UNIVERSITY OF CAPE COAST

A CRITICAL STUDY OF DAVID CHALMERS' CONCEPTION OF THE MIND

JAHAZIEL OSEI MENSAH

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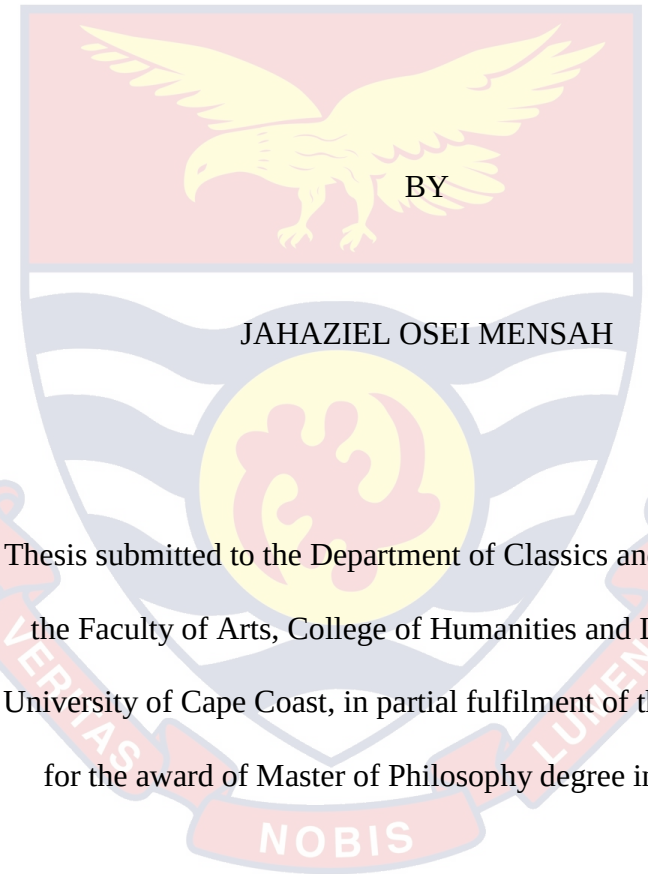

BY

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JULY, 2020

DECLARATION

Candidate's declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature……..……..…..…Date……

Name: ……..……

Supervisor's Declaration

We hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervisions of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature……..……..Date..…….……..

Name: ……..…….

Co-Supervisor's Signature……..…… Date……..

Name: ……..

ABSTRACT

Consciousness is a mysterious phenomenon that has perplexed the field of philosophy, psychology and neuroscience. Due to the subjective and intrinsic nature of consciousness, it has been challenging to establish an objective theory of consciousness. Diverse perspectives and theories have been posited to help resolve this philosophical conundrum. One peculiar perspective theorised on consciousness is David Chalmers' position on the subject. David Chalmers posits the need for a fundamental theory of consciousness. He believes that consciousness cannot be understood, entirely, by appealing to facts about the physical world. A fundamental theory of consciousness should be established because even though consciousness ontologically depends on brain states to exist, it does not conceptually depend on the brain. One intriguing aspect of Chalmers' work is that he enriches the previous arguments for the relevance of consciousness by adding logical force to the arguments, through the use of logical supervenience theory. He submits five arguments to reject the reductive materialists' perspective on consciousness. This study lays out Chalmers' arguments for the fundamental nature of consciousness. It also discusses the arguments the reductive materialists propound for the fundamental nature of the physical (brain). Having articulated these two perspectives regarding consciousness, the study presents an evaluation of Chalmers' arguments and the arguments posited by the reductive materialists. Finally, I suggest four criteria one could use to construct a plausible theory of consciousness that might address Chalmers' concerns. Any theory of the mind that meets these criteria will hopefully improve our understanding of consciousness.

KEYWORDS

Consciousness

Dualism

Mind

Materialism

Reductive

Supervene

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DEDICATION

To my parents: Mrs. Comfort Mensah and Mr. Richard Mensah.

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CHAPTER ONE

INTRODUCTION

Background to the Study

Does the mind exist? Does consciousness exist? Is the mind independent of the brain or are they basically the same thing? Do physical states cause mental states or do mental states cause physical states? Is it possible for us to reconcile consciousness and other mental states with physical states? Since time immemorial, several philosophers, neuroscientists and psychologists have made attempts to answer these questions. One group of thinkers have the perception that the mind or mental states are autonomous of brain or physical states. This group of thinkers are known as mentalists. Another group, the materialists, theorize the autonomy and the fundamental nature of the physical, while the third group, the dualists, agree with the claims made by both the materialists and the idealists. They assert the existence of both mental and physical states. Property dualism, substance dualism, materialism and idealism, are among several theories that have tried and continue to try to resolve the controversies that arise in the philosophy of mind, particularly, concerning mental states and physical states. I hold materialism to be the most plausible theory on the nature of the mind. Thus, the mind-brain identity theory will be the main focus of this thesis.

In this study, I am going to critically examine David Chalmers' arguments for the autonomy of the mind. David Chalmers states that there is a need for a fundamental theory of consciousness. This is because consciousness is a complex concept that cannot be explained or understood, entirely, by appealing to the physical world. Thus, consciousness is well and above the

physical world. Chalmers is right in stressing on the complexity of consciousness.

Neuroscience, over the years, has interrogated the concept of consciousness concerning the brain. Eliminative materialists such as Churchland and reductive materialists have presented accounts of consciousness that corresponds to the physical world. However, Chalmers makes the reader understand the difficulty in totally relating consciousness to brain states. Chalmers' search for a fundamental theory of consciousness cannot be refuted entirely. However, the identity theorist's postulate that every mental state can be reduced to brain states without any remainder. This assertion corresponds with the perspective of the neuroscientists regarding mental states.

David Chalmers presents five arguments to validate the assertion that consciousness is autonomous of the physical states and thus cannot be reduced to brain states. According to neuroscience, mental states arise due to chemical processes that take place in the brain. In other words, without the brain, consciousness and other mental states cease to exist. Given this, the idea propounded by Chalmers that the concept of consciousness exists autonomous of brain states needs to be interrogated. Commonsensically, we are aware that the concept of consciousness ontologically supervenes on brain states. Thus, every mental state, for example, thinking, coincides with chemical processes that occur in the brain. This corresponds to the theory that every mental state can be reduced to every brain state as outlined by the identity theorists. However, one important issue that defeats the reductivist's position is whether mental states can be reduced to physical states without remainder. That is,

reductive materialism cannot account for the existence of qualia states. This issue validates Chalmers' search for a fundamental theory. How does neuroscience explain the concept of qualia? I have thus decided to critically examine David Chalmers' theory of the autonomy of the mental and also study the claims made by the identity theory on the mind. I have used the identity theory to interrogate Chalmers' fundamental theory of consciousness.

In search of a fundamental theory of consciousness, Chalmers holds that mental states are autonomous of physical states. Chalmers, in his work, *The Conscious Mind*, provides several arguments to substantiate the assertion that facts about consciousness are not physical facts nor facts about the world but they are facts that are over and above physical facts. According to Chalmers, the mind is entirely different from the brain and thus we can't understand mental states by appealing to physical facts. Consequently, for Chalmers, we cannot understand complex mental states such as consciousness by appealing to the brain because the mind is conceptually autonomous of the brain. Chalmers uses the supervenience theory, namely logical supervenience, to help affirm and validate his claim on the autonomy of the mind. Furthermore, Chalmers uses the logical supervenience theory to present five arguments against reductive materialism. In turn, these arguments are meant to validate Chalmers' perspective that the mind is autonomous of the brain. Stated differently, Chalmers provides five arguments to validate his assertion that consciousness cannot be reduced to physical states. However, I will limit my discussions to the first four arguments. This is because the first four arguments are based on logical supervenience theory.

In his work, *The Nature of the Mind,* David Armstrong writes:

> This is not to say that in the future new evidence and new problems may not come to light which will force science to reconsider the physio-chemical view of man… For me, then, and for many philosophers who think like me, the moral is clear. We must try to work out an account of the nature of the mind which is compatible with the view that man is nothing but a physio-chemical mechanism… Science has provided us with an island of truths, to bear us up on the sea of our disputatious ignorance. There may have to be new results and refinements, new results may set old findings in perspective, but what science has given us will not be altogether suspended (Armstrong, p. 295)

David Armstrong's perspective on the nature of the mind in relation to the brain is the reason I have decided to research into David Chalmers' theory on the autonomy of consciousness. According to Chalmers, the mind is autonomous of the brain. Just like laws of gravity, space and electro-magnetism, Chalmers states that consciousness is fundamental and thus it needs a fundamental theory. Consciousness cannot supervene on physical properties or laws because consciousness is conceptually independent of physical states. I have discussed this in detail in chapter two. For Chalmers, consciousness is too complex a concept to be understood by appealing to the physical world. I hold that even though David Chalmers' theory of consciousness is appealing; we need to interrogate it with regards to the developments in the neuroscience domain.

Remember that Armstrong claims that we need to work out an account of the nature of the mind which is compatible with the view that man is nothing but a physio-chemical mechanism. I examine David Chalmers' 1996 work, *The Conscious Mind*, to see whether it corresponds with scientific and technological advances that have occurred since he published his work. I hold

that Chalmers' theory needs to be taken seriously as it debunks the identity theory. However, I also hold that since reductive materialism corresponds with the finding of neuroscience, it is empirically verifiable. Thus, even though reductive materialism can be faulted on some accounts, it is still a significant theory in understanding consciousness. It is important to note that even though David Chalmers has witnessed the technological advances, he still maintains his position that a fundamental theory of consciousness should be established.

Owing to technological and scientific advances, the overwhelming evidence tends to support the view that the mind-brain identity theory is the most plausible theory on the nature of the mind. However, Chalmers and other materialists disagree with the reductive materialist's claims of the mind. We will interrogate the claims made by reductive materialism in detail in chapter three. The mind-brain identity theory can be verified with the findings made by neurobiology and neurophysiology. Neurobiology, also referred to as neuroscience, is a field in science that studies the brain and the nervous system. With the aid of an electroencephalographic machine, neuroscientists have been able to conclude that mental states can be reduced to physical or brain states (Blocka, 2017). Thomas Huxley's standpoint about neuroscience and the mind help in validating the mind-brain identity theory. Some scholars claim that Huxley's perspective on the automata of animals serves as the foundation of neurophysiology. Huxley's theory on the automata of animals helps in validating the assertion concerning the dependence that mental states have on physical states. It is important to note that the mind-body problem and behaviourism led to the emergence of the mind-brain identity theory and several other theories concerning the nature of the mind (Walter, 2018). I will

thus discuss the mind-body problem to provide an understanding of how the mind-brain identity theory emerged.

Substance dualism is the theory that the mind and the body both exist independently of each other. Rene Descartes is the main proponent of this theory. Rene Descartes perceives the mind as a non-extended thinking thing, and the body, as an extended non-thinking thing, which exists simultaneously and perform their functions (Skirry, 2005). Rene Descartes' theory regarding the mind and the body is problematic due to the contradiction it poses. That is, how can an immaterial substance, the mind, and a material substance, the body, exist simultaneously when they are two distinct substances? The mind is an entirely different substance from the body. While the mind is immaterial, the brain is material. Therefore, by claiming that the mind and the body exist simultaneously, Descartes' argument runs into a contradiction. It is at this point that Rene Descartes introduces the brain by stating that the mind and the body perform their function in an area of the brain known as the pineal gland. Rene Descartes could not establish a concrete argument on the causal relationship between mental phenomena and physical phenomena. Consequently, several theories on the nature of the mind emerged to provide a tenable theory on mental and physical phenomena. One of the theories that emerged in the 20th century is known as 'behaviourism.'

The behaviourists hold that our notion of the mind has a logical connection with our behaviour. For the behaviourists, the mind is the inner cause of behaviour. That is, one can know the mental state of another person by observing the behaviour that one portrays during different mental states. Thus, according to the behaviourists, we can know that John is hungry and is

thinking of food due to the behaviour that John portrays during that period. For instance, John may be holding his stomach while looking at food, through this behaviour, one can rightly conclude that John is hungry. Therefore, we are capable of knowing the mental states of a subject by observing their behaviour (Nagel, 1970). David Armstrong, a reductive materialist, rejects this theory. Consequently, Armstrong uses the mind-brain identity theory to invalidate the behaviourist account of the mind in his work, "*The Nature of the Mind."* I will expound on this in later in the study.

Hebert Feigl, U.T. Place and J.J. Smart are the proponents of the mind-brain identity theory. The mind-brain identity theory holds that brain states are identical to mental states and mental states are identical to brain states. It is referred to as a 'reductive materialist theory' because the mind-brain identity theory claims that all mental states can be reduced to brain states. This implies that mental states supervene on physical states. There are two types of reductive materialist theories, namely, the token to token identity theory and the type-to-type identity theory. I will focus on the type-to-type identity theory in this thesis.

The type-to-type identity theory views several types of mental states to be identical with several types of brain states. This assertion corresponds with the findings of neuroscience. I hold that the findings made in the field of neuroscience are to be taken seriously because they are verifiable and have thus been proven to be valid. The perspective on the mind by Feigl, UT Place and J J. Smart is based on materialism and the type-to-type identity theory. According to Shanjendu Nath's article, *J J. Smart in Defense of Place's Identity Theory of the Mind*, Place and J J. Smart hold that various types of

mental states correlate or correspond with neurological processes that occur in the brain. J J. Smart, in his work, *Sensations and Brain Processes*, analyses some of Place's arguments and tries to resolve the criticisms raised against Place's work. Apart from Smart, many other philosophers agree with Place and assert the mind-brain identity theory to be one of the most plausible theories on the nature of the mind. David Armstrong, Paul Churchland, Raymond N. Osei and Daniel Dennett are very important in understanding the arguments presented by the identity theorists. However, David Chalmers' position on the mind-brain identity theory has caused controversy on the tenability of the theory and this is the focus of this study.

Statement of the Problem

Chalmers' submission on the need for a fundamental theory of consciousness on the grounds of the conceptual autonomy of this phenomenon poses a problem. In order to establish this fundamental theory, consciousness should be studied in isolation of physical states. Chalmers presents arguments to show that the reductive materialist position that mental states supervene on brain states is insufficient in providing understanding of consciousness. The problem with Chalmers' proposal is that it is bound to leave out the intimate relationship between the mental domain and the neuronal domain. Given the human condition therein, consciousness is ontologically dependent on some brain states. Consequently, it appears counter-intuitive to study consciousness in total without reference, whatsoever to the brain.

Thesis

In order to have a comprehensive account of consciousness, the reality of the intimate connection of consciousness to neuronal states cannot be ignored. I thus set out the following criteria for developing a comprehensive account of consciousness. The criteria have four main points:

1. It should be a materialist account of the mind.

2. Resolves the mind and body problem.

3. Does not dispute the existence and importance of qualia.

4. The tenets that the theory posits should be empirically verifiable. It should provide a first and third-person account of consciousness.

Purpose of the Study

This study aims to establish the criteria that will help in providing a comprehensive understanding of consciousness. I have decided to investigate this topic due to the advances in technology and science. Several theories in the field of philosophy of mind have used neuroscience and psychology in propounding their perspectives on mental states and physical states. I believe that the best theory on the nature of the mind should be one that can correspond accurately with the findings in the field of psychology and neuroscience. A good theory should explain how mental states supervene on physical states backed by empirical evidence. That is, a good theory is one that is capable of being affirmed through verification. However, the claims made by David Chalmers in *The Conscious Mind* raise controversy on the nature of the mind. David Chalmers' theory on the autonomy of mental states or the mind poses a problem to reductive materialism. Chalmers stresses the

difference between ontological dependence and conceptual dependence. Reductive materialism holds more importance to the ontological dependence of consciousness on brain states more than the conceptual aspect of consciousness.

Knowing the number of scientific advances that have occurred since he published his work in 1996, I hold that Chalmers' theory needs to be interrogated further. I use the theories propounded by the advocates of the identity theory and by the field of neuroscience to critically analyse David Chalmers' fundamental theory of consciousness. This will, in the end, help in establishing a middle ground between Chalmers' fundamental theory and reductive materialism. This is due to the fact that Chalmers' claims and that of the reductive materialists both have merits and demerits.

Objective of the study

This thesis has three main objectives:

- I will present an expose of David Chalmers' conception of the mind and show how Chalmers' arguments affirm the need to establish a fundamental theory of consciousness.
- I aim to submit the reductive materialists' perspective on consciousness. The main focus is to explicate how some philosophers and neuroscientists substantiate the idea that consciousness can be understood entirely by appealing to physical facts.

- After having evaluated the arguments presented by Chalmers and the reductive materialists, I intend to establish the criteria we could use to establish a plausible theory of consciousness.

Methods and Sources of Information

The method used in this thesis is qualitative. The research is termed as qualitative because I have analysed relevant concepts, themes, definitions and subject matters of the works by the philosophers that I have studied. I have used the analytic method in this research. I have analysed and critically examined David Chalmers work, *The Conscious Mind*, and used my perspective to conclude at the end of the thesis. Furthermore, I have analysed reductive materialism as a theory in relation to some philosophers and scholars in the domain of neuroscience. This research focuses on primary materials and relevant secondary materials of most of the philosophers that I have studied. David Chalmers' *The Conscious Mind* is the main text that I will critically examine. Several primary and secondary works by identity theorists will also be used for the thesis. Finally, I have gathered as much material and articles as I could on neuroscience and neurophysiology from Churchland, Hudezt, Pearce, Kruizinga and many more scholars in this field. Their works on brain networks will be significant in providing understanding of neuroscience.

Scope and Delimitation

My thesis covers three main areas, David Chalmers' search for a fundamental theory of consciousness in his work, *The Conscious Mind,* the mind-brain identity theory and lastly, the findings made by neuroscience

concerning mental states (The mind) and physical states (The brain). In relation to *The Conscious Mind*, I will limit myself to chapter three of his work. This is due to the fact that chapter three covers the five arguments that Chalmers uses to criticize reductive materialism. With regards to the mind-brain identity theory, I have limited myself to philosophers whose theories coincide with neuroscience. Philosophers such as David Armstrong, Paul Churchland and Daniel Dennett will be my focus on the mind-brain identity theory. Concerning neuroscience, apart from the articles I have gathered on the research and findings in this area, Paul Churchland's postulation in Chapter 9 of his work, *A Neurocomputational Perspective: The Nature of the Mind and the Structure of Science*, will help in understanding the configuration of the brain. Various articles and works on brain waves and the nature of the brain have been presented in chapter three. It is important to note that since the brain is a complex organ, I will limit myself to studying cerebrum, the brain stem and the hypothalamus and thalamus. This is because these parts of the brain give rise to mental states and experiences (Churchland, 1989).

Significance of the Study

This research is significant to the field of Philosophy because it aims at presenting a scientific account of the mind. I hold that it is important for philosophy of mind to have an account of the mind that can be affirmed to be evidently true. However, due to the vast amount of technological and scientific advances that have occurred since Paul Churchland's *A Neurocomputational Perspective: The Nature of the Mind and the Structure of Science* and Daniel

Dennett's *Consciousness Explained* were published, a contemporary account of the mind-brain identity theory is significant. This thesis will thus attempt to provide an account of the mind and the brain that coincides with the new findings in neuroscience and philosophy of mind. This, in the end, will serve as a verifiable account of the mind-brain identity theory.

Theoretical Framework

The framework that this research is centred on is the supervenience theory. The word supervenience can be used interchangeably with dependence. To say A supervenes on another thing means that A depends on the other thing in order to exist. David Chalmers theory on the autonomy of consciousness is based on logical supervenience theory while the reductivist theory on consciousness is based on ontological supervenience. That is, for Chalmers, consciousness is autonomous of brain states because it does not conceptually depend on physical facts. However, for the reductive materialists, consciousness ontologically depends on physical facts. The supervenience theory runs throughout this long essay. Therefore, this is the framework that supports this research study.

Literature Review

Thomas Nagel's work, *What It Is like to Be a Bat*, is significant to Chalmers' theory on the fundamental nature of consciousness. Nagel lays the foundation for Chalmers to posit the irreducible nature of consciousness. For Nagel, consciousness cannot be reduced to brain states due to the qualitative property of experience. That is, we cannot know what it is like for another person to be in pain because mental states have a subjective, intrinsic and

qualitative property. Chalmers built on Nagel's theory by adding logical supervenience theory.

David Chalmers' work, *The Conscious Mind*, is an attempt by David Chalmers to search for a fundamental theory of consciousness. According to Chalmers, mental states, specifically, the mental state of consciousness, are autonomous of brain states. *The Conscious Mind* is a very lengthy work and thus, for this thesis, I have limited myself to chapter three. In chapter three of the work, Chalmers addresses his theory of the autonomy of the mind (mental states) by the use of the logical supervenience theory and the theory of natural supervenience. The natural supervenience theory, on the one hand, focuses on the possibility of a natural event that could take place without violating the laws of nature. That is, one thing can only be said to supervene on another thing if and only if the relationship between the two things does not violate the laws of nature. For example, the claim that the brain supervenes on biological organisms, such as animals and human beings, is true and possible because it corresponds with the laws of nature. On the other hand, the Logical supervenience theory focuses on how some relevant concepts supervene on other concepts without resulting in a contradiction (Chalmers, 1996). However, according to Chalmers, the mind-brain identity theorists are wrong in their claim that mental states supervene on physical states. The claim made by the identity theory contradicts logical supervenience. Consciousness is an immaterial and complex concept that is entirely different from physical properties such as the brain. It is for this reason that Chalmers asserts that consciousness or mental states are autonomous of physical facts.

Concerning logical supervenience, Chalmers presents five arguments to affirm his position that consciousness is autonomous of brain states. Take note that I will only focus on the arguments that are based on logical supervenience theory, which are the first four arguments against reductive materialism. Chalmers concludes that since consciousness is a fundamental building block, new laws should be established that will help in providing a better understanding of this concept. It has been established that consciousness is a complex concept that cannot be understood by appealing to physical states and concepts (Chalmers, 1996).

Galen Strawson's (2010) work, *Mental Reality*, discusses the relevance of mental states. Strawson combines the materialist account of the mind and a realist account of the mind. According to Strawson, even though mental states are physical in nature, we cannot understand our conscious experiences by limiting ourselves to studying physical states. For instance, it is possible for us to have c-fibre firing in three different people. We thus conclude that the three people are experiencing pain. Nevertheless, we can only be aware of the physical state, that is, the unpleasant feeling these three people are having, but cannot know the qualitative nature of their experience. In other words, knowledge of mental states does not fully entail knowledge of physical facts due to the qualitative property of mental states. Strawson (2010) concludes on this topic by stating, "U-similarity does not obviously entail Q-similarity." Meaning similarities in the unpleasantness of a subject does not entail similarities in their qualitative conscious experiences. Strawson's work helps the reader understand the relevance of mental states in a materialist account of the mind.

Jaegwon Kim's work, *Mind in a Physical World (1998)*, attempts to interrogate the place of the mind in the physical world. Kim is a strict materialist, particularly, a reductive materialist. Further in his work, Kim interrogates the arguments made by the nonreductive materialists by discussing the mind-body problem. He uses the mind-body problem in discussing the role of the mind in the physical world. According to Kim, it is highly unlikely or as he puts it, "grim," for mental states such as consciousness to exist independent of physical states. This is because every event that takes place in the physical world should coincide with the physical laws of the world. In this respect, with regards to physics, a mental event cannot occur without being subjected to physical laws. One can only explain mental events and states by appealing to the natural laws that govern the world. Kim writes:

> I think it would be quite evident to everyone that given these materialist doctrines the prospect of mentality turning out to be both (i) causally efficacious in the physical world and yet (ii) not being part of the physical domain looks pretty grim. In the book, I advance various considerations to convince the reader why it really is grim – in fact, why it is completely hopeless. My main argument is what I call "the supervenience argument", sometimes also called "the exclusion argument" in the literature. The gist of this argument is that when we consider the claim that a certain mental event, M, is a cause of another event, R, we see that M's physical supervenience base, P, has all the credentials to serve as a cause of R, thus threatening to pre-empt M's claim to be a cause of R. The only way out for the non-reductivist would seem to be to recognize both M and P each as a full cause of R, making R causally overdetermined. I do not believe this is a plausible move for the materialist to make (for one thing, it may well violate physical

> causal closure), but some non-reductivists seem willing to embrace it. In contrast, the reductionist has a simple answer: If M is to retain its causal status, it must be reducible to P – at least, the given instantiation of M must be reductively identifiable with the instantiation, on that occasion, of its supervenience or realization base (Kim, 1998).

Kim's perspective concerning the impossibility of the claim made by the non-reductivists makes David Chalmers' search for a fundamental theory problematic. Kim provides arguments to debunk the claim made by Chalmers that consciousness cannot be explained by appealing to the physical world. However, for Kim, mental states, supervene on physical states and thus every mental state can be reduced to physical states.

John Searle, in his work, *The Mystery of Consciousness (1990),* disagrees with Daniel Dennett and David Chalmers on the complex nature of consciousness. In this work, Searle examines the mystery of consciousness as David Chalmers did in *The Conscious Mind*. However, according to Searle, consciousness is not a complex concept that needs a fundamental theory. Thus, Chalmers' theory on the fundamental nature of consciousness needs to be revisited. Furthermore, consciousness is not an illusion as Daniel Dennett exclaimed in *Consciousness Explained*. According to Searle, every mental state can be reduced to a physical state. This is because the chemical processes that occur in the brain cause mental states such as pain, hunger and consciousness to arise. Therefore, for Searle, consciousness exists, however, it is wrong to claim that consciousness cannot be reduced to physical states because consciousness cannot exist without brain processes. John Searle analyses consciousness by relating it to computational processes. In his work, Searle uses the Chinese room argument to validate the claim that

consciousness arises from brain processes. John Searle's work is significant as it provides the relationship between consciousness and brain processes by appealing to simple and precise language.

As stated earlier, U T. Place, Hebert Feigl and J J. Smart are the proponents of the mind-brain identity theory. Steven Schneider's article, *"Identity Theory*", has been used in this study. Steven Schneider's article provides an overview of the mind-brain identity theory by focusing on the early versions of the theory. J J. Smart, U T. Place, Hebert Feigl and D M. Armstrong. This article is important for the thesis because it helps in providing a summary of the entire thesis of the identity theory. Furthermore, Schneider attempts to provide a short but concise outline of the theories established by Place and Smart. Place's perspective regarding the relationship between mental states and neurophysiological states is discussed in this paper. Therefore, Schneider's article is significant to this thesis as it serves as an introduction to the assertions made by the identity theory (Schneider, 2018).

Raymond Osei's work, *The Mind-Body Problem: An Analysis of the Core Issues*, has also been used in the thesis. Raymond Osei's work is significant to this work as it helps in providing a basic understanding of several theories on the nature of the mind. Some of the theories discussed in this work are the mind-body problem, non-reductive materialism and reductive materialism. I have focused on chapter three of his work which is concerned with materialism. Raymond Osei articulates the difference between ontological reduction and conceptual reduction. This information is important for one to understand David Chalmers' claims against reductive materialism. The five arguments that David Chalmers presents against the identity theory

are hinged on conceptual reduction. That is, David Chalmers' uses conceptual reduction to object the claim that mental states can be reduced to physical states. I have explained this further in chapter three of the thesis.

Shanjendu Nath's article, *"J J C. Smart in Defence of Place's Identity Theory of Mind",* is significant to understanding the submission made by J J. Smart in relation to U T. Place. Shanjendu's paper basically outlines the criticisms hurled against Place's postulations on the identity theory. I chose to add this paper to the thesis because Shanjendu goes a step further by highlighting the responses that J J. Smart gave to the seven criticisms that were raised against Place's theory. Smart attempts to resolve any doubts that scholars have about Place's paper, "*Is Consciousness a Brain Process?*" Resolving the criticisms raised against Place is important for Smart because Smart based the submissions in his paper, "*Sensations and Brain Processes"*, on Place's reductive materialism. It is for this reason that both Place and Smart claim that sensations and mental states are physio-chemical processes that occur in the brain. Finally, Shanjendu provides a summary of J J. Smart's claims on sensations and the brain.

In relation to the mind-brain identity theory, one prominent philosopher that I have focused on is David Armstrong. I have considered the arguments presented by David Armstrong in his work, *The Nature of the Mind*. David Armstrong's claims that since human beings are physio-chemical mechanisms, any theory about the mind or mental states must correlate with the findings of science. Stated differently, the mental states that human beings engage in should supervene on physical processes of the brain. This is because man is a physio-chemical mechanism and thus anything that man engages in,

be it thought or feelings, should correspond with the physio-chemical processes that occur in the brain. Place, Smart and Armstrong use inductive reasoning in their papers. Their arguments make use of inductive prediction as they predict that in the future, we will be able to have an account of the mind that corresponds with the biochemical makeup of human beings. During the era they wrote their papers, neuroscience had not established a strong basis through which mental states and experiences correspond to the chemical processes in the brain. In present times, neuroscience has made profound progress in bridging the gap between mental states and brain states. Furthermore, David Armstrong criticizes the "behaviourist" account on mental states. David Armstrong criticizes Gilbert Ryle's theory of the "disposition to behave." According to Armstrong, Gilbert Ryle's postulation on the disposition to behave is wrong because dispositions are physical states that occur in the nervous system.

Paul Churchland's work, *A Neurocomputational Perspective: The Nature of the Mind and the Structure of Science*, helps in bridging the gap between the mind-brain identity theory and neuroscience. Churchland tries to draw a connection between the mind-brain identity theory and neuroscience. However, Churchland begins this work by criticizing folk psychology (Lynne Baker, 1992). Folk psychology is a theory on the nature of the mind that asserts that there is a correlation between mental states and behaviour. That is, similar to behaviourism, folk psychology attempts to affirm the claim that one can know the mental states of a person by studying the person's behaviour. According to Ian Ravenscroft, there are three perspectives that philosophers have concerning folk psychology. Ravenscroft writes:

> However, even a cursory examination of the literature reveals that there are at least three distinct senses in which the term "folk psychology" is used. (1) Sometimes "folk psychology" is used to refer to a particular set of cognitive capacities which include—but are not exhausted by—the capacities to predict and explain behaviour. (2) The term "folk psychology" is also used to refer to a theory of behaviour represented in the brain. According to many philosophers and cognitive scientists, the set of cognitive capacities identified above are underpinned by folk psychology in this second sense. (3) The final sense of "folk psychology" is closely associated with the work of David Lewis. On this view, folk psychology is a psychological theory constituted by the platitudes about the mind ordinary people are inclined to endorse (Ravenscroft, 1997).

According to Churchland, folk psychology does not hold because it does not correspond to the developments made by neuroscience. With the advances of neuroscience, similar to Paul Churchland, I hold that the claims made by folk psychology are not tenable. Chapter seven and chapter nine of Churchland's work help in the establishment of his "connectionism" theory. Similar to Jacob Schwartz, Churchland links connectionism to neuroscience. According to Churchland, consciousness and other mental states can be reduced to brain states. There should be a connection between mental states and brain states. Thus, consciousness, perception, thought and behaviour are determined by chemical configurations in the brain. Paul Churchland objects the claims made by folk psychology by using connectionism. It is in chapter nine that Churchland explains the configuration of the brain. In chapter nine of his work, Paul Churchland provides serval diagrams of different parts of the brain and uses the diagrams to explain the configurations of the brain. Finally,

Churchland discusses the intentional fallacy. This fallacy is used by Churchland as a reaction to the arguments that were raised against reductive materialism, specifically, the argument with regards to the first-person nature of mental states. Basically, Churchland argues that all mental states, including consciousness, are reducible to brain states. Nagel is wrong in positing that mental states are intrinsic and have a qualitative property that cannot be reduced to brain states. This section of Churchland's work is relevant to understanding the reductive materialist's point of view with regards to mental states.

Daniel Dennett's work, *Consciousness Explained*, is pivotal to this thesis. This is because Daniel Dennett explicitly states that consciousness is an illusion and thus it does not exist. Daniel Dennett's book, *Consciousness Explained*, raised a lot of controversy on the nature of the mind. Thomas Nagel and David Chalmers, are some of the prominent philosophers who have objected Dennett's postulation. David Chalmers, *The Conscious Mind*, seeks to oppose eliminative materialism and reductive materialism. Daniel Dennett is regarded as an eliminative materialist. He claims that some mental states do not exist. In *Consciousness Explained*, Dennett claims that the bundles of experience that we have are configurations or biochemical processes that occur in the brain. Dennett commences the work by discussing consciousness. He holds that consciousness is what differentiates us from mere automata and goes further to talk about the qualitative nature of conscious experience. It is further in his work that he begins to establish a correlation between what we call consciousness and the brain processes that occur in the brain. According to Dennett, the brain is responsible for our experiences. The conceptual

understanding of consciousness is wrong because consciousness and other mental states do not exist. Similar to Jacob Schwartz, Dennett claims that consciousness is a term that is used in place of the configurations and chemical processes that occur in the brain. In this respect, consciousness does not exist. Daniel Dennett and Paul Churchland have been very significant to this essay. Furthermore, similar to Churchland, Dennett responds to some of the arguments raised against reductive materialism. Arguments such as the philosophical zombie, the argument of the inverted spectrum, and the epistemic asymmetry argument are all responded to by Dennett in his work, *Consciousness Explained*.

Dennett published an article in 2003 in the *Journal of Consciousness Studies* to explain the concept of heterophenomenology. Heterophenomenology is a practical theory that Dennett believes will help us understand consciousness in totality. I have discussed this in detail in chapter three of his work. In his work, *Who's on First? Heterophenomenology Explained*, Dennett discusses the procedure that heterophenomenology should use in order to successfully explain consciousness. Remember that Dennett does not subscribe to the non-reductivist notion of consciousness, thus, in this paper, he does not focus on explaining qualia. However, he attempts to combine a first-person and third-person account of consciousness.

Several articles on neuroscience and the anatomy of the brain have been used in this thesis. The second section of chapter three discusses the perspective of neuroscience on mental states. For the neuroscientists, all mental states are reducible to brain states. The neuroscientists hold brain states to be the fundamental property, through which we have mental states. The

articles I have gathered in this section are divided into two categories. The first category is composed of articles that focus on the anatomy of the brain and the second category is composed of articles that explain brain waves.

I have used Hines (2018) article, *Anatomy of the Brain*, to point out and explain functions of the various parts of the brain. Hine's article presents the various functions of the brain in simple and concise diction. This is significant as it will help a layperson understand the function of the brain. Furthermore, Kolb (2011) has an article on the anatomy of the retina. This article discusses the relationship between the eye and the brain during the perception of colours. Kolb's presentation of this process helps in validating Dennett's critique of the inverted spectrum argument.

The second category is composed of several scholars. Hedetz and Pearce's (2009) *Suppressing the mind: Aesthetic modulation of memory and consciousness*, Laureys and Tononi's (2009), *The neurology of consciousness: Cognitive neuroscience and neuropathology*, and Perry and LeBeau's (2010), *New horizons in the neuroscience of consciousness*, have given an abreast, detailed and coherent information of the developments of consciousness in the field of neuroscience. From the discussions in these three works, we can conclude that neuroscientists are not concerned with qualia. While some of the scholars in this field are eliminative materialists, others are reductive materialists. The neuroscientists try to find neurological correlates of brain states with "mental states." Detailed discussions of the frontal and prefrontal cortex and the hypothalamus are presented in these works. Finally, Hendrick Kruizinga's (2018) work, *Your 5 Brainwaves: Delta, Theta, Alpha, Beta and Gamma*, discusses the current trending issue in neuroscience, "brain waves."

This article attempts to enlighten the reader on the relationship scientists are drawing between brain waves and understanding consciousness.

In a nutshell, this literature review has provided the primary and secondary materials that have been used in this thesis. Every work has been significant in achieving the task presented in the thesis statement.

Organization of Essay

This essay is divided into four chapters. Chapter one of this thesis serves as the introduction of the work. This chapter aims to introduce the reader to the main idea and focus of the thesis. The background to the study, significance of the study, statement of the problem, purpose of the study and the literature review are the main areas of major highlights of this chapter.

Chapter two focuses on David Chalmers' theory of the mind by examining his work, *The Conscious Mind*. I present a critical examination of the arguments he built to support the autonomy of the mind.

The mind-brain identity theory is the main focus of chapter three of the work. I have divided this chapter into two sections: the first section focuses on philosophers' defence of reductive materialism and the second section focuses on the neuroscientists' defence of reductive materialism. This section aims at drawing a connection between the mind-brain identity theory and neuroscience. It aims to show how mental states can be reduced to chemical processes that occur in the brain.

In chapter four of this work, I present a concise evaluation of Chalmers' theory. I highlight the strengths of reductive materialism and Chalmers' property dualism. Finally, I present my perspective on

consciousness. That is, after the evaluation, I present my perspective on the best theory we can use to understand consciousness.

Finally, I have dedicated a brief summary of the thesis to conclude the work. I have summarised the entire work and concluded on my findings.

CHAPTER TWO

CHALMERS' SEARCH FOR A FUNDAMENTAL THEORY OF CONSCIOUSNESS

Introduction

This chapter is an expose on David Chalmers' conception of the mind. Essential to this work is Chalmers' four arguments which are based on logical supervenience theory. The arguments form the main issue addressed in this chapter. The discussion of the supervenience theory in his work precedes the four arguments Chalmers' raises against reductive materialism. This is because Chalmers uses the supervenience theory to strengthen the older versions of the arguments raised against reductive materialism. The older versions of the arguments were responded to by Daniel Dennett and Churchland, thus Chalmers uses the supervenience theory to respond to the criticism raised by Dennett, Churchland and other notable philosophers. As stated in the earlier chapter, Chalmers holds the position that consciousness is a complex concept that cannot be understood, in totality, by appealing to physical facts or properties. By the end of this chapter, the reader will grasp the difference between phenomenal properties and psychological properties. Furthermore, the reader will understand the 'redundancy' in the reductive materialists' claim that mental states can be reduced to physical states in totality. Finally, the reader will appreciate Chalmers' reason to search for a fundamental theory of consciousness.

The Strengths of Chalmers' Perspective on Consciousness

There are two main strengths that make Chalmers' theory stand the test of time. They are:

1. Chalmers' theory defeats the mind-body problem. His arguments are based on property dualism and cannot be faulted the same way Descartes' substance dualism was faulted. He acknowledges the existence of one substance (body) which has two properties, physical properties and mental properties (consciousness).
2. He moves from an ontological argument to a conceptual argument regarding consciousness and brain states. This helps him debunk the initial arguments raised in support of reductive materialism.
3. Chalmers uses logical supervenience theory (conceptual framework) to debunk the claims made by the reductive materialists regarding consciousness.
4. With the use of logical supervenience theory, Chalmers affirms the claim that consciousness is a fundamental property that is autonomous from brain states. That is, Chalmers validates the claim that facts about the consciousness do not supervene on physical facts.

Chalmers on Consciousness

Chalmers' conception of the mind stems from the hard problem of consciousness. For Chalmers, consciousness goes beyond the limits of science: facts about consciousness are not physical facts but are facts that are over and above the physical world (Chalmers, 1996). Chalmers is a property dualist and thus for him, consciousness is a property that emerges from the brain. However, even though it is a property of the brain, we cannot know

consciousness in its entirety by appealing to physical facts. The mind and the brain may have the same referent, however, they are not identical. While consciousness is subjective, brain states are objective. We can know everything there is to know about the brain by appealing to physical facts, however, we can never come to know everything there is to know about consciousness by appealing to physical facts. Chalmers posits that we can only understand consciousness if we are to study it autonomously from brain states.

Take note that Chalmers is believed to have adopted McGuinn's claims concerning consciousness to his work, *The Conscious Mind*. Colin McGuinn, similar to Chalmers, propagates property dualism as the best theory that can help us unravel the mystery of consciousness. However, McGuinn is currently sceptic about unravelling the mystery of consciousness. Colin McGuinn provides an intriguing description of property dualism:

> Having a brain is what makes it possible to have a mental life. The brain is the seat of consciousness… Consciousness indubitably exists, and is connected to the brain in some intelligible way, but the nature of this consciousness necessarily eludes us (McGuinn, 1999, p. 6).

He also refers to the qualitative property of consciousness in his work, *The Character of the Mind*: *An Introduction to Philosophy of Mind*:

> The theory that serves to explain the world without experience seems radically inadequate to explain the world that contains it. And there is a pressing problem about relating experience to the physical world: how do experiences of red, say, relate to what happens in my brain, which looks just like a particularly fancy rearrangement of matter? When we reflect on consciousness in this way, noticing its discontinuity with the physical world, we are apt to be struck by the thought that it is a very peculiar thing. It cannot

> be seen or touched, or studied under a microscope; yet it is for each of us the most obvious reality in the world. (McGuinn, 1996, pp. 40-41).

From McGuinn's claim, one can infer that for the property dualists, the mind exists. However, it ontologically depends on the brain to exist. Moreover, there is something more to consciousness than just construing it as a brain state. Chalmers thus interrogates the concept of consciousness in order to understand the mystery surrounding it.

I proceed by noting that Chalmers uses Thomas Nagel's seminal paper, *What it is like to be a Bat*, to help affirm his position that there is something more to the concept of consciousness than taking it as a product of biochemical processes that occur in the brain. For Nagel, consciousness is a subjective or first-person form of experience. When we say John is conscious, it means that there is something it is like to be John. Nagel explicates on this issue:

> But no matter how the form may vary, the fact that an organism has conscious experience at all means, basically, that there is something it is like to be that organism. There may be further implications about the form of experience; there may even (though I doubt it) be implications about the behaviour of the organism. But fundamentally an organism has conscious mental states if there is something it is like to be that organism (Nagel, 1974, p.435).

Chalmers uses Nagel's conception of consciousness to establish four arguments under logical supervenience theory, that aim at defeating the reductive materialist's thesis. I now commence the discussion on Chalmers' *The Conscious Mind*.

Chalmers writes:

> Consciousness, however, is as perplexing as it ever was. It still remains utterly mysterious that the causation of behaviour should be accompanied by a subjective inner life. We have good reason to believe that consciousness arises from physical systems such as brains, but we have little idea of how it arises, or why it exists at all. 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? Present-day scientific theories hardly touch the really difficult questions about consciousness. We do not just lack a detailed theory; we are entirely in the dark about how consciousness fits into the natural order (Chalmers, 1996, p. xi).

The extract above makes part of the preamble of Chalmers' work, *The Conscious Mind.* As stated in the introduction of this thesis, Chalmers, a dualist, attempts to establish a fundamental theory that reconciles mental states with the natural world order. According to him, consciousness is a complex concept that cannot be understood in totality by appealing to physical systems such as the brain. The field of Science posits that consciousness is a product of the physio-chemical processes that occur in the brain. For Chalmers, this does not do justice in explaining the concept of consciousness in its entirety. There is an inner experience associated with consciousness. The brain does not have that qualitative property of experience. The qualitative property of experience is subjective to the agent of experience. Thus, there is something more to consciousness other than the assertion that it is a product of physio-chemical processes that occur in the brain. Moreover, there should be a theory that explains how consciousness arises from physical processes. Most of the theories that have been established concerning consciousness fail to successfully explain how a complex mental state such as consciousness, can

arise from physical processes that occur in the brain. Chalmers thus holds that consciousness is above physical facts about the world. The claim made by the reductive materialists that all mental states can be reduced to brain states needs to be revisited. Chalmers notes on reductive materialism:

> In this book, I reach conclusions that some people may think of as unscientific: I argue that reductive explanation of consciousness is impossible and I even argue for a form of dualism…It seems to me that to ignore the problems of consciousness would be antiscientific; it is in the scientific spirit to face up to them directly (Chalmers, 1996, p. xiv).

Chalmers uses natural supervenience theory and logical supervenience theory to argue that reductive materialism is impossible and does not do justice in explaining the concept of consciousness. However, before I look at Chalmers' natural and logical supervenience, it is important for us to understand Chalmers conception of consciousness.

Chalmers' Definition of Consciousness

"Consciousness" is derived from the Latin words con (with) and scire (to know) (Gennaro, 2018). Generally, consciousness means the self-awareness of all the experiences that an organism has. However, this widely held perception of consciousness does not define consciousness in totality. The concept of consciousness is one thing that is complex, however, very real to the subject of experience. Chalmers holds that one is said to be conscious when one is aware of various mental and physical states such as perceptions, thoughts and feelings. "We can say that a being is conscious if there is something it is like to be that being" (Chalmers, 1996). There are two aspects of consciousness addressed by Chalmers in his work, *The Conscious Mind*.

One aspect of consciousness is seen in relation to the chemical processes that occur in the brain. This aspect of consciousness can be known by observing the behaviour of the subject. It is known as the psychological concept of the mind. According to Chalmers, the psychological concept holds mental states to be the internal cause of behaviour. This means that mental states play a causal role in the behaviour of the subject. The other aspect of consciousness that makes it a complex concept is in relation to the subject's experience. I will summarize the second aspect of consciousness in a question form: How does it feel like to be a cognitive agent during different conscious experiences? Chalmers calls the former the external aspect of consciousness and the latter the internal aspect of consciousness or the psychological and the phenomenal (qualia) concept of the mind respectively. The phenomenal concept of consciousness focuses on the qualitative nature of one's experience while the psychological concept of the mind is concerned with the causal role of mental and physical states. This is how Chalmers explicates the phenomenal and psychological concepts of the mind:

> The first is the phenomenal concept of the mind. This is the concept of mind as a conscious experience, and of a mental state as a consciously experienced mental state. This is the most perplexing aspect of the mind… The second is the psychological concept of the mind. This is the concept of the mind as the causal or explanatory basis for behaviour. A state is the mental in this sense if it plays the right sort of causal role in the production of behaviour or at least plays an important role in the explanation of behaviour (Chalmers, 1996, p. 11).

Furthermore, Chalmers presents a catalogue of twelve conscious experiences in an attempt to make meaning of consciousness as a concept. The catalogue outlines the various conscious experiences that a subject may encounter (Chalmers, 1996, p.6). The first five conscious experiences are consistent with the five senses. These five are visual experience, auditory experience, tactile experience, olfactory experience and taste experience. The last seven conscious experiences are; experiences of hot and cold, pain, other bodily sensations, mental imagery, conscious thought, emotions and the sense of self. Subjects that are aware of these twelve experiences are conscious beings. Thus consciousness can be viewed as the awareness of the twelve conscious experience by a subject. A subject is said to be conscious if and only if that subject is aware of his visual experience during the time of that specific experience. For example:

> John walks out of his room one early morning and sees a dog lying on the lawn. That same morning, a robot, by the name John also walks out of his room and sees a dog lying on the lawn. Both John the human being and John, the robot, here, have engaged in visual experience. The difference between the two Johns is that John, the human being, is aware of his visual experience while, John, the robot, does not have awareness of its visual experience. That is, John, the robot, does not know what it is like to perceive a dog on the lawn. In other words, John, the robot, does not know that it is experiencing a visual experience while John, the human being, knows that he is having a visual experience.

The example summarises Chalmers' intention of presenting the twelve levels of conscious experience. Even though this catalogue explains different states of consciousness, they do not resolve the complexity of the concept of consciousness. For Chalmers, the identity theory is in line with the

psychological concept of the mind. It does not take into account the complexity of the phenomenal aspect of the mind. The qualitative nature of experience makes the type-to-type identity theory problematic. It is impossible for every mental state to be reduced to a physical state without a remainder because of the qualitative nature of conscious experience. There is something it is like to experience the colour red or to experience pain. Pain is not just a product of A-delta fibres and C fibres but there is a qualitative experience of consciousness. That is, there is something it is like to be conscious of pain. It follows that pain is something more than chemical processes that occur in the body. It is due to the gap between the phenomenal and the psychological concept of the mind that Chalmers embarks on the search for a fundamental theory of consciousness. That is, a theory of consciousness that can be understood in totality devoid of the physical world and physical states. Chalmers uses the supervenience theory to debunk the reductivist position.

The Supervenience Theory

In *The Conscious Mind*, Chalmers uses the supervenience theory to affirm his theory on the autonomy of consciousness. Generally, the theoretical framework, within which Chalmers' theory is centred on, is the supervenience theory. There are several types of supervenience theories outlined by Chalmers. They include; local supervenience, global supervenience, natural supervenience and logical supervenience. It is important to note that local and natural supervenience theories entail the global supervenience theory. However, two types of the supervenience theories are significant in guaranteeing Chalmers' position on the fundamental nature of consciousness namely, logical supervenience and natural supervenience. Therefore, one

would have to understand the supervenience theory in totality, in order to understand the arguments Chalmers raises against reductive materialism. I will thus discuss global and logical supervenience theories before delving into the arguments against reductive materialism (Mind-brain identity theory).

Chalmers writes on the supervenience theory:

> The notion of supervenience formalizes the intuitive idea that one set of facts can fully determine another set of facts. The physical facts about the world seem to determine the biological facts, for instance, in that once all the physical facts about the world are fixed, there is no room for the biological facts to vary (Chalmers, 1996, p. 32).

Basically, the supervenience theory posits that there are fundamental properties that determine the existence of other properties. That is, there are some properties that solely depend on fundamental properties in order for them to exist. For example, physical facts about the world determine the existence of biological facts. In other words, biological facts necessarily entail physical facts. Human beings, plants and animals can exist if and only if they have the properties and characteristics of being physical. Thus, physical properties are necessary and sufficient conditions for human beings, animals and plants to exist. Similarly, Seeds are necessary and sufficient conditions for plants to exist, while oxygen and hydrogen are necessary and sufficient conditions for water to exist. The relationship between biological properties and human beings can be summarized as: "biological properties supervene on physical properties about the world." In the same vein, the relationship between plants and seeds can be summarized as, "plants supervene on seeds." Seeds are the fundamental properties by which plants exist and physical

properties are the fundamental properties by which biological properties exist. One can rightly deduce that there are two types of properties, one which depends on the other properties to exist. The other property is the fundamental property that other properties depend on to exist.

In chapter two of *The Conscious Mind*, Chalmers distinguishes the two sets of properties that are involved in the supervenience process. He claims that there are two types of properties in a supervenience theory. One property is known as the "A-properties," while the second is known as the "B-properties." The A-properties are known as the basic properties or the fundamental properties in the world. It is through the A-properties that the B-properties come into existence. On the other hand, the B-properties are known as the higher-level properties. That is, the B-properties are the products of the A-properties. Therefore, B-properties supervene on A-properties, or B-properties depend on A-properties in order to exist. Biological properties, which are the higher-level properties, fall under the B-properties, while physical properties, which are basic and fundamental properties, fall under A-properties. Besides, seeds fall under A-properties while plants fall under B-properties. I will now discuss two supervenience theories that I think are relevant to understanding Chalmers' position on the fundamental nature of consciousness. Namely, global supervenience and natural supervenience.

Global Supervenience and Natural Supervenience Theory

Chalmers expounds on global supervenience:

> B-properties supervene globally on A-properties, by contrast, if A-facts about the world determine B facts: that is, if there are no two possible worlds identical with respect to their A-properties, but differing with respect to their B-properties. A world here is to be thought of as an entire universe; different possible worlds correspond to different ways a universe might be (Chalmers, 1996, p. 34).

Some synonyms of the word "global" are worldwide, international or universal. Thus, the global supervenience theory posits that B-properties or facts entail A-properties in the entire world or universe. Remember that A-properties are the fundamental facts through which B-properties exist. Global supervenience implies that regardless of the part of the world that one is located, B-properties will supervene on A-properties. According to Chalmers, "there are no two possible worlds identical with respect to their A-properties, but differing with respect to their B-properties" (Chalmers, 1996). It has already been established that A-properties are the fundamental properties through which B-properties come into existence. This implies that in every possible world this assertion holds. By "every possible world," Chalmers is referring to the diverse ways one may perceive the world to be. As long as the B-properties are indistinguishable from the A-properties, B-properties will necessarily supervene on A-properties.

In other words, the global supervenience theory posits that in every part of the world, a set of B-properties will necessarily supervene on A-properties. Biological facts about the world supervene on physical facts corresponds to global supervenience. That is, in the entire universe, biological

facts supervene on physical facts. There is no area in this globe, in which one will find biological entities that are not physical in nature. I will use human beings to illustrate this point. Regardless of the location of a subject, in this universe or globe, every human being (biological entity) that the subject perceives will necessarily be physical in nature. This affirms the thesis of the global supervenience theory; B-properties supervene globally on A-properties, that is "if there are no two possible worlds identical with respect to their A-properties but differing with respect to their B-properties" (Chalmers, 1996). Natural and local supervenience theories form the global supervenience theory.

The natural supervenience theory is concerned with the laws of nature. The word' natural', in the term 'natural supervenience', refers to natural laws. Thus, the natural supervenience theory posits that B-properties supervene on A-properties if any two natural possible situations with the same A-properties have the same B-properties (Chalmers, 1996, p.36). By the term "natural possible worlds," we are referring to any sort of world that can be perceived that does not violate the laws of nature. It is important to note that in the natural supervenience theory, the two sets of properties (The B-properties and the A-properties) are to be held within the confines of natural law. Consequently, if a set of B-properties supervene on A-properties but violate the laws of nature, the supervenience is neither natural nor global. Natural supervenience is also known as nomic or empirical supervenience. It is known as empirical supervenience because the truth value of natural supervenience theories can be determined by observing the world that we currently live in. It is known as nomic (from the Greek word "nomos" which means "law")

because of the confinement it has to the laws of nature (Chalmers, 1996, p.36). Instances of natural supervenience are presented below:

A. Everything on this earth supervenes naturally on the law of gravity: it is in accordance with nature that everything that exists in this world conforms to the laws of gravity.

B. Pressure, in relation to gas, supervenes naturally on temperature and volume: it is in accordance with nature that as the temperature increases, the pressure goes higher and as the temperature decreases, the pressure decreases. This is because, the higher the temperature, the faster the molecules of gas move in space and the lower the temperature, the slower the molecules of gas move in space. Additionally, the pressure is inversely proportional to volume. Meaning that the higher the volume, the lower the pressure of gas in an object, and the lower the volume, the higher the pressure of gas in an object. The smaller the volume of the container, the higher the pressure. This is due to the limited amount of space that the gas is confined to.

C. Human beings supervene naturally on oxygen in order to live: it is in accordance with the law of nature that human beings can exist if and only if they inhale oxygen. The absence of oxygen in a human being necessarily denotes the loss of life of a human being.

Remember I stated earlier that natural and local supervenience entails global supervenience. This means that any supervenience theory that does not correspond to local or natural supervenience necessarily does not correspond to global supervenience. Since local supervenience theory is not relevant to understanding Chalmers' arguments against reductive materialism, I will provide a summary of it from Chalmers' work.

This is Chalmers' exposition on local supervenience:

> B-properties supervene locally on A-properties if the A-properties of an individual determine the B-properties of that individual if, that is, any two possible individuals that instantiate the same A-properties instantiate the same B-properties. For example: shape supervenes locally on physical properties, if any two objects with the same physical properties will necessarily have the same shape…In general local supervenience of a property fails if that property is somehow context dependent-that is if an object's possession of that property depends not only on the object's physical constitution but also the environment and its history (Chalmers, 1996, p. 34).

Logical Supervenience Theory

Logical supervenience sets the exposition of Chalmers' search for a fundamental theory of consciousness. It is with the use of logical supervenience theory that Chalmers posits the five arguments against reductive materialism. The logical supervenience theory is entirely different from local, global and natural supervenience theory. While global, local and natural supervenience are limited to empirical knowledge, logical supervenience is confined to conceptual knowledge. For logical supervenience, a set of properties is said to supervene on another set of properties if and only if the two sets of properties do not contradict each other conceptually. This means that the logical supervenience theory is not limited to empirical knowledge, however, It is limited to pure logic, specifically, conceptual properties. Consequently, we can say two sets of properties supervene logically even if these properties are empirically impossible. Stated differently, logical supervenience can have sets of properties that do not exist

in the world or a set of properties that violate the laws of nature. However, due to the fact that the set of properties are conceptually coherent, one is correct in stating the supervenience of the two properties. Chalmers writes on 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…God could not have created a world with male vixens, but he could have created a world with flying telephones. In determining whether it is logically possible the constraints are largely conceptual. The concept of male vixen is contradictory.... the concept of flying telephone is conceptually coherent (Chalmers, 1996, p. 35).

Chalmers uses examples of a male vixen and flying telephone to illustrate the notion of logical supervenience. If two sets of properties are logically coherent, those two sets of properties are logically possible, however, if two sets of properties are contradictory, then those two sets of properties are logically impossible. The concept of a "male vixen" is contradictory. A vixen is a female fox. Therefore, the contrast between these two concepts makes it logically impossible. We cannot have a vixen that is both male and female at the same time. A living thing can only be either male or female. Thus there is a clear contradiction in the term "male vixen." On the other hand, the term "flying telephone" seems problematic from an empirical perspective. A flying telephone violates the laws of nature and thus does not coincide with global, natural and local supervenience. However, remember that logical supervenience is entirely based on the coherence of concepts. The concept of a telephone that can fly is not contradictory at all. It is possible that we can have

a flying telephone in the logical possible worlds. This is because the concept of a telephone and the concept of flying go hand in hand without running into a contradiction. "Sleeping water", 'dancing tree', "hungry chair" and "praying phone" are all examples of logical supervenience. These concepts are logically possible because they are coherent and do not contradict each other. As long as the set of properties can be conceived without any form of contradiction, that set of properties is logically possible. Thus it is valid to assert that that set of properties supervene logically. So it is right to emphatically state that global, natural and local supervenience entail logical supervenience, but logical supervenience does not always entail global, natural or local supervenience.

Chalmers' Arguments against Reductive Materialism

Remember that reductive materialism is a theory that posits that all mental states are reducible to brain states without a remainder. Let us look at reductive materialism in relation to logical supervenience. According to Chalmers, reductive materialism does not correspond to the logical supervenience theory. The thesis of reductive materialism is that mental states can be reduced to physical states in totality (Chalmers, 1996). Therefore, mental states such as pain, hunger and consciousness are reducible to physical states. With reference to the logical supervenience theory, this can be written as; mental states supervene logically on physical states as long as there is no logical possible world with the same mental states but different physical states. Thus, a mental state such as hunger or pain depends on the chemical processes that occur in the brain or the body. However, Chalmers hypothesizes that the reductive materialists' position that consciousness (mental states) can be

reduced to brain states (physical states) is contradictory. This is because consciousness is an abstract concept and the brain is a physical concept. How can an abstract entity depend on a physical entity in order to exist? They are two distinct properties and thus saying one of these properties supervenes on the other poses a contradiction. It is logically possible to have a world in which the facts of consciousness are different from the facts of the physical world. This would mean facts about consciousness do not entail physical facts. Therefore, reductive materialism is logically impossible.

Consequently, if we agree that reductive materialism is logically impossible, then it is valid to conclude that it is also globally, naturally and locally impossible. This is true because we said earlier that logical supervenience entails, global, natural and local supervenience. It is from this position that Chalmers criticizes reductive materialism. Chalmers presents five arguments against reductive materialism. However, I will limit myself to the first four arguments because the first four arguments are based on the logical supervenience theory. The first two arguments are based on logical supervenience while Chalmers uses epistemology associated with logical supervenience theory for the last two arguments. The first of the five arguments that Chalmers presents is known as the philosophical zombie argument.

Philosophical Zombie Argument

Remember that reductive materialists theorize that consciousness can be reduced to brain states in totality. In relation to the supervenience theory, this translates to mean that consciousness is dependent on physical states in order for it (consciousness) to be. Consequently, reductivists claim that once

we know facts about physical properties we should know facts about consciousness. In other words, facts about consciousness supervene on facts about the physical world. In the philosophical zombie argument, Chalmers affirms his position that it is logically possible for a physical entity to exist and perform the functions of a living thing, without necessarily being conscious. I agree that if this claim made by Chalmers is true, then it is logically impossible for consciousness to supervene on brain states. This implies that facts about consciousness do not entail facts about the physical world. Take note: the significance of the philosophical zombie argument is to affirm Chalmers' position that facts about consciousness do not entail facts about the physical world. Chalmers presents the philosophical zombie argument as follows:

> So let us consider my zombie twin. The creature is molecule for molecule identical to me, and identical in all low-level properties postulated by a completed physics, but he lacks conscious experience entirely. To fix ideas, we can imagine that right now I am gazing out of the window, experiencing some nice green sensations from seeing the trees outside, having pleasant experience through the munching on a chocolate bar, and feeling dull aching sensations in my right shoulder…. What is happening to my zombie twin? He will be conscious in the sense described earlier- 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 (Chalmers, 1996, pp. 94-95).

The extract above is a summary of the philosophical zombie argument. Chalmers begins the argument by establishing the logical possibility of the existence of a zombie. Remember that logical supervenience does not deal with a posteriori knowledge but a priori knowledge. That is, if two sets of concepts are coherent, then those sets of properties are logically possible. The conception of having a zombie that is psychologically identical to me and not phenomenally identical to me is conceptually coherent. Therefore, it is logically possible. Let us imagine a scenario where my zombie twin and I are gazing outside the window and eating a chocolate bar. I will call my zombie twin Collin. The difference between Collin and I is that Collin lacks conscious experience while I have conscious experience. This means that I am both a psychological being and a phenomenal being while Collin is only a psychological being. Collin can do everything I can do physically. That is, he is capable of eating a chocolate bar, gazing through the window and staring at the green grass and trees outside the house. One can infer from this scenario that while I know how it feels like to perceive green trees and grass and how it feels like to taste a chocolate bar, Collin does not know how these experiences feel like. That is, Collin does not know the qualitative nature of experiencing green trees or grass and tasting a chocolate bar. All that Collin has is brain states that enable him to express consciousness functionally. However, Collin does not know how it feels like to be a zombie (Chalmers, 1996). Additionally, Collin is incapable of engaging in mental activities one of such as introspection.

All in all, the philosophical zombie argument affirms the assertion that it is logically impossible for consciousness to logically supervene on brain

states (physical world). This is because we have established that there is a logical possible world in which I have a zombie twin (Collin) who is physically identical to me (has a brain and other physical properties of a human being) but lacks consciousness. Consequently, this implies that the facts about consciousness do not entail facts about the physical world. Consciousness is not a higher-level property of the physical world. And thus it cannot be reduced to physical states or properties.

Argument from the Inverted Spectrum

The second argument that Chalmers presents is known as the argument from the inverted spectrum. This is the second argument against reductive materialism that is based on the logical supervenience theory. Chalmers uses the argument from the inverted spectrum to affirm his position that facts about consciousness are different from physical facts. Therefore, it is logically impossible for consciousness to logically supervene on physical properties. Below is a diagram of a colour spectrum:

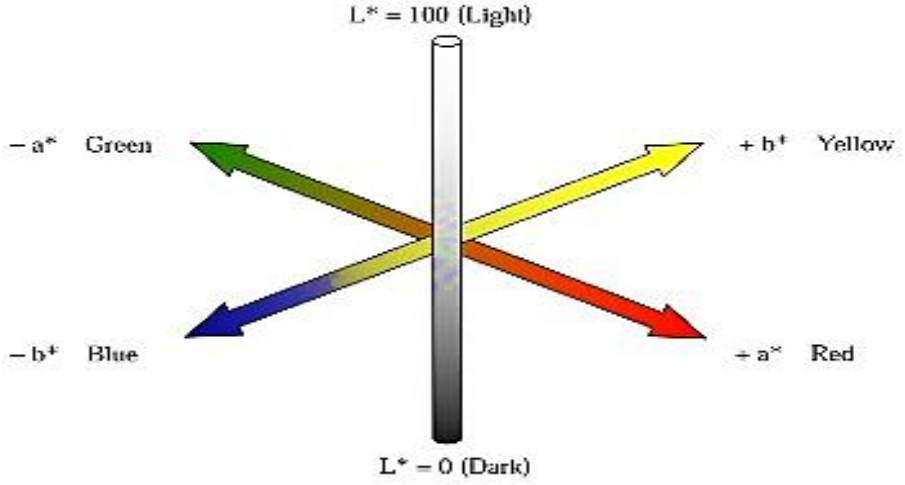

***Figure 1*: A layout of the inverted spectrum**.

Unlike the philosophical zombie argument where Chalmers talks about a twin lacking consciousness, in the inverted spectrum argument, the twin has consciousness. However, the conscious experience of the twin is inverted. I will now discuss the colour spectrum briefly.

There are four colours in the colour spectrum; green, blue, yellow and red. While red and yellow are bright colours, green and blue are dull colours. Stated differently, psychologists claim that the bright colours, which are termed as warm colours, produce a positive conscious experience for the subject of perception. Dull colours, which are termed as "cool" colours (green and blue), produce a negative conscious experience to the subject of perception. It follows that whenever a subject perceives a red or yellow object (warm colours), the redness of the object should produce a positive qualitative conscious experience to the subject. On the other hand, whenever a subject perceives a green or blue object (cool colours), the greenness or blueness of that object should produce a negative qualitative conscious experience to the subject. Having understood the conscious experiences associated with warm and cool colours, let us discuss Chalmers' argument.

Similar to the first argument, let us imagine that I have a twin brother by the name Collin. One morning, I wake up hungry and walk to the kitchen to pick something to eat. As I enter the kitchen, I see a red apple on the table. It follows that at that particular moment I perceive the red apple, it produces a positive qualitative conscious experience. That is, the colour of the apple which is red brings a positive qualitative feeling to me. On the other hand, let us imagine that my twin brother, Collin, has an inverted conscious experience. That is, Collin comes from a world in which the red-green axis and the

yellow-blue axis have been reversed. This would mean that Collin would perceive a red object as green and a yellow object as blue. The concept of an inverted spectrum is conceptually coherent and does not lead to a contradiction. Thus, Chalmers' inverted spectrum is logically possible. Let us get back to the scenario: After I am done eating the apple, I wake my twin up, Collin, and ask him to go and have a red apple for breakfast. Remember that Collin's conscious experience is inverted. As Collin enters the kitchen, he perceives the red apple to be green in colour. Accordingly, Collin would have a negative qualitative conscious experience from the apple that is red. This is because Collin's colour spectrum is inverted; it follows that Collin would have a wrong qualitative conscious experience of the red apple.

In a nutshell, this argument proves that Collin's facts about his conscious experience are different from the facts about the physical world. The physical world has a red apple, however, Collin perceives this red apple to be green in colour. This creates a contradiction in Collin's conscious experience. I agree that this argument affirms the claim that facts about conscious experience are different from facts about the world. If this is true, then Chalmers is right in his claim that facts about consciousness do not logically supervene on facts about the physical world. The third argument is known as the argument from epistemic asymmetry. Chalmers uses epistemology to affirm his position that consciousness does not logically supervene on the physical world.

Argument from Epistemic Asymmetry

This is how Chalmers states the epistemic asymmetry argument:

> As we saw earlier, consciousness is a surprising feature of the universe. Our grounds for belief in consciousness derive solely from our own experience of it. Even if we knew every last detail about the physics of the universe- the configuration, causation, and evolution among all fields and particles in the spatiotemporal manifold-that information would lead us not to postulate the existence of conscious experience. My knowledge of consciousness in the first place comes from my own case, not from every external observation…epistemic asymmetry of our knowledge of consciousness is not present in our knowledge of other minds (Chalmers 1996, pp.101-102).

The focus of the epistemic asymmetry argument is to point out that our knowledge of consciousness is not derived from our knowledge of the world. Remember that even though Chalmers posits consciousness to be a very complex concept, he defines consciousness as the awareness of one's own mental and physical states such as thoughts perceptions and feelings (Chalmers 1996). If Collin is aware of his mental and physical states, then Collin is said to be conscious.

Thus we can deduce that consciousness is a subjective and intrinsic concept. It can only be known by the subject of experience. It follows that it is redundant for one to posit that consciousness can be reduced to physical phenomena. It is not through external properties such as the physical world that one is able to know consciousness; consciousness is an inner and subjective experience of a being. This means that a being can explain consciousness without necessarily having knowledge of neuroscience or biology. Having established this claim, it follows that consciousness does not

logically supervene on physical phenomena. Remember that if we say that B-properties supervene on A-properties, implies that once one knows or is aware of the A-properties, one should necessarily know the B-properties. In other words, once one is aware of the lower-level properties (Basic properties) one should be aware of the higher-level properties. If we are to hypothesize that consciousness supervenes on physical properties (Brain states), it would mean that knowledge of physical properties should necessarily lead to knowledge of consciousness. However, since consciousness is an intrinsic and subjective experience of a being, we cannot exhaustively know consciousness by appealing to external evidence such as neuroscience and neurobiology. External knowledge (physical phenomena) cannot help us understand consciousness in totality because of the subjective and intrinsic nature of this complex concept.

Basically, the epistemic asymmetry argument affirms Chalmers' position that consciousness does not logically supervene on physical properties because consciousness is a subjective and inner experience of a being. Thus, knowledge of physical phenomena cannot explain consciousness in totality. Chalmers concludes on this argument; "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 facts about consciousness (Chalmers, 1996, pp. 102-103)." The second argument from epistemology is known as the knowledge argument.

The Knowledge Argument

In this section of the book, Chalmers introduces Frank Jackson's "Mary's room argument" to support the knowledge argument:

> Imagine that we are living in the age of completed neuroscience, where we know everything there is to know about the physical processes within our brain responsible for the generations of our behaviour. Mary has been brought up in a black-and-white room and has never seen any colours except for black, white, and shades of grey. She is nevertheless one of the world's leading neuroscientists, specializing in the neurophysiology colour vision. She knows everything there is to know about the neural process involved in the visual information processing, about the physics of the optical processes, and about the physical makeup of objects in the environment. But she does not know what it is like to see red. No amount of reasoning from the physical facts alone will give her that knowledge (Chalmers, 1996, p. 103).

Chalmers uses the extract above to reinforce his position that one cannot know consciousness by knowing physical facts about the world. Mary is said to know all the physical facts about the world (In this case, the world refers to the black and white room). She knows every neuroscientific process that occurs in the brain during the perception of colours in her room. Additionally, she is aware that the colours that she perceives are called 'black', 'white' and 'grey.' One day Mary decides to step out of the room for the first time in her life. Immediately she steps out, she sees an object that is neither black, white or grey. This object that she perceives is red. According to Jackson, it is only at this time that Mary knows what it is like to see the colour red. It is at this point that Mary is conscious of colours. While Mary was in her

room, all she knew were physical facts about colours, however, she did not have any conscious experience of these colours.

Chalmers thus concludes that Mary's room argument validates his theory that facts about consciousness do not entail physical facts about the world. It is only when Mary perceives the colour red that she knows what it is like to experience colours. Stated differently, it is only when Mary experiences the colour red that she is actually conscious of colours. All she knew in her room are physical facts about colours and not conscious facts. Furthermore, Chalmers uses mice and bats to illustrate this point. Chalmers writes:

> A related way to make this point is to consider systems quite different from ourselves, perhaps much simpler such as bats or mice and note that the physical facts about these systems do not tell us what their conscious experiences are like if they have any at all…Once all the physical facts about a mouse are in, the nature of its conscious experience remains an open question: It is consistent with the physical facts about the mouse that it has conscious experience, and it is consistent with the physical facts that it does not. From the physical facts about the bat we can ascertain all facts about the bat, except the facts about its conscious experience (Chalmers, 1996, p. 103).

Similar to Mary's room argument, even if one knows all the physical facts about the world; in this case, about bats and mice, it is not enough for one to know what the conscious experiences are of these creatures. The point should be made again that consciousness is a subjective and inner experience of the epistemic agent. Therefore, knowing the physical and neurological configurations of the mice and the bats is not enough for one to know the facts about consciousness. For Chalmers, the knowledge argument and the argument from epistemic asymmetry affirm his theory that consciousness does

not logically supervene on physical properties. Let us now examine the strengths of Chalmers' theory.

Conclusion

In conclusion, this chapter has dealt with Chalmers reasons for searching for a fundamental theory of consciousness. For Chalmers, consciousness does not logically supervene on the physical world. This is because facts about consciousness do not entail facts about the physical world. Having understood Chalmers' argument on the autonomy of consciousness, I will endeavour to provide some arguments that have been presented to support reductive materialism.

CHAPTER THREE

IN DEFENCE OF REDUCTIVE MATERIALISM

Introduction

This chapter focuses on providing the arguments that have been raised to defend reductive materialism. By the end of the chapter, the reader would have understood the arguments philosophers and neuroscientists have raised in defence of reductive materialism. I will show how these arguments attempt to defeat Chalmers' position. Finally, the reader would have understood the perspective of the neuroscientists regarding consciousness. The chapter is divided into two sections. The first section discusses the arguments Dennett, Churchland and Armstrong have raised regarding the plausibility of reductive materialism. The second section provides the arguments presented by neuroscientists concerning consciousness. Before discussing the chapter in detail let us discuss the merits of reductive materialism as a theory.

Strengths of Reductive Materialism

There are several merits or strengths of reductive materialism. Some of which are listed below.

1. Exposed the problems with behaviourism and rectified them.
2. Posits an account of the mind that corresponds to the physio-chemical makeup of human beings.
3. Since reductive materialism posits physical states (matter) to be fundamental, it is consistent with the theories in the sciences. Sciences posit matter to be the fundamental property.
4. It makes claims that can be empirically verified by neuroscientists with the aid of brain scanning machines. This is because the claims made by

the reductive materialists coincide with the claims made in the field of science.

5. Posits all mental states, including consciousness, ontologically depend on brain states which match the claims made by neuroscientists on the mind.

The strengths that I have cited will help us understand the line of thought that the philosophers and the neuroscientists use in positing their theories. Materialist philosophers and neuroscientists are concerned with having an account of the mind that is empirically verifiable. That is, one that is consistent with the laws of nature. For them, positing consciousness as a fundamental property is problematic because it contradicts the laws of nature.

In developing this chapter, I have used three main philosophers; David Armstrong, Paul Churchland and Daniel Dennett. The arguments raised against Chalmers stem from one main query: Is it possible for us to understand facts about consciousness without appealing to physical facts? These philosophers claim that facts about consciousness logically supervene on facts about the physical world.

A. In Defence of Reductive Materialism: Dennett, Churchland and Armstrong

Take note: Daniel Dennett (1991) and Paul Churchland (1989) presented their arguments before Chalmers propounded his arguments against reductive materialism. Chalmers presented an improved version of Frank Jackson's knowledge argument, Nagel's "What it is like to be a Bat", and the inverted spectrum argument. Chalmers adds something significant to these arguments, which is the logical supervenience theory. By adding the logical

supervenience theory to the older forms of the arguments, Chalmers' arguments have more logical force than the older versions. I assert that even though Chalmers adds logical supervenience to the old versions of the arguments, Dennett and Churchland's arguments against the older versions may still hold against Chalmers' arguments. We will interrogate this assertion later in this chapter. Chalmers uses a conceptual analysis of consciousness and brain states. However, he does not agree that consciousness can be conceptually reduced to physical facts. Raymond Osei (2006, p. 86) defines conceptual reduction as:

> Claims that the very content, or subject matter, of our ordinary statements about higher-level objects, turns out, on conceptual analysis, to be referring to micro-entities. That is to say, the term, 'wooden desk', is meaningful only when it refers to the collection of microphysical entities that constitute the wooden desk.

Although Dennett and Churchland affirm the reductive materialist position, they also present arguments that purport to refute Chalmers' position that consciousness cannot be conceptually reduced to brain states. For Chalmers, to talk of pain is something more than just referring to brain states. This is true, however, it is not reason enough to posit a theory of consciousness that is independent of brain states. Because no matter how one experiences pain, it is still associated with brain states. I will discuss this later in the chapter.

There are many forms of consciousness as Chalmers highlights in *The Conscious Mind* (1996). I believe that Chalmers' definition of consciousness is the best I have come across and thus I am going to adopt his definition of

consciousness for this chapter. Remember that for Chalmers, consciousness is one's awareness of various mental and physical states such as perceptions, thoughts and feelings. Therefore, if an organism or creature can only respond to stimuli without necessarily being aware of their experiences, that organism, according to Chalmers, is not fully conscious. A creature is conscious if and only if it is aware of its experiences: the mental and physical states that it has at a given point in time. Animals such as dogs exhibit some conscious states. That is, they exhibit some of the twelve experiences of consciousness that Chalmers outlines in his catalogue. However, remember that a creature is considered a conscious being if and only if that creature can exhibit at least a number of the conscious experiences outlined in the catalogue. We are aware that animals are capable of exhibiting eleven levels of consciousness except for one: which is the sense of self or self-consciousness or introspections. For instance, a dog can have sensations and emotions and even experience the rest of the conscious experiences, however, it is incapable of having self-consciousness. A dog can look at itself in the mirror and will not be aware of its reflection in the mirror. Additionally, a dog can respond to the stimuli of pain but does not have the awareness that it is experiencing that mental state but it only responds to stimuli. Additionally, it is incapable of forming introspective beliefs about its mental states. Therefore, I ascribe to Chalmers' definition of consciousness. One is conscious if one can exhibit at least some of the twelve types of conscious experiences. Most important of the twelve is the sense of self or self-consciousness.

Chalmers' Position

Since this chapter aims at exposing the flaws in Chalmers' theory: let us refresh our minds on Chalmers' position about the autonomy of consciousness. Chalmers' provides five arguments to affirm or validate his position that reductive materialism is wrong because facts about consciousness do not depend on facts about the physical world. Chalmers is a property dualist and thus subscribes to the reality of consciousness. For Chalmers, we cannot understand consciousness by reducing it to brain states because consciousness is autonomous from the brain states. In his words, "facts about consciousness are well above facts about the physical world" (Chalmers, 1996). In chapter two of this thesis, we focused on four arguments that Chalmers raises against reductive materialism: namely, the philosopher zombie, the inverted spectrum argument, the epistemic asymmetry argument and lastly, the knowledge argument. These arguments arrive at the same conclusion: consciousness or facts about consciousness do not logically supervene on brain states or facts about the physical world. I agreed that if we accept Chalmers' theory to be true based on the arguments he provides, then one is justified in advocating for the autonomy of consciousness. It follows that one cannot understand consciousness in totality by appealing to brain states and thus consciousness cannot be reduced to brain states. There is something more to consciousness than biochemical processes that occur in the body and the brain. Consciousness for Chalmers, does not depend on the configuration of neurons in the brain. Daniel Dennett and Paul Churchland posit otherwise.

I. Dennett versus Chalmers on reductive materialism.

I will begin my critical study of Chalmers' position by interrogating the arguments Dennett raises against the four arguments Chalmers presents. Before Dennett posits that Consciousness is an illusion, he addresses the arguments that Chalmers raises against reductive materialism. It is important to note that Dennett's work, *Consciousness Explained* (1991), was published before Chalmers' *The Conscious Mind* (1996). Nevertheless, his arguments for materialism are significant and tenable for this study. Dennett exposes flaws in the philosopher zombie, the argument of the inverted spectrum and the knowledge argument.

We begin with the philosopher zombie argument. Dennett's position on Chalmers' philosopher Zombie argument is as follows:

> That is just silly. So we could say instead that consciousness might be epiphenomenal in the Huxley sense: although there was some way of distinguishing zombies from real people (who knows, maybe zombies have green brains), the difference doesn't show up as a functional difference to observers. Equivalently, human bodies with green brains don't harbour observers, while other human bodies do. On this hypothesis, we would be able in principle to distinguish the inhabited bodies from the uninhabited bodies by checking for brain colour. This is also silly, of course, and dangerously silly, for it echoes the sort of utterly unmotivated prejudices that have denied full personhood to people on the basis of the colour of their skin. It is time to recognize the idea of the possibility of zombies for what it is: not a serious philosophical idea but a preposterous and ignoble relic of ancient prejudices. There is another way to address the possibility of zombies, and in some regards I think it is more satisfying. Are zombies possible? They're not just possible, they're actual. We're all zombies. Nobody is conscious — not in

> the systematically mysterious way that supports such doctrines as epiphenomenalism! I can't prove that no such sort of consciousness exists. I also cannot prove that gremlins don't exist. The best I can do is show that there is no respectable motivation for believing in it (Dennett, 1991, p. 405).

Dennett mentions how preposterous it is for us to even consider the philosophical zombie argument. For him, this argument has no philosophical basis due to the fact that the existence of Zombies is impossible. However, remember that Chalmers' argument is based on the position that zombies may not be empirically verifiable but they are logically possible. An assertion is logically possible if the concepts that are used in that assertion do not contradict each other. It is thus valid to theorise the possibility of a philosophical zombie that is psychologically identical to us (human beings) but phenomenally different from us. Nevertheless, Dennett recognises a problem with this argument by arguing from a 'functional' point of view. The philosopher zombie argument states that the human being, John, has a brain and is conscious, on the other hand, the zombie, Collin, has a brain but is not conscious. Remember that Collin can perform all the actions that John performs, however, Collin does not know what it is like to be Collin. Dennett argues that if Collin can perform all the actions that John (the conscious being) can perform, how then can we say that Collin is not conscious? If Collin is capable of performing all the actions that the 'conscious' John can perform then how can we prove that Collin is not conscious? Remember Nagel's argument that Chalmers uses about consciousness being subjective or intrinsic to the subject of experience. That is, Consciousness is a first-person (Subjective or intrinsic to the agent) experience and thus one cannot know

what is it like to be a bat or what it is to be John. If John and his friends, Mary and Priscilla, have a bite of the same red apple, we cannot know whether they have the same qualitative experience. Stated differently, we do not know what it is like for either John, Mary or Priscilla to have a bite of the red apple. Their experiences may be different, but we will never know for sure because consciousness is subjective. In contrast, if we agree with this property of consciousness, it follows that it is logically possible that Collin is as conscious as John is, however, we will not know for sure because consciousness is subjective to the agent of experience. Since Collin can perform any function that John can perform, it is logically possible that Collin is a conscious being. Moreover, since consciousness is subjective (there is something it is like to be conscious) then the same way we cannot be sure of the consciousness of the bat is proportional to the fact that we cannot be sure of Collin is not conscious as well.

Therefore, Dennett affirms the contradictory nature of the philosopher zombie argument by using the argument from functionality. If Collin can perform the same functions as John, then it is logically possible that Collin is a conscious being. Furthermore, Dennett posits that the argument of the inverted spectrum is not valid.

For Dennett, the argument of the inverted spectrum is problematic because it is logically possible that Collin (the being that has the inverted conscious experience) does not have an inverted conscious experience but wrong wiring of the neurons in the brain. Remember that Chalmers posits that facts about consciousness do not entail physical facts because it is possible for John to have the right psychological properties and phenomenal properties

while Collin has the right psychological property but an inverted conscious experience. Thus John's perception of the colour red will correspond to the right qualitative nature of experiencing the colour red. That is, John will have a positive experience. However, since Collin has an inverted conscious experience, Collin will perceive the colour red as green. This, in turn, will lead Collin to have a negative conscious experience due to his perception of a dull colour. However, this conscious experience will be inverted because what Collin is perceiving to be green is actually red. This is a summary of Chalmers' argument of the inverted spectrum. If we accept this argument to be valid then it is definitely true that facts about consciousness do not entail physical facts. However, Dennett exploits the inadequacy of this theory.

Dennett writes:

> You wake up one morning to find that the grass has turned red, the sky yellow, and so forth. No one else notices any colour anomalies in the world, so the problem must be in you. You are entitled, it seems, to conclude that you have undergone visual colour qualia inversion. How did it happen? It turns out that while you slept, evil neurosurgeons switched all the wires — the neurons— leading from the colour-sensitive cone cells in your retinas…The effect on you would be startling, maybe even terrifying. You would certainly be able to detect that the way things looked to you now was very different, and we would even have a proper scientific explanation of why this was: The neuron clusters in the visual cortex that "care about" colour, for instance, would be getting their stimulation from a systematically shifted set of retinal receptors (Dennett, 1991, p. 391).

Initially, Chalmers posits the impossibility of having intersubjective qualia. Even if we were to establish a machine that would be able to tell us the

various colours that John and Collin are perceiving, we will not be able to know whether the results that the machine discloses correspond accurately with the qualitative nature of the subjects' experience. Nonetheless, we should still consider the assertion that it is logically possible that Collin is not having an inverted conscious experience. Dennett posits that since it is logically possible that Collin has an inverted conscious experience, it is also logically possible that Collin does not have an inverted conscious experience but wrong wiring of his neurons (Dennett, 1991). That is, the retina receptors (photoreceptors) that transmit light to the cells of the retina have been rewired or misconfigured. It will follow that the information that the optic nerve receives from the retina and sends to the brain is wrong due to the rewiring of cells in the retina. There are two types of receptors in the retina, the rods and cones. The rods are responsible for visual perception in the dim light while the cones are responsible for visual perception in good lighting conditions. This means that it is logically possible that when these cells are tempered with, one can perceive a red ball to be green and a yellow ball to be blue. Below is a picture of the eye which I have presented to provide understanding of the nature of the retina.

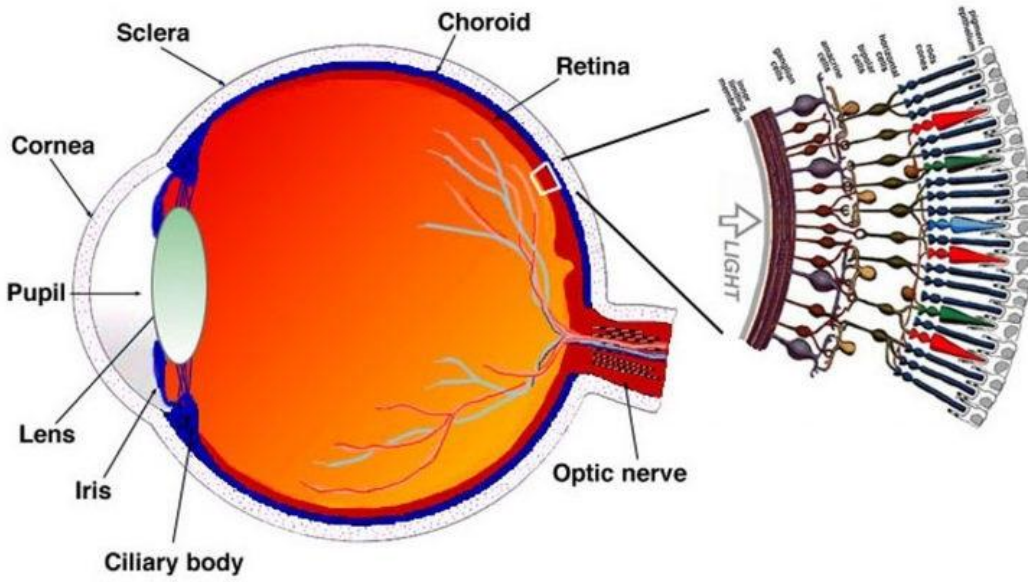

***Figure 2*: A diagram depicting the image of the eye and the various parts of the eye (Kolb, 2011).**

Therefore, Dennett's argument defeats Chalmers use of the argument of the inverted spectrum to posit that facts about consciousness do not logically supervene on physical facts. We have realised that in as much as it is logically possible to have a being with an inverted conscious experience, it is also possible to have a being with wrong neuron wiring which will lead to one having a wrong visual perception. The implication of Dennett's argument is that it affirms the position that facts about consciousness entail physical facts. This is because Collin's perception will be caused by the wrong wiring of neurons and cells in the retina. It follows that Collin's inverted conscious experience depends on or logically supervenes on the wiring of the neurons or cells in the optic nerve. In other words, the inverted conscious experience is dependent on the organisation of neurons in the retina and the brain. The last argument that Dennett treats in his work is Chalmers' knowledge argument. Dennett limits himself to Frank Jackson's 'Mary's room argument.'

For Dennett, Mary's room argument does not justify the claim it makes that Mary would not know what it is like to perceive colours. Chalmers claims that Mary will not be able to know what it is like to experience colours even though she is aware of all the physical facts. There is a qualitative nature of experience associated with the perception of colours. It is only when Mary perceives the colour red that she knows what it is like to experience colours. Stated differently, it is only when Mary experiences the colour red that she becomes conscious of colours. All she knew in her room are physical facts about colours and not conscious facts. Dennett posits otherwise by presenting a hypothetical continuation of Frank Jackson's story. The story continues:

> And so, one day, Mary's captors decided it was time for her to see colours. As a trick, they prepared a bright blue banana to present as her first colour experience ever. Mary took one look at it and said "Hey! You tried to trick me! Bananas are yellow, but this one is blue!' Her captors were dumfounded. How did she do it? "Simple," she replied. "You have to remember that I know everything absolutely everything that could ever be known about the physical causes and effects of colour vision. So of course before you brought the banana in, I had already written down, in exquisite detail, exactly what physical impression a yellow or a blue object (or a green object, etc.) would make on my nervous system. So I already knew exactly what thoughts I would have (because, after all, the "mere disposition" to think about this or that is not one of your famous qualia, is it?). I was not in the slightest surprised by my experience of blue (what surprised me was that you would try such a second-rate trick on me). I realize it is hard for you to imagine that I could know so much about my reactive dispositions that the way blue affected me came as no surprise. Of course it's hard for you to imagine. It's hard for anyone to imagine the consequences of someone knowing

> absolutely everything physical about anything! (Dennett, 1991, p. 399-400).

There are biochemical processes that occur in the brain before one can have mental states. Consciousness is thus a product of biochemical processes that occur in the brain. It is for this reason that Dennett establishes the claim that even if Mary is to go out and someone lies to her that she is looking at a blue banana since Mary is aware of every physical fact, she would know that the banana is actually yellow and not blue. According to Dennett, bright colours have a neurological configuration that is different from dull colours. This is true as we have realised that the retina has two cells that are responsible for transmitting colour vision from the optic nerve to the brain. Neurologically, every colour perception stems from the organisation of neurons in the brain. Thus we cannot perceive colour devoid of the reaction of neurons in the brain. This means that knowledge of all physical facts will be enough for Mary to know the new colours she is perceiving outside her room. This is based on the assumption that Mary has studied the effect that every colour that is perceived would have on the neurophysiological structure of the brain. Moreover, Mary will know the exact configuration that the brain will have when she perceives several colours: red, blue, yellow and green. Dennett points out:

> And she knows precisely which effects described in neurophysiological terms each particular colour will have on her nervous system. So the only task that remains is for her to figure out a way of identifying those neurophysiological effects "from the inside." You may find you can readily imagine her making a little progress on this for instance, figuring out tricky ways in

> which she would be able to tell that some colour, whatever it is, is not yellow, or not red (Dennett, 1991, p. 400).

As Chalmers said, every colour has a positive or negative effect on the experience of the subject. For Dennett, this effect is not in the mind but a biochemical reaction that takes place in the brain. Thus, since it has been established that it is logically possible for Mary to know all the effects that the brain has during different perceptions of colours, then even if Mary leaves the black and white room, she would know all the colours she experiences. She will be able to do this by paying attention to the neuronal configuration of the brain during different perceptual experiences of colours. There is a correlation between every colour that Mary perceives with a specific configuration in the brain. Dennett argues that it is through this correlation that Mary will be able to know what it is like to experience the new colours she perceives outside the black and white room.

Therefore, Dennett's argument against Chalmers' knowledge argument defeats Chalmers' position that facts about consciousness do not supervene on physical facts. If this is true, then Mary should be unable to know other colours except for the black and white colours that she was exposed to in her room. Nonetheless, it is logically possible for Mary to know the new colours that she has been exposed to due to her knowledge of all neurophysiological configurations of the brain. For every perception, there is a correlation and hence a proportional reaction of neurons. It is logically possible for Mary to know all the configurations of neurons and cells in accordance with every colour that exists.

II. Churchland versus Nagel and Chalmers

I subscribe to Dennett's arguments against Chalmers' position on reductive materialism. Given that I have presented criticisms against Chalmers' four arguments, before providing my evaluation on all the arguments, I will present Churchland's account on the validity of the reductive materialist explanation of consciousness. In chapter three of Churchland's work, *A Neurocomputational Perspective: The Nature of the Mind and the Structure of Science*, he presents some arguments against Nagel's position on the impossibility of reducing consciousness to brain states. This section of Churchland's work is significant in showing the defect of Chalmers' position on the subjective or intrinsic nature of consciousness. Chalmers adapts Nagel's theory in the arguments he presents against reductive materialism. Churchland's critique of Nagel's theory equally defeats Chalmers' epistemic asymmetry argument. According to Churchland, Nagel and Chalmers' critique commit the man-masked fallacy or the intentional fallacy.

The intentional fallacy or the man-masked fallacy is committed when one claims that if one object has a certain property, while the other object does not have the same property, these two objects are affirmed to be different. However, this is fallacious because two objects can be identical even though they differ in some properties. For example, Batman is identical to Bruce Wayne. However, Batman and Bruce Wayne have some different properties. Batman, is a man dressed as a bat, while Bruce Wayne is a human being without a Batman costume. Nevertheless, we are still referring to the same person even though they have different properties. It will thus be fallacious for one to claim that:

A. I know that Batman wears a black costume

B. I do not know that Bruce Wayne wears a black costume.

C. Therefore, Batman is not Bruce Wayne.

The mere fact that the speaker does not know that Bruce Wayne wears a black costume does not validate the conclusion that Batman is not Bruce Wayne. Yes, it is true that Bruce Wayne does not reveal his identity when he wears the Batman costume, while Batman reveals his identity as 'Batman' when he wears the black costume. Whether these two have different properties it does not mean that they are not identical. The man-masked argument can be easily understood as presented below:

A. I know who X is

B. I do not know who Y is

C. Therefore, X is not Y.

I will replace the variables X and Y in order to exemplify this argument:

A. I know who John is.

B. I do not know who the masked-man is.

C. Therefore, the masked-man is not John

We are aware that even though John and the masked-man do not share the same property (The wearing of a mask), it does not mean that they are not identical. The masked-man may be John. This affirms the thesis that it is possible for two things to differ in some properties but remain identical. Having understood the intentional fallacy, let us examine how Nagel and Chalmers commit this fallacy.

As I stated in chapter two of this thesis: Chalmers' epistemic asymmetry argument levelled against reductive materialism posits that one is

capable of knowing consciousness without necessarily appealing to brain states. This is due to the subjective and intrinsic nature of consciousness. The focus of the epistemic asymmetry argument is to point out that our knowledge of consciousness is not derived from our knowledge of the world. Remember that even though Chalmers posits consciousness to be a very complex concept, he defines consciousness as being aware of one's own mental and physical states such as thoughts perceptions and feelings (Chalmers 1996). This means that a being can explain consciousness without necessarily having knowledge of neuroscience or biology. It is possible for John to know what it is like to see green vegetation without having knowledge of the way neurons are reacting in the brain at that particular moment. Nagel and Chalmers' argument can be presented in this form:

A. The qualia of my sensations are directly known by me, by introspection, as elements of my conscious self.
B. The properties of my brain states are not directly known by me, by introspection, as elements of my conscious self
C. Therefore, the qualia of my sensations are not the properties of my brain states (Churchland, 1989, p. 58).

Another form of the argument is as follows:

A. The properties of my brain states are known-by-the various-external-senses, as having such and such physical properties.
B. The qualia of my sensations are not known-by-the various-external-senses, as having such and such physical properties.
C. Therefore, the qualia of my sensations are not the properties of my brain states.

One can clearly see that the arguments commit the masked-man fallacy. The first form posits that the properties or elements of consciousness, such as qualia, are directly known by the experiencer. Introspections are subjective to

the epistemic agent. The argument goes on to claim that brain states are not directly known to the subject of experience as Chalmers has established. There seems to be a fundamental difference between the property of consciousness and brain states. That is, consciousness is subjective while brain states are objective. Remember that the man-masked fallacy is committed when one claims that due to differences in the properties of two things, we can conclude that the two things, be what it may, are not identical. Chalmers and Nagel commit the man-masked fallacy by concluding that the qualia of sensations do not supervene on brain states because they are not identical. Churchland argues that it may seem that the property of qualia is distinct from brain states, however, upon further investigation, one will realise that they are identical.

In the same vein, it may seem that Batman is not identical with Bruce Wayne but upon further investigation, one will know that Batman and Bruce Wayne are identical. Churchland (1989, p. 59) presents examples of other fallacious arguments to illustrate his point:

A. Temperature is knowable by tactile sensing.
B. Mean molecular kinetic energy is not knowable by tactile sensing.
C. Temperature is not the same as molecular kinetic energy.

We are aware, with the aid of the sciences that temperature is caused by molecular kinetic energy. However, it is true that molecular energy is not known by tactile sensation. It is only through further experiments that science was able to establish this fact (That molecular kinetic energy is identical to temperature). Thus, it is wrong to conclude that because temperature is knowable by tactile sensation and molecular energy is not, it means that they are not identical properties. In the same vein, it is wrong to conclude that because the qualia of consciousness are not knowable by appealing to brain

states, they are not identical. This affirms Churchland's position that the epistemic asymmetry argument commits the intentional fallacy. Let us discuss Armstrong's position on reductive materialism. However, we should realise that even though qualia properties and neurochemical properties have the same referent, it does not necessarily mean that these two properties are identical. I will explicate this issue briefly in the next chapter.

III. Armstrong's position

With reference to Armstrong's work (*The Nature of the Mind*), it is impossible for one to establish a theory of consciousness that is autonomous of the brain. Armstrong claims that since man is a physio-chemical organism, any theory that is established about man must be within the confines of neuroscience or neurobiology (Armstrong, p. 295). It is wrong for us to establish a theory of man that is independent of the biochemical nature of man. However, Chalmers posits that facts about consciousness do not supervene on facts about brain states. It is for this reason that he asserts that we should establish a theory of consciousness that is autonomous of the physical world, specifically, brain states.

Armstrong believes that the best theory on the nature of the mind should be one that can correspond accurately with the findings in the field of psychology and neuroscience. A good theory should explain how mental states supervene on physical states backed by empirical evidence. That is, a good theory is one that is capable of being affirmed through verification (Armstrong, p. 8). How can we give a cogent and coherent explanation of a complex concept such as consciousness without appealing to the basic or

fundamental property through which consciousness is produced? Armstrong writes:

> What reason have I, it may be asked, for taking my stand on science? Even granting that I am right about what is the currently dominant scientific view of man, why should we concede science a special authority to decide questions about the nature of man?... It seems to me that the answer to this question is very simple. If we consider the search for the truth in all its fields, we find that it is only in science that men versed in their subject can, after investigation that is more or less prolonged, and which may in some cases extend beyond a single human lifetime, reach substantial agreement about what is the case. It is only as a result is scientific investigation that we seem to reach an intellectual controversial matters… Science has provided us with the islands of truths, or, perhaps one should say, a raft up truths, to bear us up on the sea of our disputatious ignorance. There may have to be revisions and reinforcements, new results set the old findings in new perspective, but what science has given us will not be altogether superseded.

From the extract above, one will be right to conclude that according to Armstrong, any theory, on the nature of the mind, that does not correspond to the findings of science is deemed to be fallacious. Neuroscience helps in providing empirical evidence to theories concerning the mind. In the conclusion of his work, *Consciousness Explained*, Dennett explains the importance of understanding consciousness by appealing to physical facts.

Dennett writes:

> Only a theory that explains conscious events in terms of unconscious events could explain consciousness at all. If your model of how pain is a product of brain activity still has a box in it labelled "pain", you haven't yet begun to explain what pain is, and your model of consciousness carries along nicely until the magic moment when you have to say "then a miracle occurs" you haven't begun to explain what consciousness is (Dennett, 1991, p.454).

Dennett's point is that consciousness is a product of the biochemical processes that occur in the brain. When Dennett says unconscious events he is referring to physical events or facts. I present a scenario below to help understand Dennett's position:

> Supposing there is a machine that creates several types of boxes depending on the configuration of that machine. The machine can create a box that contains air, water or consciousness depending on how the machine is configured. This implies that the machine is the cause of air, water or consciousness in the boxes. If one wants to understand how air is created in the box, one would have to observe the configuration of the machine. In the same vein, one would have to know the configuration of the machine in order to know how water and consciousness is created in the boxes. One cannot understand how air is manufactured independent of the machine that causes the air to be in the box. Again, in the same vein, one cannot understand how water or consciousness is created independent of observing the configurations of the machine.

The scenario I have presented explains Dennett's statement: "If your model of how pain is a product of brain activity still has a box in it labelled "pain", you haven't yet begun to explain what pain is." Relating it to the

scenario I have presented above, Dennett will claim that we cannot know what air is without studying the machine that produces air in the box. Similarly, we cannot know what water or consciousness is without studying the machine that is responsible for producing this effect in the box. Therefore, we need to study the brain in order for us to understand consciousness.

Having discussed Dennett, Churchland and Armstrong's arguments for a materialist theory of the mind, we shall now discuss the neuroscientific perspective on consciousness. These three philosophers posit that the best account on the mind or consciousness is one that can be verified. Let us discuss this further in the next section.

B. In Defence of Reductive Materialism: The Neuroscience of Consciousness

The materialists posit that the brain is fundamental in the production of mental states. Some materialists go as far as positing the non-existence of mental states. Why do materialists hold the brain to be the fundamental entity? How does the brain produce consciousness? Is consciousness nothing more than biochemical processes that occur in the brain? The focus of this section of the chapter is to bring the reader to understand how the brain produces the catalogue of conscious experience that were outlined by Chalmers. The reader will understand how brain states produce various mental states including consciousness. Additionally, discussed in this section, are the specific parts of the brain that produce various mental states. Finally, gamma, alpha, beta, delta and theta waves will be discussed in an attempt to understand the production of consciousness and unconsciousness in relation to brain waves. Neuroscientists believe that these waves may be responsible for self-

awareness. An article by Hendrik Kruizinga (2016) will be significant in understanding the wave frequencies in the brain. Take note: the arguments presented by the neuroscientists are highly inductive in nature due to the fact that correlations are mostly used in their research. I have thus discussed Dennett's heterophenomenology as a guide to understanding the procedure that neuroscience uses in pulling off the correlations between mental states and brain states. Scholars such as Lucia Melloni and Wolf Singer are pivotal to understanding the neuroscience behind consciousness. We shall begin this section by discussing the procedure that the neuroscientists are using to understand the brain and mental states, Dennett calls it heterophenomenology.

Heterophenomenology is the only way through which neuroscientists will be able to understand consciousness in relation to brain states. Dennett does not provide a precise definition of 'heterophenomenology', however, he gives a description of it. Heterophenomenology is a theory that posits that for us to understand consciousness we need to use a third-person scientific approach (Dennett, 1991, p. 72). That is, even though consciousness is a subjective mental state, human beings can only come to understand it by using the tools that are available to us in our world today. We should thus combine every possible tool that we can use in the empirical world, to verify our theory of consciousness. We agree that consciousness is a by-product of the biochemical processes that occur in the brain, this suggests that we cannot understand consciousness by entirely appealing to a first-person account of the concept (Dennett, 1991). The subject's conscious reports should be taken seriously, nevertheless, we cannot understand consciousness in totality without

taking brain states into account. How then can we make heterophenomenology work?

Heterophenomenology is a procedure that begins by placing the subject in a room. This room should have access to any important machine that will enable the neuroscientists to observe the biochemical processes that occur in the brain. (Perry et al., 2010). Machines such as the electroencephalographic machine (EEG) and processes such as computed tomography (CT), positron emission tomography (PET) and functional magnetic resonance imaging (fMRI) will help in affirming the third-person account of consciousness. Presented below is the procedure that heterophenomenology seeks to implement in attempts to understand consciousness. I have summarised the idea (in my own words) that Dennett (2003) presents in the article, *Who's on First? Heterophenomenology Explained* concerning the procedure involved in heterophenomenology:

> The subject is invited to a room and given a place to relax: either by lying on the bed or sitting on a chair. Electrodes and wires from the EEG, MRI, CT or PET machine are connected to the brain of the subject. Different physical states will be tested on the subject so as to produce different conscious states. For, instance, a subject may be hungry, in pain, sleepy or eating: these physical states produce certain consciousness. As the subject reports their conscious experiences, many things need to be taken into account. The researcher needs to take the environment into account, the biochemical processes that occur in the brain during the time the subject is describing their experience and the wave patterns in the brain. Psychologists, cognitive scientists, philosophers and neuroscientists should come together during this process to establish an objective scientific account of consciousness.

Dennett's heterophenomenology's main task is not to know how the subject experiences a mental state but why the subject says they experience that mental state. In order to know why the subject claims, they experience that mental state, the researcher has to interrogate the source of the mental state: the brain. Neuroscientists use heterophenomenology in understanding not only consciousness but other mental and physical diseases that are connected to the brain. For instance, deep brain stimulation (DBS) which is used to treat diseases such as Parkinson's disease employs heterophenomenology. Some scientists predict that in the long run, DBS will be used to treat mental conditions such as anorexia, depression and narcolepsy. I will briefly discuss the theory that neuroscience implements regarding consciousness.

Steven Laureys and Giulio Tononi (Neuroscientists) construe consciousness to be entirely brain states. They agree with Dennett that the only way we can understand consciousness is by using heterophenomenology. A third-person account, associated with first-person inquiries of consciousness will be the best method we can use to understand consciousness. I will highlight some few comments that they make regarding consciousness in their book, *The Neurology of Consciousness: Cognitive Neuroscience and Neuropathology (2009).* Laureys and Tononi claim:

> A. This, surely, is cause for celebration. Consciousness, like sleep, is of the Brain, by the Brain, and for the Brain. A new day is dawning.
> B. We refuse to believe that conscious choice is truly or completely illusory. We refuse to believe that consciousness is without function. Rather than refurbish psychoanalysis, which is now so scientifically discredited as to be an embarrassment,

> we need to construct a responsible introspectionism to take full advantage of the opportunities presented by the new dawn. In my opinion, we need to take ourselves far more seriously as expert self-observers. We need to take a closer account of how consciousness works. We need to use the fruits of third-person accounts to better inform and direct first-person enquiries. Consciousness, we are relieved to admit, is finally a bona fide subject
>
> C. Antonio Damasio and Kasper Meyer posit: we do not regard the issue of generating mental images as an insurmountable problem in consciousness research. We believe that mental images correspond to neural patterns and acknowledge that further understanding of the relationship between neural and mental descriptions is required (p.5).

We will realise, from the extracts presented above, that neuroscientists posit that consciousness can be understood entirely if and only if we examine the neurological correlates between mental states and brain states. They posit that it is through studying the third-person account of consciousness that one will be able to know the subjective nature of conscious states. Moreover, we can only prove the validity of the first-person account of consciousness if and only if we can verify them empirically. Since science deals with empirical studies, neuroscientists attempt to establish an empirical and verifiable theory that explains consciousness in totality. As Damasio and Meyer posit, “mental states correspond to neurological activity that takes place in the brain." Now let us interrogate how the parts of the brain give rise to several conscious states.

The Brain

In this section of the chapter, using the perspective of the physio-chemical makeup of the brain, we are going to explain how different parts of the brain give rise to various conscious states. The information regarding the brain in this section is highly based on Tonya Hines (2018) paper, "*Anatomy of the Brain*." We will intend to explain why the neuroscientists posit that the three main parts of the brain, the cerebrum, the cerebellum and the brain stem give rise to Chalmers' catalogue of conscious experiences. In this vein, neuroscience theorises that consciousness arises from physio-chemical processes that occur in the brain. Since the brain is a complex organ that has many parts, I will limit the discussion to the cerebrum, the brain stem and the hypothalamus and thalamus. These parts of the brain play a major role in understanding the catalogue of consciousness or various conscious states.

The brain is the main organ of the body that is responsible for the life of a human being. Once the brain ceases to function, the human being lacks any type of conscious state (conscious, subconscious and unconscious states). It is due to brain states that conscious states and mental states arise. Accordingly, scientists believe that they can fully understand consciousness by studying the processes that occur in the brain during different conscious states. The neuroscientists thus attempt to understand consciousness in its entirety, by looking at the correlates that mental states have with physical states. Let us discuss the causal role that the cerebrum has in the development of conscious states.

The cerebrum is divided into two halves, that is, the right and the left side. The right side is responsible for creativity, artistic and musical skills,

while the left side is responsible for hand use and language. Thus damage to the left side of the cerebrum will affect the right side of the cerebrum and any damage to the right side of the brain will affect some parts of the left side of the brain. This is because even though they are two separate halves of the brain, they depend on each other to effectively perform their functions. The right side and the left side of the brain are connected by a bundle of fibres known as the corpus callosum. The corpus callosum is also responsible for transferring information from one side of the cerebrum to the other (Hines, 2018). Significant to the production of consciousness and other mental states are the four lobes that make up the cerebrum. I will briefly discuss the functions of these lobes. Below is a diagram of the cerebrum:

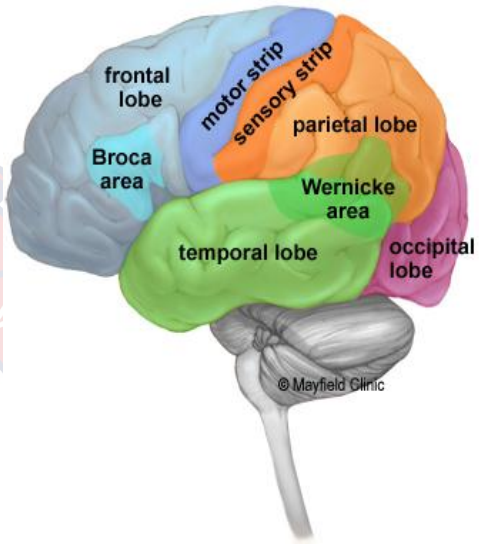

***Figure 3*: A depiction of the location of the various lobes in the brain (Mayfield Clinic, 2018).**

The four lobes that make up the cerebrum are the frontal lobe, the parietal lobe, occipital lobe and temporal lobe. As I stated earlier in this section, these four lobes are responsible for the various mental and conscious states. The frontal lobe, as the name suggests, is located at the front point of the cerebrum. Neuroscientists posit that the frontal lobe is responsible for

personality, behaviour and emotions. Thus damage to the frontal lobe can affect the personality and behaviour of the person. Furthermore, the frontal lobe produces several intellectual states. Some of which are problem-solving, planning and judgement. At the base of the frontal lobe is an area of the brain called the Broca area. This area of the frontal lobe is responsible for speaking and writing. Finally, the frontal lobe is responsible for locomotion and concentration.

The parietal lobe is responsible for interpreting language and words. Thus people who have a problem with mastering and understanding language and words may be due to damage in the parietal lobe. Furthermore, because the sensory strip is right next to the parietal lobe, the parietal lobe aids in sensations such as the sense of touch, pain and temperature (Hines, 2018). Additionally, it interprets signals from vision (Spatial and visual perception), hearing, motor, sensory and memory.

The occipital lobe is connected to the eyes. The occipital lobe is responsible for the integration of vision. Since I have already discussed this in detail in the first section of this chapter under Dennett's defence of reductive materialism, I will briefly mention a few things. The occipital lobe is responsible for interpreting colour, light and movement. The rays of light that the eye receives are sent to the occipital lobe for interpretation. The last lobe to discuss is the temporal lobe.

In the temporal lobe is the Wernicke's area. This area is responsible for understanding language. However, generally, the temporal lobe is responsible for memory and hearing (Hines, 2018). Consequently, any damage to the temporal lobe results in mental conditions such as amnesia.

Having discussed the lobes that make up the cerebrum, I am going to discuss the cerebral cortex. In the discussion of the cerebral cortex, I have limited myself to the thalamus and the hypothalamus. The cerebral cortex is located at the surface area of the cerebrum. The cerebral cortex is composed of the hypothalamus, the pituitary gland, the pineal gland, thalamus, basal ganglia and the limbic system. The hypothalamus is responsible for controlling behaviours such as hunger, thirst, sleep and sexual response. Furthermore, it is responsible for regulating body temperature, blood pressure, emotions and secretion of hormones (Hines, 2018). This means mental states such as love are caused by the hypothalamus. One is capable of loving another person if and only if hormones are produced in the body. Oxytocin is released by the body when one experiences mental states such as love. The hypothalamus releases oxytocin to the pituitary gland. This complication to the hypothalamus can result in the inability for one to express emotions such as love and empathy. Scientists posit that oxytocin is profound in people who are in a relationship than people who are single. On the other hand, the thalamus is responsible for sensations, alertness, attention and memory. Note that the brain stem is highly responsible for the efficiency of the hypothalamus and the thalamus. The brain stem is responsible for consciousness and sleep cycles, just to mention a few. Let us now examine how these parts of the brain are responsible for the conscious states outlined in Chalmers' catalogue.

The first five conscious experiences (in Chalmers' catalogue) are visual, auditory, tactile, olfactory and taste sensations. From the discussion of the cerebrum, it is right for us to affirm that the first five levels of consciousness are caused by the lobes that make up the cerebrum. The

parietal, the occipital and the temporal lobes are responsible for the production of these five qualitative conscious experiences. Furthermore, the next six in the catalogue (experiences of hot or cold, pain, other bodily sensations, mental imagery, conscious thought and emotions) are caused by all the lobes except the occipital lobe. Due to the sensory strip that is located within the parietal lobe, the parietal lobe is responsible for most of the sensations one experiences. Thus pain, experiences of hot and cold and other bodily sensations occur in the parietal lobe. Additionally, conscious thought and mental imagery take place in the frontal lobe. Finally, emotions are caused by the frontal lobe. The most complex conscious state that neuroscientists are still trying to find a correlate in the brain is 'self-awareness.' Two aspects of the brain have been considered for studies: the hypothalamus and the brain wave patterns. Let us now interrogate self-awareness from the perspective of the neuroscientists. Which part of the brain is responsible for 'self-awareness' (The twelfth conscious experience and the most important according to Chalmers)?

The Sense of Self or Self-Awareness

The twelfth level of consciousness is still under investigation in neuroscience. Neuroscientists are trying to find a correlation between the mental state of self-awareness and brain states. Many theories have been posited concerning the area in the brain that is responsible for self-awareness. All these theories are yet to be validated or affirmed. Lucia Melloni and Wolf Singer write:

> Furthermore, behavioural and brain imaging studies have shown that unconscious processing engages very much the same

> cerebral areas as conscious processing, including frontal and prefrontal cortex (Lau and Passingham, 2007; van Gaal et al., 2008). Thus, there is no compelling evidence for specific areas supporting conscious processing (Perry, et al.,2010, p.19).

There is some form of evidence for the specific areas in the brain responsible for consciousness. Scientists have limited self-awareness to two main areas, the limbic system, specifically, the hypothalamus and the waves produced in the brain. This is because the hypothalamus is responsible for several conscious states, subconscious and unconscious states. Additionally, the hypothalamus is responsible for sleep and awake states. With regards to brain waves, there are five types of brain waves that scientists are studying. Namely, the delta, theta, beta, alpha and gamma waves. These waves are produced due to the electrochemical activities that occur in the brain. Stated differently, the brain waves are caused by communications among neurons in the brain. Brain wave studies are the current focus of the neuroscientific discourse as they believe it would help in understanding consciousness and other physical and mental states. I will begin by discussing the reasons scientists posit that the hypothalamus is responsible for self-awareness.

As I stated earlier in this work, the hypothalamus is responsible for sleep and awake states. Christopher J. Watson explicates:

> In post-mortem brains of encephalitis lethargica patients who suffered from insomnia, von Economo discovered that lesions were localized to the preoptic area and the anterior hypothalamus. These findings suggested that one or both of these areas play an important role in generating and/or maintaining sleep. In patients presenting with hypersomnia, post-mortem exams revealed lesions of the posterior hypothalamus, suggesting that this area contributes to generating or maintaining

> wakefulness…More recently, it has been shown that damaging the lateral hypothalamus causes an increase in both NREM sleep and REM sleep and a decrease in wakefulness (Gerashchenko et al. 2003; Gerashchenko and Shiromani 2004). These data indicate that the lateral hypothalamus promotes wakefulness (Hudetz & Pearce, 2009).

By studying and observing (using the EEG machine) the progress of an encephalitis lethargica patient who had problems with sleep, the neuroscientists discovered that the hypothalamus is responsible for sleep and awake states. The electrochemical waves that were present at the preoptic and anterior hypothalamus during these states helped affirm this claim. Remember that it is only when one is awake, that one can experience self-awareness. In this vein, it is right for us to assert that one can experience self-awareness if and only if that being has the hypothalamus. Damage to the hypothalamus will result in difficulties for one to experience self-awareness because damage to the hypothalamus will result in problems for one to experience wakeful and sleep states. Below is a summary of the argument for the function of the hypothalamus:

A. The hypothalamus is responsible for sleep and wakefulness states.

B. One can have self-awareness if and only if one is awake.

C. One cannot have self-awareness devoid of the hypothalamus.

D. Therefore, the hypothalamus is responsible for self-awareness.

Thus, neuroscientists have observed a correlation between wakeful states and the hypothalamus by reading the wave patterns on the EEG machine. It is due to this empirical evidence that they posit that self-awareness is caused by

the hypothalamus. Below is a sample of the EEG readings that denote the structure of brain waves during wakeful and sleep states:

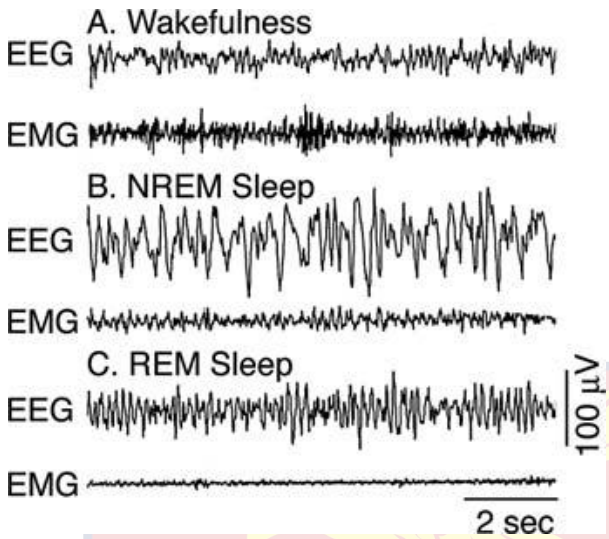

***Figure 4*: Diagram of EEG readings (Hudetz & Pearce, 2009).**

'A' above denotes the reading of the brain waves during wakeful states. As can be observed from the diagram, the brain waves are in rapid movement during wakeful states and are in slow movement during sleep states as 'B' and 'C' denote. Currently, neuroscientists believe that we can understand how self-awareness is produced in the brain by studying brain waves in general rather than specifically studying the electrochemical activities that take place in the hypothalamus.

As stated earlier in the work, five wave patterns are produced in the brain due to the electrochemical activities that take place in the brain. The firing of neurons produces five-wave patterns in the brain. By studying Hendrik's paper, I realised that brain wave research is still being carried out by scientists. They believe it will lead to understanding mental illnesses better and conscious states. The first wave pattern that we will discuss is the delta wave.

By observing the wave patterns produced in the EEG machine, it has been realised that delta waves are produced during three main physical states of the body. During digestion, cardiovascular processes in the body and during sleep states. Delta waves range from 0 Hz to 4Hz. Good production of delta waves results in good sleep and a healthy immune system. Hendrik (2018) states that irregularity in the production of delta waves has a negative effect on awareness and learning. Furthermore, low production of delta waves is as a result of difficulties in digestion and the cardiovascular processes in the body. Since delta waves are responsible for sleep states, it follows that delta waves work together with the hypothalamus. It is for this reason that neuroscientists believe that studying this brain wave will help us understand several conscious states including self-awareness. The second wave pattern that has been observed is what is known as the theta waves.

The theta waves are responsible for two main things. It is responsible for the experience of raw emotions and relaxation. Theta waves enable one to emotionally connect with other people and most importantly, connect with oneself emotionally. Consequently, this means that one can do introspections if and only if theta waves are produced. This is because introspections require an emotional connection within oneself: we are right to deduce that introspections are impossible in the absence of theta waves. Furthermore, similar to the delta waves, the theta waves help with relaxation (Hendrik, 2018). During metal states such as hypnosis, trans, daydreaming or sleep, there is a high record of theta waves on the EEG machine. We can thus infer that theta waves and delta waves are similar in that they are both responsible for sleep states. Finally, Hendrik posits that theta waves help in creativity and

intuitive states. The higher frequency of waves produced after theta waves are the alpha waves. However, I will discuss the beta and gamma waves before discussing alpha waves.

Neuroscientists have researched and found out that the beta waves are the portal through which every conscious state emanates. In order to understand every conscious state, we need to understand and study beta waves. By using Dennett's heterophenomenology, scientists have established a neurological correlate between all conscious states and the beta waves. Remember that these correlations have been empirically verified by observing the wave patterns presented on the EEG machine. Conscious states such as cognition, awareness, speaking and thinking are produced by beta waves. Good production of beta waves leads one to have good reasoning ability, focus and awareness and good memory recollection. Gamma waves have been recently discovered in the neuroscientific field and thus little is known about them. However, it has been recently discovered that gamma waves are produced during mental states such as love and other virtues actions (Hendrik, 2018). Similar to delta waves, there is a generally held belief that with further research, it may be discovered that gamma waves may be more responsible for conscious states than beta waves. The precise function of gamma waves remains to be seen in the near future.

Finally, the alpha waves are responsible for regulating the production of gamma and beta waves. Gamma and beta waves operate at the highest frequencies and thus need to be regulated. Failure to regulate these two waves will result in an unstable electrical flow in the brain. It is for this reason that

alpha waves are important. Below is a chart depicting the five brain wave patterns:

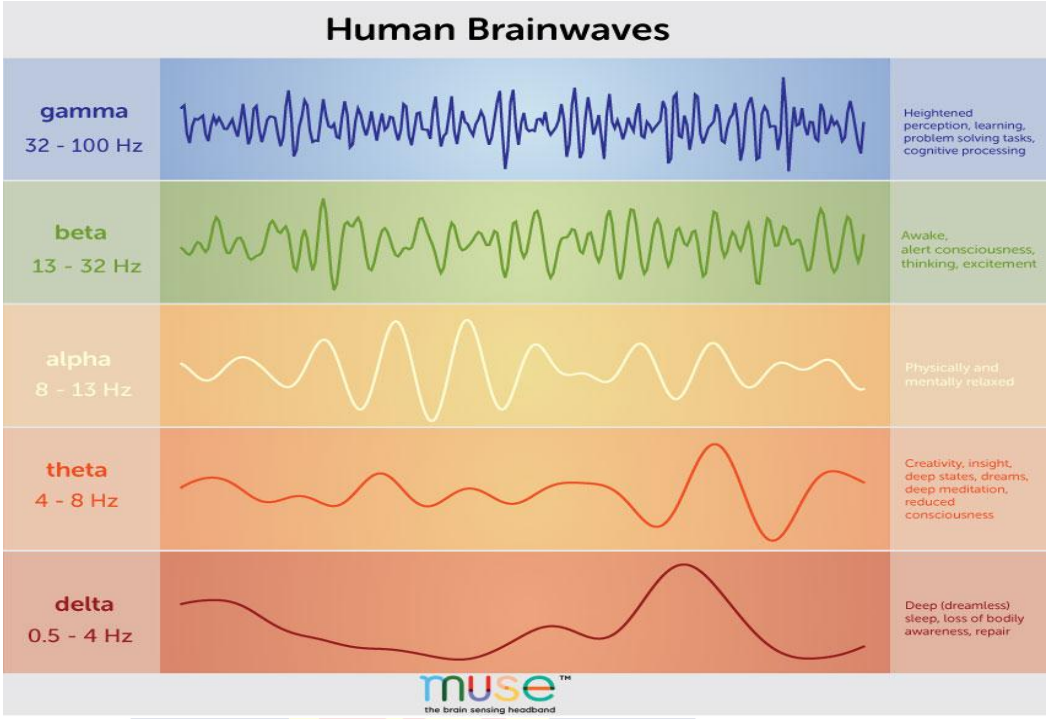

***Figure 5*: Diagram of brain waves (Muse, 2018).**

Conclusion

For neuroscientists, materialist theories of the mind are valid and any non-materialist account of the mind is not tenable. More precisely, as we can infer from this section, the neuroscientists' account of the mind corresponds to reductive materialism. By using Dennett's heterophenomenology the neuroscientists are convinced that every conscious state will eventually be explained by studying the brain. They subscribe to this position due to the fact that mental states emanate from brain states and thus we can only understand mental states by studying the source of these states. Additionally, since science is an empirical discourse, every scientific theory should be capable of withstanding empirical verification. The brain waves and the cerebral cortex

will go a long way in affirming the correlation between consciousness and brain states. Brain wave studies are the most promising in providing understanding of consciousness. Even though these studies are based on correlations, they are tenable. This is because they have been consistently verified to produce the same results.

This chapter has provided the perspectives of some philosophers and the field of neuroscience with regards to reductive materialism. Dennett, Armstrong, Churchland and some selected neuroscientists hold reductive materialism to be a tenable theory on the mind. Having discussed their perspectives, in the next chapter, I will provide an evaluation of the research I have carried out on Chalmers' search for a fundamental theory of consciousness. I will evaluate the arguments provided by Chalmers and the arguments presented by the reductive materialists and provide my perspective on consciousness.

CHAPTER FOUR

EVALUATION

Introduction

This chapter provides an evaluation of the arguments made by Chalmers and the arguments made by the adherents of reductive materialism. Chapter two provides a review of Chalmers' perspective on establishing a fundamental theory of consciousness while chapter three presents the reductive materialist position. By the end of this chapter, the reader will appreciate the respective strengths of the two positions. Finally, I will present my perspective on the two positions. A plausible theory of consciousness should take note of the significance of a first-person theory of consciousness and a third-person theory of consciousness. Let us begin by discussing the strengths of David Chalmers' theory.

Chalmers

As noted in chapter two and chapter three, Chalmers is a property dualist. That is, Chalmers acknowledges that both the mind and the brain exist. The mind is an emergent property of the brain: mental states such as consciousness emerge from the biochemical processes that occur in the brain. However, even though the mind is ontologically dependent on the brain, the mind is conceptually distinct from the brain. Chalmers' core position may be summarized as follows:

> Facts about consciousness are not physical facts. Facts about consciousness are over and above physical facts. Moreover, we cannot understand consciousness entirely or in totality by appealing to physical properties or facts. This is because consciousness is a subjective mental state. Accordingly, as Nagel

> posits, we cannot know what it is like to be a bat no matter how much knowledge we have on the physical facts about a bat. In the same vein, we cannot know consciousness in totality by appealing to physical facts or properties. It follows that consciousness is a fundamental property and thus we can only understand it in totality by studying it independent of physical states. Moreover, it is an emergent property that cannot be reduced to physical properties or states. Therefore, it is conceptually autonomous of the brain.

The above extract summarizes Chalmers' motivation for the search for a fundamental theory of consciousness. Regardless of the criticisms levelled against Chalmers, the strength of Chalmers' theory is hinged on the claim that consciousness is a distinct property from the brain. Consciousness is an abstract mental property while the brain is a physical entity through which consciousness arises. Having discussed Chalmers' arguments against reductive materialism (Chapter two), the main focus of this chapter will be to air the strengths of Chalmers' claims.

We cannot know all there is about consciousness by studying physical facts. The reason Chalmers makes this claim is that even though consciousness is an emergent property of brain states, it is conceptually distinct from consciousness. It follows that we can know everything there is to know about consciousness if and only if we study it as a fundamental property: if and only if we study it autonomously from physical facts.

Additionally, the subjective nature of consciousness raises the issue of qualia. Chalmers' theory accounts for the importance of qualia. However, reductive materialism does not do justice in explaining how qualia can be explained by appealing to the processes that occur in the brain. As I stated in

chapter two of this work, there is something more to consciousness than just referring to it as the biochemical processes that occur in the brain. According to Chalmers, consciousness is a complex concept that cannot be understood in totality by appealing to physical systems such as the brain. Galen Strawson writes on the importance of qualia:

> Let me rephrase. It is an objective fact that there is something it is like for me to hear and see the piano. It is an objective fact that there is something it is like for you too, and for these identical twins standing beside us. And we may all fully agree in language about what it is like. But this doesn't prove that we are identical, experientially speaking. There remains a real and unanswerable question about whether the experience is the same or different for any two of us (Strawson, 2010, p. 63).

The field of Science posits that consciousness is a product of the physio-chemical processes that occur in the brain. Similar to Strawson, for Chalmers, this does not do justice in explaining the concept of consciousness in its entirety. There is an inner experience associated with consciousness. The brain does not have that qualitative property of experience. The qualitative property of experience (qualia) is subjective to the agent of experience. Supposing two people, John and Mary are experiencing headaches. They go to the doctor and John and Mary tell the doctor that the degree of pain they are feeling is high. Even though the doctor will give them medication, like paracetamol, there is no way he can ever know the exact degree of pain John and Mary are describing. This is because pain is a mental state that can only be known by the subject of experience. As Strawson notes, one thing we know for sure is that John and Mary are having an unpleasant experience, however, we cannot know the qualitative nature of experience that they have. That is,

John has his qualitative feel of pain in the head while Mary also has her qualitative feel of pain. Below is a comment Strawson makes with regards to unpleasantness and qualia:

> There is A-type pain, B-type pain, C-type pain, and so on. All pains have unpleasantness in common, but we must distinguish A unpleasantness from B unpleasantness, B unpleasantness from C unpleasantness, and so on. There are different forms of unpleasantness that are constitutive of the qualitative character of the various types of pain in such a way that U-similarity does not obviously entail Q-similarity (Strawson, 2010, p. 249).

Whether neuroscientists are able to locate the area in the brain that is responsible for the production of pain, they cannot know the exact amount of pain the Mary and John are experiencing. All they can know is that Mary and John are having an unpleasant conscious experience. Thus, there is something more to consciousness than asserting that it is a product of physio-chemical processes that occur in the brain. One cannot reduce pain to biochemical processes in the brain and claim to know the pain Mary and John experience. This is because consciousness is an intrinsic property and only the subject of experience is aware of the various conscious states they experience. No matter how long we look at the readings on the EEG machine, we cannot know what it is like to be in the pain Mary and John are experiencing except Mary and John themselves. Therefore, due to the first-person nature of consciousness, Chalmers' search for a fundamental theory of consciousness has merit.

In a nutshell, Chalmers theory has merit because he has been successful in affirming the claim that consciousness is a fundamental property that is conceptually autonomous of brain states. It cannot be reduced to physical states because consciousness does not logically supervene on brain

states. In other words, facts about consciousness are conceptually distinct from physical facts. Adherents of Chalmers' theory believe his theory will stand the test of time due to the use of logical supervenience theory to affirm his claims. However, the reductive materialists, the adherents of the theory Chalmers criticized in his work, emphasize on the significance of the ontological dependence of consciousness on brain states. Let us discuss the merits of reductive materialism in accounting for consciousness.

Reductive Materialism

The main significant merit of reductive materialism is that it is an empirically verifiable theory because it corresponds to the findings of neuroscience. Reductive materialism takes matter to be the fundamental stuff through which we have mental states. Since the claims made by reductive materialism hold brain states to be fundamental, this means that we are capable of verifying (by the use of EEG machines and other brain monitoring machines) the claims made by this theory. For instance, the type-type identity theory posits that every type of mental state can be reduced to brain states without remainder. In the same vein, in conducting neuroscientific research, the main goal of the researchers is to find the correlations that mental states have with brain states. As we have discussed in chapter three, for the reason that the brain is the source of every mental state, the neuroscientists posit that every mental state is triggered by a biochemical process in the brain and thus can be reduced to that specific brain state. From my readings of the papers written by Perry and Hudetz, I realise that by verifying the correlation between various mental states and brain states, neuroscientists and reductive materialists affirm the notion that all mental states are reducible to brain states.

I do not think the theories presented by the neuroscientists can be faulted as having committed the false cause fallacy such as "mistaken correlation for cause fallacy." This is because the correlations between these two states are empirically verifiable through the use of electrochemical reading machines. Again, scientific induction thrives on observation and uniformity. That is, if a correlation has been consistently observed to always occur the same way, it follows that those correlations have uniformity and regularity. And we know that uniformity or regularity in our observations of events makes some scientific theories tenable and valid. For instance, the neuroscientists were able to conclude that the hypothalamus is responsible for various conscious states due to uniformity of the correlation that occurs between conscious states and the biochemical processes that occur in the hypothalamus. Therefore, due to the uniformity of the observed correlations, scientists claim that there is a causal relationship between brain states and mental states. It is for this reason that they posit that all mental states can be reduced to brain states.

In conclusion of this point, because the claims made by reductive materialism, specifically the type-type identity theory, correspond with neuroscience, it follows that we can verify the tenets of this theory. In my opinion, a good theory in philosophy of mind is one that corresponds with the sciences. This is because it allows for verification. Reductive materialism, even though is faulted on other grounds, is a verifiable theory. It thus passes Armstrong's assertion that a good theory of the mind is one which corresponds to the physio-chemical makeup of man.

Even though reductive materialism strives at meeting the demands of empirical verification, it is also faulted on many grounds. One of the grounds through which it is faulted is with regards to the issue of qualia. Additionally, philosophers such as Thomas Nagel and David Chalmers have criticized the reductive materialist account on several issues. As discussed in chapter two, Chalmers presents four arguments, with the use of logical supervenience theory, to criticize reductive materialism.

Therefore, from the research I have carried out into Chalmers' search for a fundamental theory as against the reductive materialist theory, I have realized that both theories have merits. In other words, Chalmers' property dualism and Dennett, Churchland, Armstrong and the neuroscientists' reductive materialism, are all significant in aiding one to understand the mystery of consciousness. I will now present my perspective on consciousness and the brain with regards to the research I have done.

My perspective (Non-reductive materialism)

This research has focused on two main theories of the mind, namely, property dualism and reductive materialism. On the one hand, the property dualists claim that even though mental states ontologically supervene on brain states, mental states cannot be reduced to brain states. This is because even though mental states and brain states may have the same referent they are conceptually different. Furthermore, there is something more to mental states than just addressing these phenomena as physical states. On the other hand, the reductive materialists posit that mental states are nothing more than brain states. That is, all mental states are identical with and can be reduced to brain states. Both of these theories make compelling arguments. The reductive

materialists make us appreciate the importance of brain states in the production of mental states while the property dualists make us appreciate the importance of mental states rather than just construing them as brain states. I believe that a plausible theory of the mind should be one that meets four criteria:

1. It should be a materialist account of the mind.
2. Resolves the mind and body problem.
3. Does not dispute the existence and importance of qualia.
4. The tenets that the theory posits should be empirically verifiable. It should provide a first and third-person account of consciousness.

Firstly, the account that any theory of the mind posits should be a materialist account. This condition should be met by all means simply because it is a fact that the mind is ontologically dependent on the brain. By positing that the mind is ontologically dependent on the brain, I mean that the mind (mental states) cannot exist without the brain. It is through the electrochemical processes in the brain that mental states such as consciousness are produced. Therefore, it would be invalid for any theory of the mind to posit a non-materialist account of the mind. Since mental states are caused by brain states, brain states are fundamental entity while mental states are the epiphenomena. It follows that any theory of the mind that does not recognize mental states to be ontologically dependent on brain states would be counter-intuitive.

Secondly, a good theory of the mind should resolve the mind-body problem. It should be a theory that does not hold the mind and the body to be substances as Descartes posited. As I have already discussed, the mind is ontologically dependent on the brain. Hence, the mind is not a substance but an epiphenomenal property that is produced by brain states.

Thirdly, a quale is an aspect of mental states that is significant and should be taken seriously. One major criticism held against reductive materialism is the issue of qualia: what it is like to perceive a blue object. Having already discussed the importance of qualia in chapter two and chapter four, I will not dwell too much on this point. Basically, there is an intrinsic and qualitative property of our experiences. And this qualitative property of experience cannot be explained by appealing to brain states. There is something more to mental states than just attributing them to brain states. Chalmers claims that we can only understand consciousness in totality by studying it independently of brain states.

The final criterion is empirical verification. Because the brain is, ontologically, the fundamental entity through which mental states are produced, claims made about mental states should have some form of verification in the brain. For instance, mental states such as pain, even though cannot be reduced to brain states, should have a correlate with brain states. I understand that there is a qualitative property of pain, however, pain is produced by the firing of neurons in the brain. And thus if one claims to experience pain, it should be empirically verifiable by pointing to the firing of neurons in the brain. Take note: I agree that we can verify the neuronal correlate of mental states such as pain but cannot know the qualitative property by observing the firing of neurons in the brain. However, since this discussion is scientific, the claims made regarding consciousness should be empirically verifiable because mental states have a causal relationship with brain states. Empirical verification of the theory is possible if and only if the theory can provide a first and a third-person account of consciousness. What I

mean is that the theory should hold as much importance to qualia (first-person account) as it would hold for brain states (third-person neuroscientific explanation). Kim writes on the possibility of having a first and a third-person account in the field of science:

> But not for the latter-day materialists: for them, the irreducibility only means that psychology, and other special sciences, are "autonomous", and that a materialist can, in consistency and good conscience, accept the existence of these isolated autonomous domains within science (Kim, 1993, p. 268).

Having provided the criteria I think a plausible theory of the mind should encompass, I assert that non-reductive materialism corresponds best to the criteria I have presented.

Louise Antony (2007) defines non-reductive materialism as a theory that posits that "there are mental phenomena; they are material in nature; and, notwithstanding, they form an autonomous domain." Non-reductive materialism basically posits that even though mental states are ontologically dependent on brain states, they cannot be reduced to brain states. Though epiphenomena, there is something more to mental states (such as quale) than just claiming that they are biochemical processes that occur in the brain.

Non-reductive materialism fulfils my perspective of four criteria that make a good theory in philosophy of mind. Firstly, it is a materialist theory that posits the autonomous nature of mental states. Moreover, even though mental states ontologically depend on brain states, they cannot be reduced to brain states. Secondly, non-reductive materialism resolves the mind-body problem. This is because the non-reductivists posit matter to be a substance and mental states as epiphenomenal properties that emerge from processes that

occur in the brain. Thirdly. It holds significance to qualia states and does not dispute their existence. It is for this reason that non-reductive materialism posits that mental states are irreducible to brain states. In other words, the qualitative property of mental states makes them irreducible to brain states. Finally, this theory corresponds to the claims made in the scientific domain. Similar to reductive materialism, non-reductive materialism has tenets that can be verified by the use of EEG machines and other brain scanning tools. Accordingly, we can conclude that non-reductive materialism provides and holds significance to a first and a third-person account of consciousness.

Can qualia states be verified?

One baffling issue that arises is with regards to the fourth criterion: the tenets that the theory posits should be empirically verifiable. The question is, how can we verify the first-person perspective (qualia states)? I acknowledge that qualia cannot be verified. However, the neurological activities that take place during mental states or activities can be verified. It is for this reason that I have added to this criterion that this verification process should combine a first and a third-person account. The subject recounts their experiences and as they recount their experiences we should verify their claims by observing the neuronal activities that are taking place during that specific point in time. For instance, we could inflict some level of pain to the subject, ask him do describe the amount of pain he feels (let us say on a scale of 1-10), and check the correlations that occur in the brain during these events. Due to the advancements in brain wave research, we have realised that beta waves are responsible for every conscious experience of a subject. Therefore, observing

brain waves and other electrochemical processes of the brain during conscious experiences will help in satisfying the fourth criterion. Chalmers' inverted spectrum argument has a ramification that supports the fourth criterion.

Inverted spectrum argument as an affirmation of the fourth criterion

The inverted spectrum argument has one key ramification that we will discuss. If we are to establish a fundamental theory of consciousness, then how can we affirm the claims made about the phenomenological states of individuals? Indeed, the inverted spectrum indicates that we cannot get far in knowing the internal character of a given sensation logged on to the world without the appropriate diagnosis of the brain states. For instance:

> We have two people, James and Mikel, and we invite them in a dark room. We then place a red object about three metres from James and Mikel. James and Mikel are asked to describe the object that is three metres away from them. While James says he sees a red ball, Mikel says he sees a green object. If we take mental states to be well and above physical states (as Chalmers asserts), how do we know who is right?

Solely depending on the phenomenology of two beings cannot affirm to us who is right. For qualia to have a valid reference to the world we cannot solely resort to the internal subjective state. We can only know who is right between the two if and only if we observe the neurological configuration of James and John. Upon further investigation, we may realise that there is a problem with the

information the optic nerve is transmitting to the brain due to damage to Mikel's photoreceptor cells.

All in all, in order for us to affirm the phenomenological states of a being we must verify the brain states of that individual. It follows that theories on consciousness should be susceptible to verification.

Chalmers' Position (Property Dualism) and my Perspective

My perspective has some similarities and one peculiar difference with Chalmers' position. Chalmers writes on his definition of property dualism:

> The dualism implied here is instead a kind of property dualism: conscious experience involves properties of an individual that are not entailed by the physical properties of that individual, although they may depend lawfully on those properties. Consciousness is a feature of the world over and above the physical features of the world (Chalmers, 1996, p. 125).

I laid out four criteria that make up a good theory of the mind. Let us examine whether Chalmers' theory satisfies these four criteria.

Chalmers' theory of the mind is a materialist account of the mind. Ontologically, the brain is the fundamental thing through which mental states arise. However, unlike the reductive materialists, who claim that mental states are reducible to brain states, Chalmers acknowledges that mental states are irreducible to brain states. For Chalmers, mental states are properties that emerge from brain states. Even though mental states ontologically supervene on brain states they are conceptually independent of brain states. Chalmers' property dualism thus satisfies the first criterion.

Property dualism resolves the mind-body problem. This is obvious because property dualism does not hold the mind to be a substance but simply

an emergent property that arises from the chemical processes that occur in the brain. It follows that Chalmers satisfies the second criterion.

Chalmers' third argument against reductive materialism, the epistemic asymmetry argument, is based on the subjective nature of our conscious experience. There is something more to mental states (the qualitative nature of experience) than merely looking at them as brain states. Accordingly, Chalmers does not dispute the existence and importance of qualia. This is a significant criterion to satisfy because the qualitative property of experience is intuitive to all beings that have mental states.

Is Chalmers' theory empirically verifiable? No, it is not. Chalmers' theory is not empirically verifiable because he advocates for a fundamental theory of consciousness that is not limited to physical causal closure. This is because facts about consciousness are well and above physical facts. It is only by the laws of nature that it depends on physical states. However, it is conceptually autonomous. This fundamental theory of consciousness that Chalmers submits, should be studied in isolation from brain states due to the conceptual autonomy of consciousness.

While non-reductive materialism satisfies the criteria I have established, property dualism does not. While some scholars see non-reductive materialism to be a form of property dualism, others see property dualism to be a form of non-reductive materialism. I see non-reductive materialism to be the contemporary form of property dualism. If we are to stretch the argument, we could find some peculiar differences between these two theories. However, I am going to mention one peculiar difference that makes me an adherent of non-reductive materialism.

Why not property dualism?

As I just stated, property dualism and non-reductive materialism are similar with one peculiar difference. I adhere to non-reductive materialism because while non-reductive materialism satisfies the fourth criterion, property dualism does not. Chalmers' theory is not empirically verifiable because he advocates for a fundamental theory of consciousness that is not limited to physical causal closure. This is because facts about consciousness are well and above physical facts. Thus, it is conceptually autonomous.

Secondly, I deem non-reductive materialism to be a contemporary form of property dualism. That is, non-reductive materialism pays more attention to the neurological perception of consciousness in as much as it does the phenomenal perception of consciousness. Non-reductive materialism accepts that mental states such as pain are irreducible to brain states, however, pain is an epiphenomenal property of the neurological processes that occur in the brain. This means non-reductive materialism can satisfy the last criterion more than property dualism. This is because non-reductive materialism is contemporary and thus holds more reverence to the neurosciences while holding on to the conceptual autonomy of the mental domain.

Basically, we can conclude that non-reductive materialism satisfies my perspective of a plausible theory of the mind. Even though property dualism and non-reductive materialism are similar, it is due to the satisfaction of the fourth criterion that I adhere to non-reductive materialism.

Conclusion

This chapter has provided a brief evaluation of the critical study carried out on David Chalmers' search for a fundamental theory of consciousness. I have discussed the strengths and weaknesses of the two theories under discussion, property dualism, the theory Chalmers advocates, and reductive materialism. In my evaluation, I have presented four criteria I think would make a good theory of the mind. The theory of the mind that best fulfils these criteria is non-reductive materialism. I thus conclude that non-reductive materialism is the best theory we can use in understanding consciousness. It can give us a good first and third-person perspective of the mind.

CONCLUSION

This research paper has discussed Chalmers' claim that there should be a fundamental theory of consciousness. I reviewed his position on consciousness in chapter two of this essay. In chapter two, I presented Chalmers' definition of consciousness and how he uses logical supervenience theory to affirm the need and significance of a fundamental theory of consciousness. He claims that even though consciousness ontologically depends on brain states, it does not conceptually depend on brain states. With the use of logical supervenience theory, Chalmers presents five arguments (discussed four in chapter two) to defeat the reductive materialist position. Chapter three aimed at presenting the perspectives of some philosophers and neuroscientists on the reductive materialist position. With the arguments presented, we were made to understand why the reductive materialists still hold on to their theory despite the criticism they have received. In chapter four, I evaluated both sides of the arguments, that is, Chalmers and the reductive materialists' position on consciousness. I finally established four criteria that make a good theory of the mind. I conclude that non-reductive materialism is the best theory that can help in understanding consciousness, in totality, in the near future.

In a nutshell, consciousness is a complex property that can only be understood if psychologists, philosophers and neuroscientists come together. Dennett's heterophenomenology is a good start for interrogating this concept. However, it is problematic because it fails to acknowledge the significance of qualia. We should thus take as much importance to a third-person account (scientific account) of consciousness as we would take a first-person account

(one that focuses on the qualitative property of experience) of consciousness. A Non-reductive theory, I believe, is the best theory that can provide a comprehensive account of consciousness. I hope we will be able to understand consciousness, in totality, in the near future. I conclude this essay with an extract from McGuinn's (1996) work, *The Character of the Mind*: *An Introduction to Philosophy of Mind*:

> We may summarise this chapter as follows: the aim of the philosophy of mind is to conduct an a priori investigation into the essential nature of mental phenomena, by elucidating the latent content of mental concepts; mental phenomena can be approached from a first-person or a third-person perspective, both of which need to be integrated (if this be possible) into a unitary account.

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