they are not metaphysically possible. On this view, Mary is ignorant of some phenomenal truths from inside her room, but when she leaves the room, she learns old facts in a new way.[57]

The most common form of type-B materialism holds that phenomenal states can be identified with certain physical or functional states. This identity is held to be

analogous in certain respects (although perhaps not in all respects) with the identity between water and H_2O. These identities are not derived through conceptual analysis, but are discovered empirically. The concept water is different from the concept H_2O, but they are found to refer to the same thing in nature. On the type-B view, something similar applies to consciousness. The concept of consciousness is distinct from any physical or functional concepts, but we may discover empirically that these refer to the same thing in nature. In this way, we can explain why there is an epistemic gap between the physical and phenomenal domains, while denying any ontological gap.

This objection is most often accompanied by an appeal to Kripke's argument in *Naming and Necessity*, which demonstrates the existence of necessary truths such as "water is H2 O" whose necessity is only knowable a posteriori. In the terms of these objections, it is logically possible that water is not H_2O, but it is not metaphysically possible.[58] On this view, there can be a conceptual gap without a metaphysical gap.

According to Chalmers, this view faces immediate difficulties. These difficulties stem from the fact that the character of the epistemic gap with regard to consciousness seems to differ from that of epistemic gaps in other domains. The necessary connection between water and H_2O may be a posteriori, but it can itself be deduced from a complete physical description of the world. The same applies to the other necessities that Kripke discusses. By contrast, the type-B materialist must hold that the connection between physical states and consciousness cannot be deduced from the complete physical truth about the world.[59]

3. Type-C Materialism:

According to type-C materialism, there is a deep epistemic gap between the physical and phenomenal domains, but it is closable in principle. On this view, zombies and the like are conceivable for us now, but they will not be conceivable in the ultimate analysis. On this view, it currently seems that Mary lacks information about the phenomenal, but in the limit there would be no information that she lacks. And on this view, while we cannot see now how to solve the hard problem in physical terms, the problem is solvable in principle.[60]

This view is initially very attractive. It acknowledges the deep explanatory gap and at the same time it allows that the gap may be due to our own limitations. There are different versions of the view.

Patricia Churchland suggests that even if we cannot now imagine how consciousness could be a physical process, that is simply a psychological limitation on our part that further progress in science will overcome.[61] Therefore she is critical of the thesis of irreducibility of consciousness. The following argument demonstrates the irreducibility of consciousness:

We really do not understand much about a phenomenon *P*. (Science is largely ignorant about the nature of P.)

Therefore: we *do* know that:

(1) *P* can never be explained, or

(2) Nothing science could ever discover would deepen our understanding of *P,* or

(3) *P* can never be explained in terms of properties of kind *S.*

According to Churchland, the above argument is obviously a fallacy: none of the intended conclusion follows, not even a little bit, because the premises (1) and (2) are false. In fact, science according to her, does explain conciouseness.[62]

Moreover, according to Churchland, the mysteriousness of a problem is not a fact about the problem, it is not a metaphysical feature of the universe — it is an epistemological fact about *us.* It is about where we are in current science, it is about what we can and cannot understand, it is about what, given the rest of our understanding, we can and cannot imagine. It is not a property of the problem itself.[63] Therefore she says: "Learn the science, do the science, and see what happens."[64]

Collin McGinn has suggested that the problem is insoluble by us, but not because consciousness is magical or irreducible or nonexistent; it is insoluble simply because of our conceptual limitations.[65] If this is so, then there will appear to us that there is a gap between physical processes and consciousness, but there will be no gap in nature.

4. Two Types of Phenomena: Physical and Phenomenal:

According to Chalmers, Problems about consciousness are type – distinct from those regarding the physical facts. Physical descriptions of the world characterize the world in terms of structure and dynamics. From truths about structure and dynamics, one can deduce only further truths about structure and dynamics. And truths about

consciousness are not truths about structure and dynamics.[66]

Explaining complex structure and dynamics, according to Chalmers, does not suffice to explain consciousness. Mary could know from her black-and-white room all about the spatiotemporal structure and dynamics of the world at all levels, but this will not tell her what it is like to see red. For any complex macroscopic structural or dynamic description of a system, one can conceive of that description being instantiated without consciousness. And explaining structure and dynamics of a human system is only to solve the easy problems, while leaving the hard problems untouched.

So the residual question is whether there are viable alternatives. If consciousness is not necessitated by physical truths, then there must be ontologically fundamental features of the world over and above the features characterized by physical theory. Some features of the world are fundamental: in physics, features such as space-time, mass, and charge, are taken as fundamental and are not further explained. If the arguments against materialism are correct, these features from physics do not exhaust the fundamental features of the world: we need to expand our catalog of the world's basic features. So, Chalmers argues, we can expect that there will be some sort of fundamental principles - psychophysical laws - connecting physical and phenomenal properties.

But what is the character of these laws? An immediate worry is that the microphysical aspects of the world are often held to be causally closed, in that every microphysical state has a microphysical sufficient cause. How are fundamental phenomenal properties to be integrated with this causally closed network?

There seem to be three main options for the nonreductionist here. First, one could deny the causal closure of the microphysical, holding that there are causal gaps in microphysical dynamics that are filled by a causal role for distinct phenomenal properties: this is type-D dualism. Second, one could accept the causal closure of the microphysical and hold that phenomenal properties play no causal role with respect to the physical network: this is type-E dualism. Third, one could accept that the microphysical network is causally closed, but hold that phenomenal properties are nevertheless integrated with it and play a causal role, by virtue of constituting the intrinsic nature of the physical: this is type-F monism.

4.1 Type-D Dualism:

Type-D dualism holds that microphysics is not causally closed, and that phenomenal properties play a causal role in affecting the physical world. On this view, usually known as *interactionism*, physical states cause phenomenal states, and phenomenal states cause physical states.[68]

The corresponding psychophysical laws will run in both directions. On this view, the evolution of microphysical states will not be determined by physical principles alone. Psychophysical principles specifying the effect of phenomenal states on physical states will also play an irreducible role.[69] The central claim of this view is that the immaterial mind and the material body, which are ontologically distinct substances, causally interact. Mental events cause physical events, and vice-versa.

But this leads to a problem like Cartesian dualism. How can an immaterial mind cause anything in a material body, and vice-versa? This has often been called the 'problem of interactionism'.

4.2 Type-E Dualism:

Type-E dualists include Campbell (1970), Huxley (1974), Jackson (1982), and Robinson (1988).[70] Type-E dualism holds that phenomenal properties are ontologically dependent from physical properties, and that the phenomenal has no effect on the physical.[71] This is the view usually known as *epiphenomenalism,* according to which, physical states cause phenomenal states, but not vice versa. On this view, psychophysical laws run in one direction only, from physical to phenomenal.

According to Chalmers "epiphenomenalism is a coherent view without fatal problems. At the same time, it is an inelegant view, producing a fragmented picture of nature, on which physical and phenomenal properties are only very weakly integrated in the natural world. And of course it is a counterintuitive view that many people find difficult to accept. Inelegance and counterintuitiveness are better than incoherence; so if good arguments force us to epiphenomenalism as the most coherent view, then we should take it seriously".[72]

4.3 Type-F Monism:

Versions of type-F monism have been put forward by Russell (1926), Chalmers (1996), Strawson (2000), and Stoljar (2001).[73]

Type-F monism is the view that consciousness is constituted by the intrinsic properties of fundamental physical entities. On this view, phenomenal or protophenomenal properties are located at the fundamental level of physical reality.[74] Here, nature consists of entities with intrinsic (proto)phenomenal qualities standing in causal relations within a space-time manifold. Physics as we know it emerges from the relations between these entities, whereas consciousness as we know it emerges from their intrinsic nature.[75]

A type-F monist may have one of a number of attitudes to the zombie argument against materialism. Some type-F monists may hold that a complete physical description must be expanded to include an intrinsic description, and may consequently deny that zombies are conceivable. We only think we are conceiving of a physically identical system because we overlook intrinsic properties. Others could accept conceivability but deny possibility: we misdescribe the conceived world as physically identical to ours, when in fact it is just structurally identical.[76]

As for the knowledge argument, a type-F monist might insist that for Mary to have complete physical knowledge, she would have to have a description of the world involving concepts that directly characterize the intrinsic properties; if she had this, she might thereby be in a position to know what it is like to see red.[77]

But physics is silent about the intrinsic properties. So a metaphysical problem arise: what are the intrinsic properties of fundamental physical systems? There is another metaphysical problem: how can the phenomenal properties be integrated with the physical world? Phenomenal properties seem to be intrinsic properties that are hard to fit

in with the structural/dynamic character of physical theory.[78] In the next section we will discuss about how Chalmers tries to fit the physical properties and the phenomenal properties in the natural order.

7. Naturalistic Dualism

From all that has been said so far we can conclude that our belief in consciousness is derived only from our experience of consciousness and not from anything we know about the physical world. And the impossibility of showing that a functional isomorph would have to be conscious for physical reasons on the other hand means that we cannot deduce facts about consciousness from facts about physics: "Even if we knew every last detail about the physics of the universe – the configuration, causation, and evolution among all the fields and particles in the spatiotemporal manifold - *that* information would not lead us to postulate the existence of conscious experience."[79] This is what Chalmers calls "epistemic asymmetry" i.e. we know of consciousness immediately but cannot on the other hand deduce it from facts about physics.[80] "The epistemic asymmetry associated with consciousness is much more fundamental, and it tells us that no collection of facts about complex causation in physical systems adds up to a fact about consciousness."[81]

But Chalmers does not say that physical facts are *irrelevant* to consciousness.[82] So far we have said nothing about *identity* of consciousness and matter: "The zombie world only shows that it is *conceivable* that one might have a physical state without consciousness; it does not show that a physical state and consciousness are not identical."[83] We were only concerned with supervenience and not with identity.[84]

Avoiding the talk about identity allows Chalmers to claim without contradiction that from everything we know about consciousness and the physical world, we must conclude that consciousness supervenes on the physical. It simply is no logical but natural supervenience.[85] On this view consciousness *arises* from a physical basis, even though it is not *entailed* by that basis.[86] As consciousness cannot be logically reduced to physics, it cannot be treated as physical phenomenon. Yet it arises from physics in a lawful way.[87]

Taking consciousness as fundamental:

Instead of denying consciousness, Chalmers suggests to take it as fundamental, as being irreducible to other, more fundamental facts. "We can give up on the project of trying to explain the existence of consciousness wholly in terms of something more basic, and instead admit it as fundamental, giving an account of how it relates to everything else in the world."[88] In physics we have become very accustomed to the idea that there are fundamental facts which are not explicable in terms of others.

Chalmers shows that in nineteenth century there had been an attempt to explain electromagnetic phenomena in terms of the physical, but this was unsuccessful. It turned out that to explain electromagnetic phenomena, features such as electromagnetic charge and electromagnetic forces had to be taken as fundamental, and Maxwell introduced new fundamental electromagnetic laws.[89] In the same way, to explain consciousness, the features and laws of physical theory are not enough. For a theory of consciousness, new fundamental features and laws are needed. According to Chalmers this view is entirely compatible with the contemporary scientific world-view, and is entirely naturalistic.[90]

Through this approach Chalmers does not want to mystify science in regard to its basic laws. On these grounds an explanation of consciousness is of course being reduced to a proper description of the basic principles. He states that "Of course, by taking experience as fundamental, there is a sense in which this approach does not tell us why there is experience in the first place. But this is the same for any fundamental theory."[91]

The view that consciousness is a fundamental feature of the universe leads to some version of dualism. "But it is an innocent version of dualism, entirely compatible with the scientific view of the world."[92] Chalmers hereby simply expands ontology, as Maxwell did. "Indeed, the overall structure of this position is entirely naturalistic, allowing that ultimately the universe comes down to a network of basic entities obeying simple laws, and allowing that there may ultimately be a theory of consciousness cast in terms of such laws. If the position is to have a name, a good choice might be *naturalistic dualism*."[93]

Why Naturalism?

Chalmers states that "it is naturalistic because it posits that everything is a consequence of a network of basic properties and laws, and because it is compatible with all the results of contemporary science. And as with naturalistic theories in other domains, this view allows that we can explain consciousness in terms of basic natural laws. There need be nothing especially transcendental about consciousness; it is just another natural phenomenon. All that has happened is that our picture of nature has expanded."[94]

There is a lawful connection between consciousness and its material basis that forms a new field of investigation. Thus a theory of consciousness becomes conceivable as theory of the laws according to which consciousness arises from the physical. These laws will not explain consciousness through reference to some more fundamental entity, but rather capture the regularity of how consciousness arises from matter.

Now we will turn to the most speculative part of Chalmers' approach to consciousness. Let us discuss his attempt to formulate the psychophysical laws, describing how consciousness arises from matter.

8. Basic Laws of Consciousness:

1. The principle of structural coherence:

As we discussed earlier, Chalmers distinguishes two aspects of mind: the experientially conscious part, which he names "phenomenal consciousness" and "awareness," the part performing different cognitive functions that are associated with consciousness. However, according to his first psychophysical law, there is structural coherence between phenomenal consciousness and awareness. As Chalmers explains: "Awareness is a purely functional notion, but it is nevertheless intimately linked to conscious experience. In familiar cases, wherever we find consciousness, we find awareness. Wherever there is conscious experience, there is some corresponding information in the cognitive system that is available in the control of behavior, and available for verbal report. Conversely, it seems that whenever information is available for report and for global control, there is a corresponding conscious experience. Thus,

there is a direct correspondence between consciousness and awareness."[95]

It is this correspondence between the structures of consciousness and awareness that constitutes the principle of structural coherence. "This principle reflects the central fact that even though cognitive processes do not conceptually entail facts about conscious experience, consciousness and cognition do not float free of one another but cohere in an intimate way."[96]

In recent years there has been an explosion of scientific work on consciousness in cognitive neuroscience, psychology, and other fields. It become possible to think that we are moving toward a genuine scientific understanding of conscious experience.[97] The task of a science of consciousness, as Chalmers claims, is to systematically integrate two classes of data into a scientific framework: *third-person data*, or data about access consciousness and *first-person data*, or data about phenomenal consciousness.[98] Both sorts of phenomena have the status of data for a science of consciousness.

Third-person data concern the behavior and the brain processes of conscious systems. Where the science of consciousness is concerned, some particularly relevant third-person data are those having to do with the following:

- Perceptual discrimination of external stimuli
- The integration of information across sensory modalities
- Automatic and voluntary actions
- Levels of access to internally represented information

• Verbal reportability of internal states

• The differences between sleep and wakefulness.[99]

First-person data concern the subjective experiences of conscious systems. These phenomenological data provide the distinctive subject for the science of consciousness. Some central sorts of first-person data include those having to do with the following:

• Visual experiences (e.g., the experience of color and depth)

• Other perceptual experiences (e.g., auditory and tactile experience)

• Bodily experiences (e.g., pain and hunger)

• Mental imagery (e.g., recalled visual images)

• Emotional experience (e.g., happiness and anger)

• Occurrent thought (e.g., the experience of reflecting and deciding) [100]

The coherence of the two sorts of data needs explanation, because this is perhaps the core project of current scientific research on consciousness: the search for neural correlates of consciousness. A neural correlate of consciousness (NCC) can be characterized as a minimal neural system that is directly associated with states of consciousness. The definition of a neural correlate of consciousness given in the program of the ASSC conference is that a "specific system in the brain whose activity correlates directly with states of conscious experience".[101]

A number of proposals have been put forward concerning the nature and location of neural correlates of consciousness. A few of these include:

- 40-hertz oscillations in the cerebral cortex (Crick and Koch 1990)
- Intralaminar nuclei in the thalamus (Bogen 1995)
- Re-entrant loops in thalamocortical systems (Edelman 1989)
- 40-hertz rhythmic activity in thalamocortical systems (Llinas et al 1994)
- Extended reticular-thalamic activation system (Newman and Baars 1993)
- Neural assemblies bound by NMDA (Flohr 1995)
- Certain neurochemical levels of activation (Hobson 1997)
- Certain neurons in inferior temporal cortex (Sheinberg and Logothetis 1997)
- Neurons in extrastriate visual cortex projecting to prefrontal areas (Crick and Koch 1995)
- Visual processing within the ventral stream (Milner and Goodale 1995)[102]

If these projects succeed, then we will have general principles connecting third person data with the first-person data. But these general principles are not yet the fundamental principles. The principles might still be quite complex, limited to specific aspects of consciousness, and limited to specific species.[103] According to Chalmers, a science of consciousness consisting of wholly different principles for different aspects of

consciousness and different species would not be entirely satisfactory.[104] It is reasonable to hope that eventually, some unity could be discovered behind this diversity.

At the present stage, we might hope for principles that are maximally general in their scope, applying to any conscious system whatsoever, and applying to all aspects of conscious experience. And we might hope for principles that are relatively simple in their form, in the way that the basic laws of physics appear to be simple.

It is unreasonable to expect that we will discover principles of this sort anytime soon, and it is an open question whether we will be able to discover them at all. Currently, we have little idea what form such principles might take.[105] Chalmers speculates that they might involve the notion of information. We will discuss the notion of information in details in the third basic law of consciousness. Now we will discuss his second law.

II. The principle of organizational invariance:

After establishing a structural coherence between consciousness and awareness, Chalmers has argued for the principle of organizational invariance. Conscious experience arises from functional organization by arguing for a principle of organizational invariance such that any system with the same functional organization will possess identical conscious experiences. Yet, consciousness arises from functional organization but is not a functional state. "On this view, the chemical and indeed the quantum substrate of the brain is irrelevant to the production of consciousness. What counts is the brain's abstract causal organization, an organization that might be realized in many different physical

substrates."[106]

This principle states that any two systems with the same fine-grained *functional organization* will have qualitatively identical experiences. If the causal patterns of neural organization were duplicated in silicon, for example, with a silicon chip for every neuron and the same patterns of interaction, then the same experiences would arise.[107] It is crucial that for Chalmers functional organization can be realized in various physical systems.

One just needs to specify the number of abstract components, their possible different states and the relations between these states. Whether these components are neurons or transistors does in fact not matter. "According to this principle, consciousness is an organizational invariant: a property that remains constant over all functional isomorphs of a given system. Whether the organization is realized in silicon chips, in the population of China, or in beer cans and ping-pong balls does not matter. As long as the functional organization is right, conscious experience will be determined."[108]

According to Chalmers any functionally identical systems have the same consciousness, independent of what they are made. "According to this principle, what matters for the emergence of experience is not the specific physical makeup of a system, but the abstract pattern of causal interaction between its components."[109]

Chalmers calls this view: "nonreductive functionalism." According to him "consciousness arises from a physical system but is not a physical state, one can believe that consciousness arises from functional organization but is not a functional state."[110]

This theory is a combination of functionalism and property dualism.[111]

III. The double-aspect theory of information:

According to Chalmers, the above principles are *non-basic* principles. They involve high-level notions such as "awareness" and "organization", and therefore lie at the wrong level to constitute the fundamental laws in a theory of consciousness.[112] Nevertheless, they act as strong constraints. What is further needed are *basic* principles that fit these constraints and that might ultimately explain them.[113] Chalmers speculates that they might involve the notion of information.

"An information space is an abstract space consisting of a number of states, which I will call *information states*, and a basic structure of *difference relations* between those states. The simplest nontrivial information space is the space consisting of two states with a primitive difference between them. We can think of these states as the two 'bits,' 0 and 1. The fact that these two states are different from each other exhausts their nature. That is, this information space is fully characterized by its difference structure."[114] Thus a light switch can be conceived of as realizing a two-state information space "[...] with its states 'up' and 'down' realizing the two states. Or we can see a compact disk as realizing a combinatorial information state, consisting in a complex structure of bits. One can see information realized in a thermostat, a book, or a telephone line in similar ways."[115]

In case of a light switch there can be many positions between what we call "up" and "down." But merely one of these differences *makes a difference* to the light that is then either switched on or off. "The difference between these two states is the only

difference that makes a difference to the light. So we can see the switch as realizing a two-state information space, with some physical states of the switch corresponding to one information state and with some corresponding to the other."[116]

The double-aspect principle stems from the observation that there is a direct isomorphism between certain physically embodied information spaces and certain phenomenal information spaces. From the same sort of observations that went into the principle of structural coherence, we can note that the differences between phenomenal states have a structure that corresponds directly to the differences embedded in physical processes.[117]

In the notion of information space Chalmers sees the link between the physical and phenomenal: "[...] whenever we find an information space realized phenomenally, we find the same information space realized physically. And when an experience realizes an information state, the same information state is realized in the experience's physical substrate."[118] This leads to a natural hypothesis that information has two basic aspects: a physical aspect and a phenomenal aspect. This has the status of a basic principle that might underlie and explain the emergence of experience from the physical.[119] If so, then information is a natural candidate to also play a role in a fundamental theory of consciousness. We are led to a conception of the world to which information is truly fundamental, and on which it has two basic aspects, corresponding to the physical and the phenomenal features of the world.[120]

But as practically everything realizes information, are we then to conclude that everything is conscious? "This idea is often regarded as outrageous, or even crazy. But I

think it deserves a close examination. It is not *obvious* to me that the idea is misguided, and in some ways it has a certain appeal."[121] Chalmers speculates that the most simple phenomenology should cohere with the most primitive system of 'perceptual psychology", such as a thermostat.[122] "If there is experience associated with thermostats, there is probably experience *everywhere:* wherever there is a causal interaction, there is information, and wherever there is information, there is experience. One can find information states in a rock - when it expands and contracts, for example - or even in the different states of an electron. So if the unrestricted double aspect principle is correct, there will be experience associated with a rock or an electron."[123]

It is counterintuitive that wherever there is causal interaction there is experience. But according to Chalmers "If the view is correct, consciousness does not come in sudden jagged spikes, with isolated complex systems arbitrarily producing rich conscious experiences. Rather, it is a more uniform property of the universe, with very simple systems having very simple phenomenology, and complex systems having complex phenomenology. This makes consciousness less 'special' in some ways, and so more reasonable."[124]

But with these problems unsolved we still gain a more comprehensive picture of how consciousness could be causally relevant. If the physical realm is causally closed, then Chalmers is forced to defend a version of epiphenomenalism. However, if information intrinsically has a phenomenal aspect to it, we might thus get a better understanding of how consciousness as a necessary internal aspect accompanying

information could have causal relevance in virtue of its status as the intrinsic nature of the physical.[125]

The double-aspect principle is extremely speculative and is also underdetermined, leaving a number of key questions unanswered. It, however, along with the other two principles, goes to an extend in explaining how consciousness arises within a predominantly physical universe.

9. Critical Responses to Naturalistic Dualism

Chalmers' Naturalistic theory of Consciousness has evoked a number of critical responses in recent times. Some of these responses are discussed in this section.

Daniel Dennett:

Dennett criticizes Chalmers for his division of easy and hard problem. "Chalmers' attempt to sort the 'easy' problems of consciousness from the 'really hard' problem is not, I think, a useful contribution to research, but a major misdirector of attention, an illusion-generator."[126] According to Dennett, there is no phenomenon over and above explaining the various functions. Once we have explained how the functions are performed, we have thereby explained everything.

Dennett imagines a vitalist arguing about the hard problem of life. The easy problems of life include those of explaining the following phenomena: reproduction, development, growth, metabolism, self-repair, immunological self- defence, etc. These are not all *that* easy, of course, and it may take another century or so to work out the fine

points, but they are easy compared to the really hard problem: life itself.[127] Our vitalist can surely ask the same dreary question: Why is the performance of these functions accompanied by life?[128]

Chalmers' argument is that there is a disanalogy between the problem of consciousness and problems in other domains. In the other domains, it is more or less *obvious* that structure and function are what need explaining.[129] In the case of life, what need to be explained are such phenomena as reproduction, adaptation, metabolism, self-sustenance, and so on: all complex functions. There is not even a plausible candidate for a further sort of property of life that needs explaining.[130] According to Chalmers, the vitalist question was always "How could a mere physical system perform these complex functions?", not "Why are these functions accompanied by life?"[131] But in the case of conscious experience it presents itself as a phenomenon to be explained, and cannot be eliminated in the same way.

After examining his own phenomenology, Dennett tells us that he finds nothing other than functions that need explaining. He suggests "subtract the functions and nothing is left".[132] Chalmers suggest that Dennett's argument is wrong. He gives an analogy suggested by Gregg Rosenberg. Color has properties of hue, saturation, and brightness. It is plausible that if one "subtracts" hue from a color, nothing phenomenologically significant is left, but this certainly doesn't imply that color is nothing but hue.[133]

Dennett explains consciousness as consisting in contain function and nothing more. "What impresses *me* about my own consciousness, as I know it so intimately, is my delight in some features and dismay over others, my distraction and concentration, my

unnamable sinking feelings of foreboding and my blithe disregard of some perceptual details, my obsessions and oversights, my ability to conjure up fantasies, my inability to hold more than a few items in consciousness at a time, my ability to be moved to tears by a vivid recollection of the death of a loved one, my inability to catch myself in the act of framing the words I sometimes say to myself, and so forth."[134] These are *all* 'merely' the 'performance of functions' or the manifestation of various complex dispositions to perform functions.[135]

According to Chalmers, Dennett's list seems to be a systematically incomplete list of what needs to be explained in explaining consciousness. If one takes the *third-person* perspective - view from the outside - these reactions and abilities are no doubt the main focus of what one sees. But the hard problem is about explaining the view from the *first-person* perspective.[136]

Patricia Smith Churchland:

Churchland suggests that there is no principled difference between the "hard" and "easy" problems. She asks "Dividing off consciousness from all of the so-called 'easy problems' listed above implies that we could understand all those phenomena and still not know *what it was for* . . . what? The 'qualia-light' to go on? Is *that* an insightful conceptualization? What exactly is the evidence that we could explain all the 'easy' phenomena and still not understand the neural mechanisms for consciousness?"[137] Chalmers defends his position by saying that "the easy problems are all clearly problems of explaining how functions are performed, and the hard problem is not."[138]

Churchland notes that phenomena such as attention have an experiential component. Chalmers agrees that there are deep and intimate links between the "hard" and "easy" phenomena. But it remains unclear why the experiential aspect should accompany those functions.[139]

According to Churchland, the mysteriousness of a problem is not a fact about the problem, it is not a metaphysical feature of the universe — it is an epistemological fact about *us.*[140] She says that Aristotle could not imagine how a complex organism could come from a fertilized egg. That of course was a fact about Aristotle, not a fact about embryogenesis.[141] She argues for "Learn the science, do the science, and see what happens.[142]

Chalmers answer is that "all the science that I know is quite neutral here: I have never seen any experimental result that implies that functions are all that need to be explained."[143] According to him, the facts about consciousness do not just fall out of the facts about the structure and functioning of neural processes. There is a further question -- "why are these processes accompanied by consciousness?" - and merely repeating the story about the physical processes does not provide an answer. [144]

John Searle:

Searle and Chalmers seem to agree on many basic assumptions about consciousness. Both conceive of consciousness in terms of experience. I.e. to both consciousness is accompanied by "something it is like" to be conscious and insist that if we were to leave out the first-personal aspect of consciousness, we would leave out the

phenomenon altogether. In case of consciousness we cannot make the distinction between reality and appearance as the appearance in this case is the reality to be explained.[145] Subjectivity in Searle and in Chalmers becomes the actual reality and object of investigation.

Both philosophers reject attempts to reductively explain consciousness. However, there are some disagreements between them about how consciousness is related to matter. Chalmers suggested consciousness to *arise* from the informational space realized by the brain. Searle, on the other hand, rejects such forms of functionalism.

Searle prefers to avoid epiphenomenalism and this is one reason why he rejects functionalism altogether. But Chalmers holds one form of functionalism.

Searle believes in intrinsic biological unities that are mirrors of phenomenal unity. Pan-psychism on the other hand, according to Searle, is facing the binding problem and cannot deal with the problem of unity of consciousness.[146] He on the other hand holds that "Consciousness is not spread out like jam on a piece of bread, but rather, it comes in discrete units." and then he asks: "If the thermostat is conscious, how about the parts of the thermostat? Is there a separate consciousness to each screw?"[147]

According to Searle, consciousness is a natural feature or higher order function of the brain. Thus for him, there are no two separate ontological realms, matter and mind, but rather there is only matter with consciousness being a feature or property of matter.

Chalmers' claim is that consciousness is a nonphysical feature of the world. He argues that the physical structure of the world - the exact distribution of particles, fields,

and forces in space-time - is logically consistent with the absence of consciousness. The presence of consciousness is a further fact about our world. However, Searle, consciousness is a natural phenomenon like digestion. “Consciousness is an ordinary feature of certain biological systems, in the same way that photosynthesis, digestion, and lactation are ordinary features of biological systems.”[148]

According to Chalmers, Searle's claim is simply a statement of the problem, not a solution. If one accepts it, the real questions are: Why does the brain cause consciousness? What are the relevant causal laws? Searle has nothing to say about these questions. A real answer requires a theory: not just a theory of the brain, but also a detailed theory of the laws that bridge brain and consciousness.

Chapter 111

DENNETT'S THEORY OF CONSCIOUSNESS

Daniel Clement Dennett is one of the most influential philosophers of mind of the past thirty years. Unlike many philosophers of mind (such as David Chalmers, Thomas Nagel, or John Searle) Dennett rejects the idea that consciousness is the fundamental problem about the mind. According to him there is no such thing as phenomenal consciousness as an extra property of the world. His philosophy of mind follows the naturalist tradition: according to which the mind can be explained by science without spiritual or metaphysical approaches.

In *Consciousness Explained,* Dennett offers an outline of the solution to the mind-body problem, "a theory of consciousness that gives answers (or shows how to find the answers) to the questions that have been just as baffling to philosophers and scientists as to laypeople."[1] Dennett's theory of consciousness involves a critique of qualia and the Cartesian Theater, phenomenal consciousness, possibility of zombies, knowledge argument, what-it's like aspect of consciousness. His theory of consciousness deals not with the so-called hard problem of consciousness, but with a set of problems (kinds of access, unification of a stream of consciousness from multiple drafts at the sub-personal level, self-representation and virtual center, self-reports, the difference language makes in a mind, etc). For Dennett, though, this is how a theory of consciousness should be.

In this chapter we will discuss Dennett's naturalistic theories of consciousness

which attempts to solve some of the problems raised in the contemporary theory of mind and consciousness. Some of the key concepts in his theory of consciousness are: Intentional Stance instead of Intentionality, Multiple Draft Model instead of Cartesian Theater Model, Heterophenomenology instead of Phenomenology. We will discuss the implications of these concepts in his theory of consciousness.

1. Intentional Stance

A stance is one which we take up in order to make sense of and predict the behavior of any creature. According to Don Ross "A stance is a foregrounding of some (real) systematically related aspects of a system or process against a compensating backgrounding of other aspects."[2] The intentional stance is a level of abstraction in which we view the behavior of a thing in terms of intentional properties. The theory provides the basis of Dennett's approach to the nature of mental phenomena.

Intentionality is a philosophical term for a property shared by all propositional attitudes; the property of standing for, or being about some object, situation or event.[3] Dennett proposes that believers can be taken as physical systems that can and sometimes must be explained using a certain predictive and explanatory strategy which he calls the 'intentional stance'. He writes "I wish to examine the concept of a system whose behavior can be - at least sometimes - explained and predicted by relying on ascriptions to the system of beliefs and desires (and hopes, fears, intentions, hunches,...). I will call such systems *intentional systems*, and such explanations and predictions intentional explanations and predictions, in virtue of the intentionality of the idioms of belief and desires (and hopes, fears, intentions, hunches,...).[4] To adopt the intentional stance towards

a physical system is to treat it as though it had states, like beliefs and other propositional attitudes, which are about objects, situations or events. According to Dennett, a true believer is to be an intentional system, a system whose behavior is reliably and voluminously predictable via the intentional strategy.

Dennett's three levels

Dennett introduces three different stances for explaining and predicting the behavior of an object, these are the different strategies of abstraction. According to him these three strategies are:

1. Physical Stance
2. Design Stance
3. Intentional Stance

A successful strategy to predict the behavior of a physical system is the physical stance. It works like this: "if you want to predict the behavior of a system, determine its physical constitution (perhaps all the way down to the microphysical level) and the physical nature of the impingements upon it, and use your knowledge of the laws of physics to predict the outcome for any input."[5]

For example, a chemist or physicist in the laboratory can use this strategy to predict the behavior of exotic materials, but equally the cook in the kitchen can predict the effect of leaving the pot on the burner too long. The strategy is not always practically available, but that it will always work *in principle* is a dogma of the physical sciences.[6]

However, the physical stance is not enough, we want to know the design stance itself which every physical system has. For example, we want to know what a computer program does (e.g. graphing a spreadsheet), but not how it does it. In this case, it is better to adopt the design stance. In design stance "one ignores the actual (possibly messy) details of the physical constitution of an object, and, on the assumption that it has a certain design, predicts that it will behave *as it is designed to behave* under various circumstances."[7]

The examples can be such systems as alarm clocks, computers, or thermostats, etc. where we can gain knowledge about their function by analyzing the mechanisms behind it, or observe the way they work. Only the designed behavior of a system is predictable from the design stance. "If you want to predict the behavior of an alarm clock when it is pumped full of liquid helium, revert to the physical stance. Not just artifacts but also many biological objects (plants and animals, kidneys and hearts, stamens and pistils) behave in ways that can be predicted from the design stance. They are not just physical systems but designed systems."[8] According to Dennett, the design stance is more sophisticated than the physical stance, because the artifact can be misdesigned or be victim to a malfunction, whereas the laws of physics are not subject to such malfunctions.

Sometimes when the design stance is practically inaccessible, there is yet another stance or strategy one can adopt. This is riskiest stance: the intentional stance. "Here is how it works: first you decide to treat the object whose behavior is to be predicted as a rational agent; then you figure out what beliefs that agent ought to have, given its place in the world and its purpose. Then you figure out what desires it ought to have, on the same

considerations, and finally you predict that this rational agent will act to further its goals in the light of its beliefs. A little practical reasoning from the chosen set of beliefs and desires will in many—but not all—instances yield a decision about what the agent ought to do; that is what you predict the agent *will* do."[9]

Dennett's three stances are best explained in the context of one of his favourite examples: the chess-playing computer.[10] There are three basic ways of understanding a chess-playing computer. In physical stance, one can ignore the fact that it is designed to play chess, and simply treat it as a physical object obeying the laws of physics. In principle, if we knew all the microscopic details about the internal state of a chess playing computer, we could use the laws of physics to predict everything it would do in the future.

In design stance a chess-playing computers can be understood as these are artefacts designed by programmers to fulfill some purpose. When there is no malfunction, one can predict and explain their behaviour by simply assuming that they will fulfill their purpose, without any knowledge of how they do this. In intentional stance one can ignore all the details of its programming, and simply predict that it will make the most optimal, or *rational* moves, given the goal of winning at the game of chess. In this stance we are attributing *intentional* states to a system.

The intentional stance comes very close to Dennett's theory of mind. He argues that it is best to understand human beliefs and desires at the level of the intentional stance. According to him, "*What it is* to be a true believer is to be an *intentional system,* a system whose behavior is reliably and voluminously predictable via the intentional strategy."[11]

Dennett proposes that human intentionality traces to the long, slow process of evolution of the human race by natural selection.

Dennett's view of how the intentional stance relates to other ways of describing systems in the explanation of intelligent behavior is inspired by standard methodologies in computer science and cognitive science. Natural cognitive systems, like human beings and non-human animals, are treated as computers running software that must be reverse-engineered. First, we determine, by what Dennett calls the intentional stance the intelligent competence of a system that we want to explain. Then, we hypothesize about the limited capacities that cooperate to approximate the competence we want to explain. Finally, we investigate how these limited capacities might be physically implemented in biological brains.

The complex systems can be studied through these three stances. We start with a description from the intentional stance, wherein the system is treated as rational and optimally designed. The inevitable loans of intelligence made at this level are repaid when we explain how a physical system might be designed to approximate this rational ideal. In particular, we show how the cooperative activity of less rational, more limited components, designed to accomplish more limited goals, can in some circumstances yield system-level behaviour that appears rational. Here, we descend from an intentional stance description of the whole system to design stance descriptions of its components. For example, in the case of a digital computer, we arrive at a level of description where all that is going on is the flipping of switches between an 'on' position and an 'off' position, giving us the binary language of 1's and 0's. At this point, we have reached a physical

stance description of the system. All loans of intelligence have been repaid, and the manifest concepts employed at the highest, intentional stance description have been reconciled with the scientific concepts of the physical stance.[12]

According to Dennett, "the question of whence came our own intentionality, does seem to leave us with an embarrassment, for it derives our own intentionality from entities—genes—whose intentionality is surely a paradigm case of mere *as if* intentionality."[13] Dennett admits that genes are too stupid to design anything. "They do not do the designing themselves; they are merely the beneficiaries of the design process. But then who or what does the designing? Mother Nature, of course, or more literally, the long, slow process of evolution by natural selection."[14]

Dennett's idea is that natural selection mirrors the mind in that it seemingly makes choices and improves its products by weeding out failures, yet it does so without any representations or foresight. Further, since natural selection may reuse one structure for a different function, there will sometimes be indeterminacy about what a structure is for. This potential for indeterminacy is inherited by our intentional states.[15]

We can still identify vast qualitative distinctions among different kinds of mind. Dennett imagine a hierarchy about the mind.[16] Let us have a brief description about this hierarchy. At the basic level are primitive "Darwinian" minds, those hard-wired to respond in optimal ways to their environment. Darwinian minds are possessed by the simplest creatures, those that have evolved clever solutions to problems posed by their circumstances. In the case of Darwinian creatures, the steps from the intentional stance to the design stance and from the design stance to the physical stance may be relatively

shortened. At a rung above Darwinian creatures are those possessing "Skinnerian minds" (named in honor of the behaviorist psychologist, B.F. Skinner). These are possessed by creatures capable of learning via operant conditioning—trial and error.

A Skinnerian creature exhibits a degree of mental "plasticity" not possessed by simpler Darwinian creatures. A Skinnerian creature can adapt its behavior to changes in its circumstances. In this way it has a hand in shaping itself to fit its environmental role. For Darwinian creatures, this role is played exclusively by Mother Nature: such creatures are shaped wholly by evolutionary pressures.

"Popperian minds" belong to creatures who have managed the trick of representing their environment in a way that enables them to test likely outcomes of distinct courses of action "in their heads," and so to learn without the attendant risk of potentially dangerous errors.

According to Popper, the success of science as a rational enterprise hinges on scientists' willingness to engage in "conjecture and refutation." Theories are conjectured and tested against the evidence. A theory is accepted only insofar as it survives rigorous testing. A Skinnerian creature learns from experience, by trial and error; a Popperian can learn by anticipating experience.

Popperian creatures make a big advance by asking themselves, "What should I think about next?" before they ask themselves, "What should I do next?" (It should be emphasized that neither Skinnerian nor Popperian creatures actually need to talk to themselves or think these thoughts. They are simply designed to operate *as if* they had

asked themselves these questions.

At the top of Dennett's hierarchy are Gregorian creatures (named, after not the Pope, but the psychologist, Richard Gregory). A Gregorian creature, like its Popperian forerunners, is capable of testing hypotheses in its head. The difference is that Gregorian creatures are capable of representing self-consciously. This opens up new horizons and possibilities, not available to the Popperians.

According to Dennett, human beings, endowed as we are with language, are Gregorian creatures. We are also, in some measure, Darwinian, Skinnerian, and Popperian. The human nervous system bears the marks of its evolutionary history, exhibiting Darwinian, Skinnerian, Popperian, and Gregorian elements. Any complex action requires the co-ordination of all of these. We should not, then, confuse kinds of mind with kinds of creature.

Criticisms and responses:

There are two main criticisms that have been raised against Dennett's proposal that to be a believer is to be an intentional system and to be an intentional system is to be reliably and voluminously predictable from the intentional stance. Stephen Stich[17] questions Dennett's claim that to treat something as a believer one must treat it as ideally rational.

According to Stich, the problem is that human beings often act irrationally, but they do not, except in extreme circumstances, lose their status as believers when they act irrationally. Consider the case of the lemonade seller that forms the centerpiece of Stich

and Dennett's debate. A boy charges 12 cents for a cup of lemonade. You give her a quarter. He gives you 11 cents change. His senses are functioning properly: he sees that you give her a quarter and that he gives you 11 cents; yet he still believes that he gives you the proper change. The boy believes:

(1) that he has given me the right change

(2) that I gave him a quarter

(3) that his lemonade costs 12 cents

(4) that a quarter is 25 cents

(5) that a dime is 10 cents

(6) that a penny is 1 cent

(7) that he gave me a dime and a penny change

(8) that 25 – 12 = 13

(9) that 10 + 1 = 11

(10) that 11 not equal to 13

(11) that he gave me 11 cents change

(12) that 11 cents is the right change from a quarter.

We would expect him to believe *that* he believed

(13) that 25 – 12 = 11 [18]

Stich argues that, just because the boy fails to give the correct change, we do not conclude that he lacks any of the relevant beliefs, or that he fails to be a believer.

According to Dennett, the proper response in this case is that the lemonade seller simply has an imperfect understanding of arithmetic and, therefore, given this lapse in rationality, that is, that he applies concepts like belief imperfectly, the lemonade seller is not a true believer. We must abandon the intentional stance for a lower-level stance, like the design stance, to explain how the sub-optimal design of the child's brain leads to the irrational behaviour. This is precisely what we do when a chess-playing computer makes a stupid move: we conclude that the program's design must be sub-optimal.[19]

John Searle, one of the Dennett's severest critics, pointed out that intentionality is "the general term for all the various forms by which the mind can be directed at, or be about, or of, objects and states of affairs in the world",[20] while for Dennett, intentionality refers to the simple property of being about something else, whether the entity exhibiting intentionality is a mind or not.

The difference here between the two positions appears to be substantial, not merely terminological, because for Searle, intentionality is not merely biological feature of the mind. Searle concedes that mindless systems may exhibit what he calls "as-if intentionality": they behave as if they had genuine intentionality. But they do not have real intentionality. The real point at issue between Searle and Dennett is whether the intentionality of our mental states is a basic, intrinsic feature of the world, or whether it

can be reduced to something else. For Dennett, intentionality is always as-if taken to be part the intentional state.

Being an intentional system, according to Dennett, is a necessary but not sufficient condition for having a mind. It is not a sufficient condition, because there are many things - such as thermostats and biological macromolecules - which are capable of being described by this stance, but are not agents. "*Intentional systems* are, by definition, all and only those entities whose behavior is predictable/explicable from the intentional stance. Self-replicating macromolecules, thermostats, amoebas, plants, rats, bats, people, and chess-playing computers are all intentional systems--some much more interesting than others. Since the point of the intentional stance is to treat an entity as an agent in order to predict its actions, we have to suppose that it is a smart agent, since a stupid agent might do any dumb thing at all."[21]

Again, Searle points out that the location of intentionality in natural selection is highly unpromising, because "intentional standards are inherently normative," but "there is nothing normative or teleological about Darwinian evolution."[22] At times, Dennett acknowledges this and talks of a Minimalist Mother Nature. For example, in commenting on the idea of gradualistic "hill-climbing" in Darwinian evolution, Dennett says, "there cannot be any intelligent…foresight in the design process, but only ultimately stupid opportunistic exploitation of whatever lucky lifting happens your way."[23]

Dennett thinks that original intentionality is a fundamentally mysterious and unscientific notion.[24] According to him, all intentionality, including the intentionality of human mental states, is derived. From where do human beings and other biological

systems derive their intentionality? Dennett's answer is 'Mother Nature'[25] or, more specifically, evolution by natural selection. Systems that are products of a process of selection exhibit real patterns of behavior that can only be tracked from the intentional stance. So their intentionality is derived from evolution by natural selection. In the fourth section of this chapter, we will discuss Dennett's evolutionary perspective in more details.

2. Heterophenomenology

In studying consciousness, Dennett adopts a method he calls *heterophenomenology,* which he presents as an alternative to Husserl's phenomenology. The prefix 'hetero' means 'other'. The goal of this method is to find a way of describing a subject's world of appearances from the third person.

Husserl claimed that it is possible to develop a rigorous, introspection-based methodology for studying consciousness. Husserl's term for this is 'phenomenology,' or the study of phenomena, which, to him, meant the study of the world of appearances.[26] According to Husserl, we should describe consciousness purely as we experience it without prejudging it from the standpoint of any philosophical doctrine, any scientific theory, or even our everyday faith that there are things in the world independent of our experience.[27]

Dennett argues, however, that phenomenology is not a scientific method for studying consciousness. Explaining the history of the term of phenomenology Dennett underlines the descriptive dimension of what it was used to designate "...the term phenomenology

came to refer to the merely descriptive study of any subject matter, neutrally or pre theoretically."[28] And he writes similarly about its first person character: “The standard perspective adopted by phenomenologists is Descartes’s first-person perspective in which I describe in a monologue what I find in my conscious experience”.[29] According to Dennett phenomenology is inadequate as a scientific methodology. There are no public constraints on a person’s judgments about what they introspect.[30]

According to Dennett, "even if mental events are not among the data of science, this does not mean we cannot study them scientifically. Black holes and genes are not among the data of science, but we have developed good scientific theories of them."[31] Dennett has been a critic of first-person methodologies for decades. He states "Consciousness is often celebrated as a mystery beyond science, impenetrable from the outside, however intimately known to each of us from the inside. I think this tradition is not just a mistake, but a serious obstacle to ongoing scientific research that *can* explain consciousness, just as deeply and completely as it can explain other natural phenomena: metabolism, reproduction, continental drift, light, gravity, and so on."[32]

Dennett, of course, regards first-person data for a science of consciousness with deep suspicion. As he puts it “There is no such thing as first-person science, so if you want to have a science of consciousness, it will have to be a third-person science of consciousness....”[33]

In Dennett’s words, heterophenomenology is "the *neutral* path leading from objective physical science and its insistence on the third-person point of view, to a method of phenomenological description that can (in principle) do justice to the most private and

ineffable subjective experiences, while never abandoning the methodological principles of science".[34]

Heterophenomenologists record first-person reports as raw data and then process the raw data to obtain final data about a subject's mind. Heterophenomenological data are no less public than any other scientific data, and the heterophenomenological science of mind is as much a third-person science as any other science.

Heterophenomenology begins with collecting what Dennett calls raw data. "We heterophenomenologists start with *recorded raw data* on all the physical goings-on inside and outside our subjects, a pool restricted to communicating human beings (with or without identifiable pathologies and quirks, of both sexes, of all ages, cultures, varying socioeconomic status, etc., etc.)."[35]

Next step is carefully recording any indications of the conscious phenomena under investigation. This can be accessible from the third-person perspective. These do not include any of the subject's private conscious phenomena, but do include his verbal reports and cataloguing all his beliefs, hunches, emotional reactions and so forth. "We gather data on all the chemical, electrical, hormonal, acoustical . . . and other physical events occurring in the subjects, and we pay particular attention to the timing of all these events, but we also single out one data stream from the others for special treatment. We take some of the noises and marks made by subjects as consisting of communication — oral and otherwise—and compose transcripts, which then are further interpreted to yield an inventory of speech acts, which are further interpreted as (apparent) expressions of belief."[36]

The next stage converts the recorded verbal utterances into transcripts, in the subject's own language. "We must move beyond the text; we must interpret it as a record of speech acts; not mere pronunciations or recitations but assertions, questions, answers, promises, comments, requests for clarification, out-loud musings, self-admonitions."[37]

These interpretations aim to give the best possible description of what it is like to be the subject. "This sort of interpretation calls for us to adopt what I call the intentional stance (…): we must treat the noise-emitter as an agent, indeed a rational agent, who harbors beliefs and desires and other mental states that exhibit intentionality or "about-ness," and whose actions can be explained (or predicted) on the basis of the content of these states."[38]

These interpreted data constitute the subject's heterophenomenological world. It is 'hetero', because it is accessible to many perspectives, and it is 'phenomenological' because it is about the subject's private conscious experience that a science of consciousness should seek to explain.

The important feature to note about the method of heterophenomenology is that it is metaphysically minimalist and neutral ".....the heterophenomenological method, that was neutral with regard to the debates about subjective versus objective approaches to phenomenology, and about the physical or nonphysical reality of phenomenological items.[39] Heterophenomenology makes no assumptions about whether this world of appearances is real or not."The heterophenomenological method neither challenges nor accepts as entirely true the assertions of subjects, but rather maintains a constructive and

sympathetic neutrality, in the hopes of compiling a definitive description of the world according to the subjects.[40]

Dennett uses an analogy to anthropology in order to clarify this point. When investigating the mythology of some tribe, an anthropologist must treat the natives' utterances as authoritative and, at the same time, remain neutral about the truth of what they say. Heterophenomenology is the application of this anthropological method to any subject's utterances about their own conscious mind.[41]

According to Dennett, there is no privileged status about what is going on inside the subject's conscious mind. Scientific truths about realities have nothing to do with how things may or may not seem to be to the reporter. As he puts it "You are not authoritative about what is happening in you, but only about what seems to be happening in you, and we are giving you total, dictatorial authority over the account of how it seems to you, about what it is like to be you." [42]

Heterophenomenology is neutral about whether such facts are also true of the real world of the subject's nervous system. This is something for science to discover. Then the question of whether items thus exist as real objects, events, and states in the brain is an empirical matter to investigate. If suitable real candidates are uncovered, we can identify them as the subject's terms; if not, we need only explain why people think there is phenomenal consciousness.[43]

Let us summarize heterophenomenology as follows:

(1) Heterophenomenology is a methodology for the study of consciousness.

(2) The source of heterophenomenological data is first-person reports.

(3) Heterophenomenologists interpret reports as expressions of subjects' beliefs about their conscious experience.

(4) Heterophenomenology is metaphysically minimalist and neutral

(5) Heterophenomenologists are agnostic about the truth value of first-person reports.

Criticisms and responses:

It seems to many philosophers that heterophenomenology leaves something out. One position familiar in the area is held by Joseph Levine, whose view Dennett discusses in *Sweet Dreams*. Levine claimed that "conscious experiences themselves, not merely our verbal judgments about them, are the primary data to which a theory must answer" [44] According to Dennett, heterophenomenologists interpret first-person reports as expressing the subjects' beliefs about their conscious mental states. Dennett proposes that the primary data give rise to the following:

(a) "conscious experiences themselves";

(b) beliefs about these experiences;

(c) "verbal judgments" expressing those beliefs;

(d) utterances of one sort or another. [45]

These constitute the heterophenomenological out of the primary data. A

heterophenomenological world may or may not correspond to what the subject actually experiences. It is analogous to a fictional world constituted by the statements made in a work of fiction. "What are the "primary data"? For Heterophenomenologists, the *primary* data are the sounds recorded when the subjects' mouths move, or (c) the utterances of the *raw* uninterpreted data. But before we get to theory, we can interpret these data, carrying us via (c) speech acts to (b) beliefs about experiences. These are the primary *interpreted* data, the pretheoretical data, the *quod erat explicatum*… Sticking to the heterophenomenological standard, and treating (b) as the maximal set of primary data, is a good way of avoiding a commitment to spurious data." [46]

Dennett explains about the ineffability of experience in the following way. "....we heterophenomenologists will note that at least you can't describe it now,…. Later, perhaps, you will come to be able to describe it, but of course at that time it will be something different, something describable." [47] For example, take the characteristic sound of a guitar. After simple training the ineffability of the first experience is gone and clearly describable as that of any chord. [48]

Another philosopher who has challenged the neutrality of heterophenomenology is David Chalmers. He claims that "I also take it that the first-person data can't be expressed wholly in terms of third-person data about brain processes and the like. There may be a deep connection between the two - a correlation or even an identity - but if there is, the connection will emerge through a lot of investigation, and can't be stipulated at the beginning of the day. That's to say, no purely third-person description of brain processes and behavior will express precisely the data we want to explain, though they may play a

central role in the explanation. So as data, the first-person data are irreducible to third-person data." [49]

This passage challenges to overlook the prospects of heterophenomenology altogether. Heterophenomenology is explicitly not a first-person methodology (as its name makes clear) but it is also not directly about "brain processes and the like"; it is a reasoned, objective extrapolation from patterns discernible in the behavior of subjects, including especially their text-producing or communicative behavior, and as such it is *about* precisely the higher-level dispositions, both cognitive and emotional, that convince us that our fellow human beings are conscious. [50]

Another argument against heterophenomenology is the possibility of zombies. One can imagine beings with all the usual information processing going on that a normal brain has but with no real, first-person point of view consciousness. Here is Chalmers' definition of a zombie (his zombie twin):

Molecule for molecule identical to me, and identical in all the low level properties postulated by a completed physics, but he lacks conscious experience entirely. . . . he is embedded in an identical environment. He will certainly be identical to me *functionally*; he will be processing the same sort of information, reacting in a similar way to inputs, with his internal configurations being modified appropriately and with indistinguishable behavior resulting. . . . he will be awake, able to report the contents of his internal states, able to focus attention in various places and so on. It is just that none of this functioning will be accompanied by any real conscious experience. There will be no phenomenal feel. There is nothing it is like to be a Zombie. . . . [51]

If this is the case, then having a physical brain necessarily entails being conscious. Consciousness is something extra feature of the world. By definition, philosophical zombies are behaviorally indistinguishable from conscious beings, and the intentional stance is *behavioristic* in the sense of restricting itself to the intersubjectively observable "behavior" of all the subjects, and all their parts, internal and external.[52] Dennett meets this objection showing that zombies are imposible, and that heterophenomenologically all conscious subjects are functional systems with attributes of intentionality and consciousness. He says: ".... we have developed a *neutral* method for investigating and describing phenomenology. It involves extracting and purifying *texts* from (apparently) speaking *subjects*, and using those texts to generate a theorist's fiction, the subject's *heterophenomenological world*. This fictional world is populated with all the images, events, sounds, smells, hunches, presentiments, and feelings that the subject (apparently) sincerely believes to exist in his or her (or its) stream of consciousness. Maximally extended, it is a neutral portrayal of exactly *what it is like to be* that subject—in the subject's own terms, given the best interpretation we can muster. " [53] These subjects have mental images, pains, etc which are accountable within a third person science.

3. Multiple Drafts Model

Let us discuss Dennett's model for the mental processes about consciousness. He claims that "some of the most perplexing paradoxes of consciousness arise because we cling too long to a good habit of thought, a habit that usually keeps us out of trouble."[54] His task is not merely to "sketch a theory of the biological mechanisms and a way of

thinking about these mechanisms that will let you see how the traditional paradoxes and mysteries of consciousness can be resolved." [55]

Dennett offer a multiple draft model of mind, since he believes that there is no single mechanism through mind functions; there are multiple ways in which mental functions are channeled. He begins with a criticism of an assumption that there is one place in the brain responsible for producing conscious experience. According to him, there is no such region in the brain. Moreover, there is no common finish line for sensory inputs to produce consciousness.[56]

Rene Descartes is famous for his classical dualistic account of mind-body relation. He states that there are two fundamental kinds of substance: mind and body. The immaterial mind and the material body which are ontologically distinct substances, causally interact. Mental events cause physical events, and vice-versa. But this leads to a problem for Cartesian dualism. How can an immaterial mind cause anything in a material body, and vice-versa? This has often been called the 'problem of interactionism'.

Descarte's solution is that "...the brain did have a center: the pineal gland, which served as the gateway to the conscious mind. The pinal gland is the only organ in the brain that is in the midline, rather than paired, with left and right versions." [57] The Cartesian solution thus offers a materialist hypothesis in the form of a pineal gland. Dennett's aim is to remove the Cartesian materialism: "......the view you arrive at when you discard Descartes's dualism but fail to discard the imagery of a central (but material) Theater where "it all comes together." [58] He agrees that "Perhaps no one today explicitly endorses Cartesian materialism. Many theorists would insist that they have explicitly

rejected such an obviously bad idea. But as we shall see, the persuasive imagery of the Cartesian Theater keeps coming back to haunt us...".[59]

According to 'Cartesian Theater' model, there is a place in the mind–brain where information first gets processed and is presented to consciousness. This ‘place’ is like a theatre, or television monitor, where the data of consciousness are presented for the self to peruse. Only the self has access to this information (outside observers cannot see it), and the self cannot be wrong about what is presented in the Cartesian Theatre.[60] Dennett claims that there is no place in the brain where all the information comes together and there is no homunculus in the brain for watching the show. Hence the idea of a Cartesian Theatre is a muddled one.

Many philosophers agree with Dennett that the Cartesian Theatre cannot be within the nervous system. However, unlike Dennett, many do not conclude that the doctrine of the Cartesian Theatre must be abandoned. Rather, they conclude that the Cartesian model hold promise for solving the problem of consciouseness.

Another influential line of thought in defence of the Cartesian Theatre is Jackson's Mary argument. The argument is like this: “....prior to being released from her black and white environment, Mary knows *everything* that science could possibly discover about the nervous system. However, upon her release, she *learns something new*, namely, what to see colours. So what it is like to see colours is something over and above what science can discover about the nervous system.”[61]

Again, consider Chalmer's zombie argument: a person is identical to his zombie twin in all physical, including all neural, respects, but while a person is conscious, his zombie twin is not. So, a person's consciousness cannot consist in any physical or neural properties. Rather, it must consist in certain intrinsic, non-physical properties of her experiences. Therefore, any facts about the brain are irrelevant to conscious experiences.

Dennett responds to these arguments in the course of developing his own methodology for the scientific study of consciousness. For a scientific study of consciousness, according to him, we should reject the 'Cartesian Theatre model' of consciousness. He proposes an alternative to the Cartesian Theatre model of consciousness: a scientific model, which he called the Multiple Drafts Model.

According to the Multiple Drafts Model the brain has many parallel information processing streams. At any point in time there are various "drafts", which are at different stages of editing and these drafts are not sent to a single place in the brain for viewing. "According to the Multiple Drafts model, all varieties of perception- indeed, all varieties of thought or mental activity- are accomplished in the brain by parallel, multi track processes of interpretation and elaboration of sensory inputs. Information entering the nervous system is under continuous "editorial revision."[62] For instance, when perception takes place, the information carried to the brain undergoes multiple revision and in the process a unitary perceptual knowledge results form the multiple draft processing.

These editorial processes occur over large fractions of seconds, during which various additions, incorporations, emendations and overwritings of content can occur in different orders.[63] Once a particular "observation" has been made by a specialized,

localized portion of the brain, the information does not have to be rediscriminated by some "master" discriminator. It is because there is no Cartesian Theater.[64] There is nothing like a Central Processing Unit in the brain, in which all commands are executed.

The nervous system is a complex collection of numerous computational agents operating at the same time, or in parallel. None of these agents knows what the whole system is doing, and each has only limited access to what the others are doing. "All the work done by the imagined homunculus in the Cartesian Theater must be distributed among various lesser agencies in the brain, *none of which is conscious*. Whenever that step is taken, however, the Subject vanishes, replaced by mindless bits of machinery unconsciously executing their tasks."[65]

Dennett does not deny that we do have a sense of having a sequence of events flowing through consciousness. But this sense is not due to the central place in the brain where consciousness comes together. The sense in which there is a sequence of events in consciousness arises when the stream is probed, for example, by asking a question as to how we are aware of the sequence of events. This probe fixes the content of consciousness. On Dennett's view, "there are no facts about the stream of consciousness aside from particular probes."[66]

Let's examine how the Multiple Drafts Model works in the brain. Dennett says that visual stimuli evoke series of events in the cortex that gradually yield discriminations of greater and greater specificity. At different times and different places, various decisions are made; fore example, first mere onset of stimulus, then location, then shape, then color, later motion, and eventually object recognition. These localized discriminative

states transmit effects to other places, contributing to further discriminations, and so forth.[67]

However, we must ask: Where does it all come together for consciousness? Dennett's answer is: Nowhere. He says that some of these distributed contentful states soon die out, leaving no further traces. Others do leave traces, on subsequent verbal reports of experience and memory, and other varieties of perceptual set, on emotional state, behavioral proclivities, and so forth. Some of these effects influences on subsequent verbal reports are at least indicative of consciousness. But there is no one place in the brain that all comes together and consciousness happens.[68]

As soon as any such discrimination has been accomplished, it becomes available for reflecting some behavior. Dennett goes on to says that contents arise, get revised, contribute to the interpretation of other contents or to the modulation of behavior and in the process leave their traces in memory, which then eventually decay or overwritten by later contents, wholly or in part. According to him, "at any point in time there are multiple drafts of narrative fragments at various stages of editing in various places in the brain. While some of the contents in these drafts will make their brief contributions and fade without further effect — and some will make no contribution at all — others will persist to play a variety of roles in the further modulation of internal state and behavior and a few will even persist to the point of making their presence known through press releases issued in the form of verbal behavior."[69]

Consider the 'unconscious driving' phenomenon. If the route is very familiar and there is no heavy traffic we may pay almost no attention to driving – it is an automatic skilled action.

On Dennett's view the important tool for initiating such probe into the work of the mind is language. Not only other people, but we are also constantly triggering such amplifications by talking to ourselves. This constant verbal self-probing creates a kind of stream of consciousness. This is how the illusion of the Cartesian Theatre arises.

According to Dennett, consciousness is a sort of "'virtual machine', a sort of evolved (and evolving) program that shapes the activities of the brain."[70] But to have a model of consciousness, there needs to be an answer to the question: what sort of program is the machine running? In the next section we will discuss Dennett's answer to this question.

4. Evolution Of Consciousness

Dennett proposes an evolutionary theory about what sort of program the machine can run. "The design of our conscious minds is the result of three successive evolutionary processes, piled on top of each other, each one vastly swifter and more powerful than its predecessor, and in order to understand this pyramid of processes, we must begin at the beginning."[71] The evolutionary theory is about how the successive processes pile up on one another in an ascending order. The pyramid of processes constitutes an evolutionary trajectory.

Dennett describes three qualitatively different levels of evolution, which are such as:

1) Genetic evolution

2) Phenotypic plasticity

3) Memetic evolution

1. Genetic evolution:

According to Dennett, the first step in the evolution of consciousness is the emergence of reasons from a world of mere causes. "In the beginning, there were no reasons; there were only causes. Nothing had a purpose, nothing had so much as a function; there was no teleology in the world at all. The explanation for this is simple: There was nothing that had interests. But after millennia there happened to emerge simple replicators"[72] Thus reasons replaced causes as consciousness took a normative turn.

The emergence of replication makes the crucial of teleology in the world for. These simple replicators want to continue to replicate, they should avoid the 'bad things' and seek the 'good things'. "...it creates a point of view from which the world's events can be roughly partitioned into the favorable, the unfavorable, and the neutral."[73] That is, the normative find of view enforces the distribution between good and bad, favourable and unfavourable etc. Dennett continues: "As soon as something gets into the business of self-preservation, boundaries become important, for if you are setting out to preserve yourself, you don't want to squander effort trying to preserve the whole world: you draw the line. You become, in a word, selfish. This primordial form of selfishness (which, as a primordial form, lacks most of the flavors of our brand of selfishness) is one of the marks

of life." [74] Self representation becomes the hallmark of the evolutionary selection of the good and bad and so on.

According to Dennett, origin does not matter. Natural selection cannot tell how a system got the way it got. In contrast, the process of natural selection is famously lacking in goals. Since she doesn't foresee at all, she has no way of worrying about unforeseen side effects.[75]

Let us summarise the first level of evolution of unconsciousness:

(1) There are reasons to recognize.

(2) Where there are reasons, there are points of view from which to recognize or evaluate them.

(3) Any agent must distinguish "here inside" from "the external world."

(4) All recognition must ultimately be accomplished by myriad "blind, mechanical" routines.

(5) Inside the defended boundary, there need not always be a Higher Executive or General Headquarters.

(6) In nature, handsome is as handsome does; origins don't matter.[76]

2. Phenotypic plasticity:

The primitive animals had very rudimentary nervous systems. Under pressure from natural selection, more sophisticated nervous systems are likely to evolve. "The key

to control is the ability to track or even anticipate the important features of the environment, so all brains are, in essence, anticipation machines."[77]

Dennett argues that this ability leads to a capacity for vigilance."Regular vigilance gradually turned into regular exploration, and a new behavioral strategy began to evolve: the strategy of acquiring information "for its own sake," just in case it might prove valuable someday."[78] Such creatures have the capacity to store information about the environment for future use. Dennett calls such creatures ‘informavores’, because of their constant hunger for information. This informavores are interested in information about *regularities* in the environment. "....the fundamental purpose of brains is to produce future..."[79]

Individuals, whose brains are capable of learning the regularities about the environment lead to an enormous advantage. This leads to a selection for phenotypic plasticity: the capacity of an individual to adapt within its lifetime. According to Dennett, we expand and continue this ability. "We human beings have used our plasticity not just to learn, but to learn how to learn better, and then we've learned better how to learn better how to learn better, and so forth."[80]

3. Memetic evolution:

Biological evolution occurs when there is variation, heritability and differential reproductive success. Dennett mentions the following condition which exist certain evolution takes place. They are:

(1) variation: is the evolution of aims elements.

(2) heredity or replication: the elements have the capacity to create copies or replicas of themselves

(3) the replication of the elements evolved: depending on interactions between the features of the environment, the number of copies of an element that are created in a given time varies.[81]

According to Dennett, there are other kinds of replicators that have recently emerged on this planet, i.e. memes. Memes are units of cultural ideas that pass from one generation to the next, while genes passed down through biological reproduction. Memes are replicators like genes. [82] According to him "Meme evolution is not just analogous to biological or genetic evolution, not just a process that can be metaphorically described in these evolutionary idioms, but a phenomenon that obeys the laws of natural selection exactly. The theory of evolution by natural selection is neutral regarding the differences between memes and genes; these are just different kinds of replicators evolving in different media at different rates."[83]

Dennett claims that it is the meme that separate human beings from the rest of the living world. It is the special capability that distinguishes the differences between human beings and the rest. According to Dennett there are different types of memes like general memes, particular memes etc. Particular memes include The Marriage of Figaro, Moby-Dick, returnable bottles, the SALT agreements.[84] Other memes are more controversial; we can see why they spread, and why, we should tolerate them: shopping malls, fast food, advertising on television. Still others are extremely hard to eradicate: hijacking airliners, computer viruses etc.[85]

Genes are invisible. They are carried by organisms in which they tend to produce characteristis. Memes are also invisible, and are carried by meme vehicles — pictures, books, sayings (in particular languages, oral or written, on paper or magnetically encoded, etc.).[86]

One may ask here how is all of this related to the evolution of human consciousness? Perhaps the most important meme of all is the meme for human language. Many if not most memes are transmitted through language: whenever we talk to each other, memes are transmitted.[87]

As Dennett points out, our primate precursors were informavores, constantly vigilant, flooded with multi-modal information. This informavores share information by making queries and responding to queries. This capacity emerged when our precursors learned how to talk to themselves. As Dennett puts it, "Such an act of autostimulation could blaze a valuable new trail between one's internal components. Crudely put, pushing some information through one's ears and auditory system may well happen to stimulate just the sorts of connections one is seeking, may trip just the right associative mechanisms, tease just the right mental morsel to the tip of one's tongue. One can then say it, hear oneself say it, and thus get the answer one was hoping for.[88]

Language becomes a way of controlling the flow of information within the brain. Once the habits of vocal autostimulation began to establish in the behavior of hominid populations, we would expect them to be quickly refined, both in the learned behavioral habits of the population and in genetic predispositions and further enhancements of efficiency and effectiveness. Dennett speculates this innovation would have the further

benefit, opportunistically endorsed, of achieving certain privacy for the practice of cognitive autostimulation.[89] Meme evolution has the potential to contribute remarkable design-enhancements to the underlying machinery of the brain at great speed. "…Cultural evolution, which happens much faster still, permits individuals to acquire, through cultural transmission, Good Tricks that have been honed by predecessors who are not even their genetic ancestors."[90]

Let us sum up Dennett's idea of evolution of human consciousness: All three stages of evolution such as genetic evolution, phenotypic plasticity, and memetic evolution have contributed to the design of human consciousness. Compared with phenotypic plasticity, which has been around for millions of years, significant memetic evolution is an extremely recent phenomenon, which has become a powerful force only in the last hundred thousand years.[91]

5. Qualia Disqualified

Qualia include the ways things look, sound and smell, the way it feels to have a pain, and more generally, what it's like to have experiential mental states. Qualia are experiential properties of sensations, feelings, perceptions, thoughts and desires.

Frank Jackson defined qualia as "certain features of the bodily sensations especially, but also of certain perceptual experiences, which no amount of purely physical information includes."[92]

In his essay on qualia in the *Stanford Encyclopedia of Philosophy* Michael Tye introduces the concept as follows: "Feelings and experiences vary widely. For example, I

run my fingers over sandpaper, smell a skunk, feel a sharp pain in my finger, seem to see bright purple, become extremely angry. In each of these cases, I am the subject of a mental state with a very distinctive subjective character. There is something it is like for me to undergo each state, some phenomenology that it has. Philosophers often use the term “qualia” (singular “quale”) to refer to the introspectively accessible, phenomenal aspects of our mental lives. In this standard, broad sense of the term, it is difficult to deny that there are qualia."[93]

Dennett agrees that "Yes, it is indeed difficult to deny that there are qualia"[94] But "The reason it is difficult is mainly that this “standard, broad sense of the term” is a conspiracy of unexamined presuppositions and circularly defined elaborations."[95]

Dennett attempts to remove the qualia from a scientific account of consciousness. He proposes that qualia, as most philosophers conceive of them, do not exist. He says: "My claim, then, is not just that the various technical or theoretical concepts of qualia are vague or equivocal, but that the source concept, the "pretheoretical" notion of which the former are presumed to be refinements, is so thoroughly confused..... Far better, tactically, to declare that there simply are no qualia at all."[96] In a series of thought experiments, which he calls “intuition pumps” Dennett points out some difficulties with the commonly accepted concept of qualia.

Dennett explains his ideas through a series of fifteen intuition pumps. The first two intuition pumps focus attention on the traditional notion. The next four intuition pumps create and refine a "paradox" lurking in the tradition ideas. Six more intuition pumps are arrayed in order to dissipate the attractiveness of those ideas, and three more intuition

pumps are used to introduce and motivate some suitable replacements for the banished notions.[97]

The traditional notion of qualia:

Intuition pump #1: watching you eat cauliflower:

Dennett dislikes the smell and taste of cauliflower and can't imagine how others like that taste. Guessing that maybe others experiencing a different taste.

Intuition pump #2: Wine-Tasting Machine:

The wine tasting machine might produce nice descriptions based on chemical analysis, but it doesn't experience what we do when we taste wine. There is *something it is like* for tasting wine, and it's something over and above whatever information processing is going on under the surface. The Wine-Testing machine's information processing isn't accompanied by "raw feels", "subjective episodes"—in a word, *qualia*—but ours is.

Dennett identifies four properties that are commonly ascribed to qualia. These qualia are characterized in the following way:

1. Qualia are *ineffable*:

No matter how eloquent one is and no matter how cooperative and imaginative one's audience is, one cannot say to another exactly what way one is currently sensing, tasting, smelling, and so forth.

2. Qualia are *intrinsic*:

Qualia are somehow atomic and unanalyzable, and are supposed to be the intrinsic properties of our experiences.

3. Qualia are essentially *private*:

Any objective, physiological, or merely behavioral test would of necessity miss the target, so all interpersonal comparisons of these ways of appearing are systematically impossible.

4. Qualia are *immediately apprehensible in consciousness*:

They are essentially directly accessible to the consciousness of their experiencer, or immediately phenomenological qualities.

Dennett, however, claims that there are no qualia. It's a confused notion and it's high time to get rid of it. According to him "They have seemed to be very significant properties to some theorists because they have seemed to provide an insurmountable and unavoidable stumbling block to functionalism, or more broadly, to materialism, or more broadly still, to any purely "third-person" objective viewpoint or approach to the world (Nagel, 1986)."[98] He continues "I suspect, in fact, that many are unwilling to take my radical challenge seriously largely because they want so much for qualia to be acknowledged. Qualia seem to many people to be the last ditch defense of the inwardness and elusiveness of our minds, a bulwark against creeping mechanism. They are sure there must be some sound path from the homely cases to the redoubtable category of the

philosophers, since otherwise their last bastion of specialness will be stormed by science."[99] From this, Dennett comes to the conclusions that we can explain consciousness without appealing to qualia.

The Traditional Paradox Regained:

Intuition pump #3: the inverted spectrum:

It is a speculation about two people: two people could have systematically inverted colour perception with no external behavioural indication of the difference and no internal functional difference either.[100]

Intuition pump #4: the Brainstorm machine:

This intuition pumb states that "no intersubjective comparison of qualia is possible, even with perfect technology."[101]

Intuition pump #5: Neurosurgical Prank:

The thought experiment is like this: "You wake up one morning to find that the grass has turned red, the sky yellow, and so forth. No one else notices any color anomalies in the world, so the problem must be in you. You are entitled, it seems, to conclude that you have undergone visual color qualia inversion."[102] Here it seems at first that qualia seem like justifiable properties after all. But, according to Dennett, this is a mistake. He explains the reason with the next intuition pump.

Intuition pump #6: Alternative Neurosurgery:

This thought experiment is that, as the result of some complex neurosurgery, one's colour experience becomes systematically inverted. The victim of the surgery wakes up one morning to find his visual experience radically altered. Dennett notes that there are two hypotheses that could account for this:

(I) Invert one of the early qualia-producing channels, e.g. in the optic nerve, so that all relevant neural events are the opposite of their original and normal values and this inverts our qualia.

(II) Leave all those early pathways intact and simply invert certain memory-access links. This does not invert your qualia at all, but just your memory-anchored dispositions to react to them. [103]

Dennett argues that it is impossible to know whether the neurosurgeons have inverted our qualia or inverted our connection to memories of past qualia. Since both operations produce the same result, we have no means to tell which operation has actually been conducted. We are thus in the strange position of not knowing whether there has been a change in our immediately apprehensible qualia. Thus qualia lose their direct accessibility.

The outcome of this series of thought experiments is an intensification of the verificationist argument against qualia. Verificationism suggests that then there is no fact of the matter, which can be called qualia, thus undermining the very existence of qualia.[104] So, by verificationism, there is no 'fact of the matter' as to the qualia at all. As

Dennett puts it: "if there are qualia, they are even less accessible to our ken than we thought."[105]

Making Mistakes about Qualia

The aim of the following two intuition pumps is to show that people might be mistaken about their own qualia, and must be explored in more detail, and with more realistic examples.

Intuition pump #7: Chase and Sanborn:

Imagine that there were two coffee tasters, Mr. Chase and Mr. Sanborn, who worked for Maxwell Coffee House. Six years later Chase believes that his taste of qualia has been constant, but his reactive attitudes toward the qualia have changed; Sanborn, on the other hand, believes that his taste of qualia has what changed while his set of reactive attitudes toward the original qualia has remained constant. Dennett argues that scientists cannot figure out which of these two types of changes actually occurred. There is no way of telling whether it is "a change near the brute perceptual processing end of the spectrum or a change near the ultimate reactive judgment end of the spectrum."[106]

Intuition pump #8: The gradual post-operative recovery:

Imagine a case that we have somehow "surgically inverted" Chase's taste bud connections in the standard imaginary way: post-operatively, sugar tastes salty, salt tastes sour, etc. The out come will be:

(I) Chase's current qualia are still abnormal, but thanks to the revision in his memory-accessing process, he has in effect adjusted his memories of how things used to taste, so he no longer notices any anomaly.

(II) The memory-comparison step occurs just prior to the qualia phase in taste perception; thanks to the revision, it now yields the same old qualia for the same stimulation.[107]

Dennett's claim is that "The qualia are the "immediate or phenomenal" properties, of course, but this description will not serve to locate the right phase in the physiological stream, for, echoing intuition pump #6, there will always be at least two possible ways of interpreting the neurophysiological theory, however it comes out."[108] By verification, "If we cannot distinguish (I) from (II), we certainly cannot support either of your claims. If you want our support, you must relinquish your concept of qualia."[109] The aims of the following four intuition pumps are to show that qualia are not intrinsic properties.

Intuition pump #9: The experienced beer drinker:

Most people don't like beer when they first taste it, but equally most people do eventually come to like beer. Is this because of an increased appreciation of the taste of beer, or is that with more experience the taste actually changes to one that is more likeable? If the taste of beer somehow depends upon one's reactions to it, then the claim that qualia are intrinsic properties might be threatened.[110] The claim is that **"...**if it is admitted that one's attitudes towards, or reactions to, experiences are in any way and in any degree constitutive of their experiential qualities, so that a change in reactivity

amounts to or guarantees a change in the property, then those properties, those "qualitative or phenomenal features," cease to be "intrinsic" properties..."[111]

Intuition pump #10: The world-wide eugenics experiment:

Properties that "seem intrinsic" at first often turn out on more careful analysis to be relational. For example, phenol-thio-urea., a substance which tastes very bitter to three-fourths of humanity, and as tasteless as water to the rest.[112]

Intuition pump #11: The cauliflower cure.

Earlier Dennett dislikes the smell and taste of cauliflower and now he likes that taste.

Intuition pump #12: Visual field inversion created by wearing inverting spectacles.

The above two intuition pump shows that our tastes do seem to be affected by our past experiences or our attitudes etc. Therefore, qualia such as tastes are not intrinsic.

Filling the Vacuum

Then, why does it seem that our conscious experiences have ineffable properties? Dennett answer this question through the following three intuition pumps.

Intuition pump #13: The osprey cry:

The argument is as follows: **"....**when first I hear the osprey cry, I may have identified a property-detector in myself, but I have no idea (yet) what property my

newfound property-detector detects. It might seem then that I know nothing new at all--that my novel experience has not improved my epistemic predicament in the slightest."[113]

Intuition pump #14: The Jello box:

"We refer to a property--a public property of uncharted boundaries--via reference to our personal and idiosyncratic capacity to respond to it. ....If I wonder whether your blue is my blue, your middle-C is my middle-C, I can coherently be wondering whether our discrimination profiles over a wide variation in conditions will be approximately the same."[114]

Intuition pump #15: The guitar string:

Through this interesting example, Dennett's aim is to show that qualia is a describable property. At first time a string sound is entirely novel and we are not able to identify which string is pressed. After some training, "The homogeneity and ineffability of the first experience is gone, replaced by a duality as "directly apprehensible" and clearly describable as that of any chord."[115]

There is an internal property detector responsible for each sensory property. This detectors can be refined through experience. This allows us to identify or recognize a familiar property. But we do not have to know how we identify or re-identify or gain access to such internal response types in order to be able to identify them. On Dennett's view there are no ineffable, intrinsic, private, directly apprehensible properties of experience.

Then, what are qualia? Dennett's answer is that qualia "are just those complexes of dispositions. When you say "This is my quale," what you are singling out, or referring to, whether you realize it or not, is your idiosyncratic complex of dispositions. You seem to be referring to a private, ineffable something or other in your a private shade of homogeneous pink, but this is just how it seems to you, not how it is. That "quale" of yours is a character in good standing in the fictional world of your heterophenomenology, but what it turns out to be in the real world in your brain is just a complex of dispositions."[116]

Dennett's attack on qualia is the first move in the demolition of phenomenal consciousness. According to him, an explanation of consciousness would require only an account of mental content and an explanation of why it appears as if there is phenomenal consciousness. His series of thought experiments show that facts about qualia dissolve into unverifiable pseudo-facts.

6. Criticisms of Dennett's Theory of Consciousness

David Chalmers, one of the main critics of Dennett, describes consciousness as being indefinable, something like the subjective quality of experience. A mental state is conscious if it has a qualitative feel. It is very hard to explain such a thing.

It is a complicated fact that the systems in the brain can process information, react to stimuli and even have learning, memory and language. There is nothing mysterious about them. These are 'easy problems' that science can solve. But, the 'hard problem' is

why are these process accompanied by subjective experience?, where does conscious experience come from? And why do we have it?

Chalmers believes that consciousness cannot be reduced to a physical processes in the brain. Consciousness, he says, is not logically entailed by brain structure. Even if we could explain the entire activity of the brain, every neuron and every connection, we would still not have understood consciousness. It is explained by something different, something more than just brain structure.

Any account of the physical processes supposed to bring about that consciousness will have the further question: why are these processes accompanied by a conscious experience? Chalmers claims that materialism is therefore false. There are features of the world over and above the physical features. However he still insists he is a naturalist, rather than a supernaturalist.

So, in Chalmer's view, consciousness cannot be reductively explained, but there can still be a theory of consciousness: which is a non-reductive one. That is, we need to give up trying to explain the existence of consciousness wholly in terms of something more basic, and instead admit it as fundamental, giving an account of how it relates to everything else in the world. Such a theory of consciousness will be similar in kind to the theories of matter, motion, or space and time. Its essence would be a set of psychophysical laws governing the relationship between consciousness and physical systems.

Dennett's arguments are the exact reverse of Chalmers' in many respects. Chalmers' view is that first-person methodology is the right method for a scientific study of consciousness. According to Chalmers, the third-person method is like studying consciousness without consciousness. On the contrary, Dennett insists that the third-person perspective (Heterophenomenology) is the right method for studying consciousness. According to Dennett, the first-person science of consciousness is a discipline with no methods, no data, no results, no future, no promise. It will remain a fantasy.

Dennett's theory is based on 'multiple drafts model'. He states that all varieties of perception, thought or mental activity are accomplished in the brain by parallel, multi-track processes of interpretation of sensory inputs.

According to Dennett, human consciousness is a huge complex of processes in brain, best understood as the operation of a virtual machine implemented in the brain. It is a software programme. It is a virtual serial machine implemented on parallel hardware.

Another important critic of Dennett's philosophy is John Searle. Searle defends consciousness as a peculiarly biological phenomenon. He grants that it is physical and emergent out of the physical interaction of neurons and other physical parts of brains. But he denies that we can expect to understand anything about it through traditional, objective scientific methods because consciousness is inherently a first-person, not a third-person, phenomenon.

As we discussed earlier, according to Dennett, we cannot expect to understand consciousness through first-person methods. Searle provide two hard evidence, that is first-person evidence that the phenomena of consciousness actually exist. Dennett, on the other hand, believes that the stories someone tells about their mental experience as data (heterophenomenological) are to be accounted for by some physical and evolutionary explanation.

Another important disagreement between these two philosophers is in the case of developing a conscious robot. According to Dennett, there is no problem applying the physical explanation of human consciousness to a different information processing artifact such as a robot.

In his article, “Minds, Brains, and Programs”, Searle presents his ‘Chinese room’ argument: a direct attack on the claim that an artificial system can have appropriate mental states. This thought experiment is based on Schank's script-based AI program, understanding and question answering system. Schank is placed in a room and he is skillful at manipulating symbols according to formal pattern and producing symbols as output. He presumes that outside observers, who speak Chinese, recognize the input as stories. He gives correct answer to the question in the Chinese. The answers are as good as those given by a native Chinese speaker. However, Schank in fact is not a Chinese speaker, but a machine.

Strong AI claims that “the thesis that "the appropriately programmed digital computer with the right inputs and outputs would thereby have a mind in exactly the sense that human beings have minds"[117]

However, Searle argues that this claim is false. The Chinese Room argument shows that just manipulating the symbols is not by itself enough to guarantee cognition, perception, understanding, thinking and so forth. For the same reasons, Schank's computer understands nothing of any stories, whether in Chinese, English, or whatever.[118] But Dennett believes that a computer could become conscious by virtue of instantiating the right kind of programme.

Colin McGinn is the another important critique of Dennett's philosophy. McGinn states that naturalist theories cannot account for conscious intentionality, and only conscious intentionality is intrinsic to the mental states that have it. "There is an internality about the relation between an experience and its object that seems hard to replicate in terms of "external" causal or teleological relations. Presence to the subject of the object of his experience seems not exhaustively explicable in terms of such natural relations..... Naturalist theories fail to do justice to the uniqueness of conscious intentionality. Nothing we know about the brain, including its relations to the world, seems capable of rendering unmysterious the capacity of conscious states to "encompass" external states of affairs."[119]

McGinn defends a mysterianist approach to consciousness. "We should accept that there is a part or aspect of intentionality that our [naturalist] theories do not and probably cannot capture."[120] According to him, "We have discovered that conscious states are affected by neural states of the brain, in that changes in the latter give rise to changes in the former. However, our concepts of conscious states are not themselves neural concepts… How it feels to the person in pain is certainly not the same as how his

brain looks to an observer. Hence there is a mind-body problem."[121] He says that we do not have a sensory states whose content represents what is going on in our consciousness. So, we do not perceive these states.

Again, McGinn criticises Dennett's Multiple Draft view. His question is "why parallel drafts should rule out a chief editor. There is simply no logical opposition here, unless it is just stipulated that there is no single conscious reader of a particular draft. Nor is there any inconsistency with the claim that some of the drafts are conscious while some are not. So Multiple Drafts seems to me a toothless truism…"[122]

One of the interesting criticisms made by McGinn is against the evolutionary account of consciousness. This is based his 'transcendental naturalistic perspective' about consciousness. The human cognitive system is weak precisely where the problem of consciousness arises. The requisite theory does not come within the scope of our mental modules. "Dennett cannot stomach psychological naturalism when it threatens to thwart his own desire to explain everything. He never takes seriously the possibility that that bag of evolutionary tricks in our heads might not be capable of explaining everything about itself; indeed, he dismisses any such suggestion as 'mysticism', a perverse wish to keep the mind free from naturalistic scrutiny." [123]

In response to his critics, Dennett admits that "My explanation of consciousness is far from complete. One might even say that it was just a beginning, but it is a beginning, because it breaks the spell of the enchanted circle of ideas that made explaining consciousness seem impossible. I haven't replaced a metaphorical theory, the Cartesian Theater, with a nonmetaphorical ("literal, scientific') theory. All I have done, really, is to

replace one family of metaphors and images with another, trading in the Theater, the Witness, the Central Meaner, the Figment, for Software, Virtual Machines, Multiple Drafts, a Pandemonium of Homunculi. It's just a war of metaphors, you say — but metaphors are not "just" metaphors; metaphors are the tools of thought. No one can think about consciousness without them, so it is important to equip yourself with the best set of tools available. Look what we have built with our tools. Could you have imagined it without them?"[124]

In any case, Dennett's is an important theory which tries to explain consciousness through a predominantly naturalistic and scientific method.

Chapter IV

REDUCTIONISM AND NON-REDUCTIONISM

1. Reductionism

1.1. Introduction:

Reductionism is an approach to understand the nature of complex things by reducing them to the processes from which they are composed. The aim of reduction is to show that some phenomena are resultants of more fundamental things.

Thomas Nagel defines reductionism thus: "All of the complex and varied and apparently disparate things and processes that we observe in the world can be explained in terms of universal principles that govern the common ultimate constituents out of which, in many different combinations, those diverse phenomena are really composed. The idea is that there exists, in principle, a theory of everything, in the form of a theory governing the one thing or few things of which everything else consists."[1]He states that reductionism has two aspects: constitutive and explanatory. The constitutive thesis is that everything is made of the same elements; the explanatory thesis is that everything that happens can be given an ultimate explanation in terms of the laws governing those elements.

There are several versions of reductionism in the philosophy of mind like identity theory, behaviorism, functionalism, eliminative materialism etc. The identity theory of

mind holds that states and processes of the mind are identical with the states and processes of the brain. The idea is that a less fundamental domain could be reduced to a more fundamental domain via bridge laws that linked the two domains.

Behaviourists think that mental kinds have behavioural signatures. Mental properties are not a particular kind of internal mental event, but a way of behaving. A claim that a person is conscious is not about their inner workings or organization. It is not a claim about the causal structure that produces behaviour; but rather about the pattern of that behaviour.

Eliminative materialists like Paul Churchland and Patricia Churchland claim that the irreducible features of the mind do not exist. They are simply illusions. Thus, we do not have to find a way to connect them, and there is no serious problem of irreducibility between the mental and the physical. We can simply ignore the irreducible features of the mind and use physical concepts to reconstruct a complete scientific theory of the mind. Before going to the details of eliminative materialism, let us begin with classical reductionism of Ernest Nagel.

1.2. Ernest Nagel's reductionism

Ernest Nagel conceptualizes the reduction between two theories in terms of one theory explaining the other. "Reduction [. . .] is the explanation of a theory or a set of experimental laws established in one area of inquiry, by a theory usually though not invariably formulated for some other domain."[2]

Nagel holds that reduction consists in the derivation of the reduced theory T2 from a reducing theory T1. This account reduction establishes a reductive relation between the reducing and the reduced theory.

However, Nagel faces a difficulty in this account of logical derivability. He says: "If the laws of the secondary science [that is, the reduced theory] contain terms that do not occur in the theoretical assumptions of the primary discipline [that is, the reducing theory] [. . .] the logical derivation of the former from the latter is *prima facie* impossible."[3]

If the reduced and reducing theories do not have a shared terminology, no logical derivation between them could be established. In order to address this difficulty, Nagel introduces two conditions that need to be in place so that the reduction can occur.

(a) The condition of connectability.

The first is the existence of bridge laws, which are used to link the vocabularies of the reduced and the reducing theories. "Assumptions of some kind must be introduced which postulate suitable relations between whatever is signified by 'A' [i.e. the offending term in the reduced theory] and traits represented by theoretical terms already present in the primary [reducing] science."[4]

(b) The condition of derivability.

The second required formal condition is derivability. In order to be able to reduce one theory to another, on Nagel's model, one needs to be able to derive the laws of the

reduced theory from those of the reducing one. “With the help of these additional assumptions (the bridge laws], all the laws of the secondary science, including those containing the term ‘A’, must be logically derivable from the theoretical premises and their associated coordinating definitions in the primary discipline.”[5]

While Nagel developed his model as an account of theory reduction, it has subsequently been understood as an account of property reduction. One can generate such an account from Nagel's schema by holding that a property M (mental) is reducible to a property P (physical) with the help of further laws connecting the properties.

On the Nagelian approach, logical derivability is fundamental to any theory of reduction. If no such derivability can be established between the two theories, there is no reduction between them. Given these difficulties with the Nagelian approach to reduction, a different model is in order. Fodor offers this model.

1.3. Jerry Fodor: Token Physicalism

In his paper “The Special Sciences (Or: The Disunity of Science as a Working Hypothesis)”, Jerry Fodor has offered a less restrictive model of reduction, while preserving the autonomy of the special sciences. He writes “I think that many philosophers who accept reductivism do so primarily because they wish to endorse the generality of physics *vis a vis* the special sciences: roughly, the view that all events which fall under the laws of any science are physical events and hence fall under the laws of physics.”[6] He proposes a new account of how the physics is related to the special

sciences. His view is that any event that falls under any scientific law also falls under a law of physics, and is therefore a physical event.

Due to the multiple realizability phenomenon, Fodor is a not a Nagelian sort of reductionist. His view is that "Though reductionism is an empirical doctrine, it is intended to play a regulative role in scientific practice. Reducibility to physics is taken to be a *constraint* upon the acceptability of theories in the special sciences, with the curious consequence that the more the special sciences succeed, the more they ought to disappear. Methodological problems about psychology, in particular, arise in just this way: the assumption that the subject-matter of psychology is part of the subject-matter of physics is taken to imply that psychological theories must reduce to physical theories, and it is this latter principle that makes the trouble."[7]

Instead of classical reductionism, he offers an alternative, less strict account of the relation of the special sciences to physics, and defends a corresponding weaker claim: *token physicalism.* He explain token physicalism as follows "If the bridge laws express event identities, and if every event that falls under the proper laws of a special science falls under a bridge law, we get the truth of a doctrine that I shall call 'token physicalism'. Token physicalism is simply the claim that all the events that the sciences talk about are physical events."[8]

On Fodor's account token physicalism has three important features. First, it is weaker than materialism. "Materialism claims *both* that token physicalism is true *and* that every event falls under the laws of some science or other. One could therefore be a token physicalist without being a materialist…"[9]

Second, token physicalism is weaker than type physicalism. It is important to distinguish token physicalism from type physicalism. Type physicalism is the doctrine that "every *property* mentioned in the laws of any science is a physical property."[10] Token physicalism does not entail type physicalism because "the contingent identity of a pair of events presumably does not guarantee the identity of the properties whose instantiation constitutes the events; not even where the event identity is nomologically necessary."[11] In another form, the difference is that type physicalism, but not token physicalism, requires bridge laws.[12]

Third, token physicalism is weaker than reductivism. The connection between token physicalism and reductionism is that "reductivism is the conjunction of token physicalism with the assumption that there are natural kind predicates in an ideally completed physics which correspond to each natural kind predicate in any ideally completed special science."[13] Instead of a strict reductionist picture, Fodor offers a less restrictive model of reduction. "It will be one of my morals that the truth of reductivism cannot be inferred from the assumption that token physicalism is true. Reductivism is a sufficient, but not a necessary, condition for token physicalism."[14]

Let us discuss Fodor's critique of reductivism and his suggested replacement. He points out that reduction of a special science to physics proceeds via bridge laws.

Let

(1) $S_1x \rightarrow S_2x$ be a law of some special science. (For any *x,* if S_1x then S_2x)

But Fodor assumes that "'all' which quantifies laws of the special sciences needs to be taken with a grain of salt; such laws are typically *not* exceptionless."[15] A necessary and sufficient condition of the reduction of (1) to a law of physics is that (2) and (3) be laws.

(2a) $S_1x \leftrightarrow P_1x$

(2b) $S_2x \leftrightarrow P_2x$

(3) $P_1x \rightarrow P_2x$.

Here 'P_1' and 'P_2' are predicates of physics and (3) is supposed to be a physical law. Formulas like (2) are bridge laws. 'Their characteristic feature is that they contain predicates of both the reduced and the reducing science. Bridge laws like (2) are thus con, trasted with 'proper' laws like (1) and (3).'[16]

For a complete reduction of some special science to physics, it is usually considered necessary and sufficient that all its laws be so reducible. And he states that "Thus, psychology is presumed to reduce to physics via, say, neurology, biochemistry, and other local stops.[17]

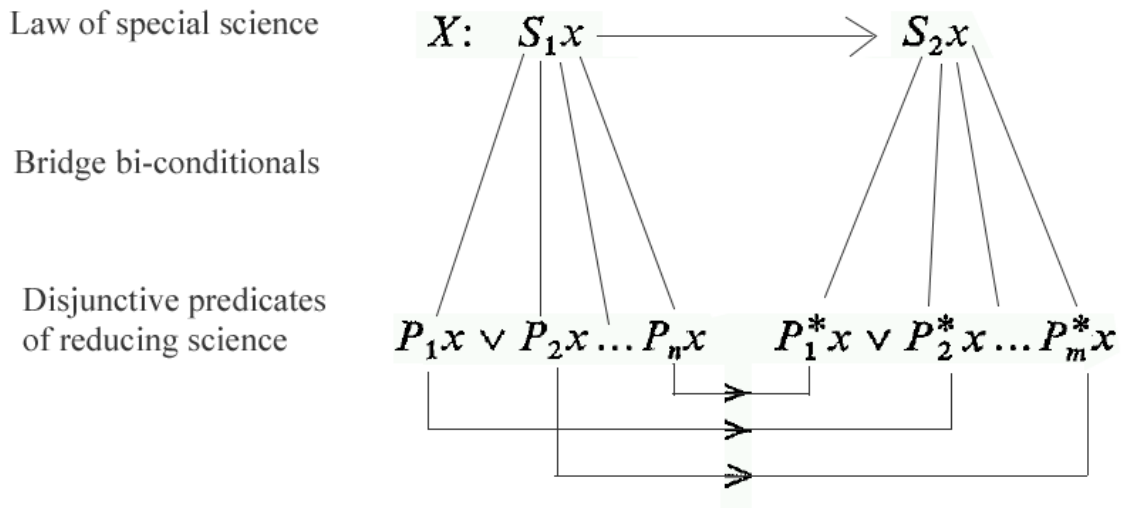
Fodor claims that classical reduction is wrong, because it misconceives the goal of scientific reduction. He says "The point of reduction is *not* primarily to find some natural kind predicate of physics co-extensive with each natural kind predicate of a reduced science. It is, rather, to explicate the physical mechanisms whereby events conform to the laws of the special sciences."[18]

Fodor introduces a new model of reduction. He proposes to allow bridge statements to have the form

(4) Sx ←→ P_1x v P_2x v …. v $P_n x$,

where 'S' is a natural kind predicate of the reduced science and 'P_1 ' , ' P_2 ' , ... 'P_n' are natural kind predicates of the reducing science. He states that "at least some 'bridge laws' may, in fact, not turn out to be laws, since I take it that a necessary condition on a universal generalization being lawlike is that the predicates which consitute its antecedent and consequent should pick out natural kinds."[19]

The following diagram illustrates the central features of Fodor's idea of reduction.



Fodor states that "if S_1x → S_2x is exceptionless, then there must be some proper law of the reducing science which either states or entails that P_1x →P* for some P*, and similarly for P_2x through P_nx. Since there must be such laws, it follows that each disjunct

of 'P_1 v P_2 v …v P_n' is a natural kind predicate, as is each disjunct of 'P_1^*v P_2^*v….v P_n^*'." And it follows that

(5) P_1x v P_2x v …v P_nx → P_1^*x v P_2^*x v …v P_n^*x

The important feature of Fodor reductions are:

(i) First, Fodor's proposal is weaker than classical reductionism. His proposal "does not imply a correspondence between the kind predicates of the reduced and the reducing science."[20]

(ii) Second, Fodor's proposal implies physicalism. His proposal satisfies "the same assumption that makes standard reductivism physicalistic (namely, that the bridge statements express true token identities).[21]

Let us summarize Fodor's view: reductionism is not required for the unity of science. In place of classical reductionism that requires bridge laws connecting the reduced and reducing science Fodor offers an account of how we can be good token physicalists and still endorse the unity of science while avoiding the problems of reductionism. In place of reductionism he suggests identity conditions that would guarantee that an event being described in the special sciences is a physical event, thereby justifying token physicalism and the unity of science. He argues that if a description in the language of physics can be given of all the instances being described by the law of the special sciences then we have enough evidence to support token physicalism and the unity of science. "If physics is to be basic science, then each of these things had better be a physical thing. But it is not further required that the taxonomies

which the special sciences employ must themselves reduce to the taxonomy of physics. It is not required, and it is probably not true."[22]

For refuting Fodor's disunity of psychology Jaegwon Kim offers a new method called the local reduction. Let us look how Kim formulates his 'local reduction' as a solution to mind body problem.

1.4. Jaegwon Kim: Local Reductionism

Kim has offered various solutions to the mind-body problem during his career. A central aim of Kim's work on the mind-body problem over the past three decades has been to weaken various anti-reductionist positions in philosophy of mind.

Fodor argued that "$P_1x \vee P_2 x \vee \ldots \vee P_n x$" fails to designate a scientific kind and hence, there are no bridge-laws that connecting special science with physical kinds. And thus, Nagelian type eduction is impossible.

Kim support the causal closure of physics: "any physical event that has a cause at time t has a physical cause at t. This is the assumption that if we trace the causal ancestry of a physical event, we need never go outside the physical domain."[23]

Then, what is the relationship between the mental and the physical? According to Kim, there are two possibilities that we can consider. First possibility is that "each is only a partial cause, the two together making up a full or sufficient cause, as when a car crash is said to be caused by the driver's careless braking and the icy condition of the road. Applied to our case, it says that the mental cause and the physical cause are each only a

partial cause, and that they together make up one sufficient cause."[24] But it violates the causal closure principle: go outside the physical domain.

Second possibility is that "the mental cause and the physical cause are each an independent sufficient cause of the physical effect? The suggestion then is that the physical effect is overdetermined. So if the physical cause hadn't occurred, the mental cause by itself would have caused the effect."[25] This lead to causal overdetermination problem and violate the causal closure principle. Causal overdetermination occurs if an effect has more than one sufficient cause and these different sufficient causes themselves have independent causal histories.[26]

Still, the problem remains: How are the mental cause and the physical cause of the single physical effect related to each other? Kim's solution is 'the problem of causal explanatory exclusion', "for the problem seems to arise from the fact that a cause, or causal explanation, of an event, when it is regarded as a full, sufficient cause or explanation, appears to exclude other independent purported causes or causal explanations of it"[27]

Kim holds that mental properties are determined by, or supervenient on, underlying physical properties. According to him the causal powers of mental properties are 'inherited' from the physical properties on which the mental properties supervene. Kim holds that vindicating the casual efficacy of mental properties is essential to a satisfactory realism about the mental.[28]

Kim admits the causal closure of physics, plus the claim that mental properties are causal properties. This leads to causal compatibilism: the claim that mental causation via non-physical properties can co-exist with physical causation even if the physical realm is causally closed-i.e. that these two kinds of causation can co-exist even though every physical event, as physically described, is causally explainable in physical terms.[29]

In his earlier writings, Kim tended to defend reductionism. But later, he has come to hold that there is something importantly right in multiple-realization arguments against classical reductionism. This leads him to a new type of reduction – local reduction.

Kim re-opens the possibility of Nagelian reductionism, by allowing for species-specific psychophysical bridge laws adequate to "local" reductions. One can hold for "species-specific bridge laws" and thus for "local" rather than "global" reductions. According to him "the multiple realization argument perhaps shows that the strong connectibility of mental properties vis-a-vis physical properties does not obtain: however, it presupposes that species-specific strong connectibility does hold…..Unlike species-independent laws, these laws cannot buy us a uniform or global reduction of psychology, a reduction of every psychological state to a uniform physical-biological base across all actual and possible organisms; however, these laws will buy us a series of species-specific or local reductions."[30]

In his local reductionism, Kim put forward two arguments: (1) The projectibility argument and (2) The causal powers argument. Let us consider these arguments.

The projectibility argument is ‘a standard mark of lawlikeness… the ability to be confirmed by observation of "positive instances"’.[31] He explains this through an analogy between the kind jade and mental properties like pain. He makes the following remarks about jade. “Consider jade: we are told that jade, as it turns out, is not a mineral kind, contrary to what was once believed; rather, jade is comprised of two distinct minerals with dissimilar molecular structures, jadeite and nephrite.

Consider the following generalization:

(L) Jade is green

We may have thought, before the discovery of the dual nature of jade, that (L) was a law, a law about jade; and we may have thought, with reason, that (L) had been strongly confirmed by all the millions of jade samples that had been observed to be green (and none that had been observed not to be green). We now know better: (L) is really a conjunction of these two laws:

(L,) Jadeite is green

(L2) Nephrite is green”[32]

The question is, does ‘Jade is green’ pass the projectibility test? Kim’s answer is that “jade is a true disjunctive kind, a disjunction of two heterogeneous nomic kinds which, however, is not itself a nomic kind.”[33]

Now Kim relate pain and its multiple realization bases, N_h, N_r, and N_m with the case of jade in relation to jadeite and nephrite. He claims that pain and other mental

properties are nonnomic kinds. Thus he criticizes Fodor's views in the following way. "….pain, and other mental states, might turn out to be nonnomic. If this turns out to be the case, it puts in serious jeopardy Fodor's contention that its physical irreducibility renders psychology an autonomous special science. If pain fails to be nomic, it is not the sort of property in terms of which laws can be formulated; and "pain" is not a predicate that can enter into a scientific theory that seeks to formulate causal laws and causal explanations…..there will be theories about human pains (instances of N_h), reptilian pains (instances of N_r), and so on; but there will be no unified, integrated theory encompassing all pains in all pain capable organisms, only a conjunction of pain theories for appropriately individuated biological species and physical structure-types. Scientific psychology, like the theory of jade, gives way to a conjunction of structure specific theories."[34]

The result of the projectibility argument is that it prevents the possibility of psychology as an independent science. And thus, psychology can be locally reducible to physics.

Kim's second argument in his local reductionism is the 'the causal powers argument'.

In this argument he formulates two principles.

(1) Principle of Causal Individuation of Kinds: Kinds in science are individuated on the basis of causal powers; that is, objects and events fall under a kind, or share in a property, in so far as they have similar causal powers.[35]

(2) The Causal Inheritance Principle: If mental property M is realized in a system at t in virtue of physical realization base P, the causal powers of *this instance of M* are identical with the causal powers of P.[36]

Kim relates the two arguments (the projectibility argument and the causal powers argument) in the following way. "…if pain (or jade) is not a kind over which inductive projections can be made, it cannot enter into laws, and therefore cannot qualify as a causal kind; and this disqualifies it as a scientific kind."[37]

Kim's claim is that if mental properties are multiply realizable, mental kinds are not causal kinds, and hence are disqualified as proper scientific kinds. And at the same time he maintains that mental properties are locally nomic. His view is that "multiple local reductions, rather than global reductions, are the rule, even in areas in which we standardly suppose reductions are possible."[38]

Kim's view is not eliminativism. According to Kim "there still are pains, and we sometimes are in pain, just as there still are samples of jade. ….the present approach is not, in its ontological implications, a form of the standard mental eliminativism currently on the scene."[39] In the case of mental properties like pain, the genuine properties are species-specific. "..the present view allows, and in fact encourages, "species-specific psychologies", but the standard eliminativism would do away with all things psychological species-specific psychologies as well as global psychology."[40]

Paul Churchland and Patricia Churchland are the proponents of eliminative materialism. They claim that the irreducible features of the mind do not exist. They are simply illusions. Let us discuss their arguments.

1.5. Paul and Patricia Churchland: Intertheoretic Reduction

In his 1981 article, "Eliminative Materialism and the Propositional Attitudes", Paul Churchland presents several arguments in favor of reducing ordinary notions like beliefs, desires, thoughts etc. Patricia Churchland's 1986 book, *Neurophilosophy* explains "….reduction is first and foremost a relation between theories. Most simply, one theory, the reduced theory T_R, stands in a certain relation (specified below) to another more basic theory T_B. Statements that a phenomenon P_R reduces to another phenomenon P_B are derivative upon the more basic claim that the theory that characterizes the first reduces to the theory that characterizes the second."[41]

Patricia Churchland used several examples from science for illustrating the concept of reduction. For example, "the discovery that we could identify temperature in a gas as the mean kinetic energy of its constituent molecules. This then permitted coherent, unified explanation of temperature phenomena such as conduction, of why temperature and pressure are related in the way they are, of why heated things expand."[42] Another example is "the claim that light has been reduced to electromagnetic radiation means (a) that the theory of optics has been reduced to the theory of electromagnetic radiation and (b) that the theory of optics is reduced in such a way that it is appropriate to identify light with electromagnetic radiation."[43]

Patricia Churchland explains some features of intertheoretic reduction. It provides us with a simpler overall account of nature. "A consequence of intertheoretic reduction is explanatory unification, and in the sciences such unification is considered a good thing. If one theory can be explained by another and thus reduced to it, then our understanding of the phenomena described by the theory is greatly enhanced."[44] It provides more explanatory power and allows us to explain more than the old theory had been unable to explain.

Another feature is ontological simplification. Its aim is to show that the two domains is actually one domain, though it may have been described in two different vocabularies. "Ontology pertains to what entities and properties exist, and in the event of intertheoretic reduction it may turn out that where we had thought there existed two different kinds of phenomena characterized by the laws of two different theories, there is in fact but one kind of phenomenon that is described by both theories."[45]

Patricia argues that ontological simplification may also be achieved, not by the reduction of one theory to another, but by the elimination of one theory by another. She gave an example "….the elimination of the caloric theory of heat by the kinetic theory of heat achieved ontological simplification, not by the identification of caloric with molecular kinetic energy, but by the claim that there is no such thing as caloric."[46] She argues that various folk psychological concepts like belief, desire and thoughts etc will ultimately fail to correspond with anything that actually exists. This view is known as eliminative materialism.

Eliminative materialism is the radical claim that our ordinary, common-sense

understanding of the mind is deeply wrong and that some or all of the mental states posited by common sense do not actually exist. They claim that there is nothing more to the mind than what occurs in the brain. In a sense, they argue that there is no need for a reduction of mental states, because mental states, as described by common-sense psychology, do not really exist. According to this view a complete neuroscience will one day displace all the folk concepts.

Eliminative materialism has been subjected to a variety of criticisms. The criticisms are not only from, within the philosophy of mind, but also from within ethics and other social sciences. As Jerry Fodor puts it, "if commonsense intentional psychology were to collapse, that would be, beyond comparison, the greatest intellectual catastrophe in the history of our species …."[47] Eliminative materialism, if true, will spell doom regarding the very idea of a human person.

2. Non-Reductionism

Antireductionism is a reaction against reductionism. A primary motivation for non-reductionism is the failure of reductive analysis. The main motivation for non-reductive views, including the non-reductive versions of functionalism, is the following. First of all, reductionism and unity of science would undermine the status of the special sciences particularly those dealing with the mental phenomena.

The argument from multiple realizability entered the scene and appeared to block both theory reduction and the type identity theory. Multiple realizability arguments

seemed plausible, and provided the philosophical justification for the autonomy and irreducibility of the mental states.

Some scientific problems are solved through a reductive explanation. For example, the physical phenomenon of heat can be explained by motions of molecules. But some philosophers like Thomas Nagel, Joseph Levine, Ned Block, John Searle, Chalmers etc have argued in different ways that the reductive approach cannot be applied to solve the problem of mind. We cannot use physical phenomena to thoroughly explain mental phenomena. Thus, we cannot reduce mental concepts to physical concepts.

Donald Davidson points out that there are no laws connecting mental and physical properties. The reason is that physical laws mostly offer necessary and sufficient causal explanations, but we cannot attribute this kind of causal explanation to psychological laws. As Davidson indicates, suppose that we understand what goes on in the brain perfectly, in the sense that we can describe in detail in purely physical or physiological terms. All this knowledge can tell us about psychology much less than we expect. We can no longer properly use many psychological concepts that involve intention, belief, and desire. Without these concepts, our psychology would be totally different. That is the reason why he suggests a kind of anomalous monism to explain the mental phenomena.

Anomalous Monism is a theory of the relationship between mental properties and physical properties developed by Donald Davidson. It holds that every causally interacting mental event is identical to some physical event. But it also claims that there can be no strict laws on the basis of which any mental event can be predicted or explained. Therefore, mental properties cannot be reduced to physical properties.

According to Thomas Nagel (1974), Joseph Levine (1982), Ned Block (2002) and John Searle (1992), even if the mental phenomena are really generated by brain activities and we know everything about the brain, we still cannot use physical concepts to thoroughly explain the mind. This is the reason they defend the irreducibility of the mind. Let us discuss their arguments one by one.

2.1. Tomas Nagel on Irreducible Subjectivity

According to Thomas Nagel, there are two kinds of antireductionism: epistemological and ontological. Epistemological antireductionism is that "even if in reality everything is explained by particle physics, we cannot, given our finite mental capacities, grasp the ultimate explanation of most complex phenomena, and would not be able to do so even if we knew the law or laws governing their ultimate constituents. We are therefore constrained to make do with rougher explanations couched in terms that our minds can accommodate."[48]

Collin McGinn's argument can be called epistemological mysterianism. McGinn argues that humans are incapable of understanding some mental phenomena like consciousness. His view of consciousness is the thesis of cognitive closure. According to this thesis, some aspects of the world are cognitively closed to some kinds of cognitive system. As a natural, evolved system, the human cognitive system must have its own limitations. Consciousness is a prime candidate for being such a phenomenon.

Ontological antireductionism holds that "…much more controversially, that certain higher-order phenomena cannot even in principle be fully explained by physics,

but require additional principles that are not entailed by the laws governing the basic constituents."[49]

Ontological antireductionism can be in two forms: constitutive and explanatory. Constitutive antireductionism is a position that "…not everything in the world is constituted of the same basic elements, those studied by physics, but that there are non-physical events or things as well—conscious mental events and conscious subjects."[50] Its most famous example is Descartes' psychophysical dualism. Explanatory antireductionism is the view that there is something that cannot even in principle be explained at a more basic level. The reason is not just a limit on our knowledge but a fact about the world. This is the main point in Fodor's paper "The Special Sciences (Or: The Disunity of Science as a Working Hypothesis)".

Reductionists philosophers use several examples from science, like water = H_2O or lightning = electrical discharges etc for establishing the success of reduction. According to Nagel, the usual examples do not help us to understand the relation between mind and body. At present, we have no conception of what an explanation of the physical nature of a mental phenomenon would be. "Without consciousness the mind-body problem would be much less interesting. With consciousness it seems hopeless."[51]

Nagel is probably most widely known as an advocate of the idea that consciousness and subjective experience cannot be satisfactorily explained using the current concepts of physics. This position was discussed by Nagel in one of his most famous articles: "What is it Like to Be a Bat?" Nagel argues that consciousness has essential to it a subjective character, a what it is like aspect. He states that "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."[52] What it is like to be that organism is called the subjective character of experience. Nagel's argument is that any reductive analysis of the mental is logically compatible with the absence of the subjective character of experience. Therefore, any reductive analysis of the mental would fail to capture the subjective character of experience.

2.2. Joseph Levine: Explanatory Gap

Joseph Levine rejects reductive explanation of mental phenomena. He argues that consciousness still poses a special epistemological problem for a reductive science of the mind. In his 2001 book *Purple Haze: The Puzzle of Consciousness* and in a number of related papers, Levine explains his worry over an "explanatory gap" between materialist theory and our first-person understanding of conscious experience. Let us explain his concept of "explanatory gap".

Levine explains "explanatory gap" through the following examples.

(1) Heat is the motion of molecules.

(2) Pain is the firing of C-fibers.

In the first example, there is an identity between motion of molecules and heat. According to Levine an understanding of chemistry and physics is all that is needed to understand the identity. "It is explanatory in the sense that our knowledge of chemistry and physics makes intelligible how it is that something like the motion of molecules

could play the causal role we associate with heat…. Once we understand how this causal role is carried out there is nothing more we need to understand.[53]

On the other hand, the second example leave something crucial by unexplained. Levine explains "… there is more to our concept of pain than its causal role, there is its qualitative character, how it feels; and what is left unexplained by the discovery of C-fiber firing is *why pain should feel the way it does*! For there seems to be nothing about C-fiber firing which makes it naturally "fit" the phenomenal properties of pain, any more than it would fit some other set of phenomenal properties."[54]

The situation with 'Pain is the firing of C-fibers' is different, since the identity does not make it intelligible why pain should feel the way it does. No matter how much we know about neurophysiology, the argument goes, the qualitative character of pain is not explained, and there remains an explanatory gap. "Reduction is explanatory when by reducing an object or property we reveal the mechanisms by which the causal role constitutive of that object or property is realized. Moreover, this seems to be the only way that a reduction could be explanatory. Thus, to the extent that there is an element in our concept of qualitative character that is not captured by features of its causal role, to that extent it will escape the explanatory net of a physicalistic reduction."[55] On his view, this explanatory gap constitutes a deep inadequacy in physicalist theories of mind.

According to Levine, the gap arises because of two distinctive and interrelated features of phenomenal consciousness: subjectivity and qualitative character. He describes these features this way: "Let's take my current visual experience as I gaze upon my red diskette case, lying by my side on the computer table. I am having an experience

with a complex qualitative character, one component of which is the color I perceive. Let's dub this aspect of my experience its "reddish" character. There are two important dimensions to my having this reddish experience. First … its being reddish is "for me," a way it's like for me, in a way that being red is like nothing for—in fact is not any way "for"—my diskette case. Let's call this the subjectivity of conscious experience … . The second important dimension … is qualitative character itself … . Qualitative character concerns the "what" it's like for me: reddish or greenish, painful or pleasurable, and the like."[56]

Although the problem of explaining qualitative character has been the focus of the phenomenal consciousness, Levine maintains that the underlying problem lies with understanding subjectivity: "I don't think we currently have any idea how to explain subjectivity, especially in physical, non-mental, terms."[57] He also emphasizes another form of the explanatory gap by showing the dual character of qualia. "A further, and perhaps most deeply puzzling, aspect of the distinctive cognitive relation subjects of experience bear to their conscious contents is that the qualitative contents themselves, qualia, seem to have a dual character as both act and object … . It does seem impossible to really separate the reddishness from the awareness of it, yet it also seems impossible to tell a coherent story about how this could be so."[58]

Levine takes the explanatory gap to be an epistemological problem rather than a metaphysical one. He holds that the existence of the explanatory gap shows that humans have no idea how to explain the emergence of phenomenal mental properties from the basic physical properties. According to him, this explanatory gap does not really support

the metaphysical conclusion that materialism is false. "From the fact that the phenomenal facts are not derivable a priori from the physical facts, it does not follow that the phenomenal facts are not realized by the physical facts…. there is still an important sense in which we can't really understand how it could be true."[59]

2.3. Ned Block: The Harder Problem of Consciousness

In his 2002 paper "The Harder Problem of Consciousness" Ned Block claims that there is an epistemic tension between phenomenal realism and naturalism. Phenomenal realists face an epistemic tension that they have no conception of a rational ground for believing that other creatures, who do not relevantly share our physical nature, are conscious or not.

Phenomenal realists regard consciousness as a real property that does not have logical ties to behavior.[60] and rejects armchair, philosophical-reductive analyses.[61] According to Block, naturalism is the view that it is a default that consciousness has a scientific nature. His description of naturalism is this. "…naturalism = default physicalism, and is thus partly an epistemic thesis…My naturalist is not a 'die-hard' naturalist, but rather one who takes physicalism as a default, a default that can be challenged. My rationale for defining 'naturalism' in this way is that this version of the doctrine is plausible, widely held, and leads to the epistemic tension that I am expositing."[62]

Block claims that the epistemic tension poses a problem for the naturalist phenomenal realist that is distinct from the hard problem. "The hard problem is one of explaining why the neural basis of a phenomenal quality is the neural basis of *that*

phenomenal quality rather than another phenomenal quality or no phenomenal quality at all. In other terms, there is an explanatory gap between the neural basis of a phenomenal quality and the phenomenal quality itself."[63] He argues that, "we can see a glimmer of hope for how a solution might one day be found."[64]

Block explains the distinction between the hard problem and the harder problem in the following way: "The *harder problem*, as I shall call it, is more epistemological than the hard problem. A second difference: the hard problem could arise for someone who has no conception of another person, whereas the harder problem is tied closely to the problem of other minds. Finally, the harder problem reveals an epistemic tension or at least discomfort in our ordinary conception of consciousness which is not suggested by the hard problem, and so in one respect is harder.[65]

Block makes use of the science fiction case of Commander Data, who is a merely superficial functional equivalent to us, equivalent to us in respect of folk-psychology, but not in neuropsychological functions. A *superficial functional isomorph* is a being "that is functionally isomorphic to us with respect to those causal relations among mental states, inputs, and outputs that are specified by 'folk psychology.'"[66] He says that such a being will share certain functional states with us. "A functional state is a kind of second-order property, one that consists in having certain first-order properties that have certain causes and effects."[67]

Block gives an example of a human-like robot, called Commander Data, and he asks us to consider Commander Data to be a superficial isomorph of us (ignoring his superior reasoning and inferior emotions). He offers the following formulation of the

harder problem: "…naturalism says the default is that Commander Data is not conscious, but phenomenal realism says that the issue is open in the sense of no rational ground for belief either way."[68]

Block divides the harder problem into two parts. The first part is that we have no conception of a rational ground for the belief that Commander Data is or is not conscious. He is physically different from us, so any science of consciousness that is based on us will be powerless to determine whether he is conscious or not. [69] The second part of the harder problem is that we cannot base a science of consciousness on him unless we already know he is conscious. So we have no idea what would be evidence for the belief that Data is conscious or not; Data's consciousness is meta-inaccessible.[70]

Block's idea about the meta-inaccessibility is that any science of consciousness that can generalize to other creatures must be based in part on them in the first place, but this cannot be done unless we already have discovered whether they are conscious or not. The idea about Commander Data prevents this discovery. "We have no conception of a ground of rational belief to the effect that a realization of our superficial functional organization that is physically fundamentally different along the lines I have specified for Commander Data is or is not conscious…..Not only do we lack a ground of belief, but we lack a conception of any ground of belief."[71]

Block says that while maintaining the above view, he does not maintain that we are cognitively closed to the physical conditions of phenomenal consciousness. He says: "I am not denying that we might someday come to have the conception we now do not have. (So I am not claiming—as McGinn does—that this knowledge can be known now

to be beyond our ken.) I am merely saying that, at this point, we have no idea of evidence that would ground rational belief, even a hypothetical or speculative conception."[72]

The harder problem for the naturalist-phenomenal realist is that we have no conception of how we could have rational grounds for believing that Commander Data is or is not conscious.

There are some differences between Chalmers' hard problem and Blocks' harder problem. "…the harder problem depends on the puzzling nature of multiple physical constitution of consciousness, a problem that does not naturally arise from the perspective that Chalmers recommends. Supervenience prohibits any mental difference without a physical difference, but multiple constitution is a physical difference without a mental difference."[73] Block holds that the harder problem includes or presupposes the hard problem. But the harder problem is more narrowly epistemic than the hard problem. He states that "The hard problem could arise for someone who has no conception of another person, whereas the harder problem is closely tied to the problem of other minds. Finally, the harder problem involves an epistemic tension not involved in the hard problem."[74]

Hence, in the context of doubts about the evidence of Commander Data is conscious or not, even if there are available explanations that identify phenomenal states with physical states of his brain. In this version, the problem posed by Block's premise about the meta-inaccessibility of Commander Data's phenomenality is therefore very hard. In contrast to the hard problem, it will not immediately go away once we have a conception of what explanations of phenomenality will be like.

2.4. John Searle: Ontological Irreducibility

In his book The Rediscovery of the Mind Searle claims that conscious minds are ontologically irreducible. At the same time he holds that it can causally be educible to neurophysiological processes in the brain. According to him "Mental phenomenon are caused by neurophysiological processes in the brain and are themselves feature of the brain."[75]

Searle's position differs from materialism and dualism. Materialism says truly, according to Searle, that the universe is entirely made up of physical particles that exist in a field of force and are often organized into systems. But it ends up saying falsely that there are no ontologically irreducible mental phenomena. For Searle, dualism tries to say truly that there are irreducible mental phenomena. But it ends up saying falsely that there is something apart from the ordinary physical world, i.e., that they is something over and above the physical world.

According to dualism consciousness is irreducible to third person neurobiological processes. In a similar way, Searle also argues that, consciousness is irreducible to third person neurobiological processes. However, the dualist takes this to imply that consciousness is not a part of the ordinary physical world, but is something over and above it. While what Searle says is that consciousness is causally reducible but not ontologically reducible. It is part of the ordinary physical world and is not something over and above it.[76]

For a better understanding let us examine how Searle defines different types of reductions.

1. Ontological reduction: Objects of one type are nothing but objects of another type. For example: chairs are nothing but collections of molecules. Ontological reduction is defined by Searle as the form in which objects of certain types can be shown to consist in nothing but objects of other types. Thus, for instance, chairs, pens and mountains (objects of one type) are shown to consist in nothing but collections of molecules (objects of other types). Ontological reduction is to be distinguished from causal reduction, which is "a relation between any two types of things that can have causal powers, where the existence and ... causal power of the reduced entity are shown to be entirely explainable in terms of the causal powers of the reducing phenomena."[77]

2. Property reduction: It is a form of ontological reduction, but it concerns properties. Example: temperature is mean molecular kinetic energy.

3. Theoretical reduction: Theoretical reduction is primarily a relation between theories, where the laws of the reduced theory can be deduced from the laws of the reducing theory. Example: reduction of the gas laws to the laws of statistical thermodynamics.

4. Logical or definitional reduction: Terms for macro properties or things are definable by means of terms for micro properties or things.

5. Causal reduction: The causal powers of the reduced entity are explainable in terms of the causal powers of the reducing entity. Searle explains causal reduction is as follows: "This is a relation between any two types of things that can have causal powers, where the existence and a fortiori the causal powers of the reduced entity are shown to be entirely explainable in terms of the causal powers of the reducing phenomena."[78]

Searle says that consciousness is caused by brain processes. He claims that consciousness supervenes on the brain. He distinguishes between two notions of supervenience: the constitutive notion of supervenience according to Kim and what he calls the causal conception. [79] He claims that only the causal conception of supervenience is required for understanding the mind/body problem. "There is nothing mysterious about such bottom-up causation; it is quite common in the physical world. Furthermore, the fact that the mental features are supervenient on neuronal features in no way diminishes their causal efficacy…. Once you recognize the existence of bottom-up, micro to macro forms of causation, the notion of supervenience no longer does any work in philosophy. The formal features of the relation are already present in the causal sufficiency of the micro-macro forms of causation."[80]

Searle argues that consciousness is causally reducible. Consciousness is entirely caused by neuronal processes, and it has no causal powers beyond those of the neuronal processes. Though consciousness is causally reducible, he denies that consciousness is ontologically reducible.

According to Searle, we cannot do an ontological reduction of consciousness to more fundamental neurobiological processes for the reason that consciousness has a subjective or first-person ontology. The neurobiological causal basis of consciousness has an objective or third-person ontology. We can't show that first person-ontology is nothing but third-person ontology.

Searle formulated his challenge to strong Artificial Intelligence in his paper 'Mind Brain and Program', published in 1980.[81] Ever since it has been a chief support debate over the possibility of what Searle called 'Strong Artificial Intelligence'. Strong Artificial Intelligence states that thinking is merely manipulations of formal symbols. Thus by designing the right kind of programmes with the right input and output, we can create conscious intelligence. In other words the computer is not merely a tool in the study of mind, rather, the programmed computer is a mind.[82]

On the other hand, Weak Artificial Intelligence holds the view that brain processes (and mental processes) can be simulated computationally. According to Weak Artificial Intelligence, the principal value of the computer is the study of the mind that it gives us a very powerful tool. Hence for the purpose of refuting Strong Artificial Intelligence, Searle introduces the Chinese Room Argument. It goes as follows:

A monoglot English speaking person is confined in a room containing a typewriter keyboard, a printer and an operation manual written in English. The keyboard is design to produce Chinese characters rather than letters of Roman alphabet. Outside the room, a monoglot Chinese speaking person has another such keyboard and printer, allowing him to sent messages written in Chinese in to the room. The Chinese speaker is

permitted to ask whatever questions he likes in these messages. On receiving the message, the English speaker inside the room has to consult the operation manual, which tells him what string of Chinese character to type out in response. Let us suppose that the manual has been so written that, when the Chinese speaker receives the responses to his questions, he is unable to distinguish them from those of a native Chinese speaker. In that case, it seems the Turing test has been passed. By the understanding of the test, the Chinese speaker outside the room ought to conclude that he is communicating with an intelligent inside the room. However the English speaker inside the room has no understanding of Chinese whatever. The implication is that passing the Turing test demands no understanding of the questions posed in the course of that test. Consequently, the test is not a test of genuine intelligence, since genuine intelligence does demand understanding.[83]

Now we are in a position to examine the Strong Artificial Intelligence claims in the light of this thought experiment. Strong Artificial Intelligence claims that the programmed computer understands the stories and that the program in some sense explains human understanding. As regards the first claim, it is obvious that, the English speaker doesn't understand a word of Chinese stories. He has inputs and outputs that are distinguishable from those of the native Chinese speaker, but still he understands nothing. As regard the second claim we can see that the computer and its program do not provide sufficient condition for understanding since the computer and program are functioning, and there is no understanding.[84]

The Chinese Room argument is based on the point that just manipulating the symbols is not by itself enough to guarantee cognition, perception, understanding, thinking and so forth.

2.5. David Chalmers: Consciousness is an addition to the physical world

In his 1996 book The Conscious Mind and in a series of related papers, David Chalmers argues that consciousness poses a problem different in kind from other scientific challenges. According to Chalmers, consciousness cannot be explained in physical terms, and therefore fails to find location in a materialist ontology.

Chalmers argues that for a phenomenon to gain location in a materialist ontology, it must logically supervene on the physical. According to Chalmers, "B-properties supervene logically on A-properties if no two logically possible situations are identical with respect to their A-properties but distinct with respect to their B-properties"[85]

Chalmers argues that we possess two distinct kinds of concepts that characterize the mind, psychological concepts and phenomenal concepts. "On the phenomenal concept, viz. mind is characterized by the way it feels; on the psychological concept, mind is characterized by what it does"[86] Psychological concepts characterize mental states in functional terms, in terms of perceptual inputs, behavioral outputs, and relations to other mental states. Phenomenal concepts characterize mental states in terms of subjective experience, in terms of what it is like for the subject to be in that state.

The psychologically characterized aspects can be reductively explained, because psychological characterizations provide the functional analyses necessary for reductive

explanation. However, Chalmers claims the phenomenal cannot be fully captured in a functional characterization. "The phenomenal element in the concept prevents an analysis in purely functional terms."[87]

According to Chalmers, reductionism require all facts supervene logically on microphysical facts. But how does Chalmers understand supervenience? Let us look at the different kinds of supervenience and his explanation of why consciousness is not logically supervenient on the physical.

Chalmers' definition of supervenience is the following: "B-properties supervene on A-properties if no two possible situations are indiscernible with respect to their A-facts while differing in their B-facts."[88] He explains the following kinds of supervenience.

1. Local supervenience: B-properties supervene locally on A-properties if the A-properties of an individual determine the B-properties about that individual—that is, if any two possible individuals that instantiate the same A-properties instantiate the same B-properties. For example, shape supervenes locally on physical properties: any two objects with the same physical properties will necessarily have the same shape.[89]

2. Global supervenience: B-properties supervene globally on A-properties, if the A-facts about the entire world determine the B-facts: that is, if there are no two possible worlds indiscernible with respect to their A-properties, but discernible with respect to their B-properties.

3. Logical supervenience: B-properties supervene logically on A-properties if no

two logically possible situations are identical with respect to their A-properties but distinct with respect to their B-properties.

According to Chalmers "A natural phenomenon is reductively explainable in terms of some lower-level properties if the property of instantiating that phenomenon is globally logically supervenient on the low-level properties in question. A phenomenon is reductively explainable *simpliciter* if the property of exemplifying that phenomenon is globally logically supervenient on physical properties."[90]

Chalmers presents five arguments to demonstrate that phenomenal consciousness fails to logically supervene on the microphysical properties. His first argument involves the conceivability of "zombies," creatures physically identical to us but which lack phenomenal consciousness. Chalmers argues that zombies are conceivable because nothing in the zombie case seems contradictory or incoherent. He writes "I confess that the logical possibility of zombies seems... obvious to me. A zombie is just something physically identical to me, but which has no conscious experience--all is dark inside. While this is probably empirically impossible, it certainly seems that a coherent situation is described; I can discern no contradiction in the description."[91]

If zombies are conceivable, then they are logically possible in Chalmers' sense. If zombies are logically possible, then the phenomenal does not logically supervene on the physical, because fixing the physical facts fails to fix the phenomenal facts. And if it does not logically supervene, it is not reductively explainable.

Chalmers second argument focuses on the possibility of the inverted spectrum. The inverted spectrum is the possibility that two creatures can be physically identical, and yet have systematically inverted phenomenal experiences. Chalmers claims that it is conceivable that there could be physical duplicates, one that experienced phenomenal red when stimulated by an apple while the other experienced phenomenal green, despite the fact that the stimulations and the perceivers were physically identical. If this is conceivable, then by Chalmers' definition, it is logically possible. If it is logically possible, then logical supervenience fails. Thus, phenomenal consciousness cannot be reductively explained.

Chalmers' third argument is that there is an epistemic asymmetry between our knowledge of consciousness and our knowledge of other things, an asymmetry that is absent with reductively explainable phenomena. The asymmetry is reflected in the so-called problem of other minds. Chalmers writes, "Even when we know everything physical about other creatures, we do not know for certain that they are conscious, or what their experiences are..."[92] Chalmers argues that this shows that consciousness does not logically supervene on the physical and thus consciousness is not reductively explainable.

The fourth case involves the so-called knowledge argument against physicalism (Nagel 1974; Jackson 1982). The argument features Mary, the color-deprived super-scientist. By hypothesis, Mary knows all the facts of a completed science, but has never seen red. Eventually, she gets her first glimpse of red. The question is, does she learn anything new? Chalmers argues that even though she has all the physical facts, Mary

lacks the facts about what it is like to see red. She learns these facts upon her release. As the physical facts do not entail the phenomenal facts, logical supervenience fails, and thus phenomenal consciousness is not reductively explainable.

Finally, Chalmers argues that "Although conscious states may play various causal roles, they are not defined by their causal roles. Rather, what makes them conscious is that they have a certain phenomenal feel, and this feel is not something that can be functionally defined away."[93]

Chalmers maintains the view that conscious experiences do not logically supervene on material facts. Thus he concludes that "….conscious experience is almost unique in its failure to supervene logically. The relationship between consciousness and the physical facts is different in kind from the standard relationship between high-level and low-level facts."[94]

The failure of phenomenal consciousness to logically supervene on the physical shows an explanatory problem. No matter what we find out about the physical and functional basis of the mind, we are still left with an open question: why are these processes accompanied by phenomenal experience? There is an explanatory gap between the physical and functional, and the phenomenal properties. Therefore, Chalmers concludes that consciousness poses a hard problem for reductive explanation.

Let us sum up this chapter by a quotation from Max Velmans famous article "Goodbye to Reductionism". He writes "reductionist accounts of consciousness *attempt to do something that cannot be done*. Examination of the brain from the outside can *only*

reveal the physical causes and correlates of consciousness. It can *never* reveal consciousness itself. Many phenomenal properties of conscious experience appear very different to those of brain states. Consequently, it is difficult to imagine what science *could* discover to demonstrate that experiences are *ontologically identical* to states of the brain…. If so, reductionism is dead within philosophy of mind. Let us wave it goodbye without tears. And hello to a non-reductionist science of consciousness, which takes phenomenology seriously, and does not ignore common-sense."[95] In the next chapter, I will try to build such kind of non-reductive theory of mind and consciousness.

Chapter V

A NON-REDUCTIVE THEORY OF MIND AND CONSCIOUSNESS

1. Introduction:

The main argument of this chapter is to show that naturalism cannot adequately account for consciousness. To establish naturalism's failure, I analyze various thought experiments put forward by recent philosophers. The analysis shows, why no naturalistic theory can adequately explain consciousness.

The failure of naturalism creates a puzzle regarding just what consciousness is and how it can be explained. In this context, I will consider whether liberal naturalism is a viable option. Liberal naturalists are those who accept naturalism without materialism. Here, I will critically examine Chalmers' theory of consciousness and the possibility of panexperientialism.

Naturalism takes science to be our guide to what exists. Therefore naturalistic theories of mind guided by the physical sciences always have some difficulties in making space for consciousness. Consciousness seems to us to be something that is essentially subjective. This resists the kind of objective descriptions of the mind we get from science. The subjective feature of consciousness seems to point to a limit in our scientific conception of the mind. It is undeniable that there is something subjective about our conscious mental life. Yet subjectivity looks to be something which escapes the scientific

descriptions of mind. Must we conclude, then, that science cannot be our only guide to what exists, and hence that naturalism is false?

As we discussed in the first chapter, naturalism comes in different versions. One version of naturalism is the idea that philosophical issues should be dealt with through the use of the methods of natural science. If this is accepted, and if it is true that following the methods of natural science leads plausibly to an approval of materialism, then at least some presupposition in favor of materialism might follow.

However, over the last fifty or so years, materialism has been challenged by a series of arguments: the multiple-realizability argument, the knowledge argument, the explanatory gap argument, the zombie argument, the absent qualia argument, the inverted spectrum argument, and many, many more. Taken together, these arguments and sophisticated variations on them constitute a significant threat to the success of materialism.

The series of arguments against materialism show that our naturalistic explanations of mind leave out what is essentially subjective about our experiences. I will argue that the explanatory gap is genuine, and the reason it exists is that naturalistic explanations of mind do not seem to make room for the existence of facts that essentially involve us as conscious subjects.

Thomas Nagel argues that any physicalist account of the universe, by being inherently objective, will leave out the subjective points of view. Nagel argues that this omission is reflected in the fact that even when we know all about the physiology of

creatures that are very different from us, we do not know what it is like to be them. Among others, Frank Jackson, Joseph Levine and David Chalmers have refined Nagel's guiding intuitions.

2. Locating the Explanatory Gap

Naturalist theories of mind have run into what Levine calls "an explanatory gap". So far no naturalistic theory of mind has succeeded in securing agreement as to why we have the kinds of conscious experiences we do, or indeed any at all. There is then a gap in the naturalist's account of mind, a gap which must be closed if the naturalist is to lay claim to having succeeded in locating the mind in the natural world.

One can argue that the appearance of the explanatory gap is due an obvious failure on the part of the naturalistic theories of mind to recognise the existence of consciousness. It can be argued drawing on Jackson's knowledge argument that there is a class of facts that can only be represented from a subject's point of view. It is subjective facts which appear to be missing from a naturalistic conception of reality. One of the claims that the non naturalists makes against naturalism is that a naturalistic conception of reality must fail to include subjective facts. Thus it will turn out that the explanatory gap is located at the very conception of reality which the naturalists entertain.

A naturalistic theory of mind must find a place for consciousness in the natural world. Yet it remains deeply puzzling to us how consciousness arises from the brain. As Colin McGinn has put it: "We know that brains are the *de facto* causal basis of consciousness, but we have, it seems, no understanding whatever of how this can be so. It

strikes us as miraculous, eerie, even faintly comic. Somehow, we feel, the water of the physical brain is turned into the wine of consciousness, but we draw a total blank on the nature of this conversion."[1]

There are many reasons for believing in the existence of an explanatory gap. The materialistic explanations of consciousness which are the naturalist's best explanations make this gap evident. These explanations seem to provide at best what Levine calls 'gappy identities'.[2] Many philosophers who are persuaded of the gap's existence have concluded that the materialistic explanations of mind cannot account for the nature of consciousness. Therefore, the explanatory gap follows from the materialist and naturalist form of explanation.

A naturalistic account of consciousness must account for the phenomenal characteristics of conscious experience. The nature of phenomenal consciousness is a formidable problem for the naturalistic philosophy of mind. Any naturalistic explanation ought to give us an answer to the question, how is consciousness possible in a natural world, yet there is no general agreement as to how an answer to these questions might go.

Many philosophers have claimed to be able to conceive of a person who are functionally and physically identical to us, but who enjoy nothing in the way of phenomenal consciousness. Chalmers calls them "zombies".[3] If we can conceivable such creatures, we will have to say that functional and physical explanations do not provide a satisfactory explanation of phenomenal consciousness.

Again, we can see that naturalistic accounts of the mind do not seem to give a

satisfying answer to this question by reflecting on the classic "inverted spectrum" thought experiments.[4] The situation these thought experiments describe is one in which two subjects are physically and functionally identical, but the two subjects experience coloured things in different ways. So it would seem our functional and physical explanations fail to explain a difference in the experiences the two subjects enjoy. This is a significant shortcoming in the kind of understanding a functional and physical explanation of phenomenal consciousness supplies.

Reductive explanations of phenomenal properties with functional or physical properties leave the question why our experiences should present the world as seeming a certain way. Functional and physical explanations of phenomenal properties supply what Levine calls 'gappy identity statements'. In the case of identities like "water = H_2O", it is unintelligible for us to ask for explanations of these identities. Our theory of H_2O molecules and the way in which they interact suffices as an explanation of water and its properties. There are no further facts about water and its identity with H_2O. Functional and physical explanations of phenomenal properties, however, differ from successful cases of reductive explanations like the reduction of water to H_2O. It is perfectly intelligible for us to ask, for instance, why a visual experience of a red rose should also instantiate phenomenal properties of redness rather than some other type of phenomenal property. We do not learn about the true nature of phenomenal properties from functional and physical explanations of mind because phenomenal properties and functional/physical properties are distinct kinds of properties.

Chalmers has tried to use a version of two-dimensional semantics to argue from

the conceivability of zombie worlds to the metaphysical conclusion that phenomenal properties are distinct from functional/physical properties. [5] When we conceive of zombie worlds we are truly conceiving of such worlds, and so we can conclude that zombie worlds are genuinely possible. Thus Chalmers shows that fixing the functional and physical facts of a world doesn't suffice to fix the phenomenal facts of this world.

Let us look Jackson's much discussed knowledge argument[6] which shows that there are some facts which we cannot learn from science. His knowledge argument invites us to imagine Mary, a colour scientist restricted to a black and white room for the duration of her life. The only coloured objects Mary has ever seen are things coloured black and white. Jackson also supposes that Mary has acquired complete knowledge of the physical facts. But, when she escapes from the black-and-white room Mary would learn what it is like to see colour things. She would learn something she didn't know before even though she knew all the microphysical facts there are to know. The knowledge argument shows that there are some facts in addition to those that science describes. More specifically there are facts which can only be represented from the subject's point of view.

The above arguments I have just sketched shows that there are some important facts that are missing from scientific explanations of consciousness. Arguments for an explanatory gap normally proceed to demonstrate that naturalistic explanations of mind fail to explain why things feel the way they do to us. When a subject knows what it is like to undergo an experience he knows something that can only be represented from his own point of view. According to these philosophers phenomenal conscious experience poses

a problem for naturalism. It is the facts that can only be represented from a subject's point of view which it is claimed a naturalist must leave out from his conception of reality.

Since naturalism takes science to be the measure of what there is, it will follow from this argument that naturalism can make no room for the subjective facts. It follows that there is a gap in the naturalist's account of the mind; what is missing from a naturalistic account of mind is any account of how there can be facts that essentially involve subjects of experience.

We are in a position now to see that there is an explanatory gap in the naturalistic account of consciousness. I think that there is something we will not learn from a complete scientific account of mind. There are facts that will be missing from a conception of reality formed by natural sciences.

3. Critique of Dennett's Naturalism.

Dennett's project is to explain consciousness without admitting phenomenal consciousness. According to him there is no such thing as phenomenal consciousness as an extra property of the world. His philosophy of mind follows the naturalist tradition: according to which the mind can be explained by science without admitting spiritual or metaphysical entities. On his view, we need only explain why people think there is phenomenal consciousness.

Dennett aims to dissolve rather than solve the problem of consciousness. His attack is specifically directed at the notion of qualia: the 'what it is like' aspect of

experience. He argues that the notion of qualia is confused and unintelligible.

Through a series of thought experiments, Dennett tried to prove that the conception of qualia is incoherent.[7] Since an incoherent concept cannot have an extension, the qualia, as conceived, cannot exist. Dennett criticize the four features of qualia: ineffable, intrinsic, immediate and private. Ineffability is that one can't know what it is like to have an experience of a certain sort unless one has had an experience of that sort. Intrinsicness is the claim that states of qualitative consciousness are properties of the subjects who have them. Immediacy is the claim that subjects are non-inferentially aware of the way things seem to them. The privacy of the states of consciousness is that others prevents from being in a qualitatively identical state of consciousness.

On Dennett's view there are no ineffable, intrinsic, private, directly apprehensible properties of experience. He says that qualia are just those complexes of dispositions. According to him, an explanation of consciousness would require only an account of mental content and an explanation of why it appears as if there is phenomenal consciousness. His series of thought experiments show that facts about qualia dissolve into unverifiable pseudo-facts.

Dennett's attack on qualia is the first move in the demolition of phenomenal consciousness. If successful, an explanation of consciousness would require 'only' an account of mental content (or representation) and an explanation of why it appears as if there is phenomenal consciousness. Let us take Dennett's example, the characteristic sound of a guitar. After simple training: "the homogeneity and ineffability of the first experience is gone, replaced by a duality as "directly apprehensible" and clearly

describable as that of any chord"[8] This appeals to and then threatens a kind of 'ineffability' that qualia need not possess. Dennett seems to confuse the indescribable with the ineffable. As William Seager puts it "Everything is describable, better or worse. An experience is ineffable when no description by itself yields knowledge of what it is like to have that experience."[9]

The elimination of phenomenal consciousness proceeds by showing that there is nothing which satisfies the set of properties definitive of qualia. Dennett deploys a series of thought experiments aiming to show that assumed facts about qualia dissolve into unverifiable pseudo-facts under pressure of philosophical investigation.

The strategy is very dangerous. Even if we could explain the entire activity of the brain, every neuron and every connection, we would still not have understood consciousness. It is explained by something different, something more than just the brain structure.

Dennett's series of thought experiments cannot prove that qualia in not private. For example, a physical system may be able to detect pain, but that is not the same as experiencing oneself as being in pain. It seems that Dennett's eliminativist strategy has failed. The various thought experiments cannot challenged the notion of qualia since they cannot challenge the very idea of oneself being in pain. Lucky for us, since if there were no qualia we would be entirely unconscious.[10] Dennett's arguments against qualia do not force us to abandon the notion and suggest that a positive account of qualitative consciousness is still necessary.

Dennett's project is to 'intentionalize' consciousness and to shows that phenomenal consciousness is an illusion. The first step of his project is to show how the brain produces and operates upon meaning or content. The second step - showing that phenomenal consciousness is, in a significant and entirely non-phenomenal sense, illusory - depends upon a series of verificationist thought experiments. These now aim to show that while 'there seems to be phenomenology', this is a mere "seeming". If one was better able to predict and explain the system's behaviour by describing it from the intentional stance, then that was all that was required. Adopting an intentional stance does not require the admission of qualia.

Dennett criticizes 'Cartesian Materialism'.[11] Cartesian materialism is the view that there is a crucial finish line or boundary somewhere in the brain, marking a place where the order of arrival equals the order of 'presentation' in experience because what happens there is what you are conscious of. This is important for Dennett, and he explicitly maintains that consciousness cannot be identified with particular types of brain states or processes.

Dennett gives a diachronic account of consciousness for explaining intentionality in terms of the prior causal processes of natural selection. He admits that genes are too stupid to design anything. In fact, they are merely the beneficiaries of the design process. But then who or what does the designing? Mother Nature, the long, slow process of evolution by natural selection.

According to Dennett, human intentionality is real, but it is not original, for "we must recognize that it is derived from the intentionality of natural selection, which is just

as real."[12] Since our intentionality is derived, we do not have some privileged authorial knowledge of what we really mean.

As Searle has pointed out, intentionality is the general term for all the various forms in which the mind can be directed at the states of affairs in the world. As he points out, the location of intentionality in natural selection is highly unpromising, because the intentional standards are inherently normative, but there is nothing normative or teleological about Darwinian evolution.[13]

Dennett's model is able to explain many problems within the psychological aspect of mind. However, the rejection of conscious experience does not follow from his model. Consciousness is a fundamental feature of the world. All other properties may be reducible to the basic properties, but the basic properties do not reduce to anything else. We can characterize Dennett's naturalism as 'scientific naturalism', the thesis that science and science alone should dictate the terms of our ontology. Chalmers defends an alternative, 'liberal naturalism', that insists that there is a space of reasons that cannot be understood exhaustively in scientific terms.[14]

4. Liberal Naturalism as a solution to the problem of consciousness

If physicalism is false, we must look for an alternative way to place conscious experience in the universe. The alternative I explore in this section is a version of Liberal Naturalism. Liberal Naturalism is the view that "nature is built on a single fundamental kind, and, if so, that some aspects or properties of this fundamental natural kind are not physical."[15] Liberal Naturalism has weaker metaphysical commitments than physicalism.

It may be that the physical description of the brain states associated with consciousness is an incomplete account of their essence and that it is merely the outside view of what we recognize from within as conscious experience. If anything like that is true, then our present conceptions of mind and body are radically inadequate to the reality, and do not provide us with adequate tools for a priori reasoning about them.

Liberal Naturalism holds that the world is probably composed from a single fundamental kind of thing. This fundamental kind of thing has a set of fundamental properties that are mutually related in a coherent and natural way by a single set of fundamental laws. Liberal Naturalism also holds that some of these properties and laws are not physical properties and laws. What ties the physical and nonphysical together is a deeper kind of thing of which they are both aspects.[16]

In Chalmer's view, consciousness cannot be reductively explained, but there can still be a theory of consciousness which is a non-reductive one. That is, we need to give up trying to explain the existence of consciousness wholly in terms of something more basic, and instead admit it as fundamental, giving an account of how it relates to everything else in the world. [17] Such a theory of consciousness will be similar in kind to the theories of matter, motion, or space and time. Its essence would be a set of psychophysical laws governing the relationship between consciousness and physical systems.

5. Critique of Chalmers' Naturalism.

Let us examine Chalmers' theory of consciousness. His attempt is to formulate a

naturalistic and yet non-reductive approach to consciousness. According to him, there is an explanatory gap between physical processes and conscious experience and we need some extra ingredient for explaining consciousness. He argues for a careful attention both to physical processing and to phenomenology so as to find systematic regularities between the two and explain the connection between the two in terms of a simple set of fundamental laws.[18] The new fundamental principles postulated by a non-reductive theory give us the extra ingredient that we need to build an explanatory bridge. In this way we may eventually arrive at a truly satisfactory theory of conscious experience.

According to Chalmers, the problems about consciousness are distinct from those regarding the physical facts. Physical descriptions of the world characterize the world in terms of structure and dynamics. From truths about structure and dynamics, one can deduce only further truths about structure and dynamics. For example, in Jackson's thought experiment Mary could know from her black-and-white room all about the spatiotemporal structure and dynamics of the world at all levels, but this will not tell her know what it is like to see red.

If consciousness is not necessitated by physical truths, then there must be ontologically fundamental features of the world over and above the features characterized by physical theory. Some features of the world are fundamental: in physics, features such as space-time, mass, and charge, are taken as fundamental and are not further explained. So, Chalmers argues, we can expect that there will be some sort of fundamental principles - psychophysical laws - connecting physical and phenomenal properties.

But what is the character of these laws? An immediate worry is that the

microphysical aspects of the world are often held to be causally closed, in that every microphysical state has a microphysical sufficient cause. How are fundamental phenomenal properties to be integrated with this causally closed network?

There are three main options for the liberal naturalists:

a) Interactionism: According this view, physical states cause phenomenal states, and phenomenal states cause physical states. But this leads to the 'problem of interactionism'. How can an immaterial mind cause anything in a material body, and vice-versa?

b) Epiphenomenalism: According this view, physical states cause phenomenal states, but not vice versa. On this view, psychophysical laws run in one direction only, from physical to phenomenal.

c) Naturalistic Dualism: According this view, consciousness is constituted by the intrinsic properties of fundamental physical entities. On this view, phenomenal properties are located at the fundamental level of physical reality. The problem with this view is: what are the intrinsic properties of fundamental physical systems? There is another problem: how can the phenomenal properties be integrated with the physical world? Chalmers tries to fit the physical properties and the phenomenal properties in the natural order with the help of three basic laws of consciousness.

1. The principle of structural coherence: According to the first law, there is a lawful connection between consciousness and its material basis. It is this connection that constitutes the principle of structural coherence. The task of a science of consciousness, as Chalmers claims, is to systematically integrate two classes of data into a scientific

framework: *third-person data*, or data about access consciousness and *first-person data*, or data about phenomenal consciousness. If these projects succeed, then we will have general principles connecting third-person data with the first-person data. But these general principles are not yet the fundamental principles. The principles might still be quite complex, limited to specific aspects of consciousness, and limited to specific species. According to Chalmers, a science of consciousness consisting of wholly different principles for different aspects of consciousness and different species would not be entirely satisfactory.

II. The principle of organizational invariance: According to the second law, any two systems with the same fine-grained *functional organization* will have qualitatively identical experiences. Chalmers calls this view the nonreductive functionalism. On this view consciousness arises from a physical system but is not a physical state.

III. The double-aspect theory of information: According to Chalmers, the above two principles are *non-basic* principles. What is further needed are *basic* principles that fit these constraints and that might ultimately explain them. Chalmers speculates that they might involve the notion of information.

In the notion of information space Chalmers sees the link between the physical and phenomenal: "when an experience realizes an information state, the same information state is realized the experience's physical substrate."[19] Chalmers finds the notion of information is a natural candidate to play a role in a fundamental theory of consciousness. We are led to a conception of the world to which information is truly fundamental, and in which there are two basic aspects, corresponding to the physical and

the phenomenal features of the world.

This leads to the view that wherever there is a causal interaction, there is information, and wherever there is information, there is experience. This may be called panexperientialism. It is counterintuitive that wherever there is causal interaction there is experience. It is difficult to accept that every causal state has an information state and every information state is a state of consciousness.

We have yet another problem: which information states actually yield consciousness, and why/how just those? According to William Seager, "Since information so conceived obeys the principle of causal grounding it is not itself a fundamental feature of the world….Of course, on the usual understanding of 'information', it is most certainly not a fundamental feature of the world and thus is not an obvious partner of consciousness conceived as an absolutely fundamental feature of the world."[20]

According to Chalmers, protophenomenal properties would be fundamental nonexperiential, nonphenomenal properties. By hypothesis, in proper combination protophenomenal properties could become experienced phenomenal properties. Chalmers leaves open what contexts can provide the proper combination. [21]

Liberal naturalists are searching for something fundamental in nature. Fundamental laws of nature govern the behavior of fundamental things. The kinds of laws they are looking for are on the same level as those governing gravitation, motion, and mass. But the question is: how can the quantitative laws of physics be on the level as

the laws of the phenomenal field? Can both sorts of law be equally fundamental?

6. The possibility of panexperientialism:

According to the liberal naturalism, the world has a fundamental aspect that we must understand if we are to understand the qualitative character of our mental lives. To make sense, liberal naturalists have to introduce some extra fundamental natural laws or principles to explain the relation between the physical facts and the facts of experience. If these laws are fundamental, then, it is not plausible that neuroscience and psychology are the right places to look for clues about consciousness.

Panexperientialism is the view that experience exists throughout nature. Is panexperientialism even possible? According to Seager, there are five serious reasons for rejecting panexperientialism. [22]

1. The Combination Problem: Even if we grant that all elements of reality have some kind of mental, conscious aspect to them, how is it that some groups of such elements form higher level and unified states of consciousness?

2. The Unconscious Mentality Problem: What is the secret ingredient that turns certain combinations of utterly unconscious mental elements into complex states of consciousness?

3. The Completeness Problem: The physical world view as presented by and in fundamental physics seems to be causally complete. But a truly irreducible, basic feature of the world ought to make a causal difference to the world.

Thus panexperientialism would seem to threaten a plausible doctrine of physical causal closure.

4. The No Sign Problem: There appears to be no direct evidence whatsoever that every element of reality is associated with a conscious aspect.

5. The Not-Mental Problem: Even supposing there was some evidence for a fundamental, non-physical property that pervaded the world and had some kind of causal influence upon events, why would we call it a mental property? (In particular, why not call it a new kind of physical property?) [23]

The view that consciousness is a fundamental feature of the world is attractive. But, from the above objections we are force to reject panexperientialism. Then, what is our next choice?

A proposal that seems to meet the challenge ties consciousness to biology by specifying that only biological systems reaching a certain level of complexity can be conscious. Searle has defended a position something like this. [24] He believes in intrinsic biological unities that are mirrors of phenomenal unity. Consciousness is a natural feature or higher order function of the brain. Thus, for him, there are no two separate ontological realms, matter and mind, but rather there is only matter with consciousness being a higher order feature or property of matter.

According to some philosophers, consciousness is not simply one kind of biological property with no deeper question than that raised by the nature of digestion or the like. Collin McGinn argues that to be in a conscious state is not just to be in a certain

sort of neural state or a state defined by causal role. According to Gregg Rosenberg, "the biological markers for given experiences will not support the events underlying a unique kind of experience. Much more plausibly, at different times the same biological objects will support different kinds of experiences by participating in different kinds of events. If it turns out that a neuron's firing as part of a "blue qualia" event is not significantly biologically different from its firing as part of a "purple qualia".[25] These kinds of considerations can yield reason for rejecting the biological theory.

Normally naturalization only requires that we be able to see how the world as described in natural (especially basic physical) terms could act so as to sustain a characterization in the target non-natural terms. But this won't work in the case of consciousness. Let's suppose that science comes to see how the brain produces the kind of behaviour that generally underwrites the attribution of consciousness. This might tell us that brains, perhaps even certain features or parts of brains, are the source of consciousness. None of this will tell us why and how these brain features generate conscious experience. McGinn has provided particular arguments based on possible limitations of human cognitive capacity that a naturalizing explanation of the how and why of consciousness is impossible, or, at least, unattainable by us.[26] Mysterianism grows out of a persistent failure to naturalize consciousness.

According to Seager, "It is not for consciousness to be integrated with science; the emphasis must be the other way around. Science has to be integrated with consciousness, but it is not clear that there is any way to naturalize consciousness."[27] This is similar to Husserlian phenomenological standpoint. Let us have a brief look about the Husserl's

phenomenological project.

7. Phenomenology as a solution to the problem of consciousness

Phenomenologists offer descriptions of our conscious experience as it is experienced by us. What these descriptions uncover are ways in which our experience must be structured or organised if we are to experience the kinds of objects we do. The phenomenologist thinks there are questions that arise prior to any merely empirical question. These are questions concerning the conditions that must be in place if we are to have any experience of an objective world at all.

Husserl's phenomenology has as its goal, the description of various conditions that are necessary and sufficient for an objective world to be experienced and thought about by us.[28] His phenomenology locates these conditions within a subject's consciousness. Husserl rejects naturalism because it fails to recognise the constitutive role he thinks consciousness plays in giving us perceptual experiences of an objective reality.

Husserl's critique of naturalism is to be found in his 1911 essay, 'Philosophy as a Rigorous Science'. [29] Husserl regards naturalism both as the dominant theoretical outlook of his age and also as deeply embedded in our ordinary assumptions about the world surrounding us. In other words, our pre-theoretical engagement with the world has an inbuilt bias towards naive naturalism.

If phenomenology is to be a science, the phenomenologist must begin by setting aside all propositions whose truth he has not established for himself. He must accept no

propositions as true that he has not discovered to be absolutely grounded in evidence. Husserlian phenomenologist describes how we achieve a sense or understanding of an objective reality while appealing to nothing but the contents of consciousness. On this understanding of Husserl, consciousness contains conditions both necessary and sufficient for a subject to have a sense of an objective reality.[30]

Husserl held that our conscious mental states have their intentionality intrinsically. It is this discovery that consciousness is intrinsically intentional which is the central claim of Husserl's phenomenology. Husserl's phenomenology studies the process by which consciousness constitutes its intentional objects while bracketing the objects of our thoughts and experience.

Husserl argument against naturalism is, in essence, that we cannot use the theories of the natural sciences to explain the intentional directedness of our conscious mental states. We cannot appeal to the elements of which the natural world is composed to account for the existence of consciousness. It is consciousness and the intentional mental states of which it is composed that explain the existence of the natural world for us and not other the other way round. In his Ideas 1 Husserl tells us that: "Reality is not something absolute which becomes tied secondarily to something else; rather in the absolute sense, it is nothing at all…it has the essentiality of something which, of necessity, is only intentional, only an object of consciousness."[31]

Naturalists say that science is our guide to what there is and what there is not. Naturalists assumes that there is a world that is there anyway which is available for study by science. Husserl says we have a sense of an objective reality only because our

thoughts and experiences are intrinsically intentional. The world the scientist describes is available to us only because our thoughts and experiences have intrinsic intentionality. Insofar as the naturalist presupposes that there is a world there anyway that is available for scientific study, Husserl thinks we must also presuppose the conditions which make it possible for our thoughts and experiences to achieve a relation to such a world.

In 'Philosophy as a Rigorous Science', Husserl explicitly identifies and criticises the tendency of all forms of naturalism to seek the naturalisation of consciousness and of all ideas and norms. In contrast to the outlook of naturalism, Husserl believed all knowledge, all science, all rationality depended on conscious acts, acts which cannot be properly understood from within the natural outlook at all. Consciousness should not be viewed naturalistically as part of the world at all, since consciousness is precisely the reason why there was a world there for us in the first place. For Husserl it is not that consciousness creates the world in any ontological sense-this would be a subjective idealism, itself a consequence of a certain naturalising tendency whereby consciousness is cause and the world its effect-but rather that the world is opened up, made meaningful, or disclosed through consciousness.

8. Towards a Non-naturalist theory of Consciousness.

If we take phenomenological model in the present context, we can consider consciousness as a fundamental reality co-exists with the material world, but not causally conditioned by it. Consciousness is there already. Without it there is no science and no projects of naturalization. Only through consciousness is the world revealed to itself. Naturalizing consciousness is akin to expect to see consciousness take an ordinary place

in the scientific world picture. It is "like expecting to be able to see one's own eyes, directly and without the aid of any imaging equipment."[32]

Let us conclude with the idea that the solution to the problem of consciousness requires a radical approach. In such an approach consciousness figures as an absolutely fundamental feature of the world, which is realized in the functional architecture of the world but not derived from it by the so-called psychophysical laws. If we pursue the idea that consciousness is a fundamental feature of the world, and not reducible to the physical states, then we must look even beyond Chalmers' liberal naturalism.

CONCLUSION

I have been arguing that naturalistic accounts of the mind have run into an explanatory gap because they have failed to recognize the existence of subjective facts. So far no naturalistic theory of mind has succeeded in securing agreement as to why we have the kinds of conscious experiences we do, or indeed, any at all.

There are many reasons for believing in the existence of an explanatory gap. The materialistic explanations of consciousness which are the naturalist's best explanations make this gap evident. Many philosophers who are persuaded of the gap's existence have concluded that the materialistic explanations of mind cannot account for the nature of consciousness. I argue that the appearance of the explanatory gap is due an obvious failure on the part of the naturalistic theories of mind to recognise the existence of consciousness.

The failure of naturalism creates a puzzle regarding just what consciousness is and how it can be explained. In this context, I considered liberal naturalism as a viable option. Liberal naturalists are searching for something fundamental in nature. Fundamental laws of nature govern the behavior of fundamental things. The kinds of laws they are looking for are on the same level as those governing gravitation, motion, and mass.

If we take consciousness as fundamental, then panexperientialism is a necessary consequence. The view that consciousness is a fundamental feature of the world is attractive. But, from a series objections we have examined, are force to reject

panexperientialism.

Then, I considered a proposal that seems to meet the challenge by tying up with consciousness to biology by specifying that only biological systems reaching a certain level of complexity can be conscious. According to some philosophers, consciousness is not simply one kind of biological property with no deeper question than that raised by the nature of digestion or the like. These kinds of considerations can yield reason for rejecting the biological theory.

Then, I considered Husserl's phenomenological project. Husserl describes various conditions that are necessary and sufficient for an objective world to be experienced and thought by us. His phenomenology studies the processes by which consciousness constitutes its intentional objects while bracketing the objects of our thoughts and experience. If we take phenomenological model in the present context, we can consider consciousness as a fundamental reality co-existent with the material world, but not causally conditioned by it. Consciousness is there already. Without it there is no science and no projects of naturalization. Only through consciousness is the world revealed to itself.

I concluded with the idea that the solution to the problem of consciousness requires a radical approach. In such an approach consciousness figures as an absolutely fundamental feature of the world, which is realized in the functional architecture of the world but not derived from it by the so-called psychophysical laws. If we pursue the idea that consciousness is a fundamental feature of the world, and not reducible to the physical states, then we must look even beyond Chalmers' liberal naturalism.

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SYNOPSIS

Naturalism is the view that everything that exists belongs to the realm of nature. Naturalism entails that non-natural causes of events within the natural world - that is, supernatural causes do not exist. Most naturalists would agree that naturalism at least entails that nature is a closed system determined by the causal laws. It also holds that human beings come into being as a result of natural processes.

One version of naturalism is the idea that philosophical issues should be dealt with through the use of the methods of natural science. If this is accepted, and if it is true that following the methods of natural science leads plausibly to an approval of materialism, then at least some presuppositions in favor of materialism might follow.

The naturalistic theories of mind guided by the physical sciences always have some difficulties in making space for consciousness. Consciousness seems to us to be something that is essentially subjective. This resists the kind of objective descriptions of the mind we get from science. The subjective feature of consciousness seems to point to a limit in our scientific conception of the mind. It is undeniable that there is something subjective about our conscious mental life. Yet subjectivity looks to be something which escapes the scientific descriptions of mind.

Naturalism and its various offshoots have dominated contemporary philosophy in general and philosophy of mind in particular. Therefore the objective methods of science

have been applied to the study of all phenomena, including the mental phenomena. The naturalist theories of mind and the world have dominated the contemporary philosophy of mind.

In philosophy of mind the naturalistic views have been prominent and highly controversial in recent times. Many theorists hold that the categories, concepts, and vocabulary needed to explain consciousness, experience, thought, and language are those of the natural sciences. This view comes from a number of directions, including developments in biological sciences, linguistics, artificial intelligence, and cognitive science. To many theorists the mind is as fully a part of nature as anything else.

There are various versions of naturalism in the philosophy of mind. Eliminative Materialism (Paul Churchland), Multiple Draft Model (Daniel Dennett), Biological Naturalism (John Searle), Transcendental Naturalism (Colin McGinn), and Naturalistic Dualism (David Chalmers) are some examples of naturalistic theories of mind. Of these some are strongly naturalistic while others are less strongly so.

Paul Churchland and Daniel Dennett are the supporters of 'strong naturalism', the thesis that science and science alone should dictate the terms of our ontology. Eliminative materialism claims that our ordinary, commonsense understanding of the mind is deeply wrong and that some or all of the mental states posited by commonsense do not actually exist. For Churchland, cognition should be understood as a complex collection of vector-to-vector transformations of neural activation patterns in the brain. In these transformations, consciousness appears to play no role.

There are some philosophers who argue that physicalism cannot adequately account for consciousness. Let us call them the 'weak naturalists'. By using series of thought experiments, the weak naturalists aim to show that there is no entailment from physical facts to facts about conscious experience.

My thesis has five chapters. In chapter 1 I set out what I understand to be the commitments of naturalism. I sketch various forms of naturalistic theories in the philosophy of mind. Then, I go on to present various arguments against materialism. The series of arguments against materialism show that our naturalistic explanations of mind leave out what is essentially subjective about our experiences. Then, I examine Searle's biological naturalism and McGinn's transcendental naturalism as a solution to the mind-body problem.

According to Searle, consciousness is a biological phenomenon common to humans, and higher animals. He calls his theory "Biological Naturalism" because it emphasizes that the right level to account for the very existence of consciousness is the biological level. We do not know the exact process of the brain, but we know that the processes that produce it are neuronal processes in the brain. By "Naturalism", Searle means that consciousness is part of the natural world along with other biological phenomena such as photosynthesis, digestion or mitosis.

Collin McGinn argues that to be in a conscious state is not just to be in a certain sort of neural state or a state defined by its causal role. He argues that for solving the problem of consciousness we lack the concepts needed to close the "explanatory gap" between spatially situated brain processes and a non-spatial conscious experience. They

must be radically different properties, of a kind we deeply do not understand. He calls his view the Transcendental Naturalism. Transcendental naturalism accepts the full reality of consciousness, but disputes our ability to find this explanation. Consciousness has an epistemologically transcendent natural essence. According to him, we have no clue about consciousness. However, he shows that we have a clue about why we have no clue about consciousness.

Chapter 2 presents Chalmers' theory of consciousness. Chalmers attempts to formulate a naturalistic and yet non-reductive approach to consciousness. According to him, there is an explanatory gap between physical processes and conscious experience and we need some extra ingredient for explaining consciousness. He argues for a careful attention both to physical processing and to phenomenology so as to find systematic regularities between the two and explain the connection between the two in terms of a simple set of fundamental laws. The new fundamental principles postulated by a non-reductive theory give us the extra ingredient that we need to build an explanatory bridge. In this way we may eventually arrive at a truly satisfactory theory of conscious experience.

In Chalmers' view, consciousness cannot be reductively explained, but there can still be a theory of consciousness which is a non-reductive one. That is, we need to give up trying to explain the existence of consciousness wholly in terms of something more basic, and instead admit it as fundamental, giving an account of how it relates to everything else in the world.

Chapter 3 presents Dennett's theory of consciousness. Dennett's project is to explain consciousness without admitting phenomenal consciousness. According to him, there is no such thing as phenomenal consciousness as an extra property of the world. On his view, we need only explain why people think there is phenomenal consciousness.

Dennett aims to dissolve rather than solve the problem of consciousness. His attack is specifically directed at the notion of qualia i.e., the 'what it is like' aspect of experience. He argues that the notion of qualia is confused and unintelligible. Through a series of thought experiments, Dennett tried to prove that the conception of qualia is incoherent.

Dennett's attack on qualia is the first move in the demolition of phenomenal consciousness. If successful, an explanation of consciousness would require 'only' an account of mental content (or representation) and an explanation of why it appears as if there is phenomenal consciousness. He criticizes 'Cartesian Materialism'. Cartesian materialism is the view that there is a crucial finish line or boundary somewhere in the brain, marking a place where the order of arrival equals the order of 'presentation' in experience because what happens there is what you are conscious of. This is important for him, and he explicitly maintains that consciousness cannot be identified with particular types of brain states or processes.

Dennett gives a diachronic account of consciousness for explaining intentionality in terms of the prior causal processes of natural selection. He admits that genes are too stupid to design anything. In fact, they are merely the beneficiaries of the design process.

Chapter 4 describes various reductive and non-reductive positions in the philosophy of mind. Reductionism is an approach to understand the nature of complex things by reducing them to the processes from which they are composed. The aim of reduction is to show that some phenomena are resultants of more fundamental things.

Ernest Nagel conceptualizes the reduction between two theories in terms of one theory explaining the other. He holds that reduction consists in the derivation of the reduced theory T2 from a reducing theory T1. On his approach, logical derivability is fundamental to any theory of reduction. If no such derivability can be established between the two theories, there is no reduction between them. Given these difficulties with the Nagelian approach to reduction, a different model is in order. Fodor offers this model.

Instead of classical reductionism, Fodor offers an alternative, less strict account of the relation of the special sciences to physics, and defends a corresponding weaker claim: *token physicalism.* He proposes a new account of how physics is related to the special sciences. His view is that any event that falls under any scientific law also falls under a law of physics, and is therefore a physical event.

For refuting Fodor's disunity of psychology, Jaegwon Kim offers a new method called the local reduction. Kim holds that mental properties are determined by, or supervenient on, underlying physical properties. Kim's claim is that if mental properties are multiply realizable, mental kinds are not causal kinds, and hence are disqualified as proper scientific kinds. And at the same time he maintains that mental properties are

locally nomic. His view is that multiple local reductions, rather than global reductions, are the rule, even in areas in which we standardly suppose reductions are possible.

Paul Churchland and Patricia Churchland are the proponents of eliminative materialism. They claim that the irreducible features of the mind do not exist. They are simply illusions. They argue that there is no need for a reduction of mental states, because mental states, as described by commonsense psychology, do not really exist. According to this view a complete neuroscience will one day displace all the folk concepts.

The argument from multiple realizability entered the scene and appeared to block both theory reduction and the type identity theory. Multiple realizability arguments seemed plausible, and provided the philosophical justification for the autonomy and irreducibility of the mental states. Some philosophers like Thomas Nagel, Joseph Levine, Ned Block, John Searle, Chalmers, etc. have argued in different ways that the reductive approach cannot be applied to solve the problem of mind. We cannot use physical phenomena to thoroughly explain mental phenomena. Thus, we cannot reduce mental concepts to physical concepts.

Reductionists philosophers use several examples from science, like water = H_2O or lightning = electrical discharges etc for establishing the success of reduction. According to Nagel, the usual examples do not help us to understand the relation between mind and body. At present, we have no conception of what an explanation of the physical nature of a mental phenomenon would be. Nagel's argument is that any reductive analysis of the mental is logically compatible with the absence of the subjective character

of experience. Therefore, any reductive analysis of the mental would fail to capture the subjective character of experience.

Joseph Levine argues that consciousness still poses a special epistemological problem for a reductive science of the mind. According to him, no matter how much we know about neurophysiology, the argument goes, the qualitative character of pain is not explained, and there remains an explanatory gap.

Ned Block presents a 'harder problem of consciousnesses'. He claims that there is an epistemic tension between phenomenal realism and naturalism. Phenomenal realists face an epistemic tension that they have no conception of a rational ground for believing that other creatures, who do not relevantly share our physical nature, are conscious or not.

John Searle argues that consciousness is causally reducible. Consciousness is entirely caused by neuronal processes, and it has no causal powers beyond those of the neuronal processes. Though consciousness is causally reducible, he denies that consciousness is ontologically reducible. According to him, we cannot do an ontological reduction of consciousness to more fundamental neurobiological processes for the reason that consciousness has a subjective or first-person ontology. The neurobiological causal basis of consciousness has an objective or third-person ontology. We cannot show that first person-ontology is nothing but third-person ontology.

Chalmers argues that the failure of phenomenal consciousness to logically supervene on the physical shows an explanatory problem. No matter what we find out about the physical and functional basis of the mind, we are still left with an open question: why are

these processes accompanied by phenomenal experience? There is an explanatory gap between the physical and functional, and the phenomenal properties. Therefore, Chalmers concludes that consciousness poses a hard problem for reductive explanation.

In Chapter 5 I offer a critical evaluation of Chalmers' and Dennett's naturalistic theories of mind. Naturalism cannot adequately account for consciousness. The series of arguments against materialism show that our naturalistic explanations of mind leave out what is essentially subjective about our experiences. I argue that the explanatory gap is genuine, and the reason it exists is that naturalistic explanations of mind do not seem to make room for the existence of facts that essentially involve us as conscious subjects.

Dennett's model is able to explain many problems within the psychological aspect of mind. However, the rejection of conscious experience does not follow from his model. Consciousness is a fundamental feature of the world. All other properties may be reducible to the basic properties, but the basic properties do not reduce to anything else.

To establish naturalism's failure, I analyze various thought experiments put forward by recent philosophers. The analysis shows, why no naturalistic theory can adequately explain consciousness. Then, I consider whether liberal naturalism is a viable option. Liberal naturalists are those who accept naturalism without materialism. Here, I critically examine Chalmers' theory of consciousness and the possibility of panexperientialism.

Then, I consider Husserl's phenomenological project. Husserl describes various conditions that are necessary and sufficient for an objective world to be experienced and thought by us. His phenomenology studies the process by which consciousness

constitutes its intentional objects while bracketing the objects of our thoughts and experience.

Husserl argument against naturalism is, in essence, that we cannot use the theories of the natural sciences to explain the intentional directedness of our conscious mental states. We cannot appeal to the elements of which the natural world is composed to account for the existence of consciousness. It is consciousness and the intentional mental states of which it is composed that explain the existence of the natural world for us and not other the other way round.

The last part of chapter 5 looks towards a non-naturalist theory of consciousness. If we take phenomenological model in the present context, we can consider consciousness as a fundamental reality co-exists with the material world, but not causally conditioned by it. Consciousness is a fundamental reality.