

**UNIVERSITY OF GHANA
COLLEGE OF HUMANITIES**

**IS NON-REDUCTIVE PHYSICALISM A PLAUSIBLE THEORY
OF CONSCIOUSNESS?**

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DECLARATION

I hereby declare that this project work is the result of an original research conducted by George Kwasi Barimah, with student number 10335022, under the supervision of Dr. Caesar Atuire and Dr. Martin Ajei, and that apart from other works which are duly acknowledged, this work has neither in whole nor in part been submitted for a degree either in this university or elsewhere.

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ABSTRACT

According to the non-reductive physicalist, mental properties are not identical to physical properties. In order to distinguish non-reductive physicalism from epiphenomenalism, the non-reductive physicalist considers mental properties as not just a by-product of physical processes but posits that mental properties can cause physical events thereby violating the principle of the causal closure of the physical domain. The problem which this thesis seeks to investigate, therefore, is that, if physicalism suggests that the only reality is the physical kind and that all other things including the mental depend on the physical domain then is the position of the non-reductive physicalist with respect to the independence of mental properties and their causal powers consistent with physicalism? I posit in this thesis that non-reductive physicalism is a plausible theory of consciousness by clarifying concepts such as monism, physical, physicalism and materialism. I also assert the plausibility of non-reductive physicalism by showing that non-reductive physicalism upholds the principle of the causal closure of the physical against Kim's (1993) criticism that it does not.

DEDICATION

I dedicate this thesis to the blessed memory of my father Mr. G.K Barimah. I hope he will be pleased with my academic journey.

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CHAPTER ONE

GENERAL INTRODUCTION

1.1. Background of Study

One of the problems which philosophers throughout history have had to grapple with has been the particular nature of the human mind and its interaction with the body. Plato for instance contemplated the nature of the soul and its relationship with the body. He was of the view that the body is the prison house of the soul and that at death the soul is set free from the shackles of the body and returns to the world of forms¹. Plato provides a dualistic account of being human, according to the dualistic account there exists a body and there exists a soul, both are distinct and at the death of the body the soul lives on.

During the medieval era, the question of the specific relationship between the soul and the body was a matter of serious contention. According to Thomas Aquinas, the soul is united to the body as its form. Aquinas employs the argument of matter and form as espoused by Aristotle to describe the specific union which exists between the body and the soul. For Aquinas the soul is united to the body to the extent that even after death “the soul....has a natural aptitude and a natural tendency to embodiment”². Unlike Plato who considers the body to be a hindrance to the full contemplative power of the soul, Aquinas considers the body as providing the needed environmental sensations for the soul to contemplate on.

The question of mind and body interaction was heightened in the Modern era in the *Meditations* of Rene Descartes. In his search for indubitable knowledge, Descartes arrived at the conclusion that the only thing that he could not doubt was his own existence. After doubting his senses and body he concluded that he existed as a *thinking thing*; a thing that affirms, doubts, denies and understands, i.e. he existed as a mind. He made the famous statement ‘*Cogito ergo sum*’ which translates as ‘I think therefore I am’. However as he

¹ Bluck, R. S. (2014). *Plato's Phaedo: A Translation of Plato's Phaedo*. London: Routledge.

² Saint Thomas (Aquinas). (1991). *Summa Theologiae: A concise translation*. Christian Classics.

progressed in other chapters of his *Meditations* he affirmed the existence of the body and asserted that the mind interacted with the body. According to Descartes the mind and the body are two distinct substances. While the body is extended, divisible and spatial, the mind is non-extended, indivisible and non-spatial. However in spite of their very distinct properties Descartes asserts that there is a causal interaction between the mind and the body and vice versa³.

The problem with Cartesian dualism can be stated in this way: how is it possible that two substances with distinct properties interact with each other? Rene Descartes' interactionist dualism led to the mind-body problem in contemporary philosophy of mind. In an attempt to find a solution to the mind-body problem various theories have emerged. These theories can be grouped under two main branches; substance dualism and monism. Substance dualism refers to the belief in the existence of two ontological realms of reality, while monism refers to the belief in one ultimate realm of reality.

Substance dualist's accounts of the mind-body problem include; interactionist dualism, occasionalism, pre-established harmony and parallelism, while monist accounts of the mind-body problem are idealism and physicalism. It is important to note that occasionalism, pre-established harmony and parallelism attribute physical and mental interaction or causation to an act of God and therefore are not theories which are subject to empirical or scientific examination.

Given the rise of logical positivism and the analytical turn in philosophy, contemporary discussions in philosophy of mind have abandoned theories like occasionalism, parallelism and pre-established harmony which tend to appeal to God for explanations of mental and physical interaction. Most contemporary debates in philosophy of mind have jettisoned

³ Cottingham, J. (1996). *René Descartes: Meditations on first philosophy: With selections from the objections and replies*. Cambridge: Cambridge University Press.

substance dualism because of the ontological distinction it draws between the mind and the body i.e. the mind as a separate entity existing as a substance outside the body has been jettisoned in philosophy of mind in the same way the phlogiston theory⁴ has been abandoned in science for the explanation of combustion.

1.2. Statement of the Problem

Physicalism posits that reality is made up of the physical or that reality is fundamentally physical, thus everything that exists in the universe is ultimately explainable in physical terms. Another major component of physicalism is that every physical event has a physical cause; this is known as the causal closure of physics. However there has been a popularization of a strand of physicalism known as non-reductive physicalism. This is the view that everything including the mental is ultimately physical or depends on the physical domain but denies that mental phenomena such as consciousness are reducible to physical processes. According to the non-reductive physicalist mental properties are not physical processes and in order to distinguish non-reductive physicalism from epiphenomenalism, the non-reductive physicalist considers mental properties not just as a by-product of physical processes which are causally inert but posits that mental properties can cause physical events thereby violating the principle of the causal closure of physics.

The problem which this thesis seeks to investigate therefore is that, if physicalism suggests that the only reality is the physical kind and that all other things including the mental depends on the physical domain then is the position of the non-reductive physicalist with respect to the independence of mental properties and their causal power consistent with physicalism? Is the non-reductive physicalist a non-physicalist in disguise? Does the non-reductive physicalist succeed in merging Cartesian dualism with the tenets of physicalism and does the result of this merger merit the tag; 'physicalism'?

⁴ The phlogiston theory held that the substance which aided in burning was phlogiston. This theory was disproved with scientific progress which showed that the substance which aides burning is oxygen.

1.3. Aim and Objectives of Thesis

The main aim of this thesis is to defend non-reductive physicalism as a plausible theory of consciousness. I seek to achieve this aim through the following objectives:

1. To argue that reductive physicalism is not adequate in its explanation of consciousness.
2. To argue that physicalism need not be reductive.
3. To argue that non-reductive physicalists qualify to be characterized as physicalists.
4. To argue that non-reductive physicalism does not violate the principle of the causal closure of the physical domain.
5. To argue that non-reductive physicalism is a more plausible theory of consciousness than reductive physicalism.

1.4. Definition of Key Terms

1.4.1 Physicalism

Physicalism is the view that everything that exists is physical, or depends upon something that is physical (Lacewing, n.d.). Lacewing further intimates that:

‘Physical’ means something that comes under the laws and investigations of physics, and whose essential properties are identified and described by physics. Physicalism claims that what is physical is metaphysically fundamental. It is not enough that the only *substance* is physical – the fundamental *nature* of the universe is physical, and this covers events and properties as well.⁵

Lacewing identifies three essential features of physicalism namely:

1. The properties identified by physics form the fundamental nature of the universe;
2. Physical laws govern all objects and events in space-time;

⁵ Lacewing M. (2018, July 25). Non-reductive physicalism and supervenience. Retrieved from <http://s3-euw1ap-pe-ws4-cws-documents.ri-prod.s3.amazonaws.com/9781138793934/A2/Mind/Supervenience.pdf>

3. Every physical event has a physical cause that brings it about in accordance with the laws of physics. (This is known as the ‘completeness of physics’ or ‘causal closure’.)⁶

1.4.2 Type Identity Theory

The view that mental states are simply brain states. Mental state (T) is identical to brain state (N). It is the general view that mental states are just neurological processes in the brain. Thus hunger is just the activity of certain neurons in the brain.

1.4.3 Behaviourism

The view that observed behaviour can lead us to the mental life of humans. Behaviourists believe that introspection cannot provide us with knowledge of the mental processes of an individual since introspection is not observable by the third person. Behaviourists therefore hold that the physical actions of a person can provide us with a more plausible knowledge of their mental processes.

1.4.4 Functionalism: Mental properties are just functional properties, and functional properties are simply complex properties built up out of physical properties and their causal powers and relations.⁷

1.4.5 Non-reductive physicalism

Non-reductive physicalism in the area of philosophy of mind has been formulated differently by different philosophers. However, according to List and Menzies (2009, p. 1) non-reductive physicalism consists of three theses:

⁶ Lacewing M. (2018, July 25). Non-reductive physicalism and supervenience. Retrieved from <http://s3-euw1ap-pe-ws4-cws-documents.ri-prod.s3.amazonaws.com/9781138793934/A2/Mind/Supervenience.pdf>

⁷ Lacewing M. (2018, July 25). Non-reductive physicalism and supervenience. Retrieved from <http://s3-euw1ap-pe-ws4-cws-documents.ri-prod.s3.amazonaws.com/9781138793934/A2/Mind/Supervenience.pdf>

- i. That mental properties are not identical to physical properties, since they are multiply realized by them.
- ii. That mental properties nevertheless supervene on physical properties in the sense that there cannot be a difference with respect to mental properties without a further difference with respect to physical properties.
- iii. That mental properties are causes and effects of other properties.

1.4.6 Consciousness

Consciousness is broadly conceived as the complete range of mental processes that occur within an individual. Philosophers have studied consciousness in two broad ways, namely; introspective consciousness and phenomenal consciousness. According to Lormand (1998):

Something within one's mind is 'introspectively conscious' just in case one introspects it (or is poised to do so). Introspection is often thought to deliver one's primary knowledge of one's mental life. An experience or other mental entity is 'phenomenally conscious' just in case there is 'something it is like' for one to have it.⁸

Introspective consciousness is closely linked to self-consciousness where an individual is able to reflect on his or her mental states. For instance, the ability to be aware that one is thinking about something now, demonstrates one's capacity for self-consciousness. Another strand of consciousness which has become a subject of much scholarly work in consciousness research is phenomenal consciousness. Phenomenal consciousness refers to the qualitative character of mental events or the subjective nature of mental events. The subjective nature of mental events refer to the experiences which accompany certain mental events such as pain, hunger, joy and fear among others. Thomas Nagel (1974) in his famous paper *What is it like to be a*

⁸ Lormand, E. (1998). 'Consciousness'. In *The Routledge Encyclopedia of Philosophy*. Taylor and Francis. Retrieved 23 Jun. 2018, from <https://www.rep.routledge.com/articles/thematic/consciousness/v-1>. doi:10.4324/9780415249126-W011-1

bat identified consciousness with the unique experience of ‘what is it like’ to be in a particular mental state. Also, David Chalmers (1995) further categorized consciousness into: the hard problem of consciousness and the easy problem of consciousness. The hard-problem of consciousness according to Chalmers is the problem of experience; why and how physical processes in the brain are able to give rise to experience. The easy-problem on the other hand refers to the explanation of a mental phenomenon by resorting to computational and neural mechanisms. Chalmers (2018) introduced the meta-problem of consciousness as yet another problem in consciousness studies. The meta-problem of consciousness according to Chalmers (2018:1) is “the problem of explaining why we think that there is a problem of consciousness.” In this thesis, I shall not restrict myself to only one strand of consciousness, I shall consider consciousness in its broadest form, which for me is the entire gamut of mental processes taking place within an individual. This includes beliefs, desires, pains, fears, hunger and many others.

1.5. What is the nature of the gap between mental and physical events?

The gap between mental and physical events is often described as either ontological or explanatory. An ontological gap between mental and physical events is the view that there exists separate substances responsible for mental and physical events. Cartesian dualism is a quintessential account of the ontological gap between mental and physical events. According to the Cartesian view, there exists a mind responsible for mental events and a body responsible for physical events and these two entities i.e. mind and body are distinct. The explanatory gap account on the other hand is the view that there are not two distinct entities responsible for mental and physical events but one physical entity. However, there exists a gap in explaining how physical properties in the brain are able to give rise to mental experience. In the ensuing paragraphs I provide arguments to show the implausibility of the ontological gap or Cartesian dualism.

In order for the claims of an ontological gap between mental and physical events to be established we must be able to establish that mental events do not have physical properties (e.g. pain resulting from the firing of C fibres in the brain). Mental events such as desires, hunger, beliefs and sorrow do not happen in a vacuum, they happen within a human body and it therefore seems implausible how mental events can be caused by an entity outside the body but experienced within it.

Again, for the claims of an ontological gap to be upheld advocates of this gap must be able to establish that there is an entity outside the body responsible for mental events. This entity which is often referred to as 'mind' appears to be a mysterious entity whose nature is not clearly identifiable even by proponents of the ontological gap.

Moreover I posit that the explanatory gap account of the relationship between mental and physical events is more plausible than the ontological gap account. This is because it is only an explanatory gap that can account for causation between mental and physical events. If the advocates of an ontological gap between mental and physical events are right, then they face the difficulty of explaining how two ontologically distinct events are able to interact with each other. It is widely experienced that pain (mental event) can cause an individual to scream (physical event), likewise a slap (physical event) can cause an individual to be in pain (mental event). An explanatory gap between mental events and physical events will be able to account for causation between these two events better than an ontological gap. In accounting for the reciprocal causation between mental and physical events, the explanatory gap will posit that the reason why mental events can cause physical events and vice versa is because they are all brain processes and thus share some similarities which enable them to interact. The advocates of an ontological gap on the other hand will have a herculean task in explaining this interaction because from the onset they have asserted that there is no similarity between the mental and physical event. For them, while mental events are attributable to a mind, physical

events are attributable to the body. The mind is distinct from the body and as such any case of interaction between mental events and physical events will either be a miracle or some form of pre-established harmony. The attempt to attribute mental-physical interactions to the divine is not scientifically ascertainable and hence lacks credibility; it is of no wonder that arguments in this direction have been jettisoned in contemporary attempts to explain mental-physical interactions.

Also, an ontological gap between mental and physical events will be torn to shreds under the razor of Ockham. Ockham's razor according to the Simple English Wikipedia asserts that "if there are several possible ways that something might have happened, the way that uses the fewest guesses is probably the right one." However, Ockham's razor only applies when the simple explanation and complex explanation work equally well". An ontological distinction between mental and physical events tends to multiply entities which are unnecessary for accounting for the nature of mental and physical events. According to the proponents of an ontological gap, there is an entity known as 'mind' (its location is incoherent) responsible for mental events and there is an entity known as 'body' or 'brain' responsible for physical events and any form of interaction between them is the result of chance or divine intervention. The explanatory gap argument on the other hand posits just one cause of mental and physical events namely the brain and the interaction between them resulting from similarities they share (they are all from a physical source). The explanatory gap does not multiply entities unnecessarily like the ontological gap argument which employs additional entities, namely; the mind and a divine link. Thus, employing Ockham's razor, an explanatory gap between mental and physical events is more plausible than an ontological gap.

The alternative to substance dualism in the mind-body debate is monism. Monist theories of mind postulate the existence of just one entity, the most popular brand of monism in contemporary philosophy of mind is physicalism. Physicalism is the view that the physical

domain is the ultimate reality and everything else in the universe can be explained in terms of the physical. The physicalist solution to the mind-body problem is that there is no principle out there called mind which is distinct from the body because the only thing that exists is the physical domain. Therefore mental events are nothing other than physical processes in the brain or a particular behaviour disposition or that mind is just a terminology used to explain a specific function of the body as the term 'booting' refers to a particular function of a computer.

Physicalism has faced stiff challenges from Nagel (1974), Chalmers (1996), Levine (1986), Jackson (1982) and many others who assert that the physicalist worldview does not adequately account for the phenomenon of human consciousness. According to these philosophers physicalism leaves something out in its explanation of mental events, and what physicalism leaves out is the subjective component of mental events i.e. the aboutness, the qualitative aspect of mental events or more broadly how it feels like to have a particular experience of mental events. Some philosophers such as Davidson (1970) have tried to amend physicalism in order that it accommodates consciousness. This amendment of physicalism to make room for consciousness has led to the popularization of a type of physicalism known as non-reductive physicalism.

Contrary to substance dualism which posits the existence of a mind, which is responsible for mental events and distinct from the body, the non-reductive physicalist believes in just one ultimate reality which is the physical but also believes that there are some mental properties which supervene on the physical reality which cannot be reduced to the physical substrate. For example, the non-reductive physicalist affirms that pain is a physical process which results from C-fibre firing in the brain but denies that the felt quality of pain can be reduced to or explained in terms of the C-fibre firings in the brain which caused the pain. The non-reductive

physicalist does not end there; in order to differentiate himself from the epiphenomenalist⁹ he asserts that these mental properties are not causally inert by-products of brain processes but have the ability to causally affect physical processes.

This thesis is an investigation into whether the non-reductive physicalist project of reconciling aspects of Cartesian dualism with physicalism is successful. Is non-reductive physicalism consistent with physicalism or it contradicts it and hence leads to some kind of ‘non-physicalism’? Can the non-reductive physicalist still call himself a physicalist? Is there a middle ground between Cartesian dualism and physicalism? These questions shall be discussed in subsequent chapters of this thesis.

1.6. Review of Literature

Physicalists such as John Smart (1959) and Ullin Place (1970) have argued that mental states are identical to brain or neural states and as such mental states such as sensations can be fully explained in terms of physical brain processes, hence for these physicalists the mental is physical. In very simplified terms: a mental state T is nothing other than brain state N. The mental state “desire for a hot beverage” would thus be nothing more than the “firing of certain neurons in certain brain regions.”

However works by Nagel (1974), Levine (1983), Jackson (1982) and Chalmers (1996) expose gaps in the physicalist’s account of mental events. According to Levine (1983, p. 357):

there is more to our concept of pain than its causal role, there is its qualitative character, how it feels; and what is left unexplained by the discovery of C-fiber firing is why pain should feel the way it does! For there seems to be nothing about C-fiber firing which makes it naturally “fit” the phenomenal properties of pain, any more than it would fit some other set of phenomenal properties. Unlike its functional role, the

⁹ Epiphenomenalism is the view that mental events are causally inert by-products of physical processes.

identification of the qualitative side of pain with C-fiber firing (or some property of C-fiber firing) leaves the connection between it and what we identify it with completely mysterious. One might say, it makes the way pain feels into merely a brute fact.

Chalmers (1996: p.3) states that,

There is no question that experience is closely associated with physical processes in systems such as brains. It seems that physical processes give rise to experience, at least in the sense that producing a physical system (such as a brain) with the right physical properties inevitably yields corresponding states of experience. But how and why do physical processes give rise to experience? Why don't these processes take place "in the dark," without any accompanying states of experience? This is the central mystery of consciousness.

For Levine and Chalmers, although there are physiological explanations of the cause of pain there is no physiological explanation of how it feels like to be in pain. This for Levine is the central problem of the explanatory gap: the inability of physicalism to account for the qualitative experience of mental events. The challenge to physicalism has taken three folds, namely: (a) the Knowledge Argument (Jackson, 1986), (b) the Explanatory Argument (Levine, 1986) and (c) the Conceivability Argument (Chalmers, 2010). These arguments shall be considered in detail in the next chapter.

Colin McGinn (1996: p. 42) posits that,

The nature of consciousness is a *mystery* in the sense that it is beyond human powers of theory construction, yet there is no sense in which it is inherently miraculous. This position depends upon a sharp separation between epistemological and ontological questions. Epistemologically, consciousness outruns what we can comprehend, given the ways our cognitive systems are structured--in rather the way that theoretical physics is beyond the intellectual capacities of the chimp. Ontologically, however,

nothing can be inferred from this about the naturalness or otherwise of the object of our ignorance: what cannot be known about is not thereby supernatural in itself. McGinn argues that our reasoning capacity is limited in such a way that we cannot fully grasp the complete nature of consciousness, not even with the advancement of neuroscience.

In spite of the characterization of consciousness as a ‘mystery’ by McGinn, some physicalists such as Dennett (2017), Tye (1999) and Papineau (1998) have argued that consciousness can be fully explained in terms of physical processes in the brain thus reaffirming the physicalist positions of John Smart and Ullin Place.

Michael Tye (1999) in explaining away the gap asserts that phenomenal states or the ‘aboutness’ of mental states such as pain belong to the mental state itself and not to the individual. As a result of this the fact that there is physiological explanation of the cause of mental events such as pain then that explanation also caters for all the properties of pain including qualia.

David Papineau in his article; *Mind the Gap* (1998: p. 1) asserts that “Physicalism has no problem at all in explaining why conscious states go with brain states. This is because I think physicalism is best conceived as a thesis of identity between conscious properties and material properties, and identities need no explaining.”

Another group of philosophers who identify as non-reductive physicalists have attempted to formulate a kind of physicalism which is non-reductive in nature as a solution to the mind-body problem. This is ultimately an attempt to reconcile Cartesian dualism with physicalism. While some non-reductive physicalists maintain that mental properties supervene on physical properties, others maintain that mental properties emerge from physical processes.

Donald Davidson (1970, p. 214), attempts to formulate a kind of non-reductive physicalism through his theory of anomalous monism. According to him,

Anomalous Monism resembles materialism in its claim that all events are physical, but rejects the thesis, usually considered essential to materialism, that mental phenomena can be given purely physical explanations. Anomalous monism shows an ontological bias only in that it allows the possibility that not all events are mental, while insisting that all events are physical. Such a bland monism, unbuttressed by correlating laws or conceptual economies, does not seem to merit the term 'reductionism'...

Kwame Nkrumah in his seminal work *Consciencism* (1970) argues for a kind of physicalism in his theory of dialectical materialism known as categorial conversion. In this framework Nkrumah argues for the primary reality of matter but asserts that as a result of matter's specific arrangement there is a categorial conversion where the mind emerges from the brain. According to Nkrumah (1970, p. 24):

Mind, according to philosophical materialism, is the result of a critical organization of matter. Nervous organization has to attain a certain minimum of complexity for the display of intelligent activity, or the presence of mind. The presence of mind and the attainment of this critical minimum of organization of matter are one and the same thing.

Again he asserts that "mind is nothing but the upshot of matter with a critical nervous arrangement" (Nkrumah, 1970, p. 24).

In recent times, non-reductive physicalism has become the most convenient theory of mind to subscribe to because it appeals to our common sense notion of an existing distinction between mental and physical events while denying the existence of 'mind' as a separate entity. However non-reductive physicalism has come under heavy criticism from several philosophers, notable among the lot being, Jaegwon Kim. Kim (1993) criticizes non-reductive physicalist claims that the mental is causally efficacious and can cause physical events.

According to Kim the causal power of mental events on physical events violates the exclusion principle which states that every caused physical event has only physical causes.

Here is a succinct expression of Kim's argument against non-reductive physicalism by List and Menzies (2009, p. 1):

Focusing on the example of how mental properties relate to their underlying physical, neural properties, Kim claims that if mental properties supervene on neural properties without being identical to them, then mental properties cannot be causes of other properties. His argument invokes what he calls the *exclusion principle*: if a property F is causally sufficient for some effect G then no distinct property F* that supervenes on F can be a cause of the effect.

List and Menzies (2009) have criticized Kim's account of the exclusion principle and have asserted that an interpretation of the principle supports mental to physical causation as held by non-reductive physicalism. In the same vein, Crisp and Warfield (2001) have also criticized portions of Kim's argument against non-reductive physicalism and have "left open the possibility of non-reductivist approaches to mental causation" (p. 315).

However, Schneider (2013) has argued that non-reductive physicalism cannot uphold substance physicalism and is therefore false.

My thesis approaches the question of the plausibility or otherwise of non-reductive physicalism through a conceptual analysis of the meaning of the words which make up the term 'non-reductive physicalism'. Thus while Kim argues against non-reductive physicalism on the basis of its causal claim, I focus on the ontological question of whether non-reductive physicalism is possible in the first place.

1.7. Significance of Study:

It is important to note that non-reductive physicalism is fast becoming the preferred theory of mind today, basically because it provides an avenue to hold on to a mental aspect of humans while remaining a physicalist. This thesis is important because it will help determine whether non-reductive physicalism is a mistaken or contradictory theory of mind and whether the use of this term is a defeat to classical physicalism.

Apart from the contribution that this thesis will make to the existing body of knowledge on the subject, this thesis will also have practical relevance for the medical field, teaching and learning and issues of moral obligation and punishment. This thesis has practical relevance for the medical field especially in the area of diagnosing mental health and neurological problems. It is well known that the field of psychiatry is distinguishable from the field of neurology because it is believed that mental health issues are not always neurological issues¹⁰. If it is discovered through this research that reductive physicalism is the only sense of physicalism then it means that there needs to be a merger or a collapse of the field of psychiatry into neurology and also that all mental health hospitals including ‘spiritual’ centres of healing must be abandoned and replaced with more neurological hospitals and centres.

What this means is that if reductive physicalism is all there is to physicalism then surgery, chemical or genetic therapies are the most preferred options for mental disorders. However if non-reductive physicalism is plausible then the traditional distinction between psychiatry and neurology must be maintained and much effort must be exerted to explore non-physical means of treating mental health disorders. It will be interesting to ascertain at the end

¹⁰ National Institutes of Health (US); Biological Sciences Curriculum Study. NIH Curriculum Supplement Series [Internet]. Bethesda (MD): National Institutes of Health (US). (2007). Information about Mental Illness and the Brain. Retrieved 25 July 2018 from <https://www.ncbi.nlm.nih.gov/books/NBK20369/>

of this thesis whether the difference between psychiatry which deals with illnesses of the mind should continue to be separated from neurology, which deals with illnesses of the brain.

Moreover this research will also help teachers and students understand each other better in the classroom. If reductive physicalism holds, then what it means for a teacher is that, a child is just a bundle of tissues and chemical reactions in the brain and this will affect how the teacher disseminates information to the child. However if non-reductive physicalism holds, then the teacher will consider the child not just as a bundle of tissues and chemical reactions but as a unique individual who has desires, emotions, aspirations and a world of mental processes which must be developed and harnessed through a need-based approach to teaching and learning.

Furthermore, this research is relevant to the on-going debate on free will, determinism and moral obligation. If a physicalist world view is true then it means the decisions and thoughts of a person which are considered mental do not influence a physical event such as physical assault or torture or rape for example and as such how do we punish law breakers for their wrongs? Do we say their actions were a direct result of chemical reactions in their brains? Do criminals have power over the chemical reactions in their brains and what determines the chemical reactions that go on within the brain? Where in the brain can we find free will and is free will possible if it cannot be found in the brain? These are questions which this research will help to answer.

1.8. Method

The success of this thesis relies heavily on the clarification of concepts; hence I shall employ the use of conceptual analysis to examine the concepts which are in contention in this thesis. These concepts include: 'Physical', 'Non-Physical', 'Physicalism', 'Reductive' and 'Non-Reductive'. Also critical analysis shall be used to determine the consistency or otherwise of non-reductive physicalism after a thorough conceptual analysis has been done. I

shall narrow the discussion to a few self-acclaimed physicalists and non-reductive physicalists and consider the plausibility or otherwise of both arguments.

1.9. Outline of Chapters

This chapter provided a general introduction of the work, which involved a background of the study, a review of the relevant literature and problem identified. It must be noted that since this current chapter also serves as the general introduction to the entire thesis, some of the concepts and literature mentioned in this chapter shall be repeated in subsequent chapters but with much greater detail and analysis.

Chapter two will focus on discussing reductive physicalism and the various challenges it faces.

Chapter three will examine non-reductive physicalism. A thorough conceptual analysis shall be done in this chapter to ascertain what the terms reductive, non-reductive and physicalism mean philosophically and whether or not non-reductive physicalism is consistent with physicalism. The non-reductive physicalist will either have to side with reductive physicalism or denounce physicalism and side with non-physicalist accounts of reality if non-reductive physicalism contradicts physicalism. However if it is discovered that non-reductive physicalism is consistent with physicalism then it is possible to hold a middle ground in the mind-body debate and a non-reductive account of consciousness is possible.

Chapter four will be dedicated to assessing the plausibility of non-reductive physicalism as a theory of consciousness. Various versions of non-reductive physicalism shall be explored in this chapter and the argument of Jaegwon Kim against non-reductive physicalism shall be evaluated.

Chapter five shall be the concluding chapter of the thesis and it shall focus on providing a concise summary of the entire thesis and also offer some recommendations towards future scholarship in this area.

CHAPTER TWO

THE PITFALLS OF REDUCTIVE PHYSICALISM

Physicalism as it relates to mental phenomena refers to the view that mental activities such as perceiving, thinking, pain and memory are physical activities or supervene on physical processes of the brain. Physicalism is a theory which aims to provide a solution to the mind-body problem and it does this by positing a monist picture of the world devoid of any problem of mind-body interactions as pertains in the dualistic picture of the world.

Again by positing a single substance as an explanation of mental activities the physicalist tends to be supported by the thesis of ontological reduction postulated by William of Ockham (1285-1347) which has come to be known as Ockham's razor. Ockham's razor according to the Simple English Wikipedia asserts that "if there are several possible ways that something might have happened, the way that uses the fewest guesses is probably the right one. However, Ockham's razor only applies when the simple explanation and complex explanation work equally well." By offering a monist picture of the world physicalism makes use of fewer entities as compared to the dualist framework which suggests two principles as the cause of mental and physical phenomenon.

The word 'physicalism' was introduced into philosophy only in the 1930s by Otto Neurath (1931) and Rudolf Carnap (1959/1932), both of whom were key members of the Vienna Circle, a group of philosophers, scientists and mathematicians active in Vienna prior to World War II. It is not clear that Neurath and Carnap understood physicalism in the same way, but one thesis often attributed to them (e.g. in Hempel 1949) is the linguistic thesis that

every statement is synonymous with (i.e. is equivalent in meaning with) some physical statement (Stoljar, 2017).¹¹

It is no surprise that the term ‘physicalism’ was coined by members of the Vienna Circle who were logical positivists. Chief among their pursuits was to make philosophy conform to the scientific methods of observation and verification; this led to their staunch insistence on the elimination of metaphysics. It became almost natural that the logical positivists will oppose the view that mental activity was attributable to a substance which could not be observed or verified, known as ‘mind’. They were more likely to posit an observable and verifiable physical substance responsible for mental activity.

Physicalism in contemporary philosophy can be divided into two main types namely; reductive physicalism and non-reductive physicalism. Reductive physicalism posits that mental events are physical events or simply put the mental is physical. Non-reductive physicalism on the other hand is of the view that mental activities supervene on physical events but are not reducible to physical events. The thesis of supervenience states that there cannot be a change in mental activity without a change in the physical state on which it depends. My focus in this chapter is to discuss reductive physicalism and the various forms it has taken in the philosophy of mind and to show its inadequacy in accounting for mental events. The various forms of reductive physicalism I shall discuss in this chapter are:

Behaviourism and Type Identity Theory. Hilary Putnam’s account of functionalism shall also be discussed in this chapter.

2.1. Behaviourism

Behaviourism is the view that there are no mental states but only behaviour dispositions or dispositions to behave in certain ways (Ryle, 1949). Behaviourism became popular in psychology in the very first half of the 20th century (Kim, 1995). The need to make

¹¹ Stoljar, Daniel, "Physicalism", *The Stanford Encyclopedia of Philosophy* (Winter 2017 Edition)

psychology more scientific led to the denial of introspection which could not be accessible to others (Stoljar, 2005). According to Stout (2003, p. 38):

Ryle shared with Watson's psychological behaviourism the conviction that the interpretation of behaviour rather than introspection was the primary method of access to the mind. Indeed Ryle went a step further than some psychological behaviourists (though not Watson) by saying that this pragmatic methodological claim actually determines the concept of mind. According to Ryle, there is nothing more to one's assertion that someone is in a certain state of mind than that one is entitled to make certain inferences about their behaviour.

Observed behaviour became the only avenue to predict and generalise on the internal processes taking place in an individual (Skinner, 1972). Parallel to these developments in psychology, a philosophical behaviourism (sometimes called logical behaviourism) was developed. This is characterized by a strong verificationism, which generally considers unverifiable statements about interior mental life senseless (Stoljar, 2005). For the behaviourist, mental states are not interior states on which one can make introspective reports. They are just descriptions of behaviour or dispositions to behave in certain ways, made by third parties to explain and predict others' behaviour (Ryle, 1949).

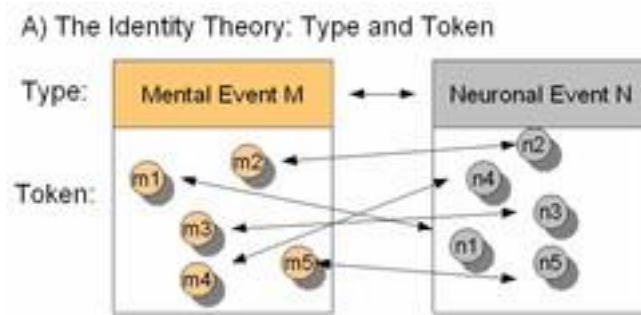
Thus for the behaviourist, in order to determine whether an individual is experiencing a particular mental state such as a pain in the tooth, one needs to observe the victims bodily or verbal gestures such as screams, moans, swollen gum or shedding of tears in some cases. An individual in a state of hunger will be detected by his or her claim that he or she is hungry and the bodily movements made by one in search of food. These bodily movements and verbal statements for the behaviourist are more empirical and verifiable, thus making psychology more scientific than the reliance on a person reporting on his or her own internal mental states which are unverifiable and may be misleading.

Notwithstanding the momentary appeal of behaviourism with its claim to science, it faces a very potent objection. This objection which bedevils the thesis of behaviourism is that behaviour will not always lead us to the mental state an individual is in. An individual in severe pain may be smiling and chatting heartily with a colleague and if the individual's colleague is a behaviourist, he will assert that his friend is in a very healthy and jolly mood when that is the very opposite of what his friend is experiencing. Behaviourism therefore places the task of determining the mental state a person is in, on the observer, while disregarding the subjective nature of mental states which are unique to each individual. In effect, behaviourism denies phenomenal consciousness described by Nagel (1974) as the 'what is it like' feature of phenomenal mental states such as pain, fear, hunger, among others. The accompanying experiences of these mental states cannot be accurately determined by observing the behaviour of the person in a particular phenomenal mental state. Behaviourism therefore omits the subjective experience of mental states which can only be reported by the first person and not by a third person.

2.2. Type Identity Theory

Type Identity Theory is another strand of reductive physicalism which asserts that mental states are identical to brain states. This strand of physicalism is attributable to John Smart (1959) and Ullin Place (1970). They asserted that sensations are identical to physical processes in the brain and thus mental state T is nothing other than brain state N. Pain is just the firing of c-fibres within a particular portion of the brain. Type Identity Theory was developed as a direct response to the inadequacies of behaviourism as a theory of mind.

Fig. 1.¹²: Structural representation of Type Identity Theory



In Fig.1. Mental event m1 corresponds to neural event n1, mental event m2 corresponds to neural event n2, mental event m3 corresponds to neural event n3, mental event m4 corresponds to neural event n4 and mental event m5 corresponds to neural event n5. This diagram shows that in the identity theorist's framework there is no mental event which does not have a neural twin, every mental event is captured within the neural activities of the brain and as such mental events are reducible to brain states.

In his seminal paper titled: *Is Consciousness a Brain process?* U.T Place (1956, p. 50) makes this statement to support his view that consciousness can be identified with brain processes:

We realise that there is nothing that the introspecting subject says about his conscious experiences which is inconsistent with anything the physiologist might want to say about the brain processes which cause him to describe the environment and his consciousness of that environment in the way he does. When the subject describes his experience by saying that a light which is in fact stationary, appears to move, all the physiologist or physiological psychologist has to do in order to explain the subject's introspective observations, is to show that the brain process which is causing the subject to describe his experience in this way, is the sort of process which normally

¹² Retrieved 23 June 2018 from http://en.wikipedia.org/wiki/File:Anomalous_Monism.png

occurs when he is observing an actual moving object and which therefore normally causes him to report the movement of an object in his environment.

The identity theory provides a solution to the mind-body problem by positing only one ontological reality which is the physical brain which has neuronal correlates to all mental events. What this means is that, since mental events are identical to neuronal events, mental events can adequately be substituted for neuronal events. Despite the immediate simplicity of this theory it has come under attack from the philosopher, Hilary Putnam. His criticism of the type identity theory is known as, the multiple realizability of the mental. According to this view, mental events such as pain or hunger are experienced not only by humans but also by other organisms which do not have identical brains like that of humans. Putnam (1990, p. 53) asserts,

The hypothesis becomes still more ambitious when we realize that the brain-state theorist is not just saying that pain is a brain state; he is, of course, concerned to maintain that every psychological state is a brain state. Thus if we can find even one psychological predicate which can clearly be applied to both mammal and an octopus (say “hungry”), but whose physical-chemical “correlate” is different in the two cases, the brain-state theory has collapsed.

In response to the inadequacies of behaviourism and type identity theory, Hilary Putnam formulated the theory known as functionalism.

2.3. Functionalism

Hilary Putnam (1990) advances his thesis of functionalism by pointing out the inadequacies of the type identity theory and behaviourism. He disputes the claim that pain is a brain state by arguing that while a brain state refers to a physical-chemical state, pain is not a physical-chemical state and therefore pain cannot be identical to a brain state. The behaviourist on the other hand defines pain as a behaviour disposition. This definition

according to Putnam has one apparent advantage which is the fact that the way we verify that organisms are in pain is through their behaviour. However, this apparent advantage according to Putnam is no advantage at all; this is because the behaviourist in his attempt to define pain as a behaviour disposition provides a circular definition. This circular definition according to Putnam is as follows; pain is the disposition of X to behave as if X were in pain (Putnam, 1990). For Putnam therefore the behaviourist does not provide us with any valuable information about the practical workings of pain.

As a result of the inadequacies of the claims made by the type identity theorist and the behaviourists, Hilary Putnam provides what he terms 'a more plausible hypothesis'. His hypothesis is the claim that 'pain is a functional state of a whole organism'. According to Putnam (1990, p. 55) 'the functional state refers to the state of receiving sensory inputs which play a certain role in the Functional Organization of the organism'. He argues that these sensory inputs lead to motor outputs. He employs the functioning operations of the Turing machine to make his claim. In his view the Turing machine is an example of an entity which receives certain sensory inputs and simultaneously gives out motor outputs. The working of the Turing Machine is like that of any probabilistic automaton whose functional state depends on the machine table. Hilary Putnam (1990) enumerates his main thesis in the following argument:

- a. All organisms capable of feeling pain are Probabilistic Automata
- b. Every organism capable of feeling pain possesses at least one Description of a certain kind (i.e., being capable of feeling pain is possessing an appropriate kind of Functional Organization.)
- c. No organism capable of feeling pain possesses a decomposition into parts which separately possess Descriptions of the kind referred to in (b)

- d. For every Description of the kind referred to in (b), there exists a subset of the sensory inputs such that an organism with that Description is in pain when and only when some of its sensory inputs are in that subset.

I find some problems with Putnam's thesis that pain is a functional state of a whole organism. Firstly, in Hilary Putnam's attempt to define pain as a functional state of a whole organism he employs the functioning of the Turing machine to make his case. He posits an analogy between the working of the Turing machine and that of living organisms i.e. humans and animals (sentient beings), I find this analogy weak in the sense that there are little similarities between machines and humans. An important feature of analogical arguments is that the two entities under consideration must share in some basic features and based on these initial similarities they may be said to be similar in other respects. However this is not the case for machines and humans. While humans are made up of flesh, bones and a central nervous system, a machine is made up of metal and a combination of codes. Thus it will be very doubtful if the properties ascribed to humans can be ascribed to machines in the same way, especially when consciousness and mental life is the subject under consideration.

I doubt if the Turing machine can feel pain in the same way that humans feel pain, or whether the Turing Machine can feel any other psychological state such as hunger, anger, love or sadness. Quite apart from having these mental states, one important element is whether machines have qualia or raw feels. Qualia refers to the 'aboutness' of mental states or as Nagel (1974) puts it 'what is it like to be a bat'. Do machines know what is it like to be a machine? These are important observations and concerns which are at the heart of Artificial Intelligence (AI) research. Unlike the type identity theorist and the behaviourists who define pain by making reference to the brain and behaviour which are linked to living organisms, Hilary Putnam's functionalism fails to focus on living organisms but rather focuses on a machine to make his point.

It is easier to believe medical analogies than to believe Putnam's machine analogy. This is because in most medical analogies similar entities are compared, for example scientists usually try new drugs on rats or mice in the laboratory and based on the reaction of these living organisms make recommendations on the effect of the drug on humans. The basis of these tests on mice and humans is that both are 'animals' and mammals. Scientists do not try experiments on machines and from their tests make recommendations to humans.

An objection to this position is that the concern of Putnam in the analogy is not so much about the composition of machines and humans but on the probable output from a given input scenario which is both present in machines and humans. It is true that Putnam focuses on the input-output operation of machines and humans, however I think it is impossible to eliminate the components that are involved in this input-output operation. The input-output operation of both the Turing machine and humans do not take place in a vacuum, it is important to consider the material components involved in these operations in order to build a stronger analogy. The way a human being acquires inputs from the environment and processes it through neural activity and consequently gives rise to certain behavioural outputs is not the same in a machine. It is admirable how Putnam builds his case for functionalism through the machine analogy but I think it loses touch especially with the reality of consciousness as a human phenomenon.

Secondly, Putnam's functionalism is another form of behaviourism and as such can also face the same criticisms he poses against the behaviourist. By asserting that pain is a functional state of a whole organism, Putnam is implicitly saying that anytime we observe that a sentient organism is in pain then that whole organism is in a certain functional state. This functional state, Putnam will attribute to certain sensory inputs. If the only way we can come to know that an organism is in a functional state of pain is by observing its behavior, then we are back to the behaviourist thesis. One major criticism levelled against behaviourism is

liberalism; the propensity on the part of the behaviourist to ascribe mental states to entities that do not have the capacity for mental activity (Block, 1990). Hilary Putnam's functionalism faces this same criticism of liberalism as can be seen clearly with his attempt to ascribe pain to a Turing machine. Ned Block (1990) argues that the fact that Homunculi-headed robots made up of an internal system of small men function like the human body, does not mean that Homunculi-headed robots are capable of mental activity. Also the fact that the whole population of China (1.5 billion) function like an organism does not mean the collective population of China feel pain or have a mind.

Ned Block (1990) argues that an attempt on the part of the functionalist to escape the problem of liberalism lands him in the problem of chauvinism. Chauvinism simply means an attempt to restrict mental states to brain states; the view point of the type identity theorists which Hilary Putnam criticizes. Whichever way, either liberalism or chauvinism the functionalist is in trouble.

Thirdly, the inability of Hilary Putnam to specify the particular sensory inputs which lead to pain mars his thesis. Again he falls into the same trap of the behaviourist in the sense that he does not give us any concrete information about the nature of pain. The only information he gives us is that pain is a functional state of a whole organism which is caused by sensory inputs leading to motor outputs. Which sensory inputs in particular is he referring to? Are these sensory inputs physical only or mental only or both? Given the fact that humans pretend sometimes, our inability to ascertain the particular sensory inputs that lead to pain will often lead to error in detecting pain. As a result of this I assert that Putnam's thesis that pain is a functional state of a whole organism provides us with little or no detail about pain in the same way the type identity theorist says 'pain is a brain state' or the behaviourist's claims that 'pain is a behaviour disposition'.

Finally, Putnam's thesis in my view fails the test of Ockham. Given the explanations by the type identity theorists, the behaviourists and the functionalists as to the nature of pain I am of the view that the functionalist approach leads to more guesses and as such may probably be wrong. Hilary Putnam in his attempt to justify why pain is a functional state of a whole organism employs four premises as seen in the preceding paragraphs. He also employs the use of an analogy between the operations of the Turing machine and sentient beings; an analogy which has its own problems. Moreover Putnam uses the terms 'sensory inputs' and 'motor output' which he says little about. Putnam's superfluity with regards to his claims and assumptions is more likely to be erroneous as compared to the rather fewer assumptions by the type identity theorist and the behaviourist with regards to mental activity such as pain.

It has become apparent at this point that behaviourism, type identity theory and functionalism are inadequate in providing a credible account of mental phenomenon. There are problems with reducing mental events to behaviour, to brain states and to the functional state of a whole organism. Does this mean the mental does not have accommodation in a physicalist framework? In addition to the problems with the various strands of reductive physicalism identified above, there have been three broad criticisms of physicalism, these are; the Knowledge Argument, Explanatory Argument and the Conceivability argument. I shall consider each in turn.

2.4. Knowledge Argument against Physicalism

The knowledge argument against physicalism asserts that one can know all the physical facts about the universe but will still be lacking the knowledge of other aspects of the universe like consciousness. Different versions of this argument have been formulated by Frank Jackson (1986) and Thomas Nagel (1974). David Chalmers (2003, p. 7) summarizes Frank Jackson's account of *What Mary didn't know* as follows:

Mary is a neuroscientist who knows everything there is to know about the physical processes relevant to colour vision. But Mary has been brought up in a black-and-white room (on an alternative version, she is colourblind) and has never experienced red. Despite all her knowledge, it seems that there is something very important about colour vision that Mary does not know: she does not know what it is like to see red. Even complete physical knowledge and unrestricted powers of deduction do not enable her to know this. Later, if she comes to experience red for the first time, she will learn a new fact of which she was previously ignorant: she will learn what it is like to see red.

Jackson's version of the argument according to Chalmers (2003) can be put as follows (here the premises concern Mary's knowledge when she has not yet experienced red):

(1) Mary knows all the physical facts.

(2) Mary does not know all the facts

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

One can put the knowledge argument more generally:

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

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

(3) Physicalism is false.

Thomas Nagel's (1974) paper titled *What is it like to be a bat* is often referred to as the work which laid the foundation for the knowledge argument against physicalism. In this paper Nagel states that human beings can know all the physical and biological information and processes concerning the functioning and life of a bat but can never know what it is like to be

a bat. It takes only the bat to know what it is like to be a bat. The same applies to human beings, although scientists can describe the processes involved when an individual is in pain or hungry, scientists cannot know how it is like for person A to be in either a state of pain or hunger. This idea is used to advance the claim that physicalism which purports that everything is physical is false. We can know all the physical facts about something and still not know it fully. Consider for instance how we can know all the physical aspects of the functioning of a bat or an ant but never know what it is like to be a bat or an ant. The specific nature of the 'what it is like' is how consciousness has been defined.

2.5. The Explanatory Argument against Physicalism

The explanatory argument against physicalism states that at best physicalism provides explanation for structure and function and since consciousness does not conform to a particular physical structure or tangible pattern then physicalism cannot explain consciousness. David Chalmers (2003, p. 4) puts it succinctly this way;

One can argue that by the character of physical explanation, physical accounts explain only structure and function, where the relevant structures are spatiotemporal structures, and the relevant functions are causal roles in the production of a system's behaviour. And one can argue as above that explaining structures and functions does not suffice to explain consciousness. If so, no physical account can explain consciousness.

The term 'explanatory gap' was coined by Joseph Levine. According to Levine (2001, p. 357) "there is more to our concept of pain than its causal role, there is its qualitative character, how it feels; and what is left unexplained by the discovery of C-fiber firing is why pain should feel the way it does!." For Levine, although there are physiological explanations of the cause of pain there is no physiological explanation of how it feels like to be in pain.

This for Levine is the central problem of the explanatory gap; the inability of physicalism to account for the qualitative experience of mental events.

We can call this the explanatory argument:

- (1) Physical accounts explain structure and function.
- (2) Explaining structure and function does not suffice to explaining consciousness

- (3) No physical account can explain consciousness.

2.6. The Conceivability Argument against Physicalism

Proponents of the conceivability argument against physicalism assert that it is conceivable that there is a system that is physically identical to a conscious being but which lacks consciousness, like a zombie. This argument does not categorically assert that zombies exist but provides a logical possibility and does not amount to a contradiction to allow for the existence of a physically identical system to a conscious being which lacks consciousness. This argument concludes that consciousness is non-physical and thus the kind of physicalism which reduces our consciousness to physical activity is inadequate or false. According to Chalmers (2003, p. 5):

There is little reason to believe that zombies exist in the actual world. But many hold that they are at least conceivable: we can coherently imagine zombies, and there is no contradiction in the idea that reveals itself even on reflection. We can put the argument, in its simplest form, as follows:

- (1) It is conceivable that there are zombies.
- (2) If it is conceivable that there are zombies, it is metaphysically possible that there are zombies.
- (3) If it is metaphysically possible that there are zombies, then consciousness is nonphysical.

Therefore:

(4) Consciousness is nonphysical.

The reductive physicalist project faces a formidable opposition from the knowledge, explanatory and conceivability arguments. There have been attempts by some reductive physicalists to respond to these arguments. David Papineau (1998, p. 373) for instance asserts that,

Physicalism has no problem at all in explaining why conscious states go with brain states. This is because I think physicalism is best conceived as a thesis of identity between conscious properties and material properties, and identities need no explaining.

Fasiku Gbenga (2011, p. 96) also posits that there is no gap in the universe and in extension there is no explanatory gap between mental and physical events. The responses by Papineau and Gbenga do not resolve the objections levelled against reductive physicalism.

Contrary to Papineau's claim that identities need no explaining, I am of the view that identities need explaining, especially if the two things considered similar have different properties. A brain state is physical while a conscious state is non-physical, therefore to identify brain state *A* with mental state *B* cannot be taken as given. There must be an elaborate attempt on the part of the reductive physicalist to explain why a mental state is identical to a brain state. This identity must also be explained in order to avoid an epistemic fallacy of mistakenly inferring that, because *a* and *b* refer to one and the same thing *Q*, the one who believes or knows *b* must also know or believe *a*:

Example: P1: Descartes knows that pain is a mental state.

P2: Pain is also a brain state involving C-fiber firing.

Conclusion: Descartes knows that pain is a brain state involving, C-fibre firing.

In the above example, premises 1 and 2 do not support the conclusion made. It is possible for Descartes to know that pain is a mental state without knowing that it is a brain state involving C fibre-firing. Thus, it does not always follow that if 'a' and 'b' are identical and if 'Q' knows 'a' then 'Q' knows 'b'. There is therefore the need to explain the identity of 'a' and 'b' in this case the identity of pain as a mental state and pain as a brain state to Descartes who will then judge the merits of this explanation. The claim that identities need no explanation according to Papineau is untenable especially when a third person is involved.

Gbenga (2011, p. 96) also opines that there is no gap in the world hence there cannot be any explanatory gap between physical and mental events. Gbenga must be oblivious of the gaps that exist in this mysterious universe. There are events in our universe that are still without explanation some of which include gravity, the law of electromagnetism (why do unlike poles attract while like poles repel?) and how the planets are held in their orbits around the sun? If there was no gap in the universe I believe scientists will not spend years in secluded laboratories in their attempt to understand the universe better.

Chalmers (1995, p. ix) asserts that "consciousness is the biggest mystery. It is probably the largest outstanding obstacle in our quest for a scientific understanding of the universe". Nagel (1974, p. 435) also opines in the first two lines of his seminal paper *What is it like to be a bat* that "Consciousness is what makes the mind-body problem really intractable". Consciousness escapes classification in the reductive physicalist framework and this calls for a search for a more plausible theory.

CHAPTER THREE

AN EXAMINATION OF NON-REDUCTIVE PHYSICALISM

The thesis of non-reductive physicalism in philosophy of mind attempts to salvage physicalism from the challenge of consciousness as it became overwhelmingly obvious that our mental life as humans could not be ignored or swamped under the umbrella of reductive physicalism. Proponents of non-reductive physicalism in their quest to understand and provide an explanation to the phenomenon of consciousness sought to remain physicalist while maintaining the irreducibility of consciousness to the physical substrate from which they emerge. The import of this chapter is to examine the thesis of non-reductive physicalism and to consider the various forms it has presented itself in the literature. A major focus of this chapter will be to ascertain whether the thesis of non-reductive physicalism succeeds as a physicalist theory of consciousness. There is the need for the clarification of certain key concepts which will aid in our understanding of non-reductive physicalism. These concepts are: monism, materialism and physicalism.

3.1. Monism

Monism is the view that the universe is composed of one ultimate reality. It is a metaphysical position in contrast to pluralism, dualism and nihilism. Monism as pertains to the mind-body debate suggests that all that exists are ideas (idealism) or what exists is matter (materialism) or that the physical is all that exists (physicalism). Monism can be understood in two different ways. These are priority monism and existence monism. Priority monism holds that there is only one ontological entity which is primary and which serves as a source of all other things in the universe, these other entities exist only derivatively (Schaffer, 2016). Existence monism posits that exactly one concrete object token exists (the One), (Schaffer,

2016) and nothing else. In most discussions on monism it is often common to think of monism as existence monism with little or no consideration for priority monism. Physicalism is a monist theory of mind but the same error of defining physicalism in terms of existence monism leads to a narrow understanding of physicalism. Physicalism defined in terms of priority monism suggests that the physical is the primary or prior entity and other entities exist as derivatives of the physical. Monism viewed in terms of priority monism makes room for non-reductive physicalism.

3.2. Materialism and Physicalism

The terms materialism and physicalism are often used interchangeably, but they differ. Materialism is the view that everything in the universe exists as matter. Matter refers to anything which has mass and occupies space. Physics has shown that not everything in the universe is material in this sense; gravitational force is physical but does not have the concreteness and extendibility characteristic of matter. Physicalism which is derived from the term physics thus differs from materialism in the sense that it allows for the existence of entities which are not material (possessing mass and occupying space) but nonetheless corresponding to the laws of physics and the physical sciences. To be a physicalist therefore does not require one to be a materialist.

3.3. Non-reductive physicalism

The term ‘non-reductive physicalism’ is a loaded term which needs a critical unpacking since it involves the combination of two important words; ‘non-reductive’ and ‘physicalism’. I shall offer an analysis of each word in turn. First, to be non-reductive is to be not reducible or irreducible, thus non-reduction is the opposite of reduction. Reduction gives the impression of lessening, simplifying, eliminating, compressing or bringing to a lower level. Thus non-reduction means not able to lessen, nor simplifying, not eliminating, not

compressing or not bringing to a lower level. Physicalism on the other hand is the view that everything is either physical or supervenes on the physical.

Hoernlé (1917, p. 298) defines the physical as “all entities which (a) possess mass, (b) have position or extensive magnitude in 'real' space, and (c) are describable in terms of the laws of the science of energetics.” The term physical can be traced to the word physics. Aristotle defines physics as the branch of theoretical philosophy which is material and moved¹³. From the above breakdown of the terms, ‘non-reductive’ and ‘physicalism’ I define non-reductive physicalism as a strand of physicalism in which some entities emanating from the material and movable world cannot be simplified, lessened, compressed or brought to the level of the physical.

3.4. Does physicalism presuppose reduction?

With the advent of physicalism as a monist theory of reality which is opposed to substance dualism, physicalism has often been conceived as positing a reductionist picture of the world. The introduction of physicalism in explanations of the mind-body problem gave the impression that physicalism was a reductionist thesis aimed at resolving the mind-body problem by eliminating the mind or simplifying mental states to physical processes. This gave rise to strands of physicalism such as type identity theory and behaviourism. Hence any attempt to postulate a non-reductive physicalist account of reality is either considered fallacious or at best a contradiction. The question which must be asked and properly answered is whether physicalism presupposes reduction?

In order to respond to this question an analysis of the concept ‘physicalism’ needs to be done. As I have alluded to earlier, physicalism stems from the words ‘physical’ and ‘physics’. The physical is that which conforms to the laws of physics. The physical (a) possesses mass, (b) has position or extensive magnitude in 'real' space, (c) is describable in

¹³ Copleston, F. (1993). *A History of Philosophy*, Vol. 1: Greece and Rome From the Pre-Socratics to Plotinus. Garden City. p. 277

terms of the laws of the science of energetics. (Hoernlé, 1917, p. 298). I believe what Hoernlé means is that for an entity to be captured under the realm of the physical it must possess either one of these requirements. This is because there are entities which possess all of these requirements and there are others which do not possess all of these but are still considered to be under the ambit of the physical. A human body, a table, a chair, a book or a car have concrete existence; by concrete existence I mean they can be seen, touched and are composed of material parts. In addition to these they have mass, position or extensive magnitude in 'real' space and are describable in terms of the laws of science of energetics.

However, apart from these entities which have concrete existence there are other entities which are characterised as physical but which cannot be seen or touched but can be felt. Those that fall within this category include air, heat, electromagnetic force, gravitational force, electricity, ultra violet rays among others. The point I intend to make here is that physicalism needs not be reductive in the sense that one must not assert that everything has concrete existence in order to be a physicalist. Physicalism also holds true for one who asserts that there are other phenomena in the physical world which do not have concrete existence but depend or emerge from entities with concrete existence. Indeed material bodies exist in this world which give rise to other phenomena which lack the concreteness of these bodies.

For instance, although we cannot see the earth's gravitational pull we know this force is connected to the concrete earth, again we do not see magnetic fields or force but we know they emerge from concrete magnets, moreover we perceive colour only because concrete materials are coloured. So also do we have experiences of pain, joy, hunger and trains of thought which cannot be seen or touched but emanate from concrete bodies. Thus without bodies, talk about pain and hunger will be indecipherable.

One can be tagged a physicalist (A) if one decides to reduce mental states to brain states like the type identity theorist does and I want to suggest that one is also a physicalist (B) if one

asserts that, he has pain and hunger which are mental states which are derived from a material substance. The difference between physicalist (A) and physicalist (B) is that while physicalist (A) reduces, compresses, identifies and replaces mentality with the brain so that talk about mental life is substituted with talk about brain processes, physicalist (B) admits that mental states exist and are not to be simplified or identified with brain processes although they ‘supervene’ on the brain.

To assert that physicalism presupposes reduction becomes difficult to defend when we are to consider whether numbers and words are physical. In my view therefore, physicalism does not presuppose reduction and physicalism is not inherently reductive, it can be reductive and non-reductive. It is not a contradiction in my view to hold on to non-reduction within a physicalist framework.

3.5. Consciousness as the non-reductive component

Mental states have objective and subjective properties, the objective properties of mental states refer to the physical components of mental states. For example the phenomenon of pain has been explained as the firing of C fibres in the brain, likewise the phenomenon of perception and visualization is “subject to considerable processing in many (if not all) areas of visual cortex plus associated subcortical structures as evidenced by behavioural and brain imaging techniques” (Rees, 2009, p. 54).

Neuroscience has established that there are various compartments of the brain responsible for mental events such as hunger, pain, emotions, memory etc. These fibres within the brain cause the body to respond in a particular way when these mental events are experienced. For instance when the brain detects hunger, messages are sent from the brain to other parts of the body such as the stomach in such a way that the individual makes efforts to acquire food. In the same way when the brain detects the emotion of sorrow, messages are sent to the tear glands in the eye to shed tears.

The subjective property or quality of mental events on the other hand refers to the way mental states feel like when experienced, and this is known as phenomenal consciousness. Why does pain feel the way it does or what accounts for the reddishness of red in the observer for example. The subjective experience of mental events is not explained by the firing of certain chemicals in the brain, no scientific discovery has been able to explain this. Therefore there are properties of mental states that are physical and are explained in terms of the brain while there are subjective or 'mental properties' of mental states that are not explained by the brain. Thus in the physicalist account of mental states the component which is left unexplained and which remains non-reductive is the experience which accompanies mental states often termed phenomenal consciousness.

3.6. Non-reductive physicalism in philosophy of mind

Non-reductive physicalism in the area of philosophy of mind has been formulated differently by different philosophers. However, according to List and Menzies (2009, p. 1) there are three common features of non-reductive physicalism and these are:

- i. That mental properties are not identical to physical properties.
- ii. That mental properties nevertheless supervene on physical properties in the sense that there cannot be a difference with respect to mental properties without a further difference with respect to physical properties.
- iii. That mental properties are causes and effects of other properties.

I will reflect on these three features of non-reductive physicalism in turn. Firstly, non-reductive physicalists hold that mental properties are not identical to physical properties. This feature is at variance with reductive physicalism which holds that mental state A is identical to brain state B and every mental state can be reduced in terms of composition and explanation to physical properties of the brain. However as I tried to demonstrate in chapter two of this work, there are intractable problems which arise when a physical-chemical state of brain

processes are said to be identical to non-physical mental properties. The knowledge, explanatory and conceivability arguments broadly undermine the thesis held by the reductive physicalist that physical properties are identical to mental properties. Moreover, the mental and the physical represent different categories and thus to reduce one to the other is to commit a category mistake. Thus the non-reductive physicalist aware of the problems of reductive physicalism accepts that mental properties are not identical to physical properties but in keeping with his physicalist bearings is quick to add a second feature of this nonidentity.

The second feature which the thesis of non-reductive physicalism adds is that mental properties nonetheless supervene on physical properties. The concept of supervenience is widely believed to have been introduced into the mind and body debate by Davidson (1970, p. 214) in his assertion that mental characteristics are in some sense dependent, or supervenient, on physical characteristics. Such supervenience might be taken to mean that there cannot be two events alike in all physical respects but differing in some mental respect, or that an object cannot alter in some mental respect without altering in some physical respect.

Supervenience therefore represents a dependence relationship in which physical properties provide a base on which mental properties are realised; the physical property is 'subvenient' while mental properties are 'supervenient'. The thesis of supervenience prior to its introduction in the philosophy of mind was already present in moral theory in the writings of G.E Moore and R.M. Hare.

According to Moore (1922, p. 261);

...if a given thing possesses any kind of intrinsic value in a certain degree, then not only must that same thing possess it, under all circumstances, in the same degree, but also anything exactly like it, must, under all circumstances, possess it in exactly the same degree.

Although, Moore in this extract does not use the exact term of 'supervenience' he provides the ground work for the thesis of supervenience. Thus for Moore things that are *exactly alike* must possess the same intrinsic value, it is impossible therefore to have two things which are *exactly alike* but differ in some intrinsic value.

R.M Hare who used the term 'supervenience' in his work in moral theory builds on the work of Moore when he posits that,

first, let us take that characteristic of "good" which has been called its supervenience. Suppose that we say "St. Francis was a good man." It is logically impossible to say this and to maintain at the same time that there might have been another man placed exactly in the same circumstances as St. Francis, and who behaved in exactly the same way, but who differed from St. Francis in this respect only, that he was not a good man (Hare, 1952, p. 145).

In this passage, the notion of supervenience which Hare presents is one which shows a relation between the ethical predicates such as 'good' and non-ethical properties which are descriptive or naturalistic. Thus any entity which is descriptively or naturalistically alike will possess the same ethical predicates. Ethical predicates are therefore supervenient on descriptive properties although ethical predicates cannot be reduced to descriptive properties.

The thesis of supervenience in discussions of the mind and body follows the same idea as pertains in moral theory but differ only in terms of concepts. While mental properties supervene on physical properties in philosophy of mind, ethical predicates supervene on descriptive or naturalistic properties in moral theory. It is important to note that it is this second criterion of supervenience in the thesis of non-reductive physicalism which points to its physicalistic underpinnings. Mental states such as pain, hunger, perceptions etc. supervene on neural properties without being reducible to them. This means that there cannot be a change in a mental state without a prior change in physical or neural properties and also two

entities cannot differ in terms of mental states if they are *exactly alike* in all physical respects. The concept of supervenience has been categorized into weak, strong and global supervenience by Jaegwon Kim (1984, 1987). These three varieties of supervenience are defined by Kim as follows:

3.6.1 Weak supervenience

Necessarily (that is, in every possible world), if any x and y (in the domain) are indiscernible in physical properties (P), x and y are indiscernible in mental properties (M). According to Kim (1996, p. 577);

suppose you are creating worlds: weak supervenience prohibits you from placing in the same world physical duplicates that are not mental duplicates. But it does not prohibit you from creating two physical duplicates that are not mental duplicates *as long as you put them in different worlds*.

The distinctive feature of weak supervenience is that its constraint applies only intra-world, not cross-world; that is, the way in which mental and physical properties are distributed in one world places no restriction whatever on how they may be distributed in another world.

3.6.2 Strong supervenience

For any individuals x and y, and any worlds A and B, if x in world A is physically indiscernible from y in world B (that is, x has in world A exactly the same physical properties in P that y has in world B), then x in world A has mental properties indiscernible from y in world B. Kim (1996, p. 578) asserts that,

strong supervenience, therefore, differs from weak supervenience in that individuals compared for indiscernibility may be recruited from different worlds, whereas on weak supervenience individuals are compared only as they are within the same world. This is why the constraint of strong supervenience, unlike that of weak supervenience, applies cross-world as well as intra-world.

3.6.3 Global supervenience

Any two worlds that are indiscernible with respect to P (i.e. worlds in which physical properties are distributed over the individuals in the same way) are indiscernible with respect to M (that is, they cannot differ in how mental properties are distributed). Concerning global supervenience, Kim (1996, p. 578) opines that,

global supervenience applies indiscernibility considerations globally, to whole worlds taken as units rather than to individuals within worlds, and requires that worlds that are indistinguishable from the physical point of view do not differ from the mental point of view, although of course worlds that are alike mentally could differ in physical respects.

A careful delineation of the concept of supervenience as done above is important because not all the concepts of supervenience appeal to the thesis of non-reductive physicalism. One must bear in mind that non-reductive physicalism is a minimal account of physicalism and thus will shy away from any concept of supervenience which argues for a strong connection between physical and mental properties especially in scenarios when two different worlds are compared. I shall argue later in the chapter that the kind of supervenience which is ideal for the thesis of non-reductive physicalism is weak supervenience, a position Kim finds untenable.

The third component of the thesis of non-reductive physicalism is that mental properties are causes and effects of other properties. According to this view mental properties are not mere by-products of physical processes as held by epiphenomenalism. Mental properties according to the non-reductive physicalist are causally efficacious i.e. the mental can cause physical events. This view of the causal powers of the mental appears to violate the thesis of the causal closure of the physical domain which holds that it is only the physical domain which can cause mental events and not vice versa.

The causal closure of the physical domain according to Kim is a pivotal aspect of physicalism and thus non-reductive physicalism fails as a physicalist theory if it allows for mental causation. However I shall defend the position that allowing for the causal efficacy of mental properties does not undermine the non-reductive physicalist's position as a physicalist, this defense I shall provide in Chapter 4. This notwithstanding, I agree with Fodor (1989, p. 77) when he asserts that:

if it isn't literally true that my wanting is causally responsible for my reaching, and my itching is causally responsible for my scratching, and my believing is causally responsible for my saying...if none of that is literally true, then practically everything I believe about anything is false and it's the end of the world.

Fodor seems to subscribe to a common sense or general conception of the mental as causally efficacious.

I agree with this common sense notion of the efficacy of mental properties in the sense that a desire for a cup of coffee which is not physical in that a desire lacks mass, or extendibility and hence mental, causes an individual to take physical steps such as standing, walking, getting a cup and preparing coffee which is directed to meeting his desire for a cup of coffee. Again one's belief (mental) that God exists for instance, causes him or her to perform physical acts such as bowing to pray, dancing, fellowshiping in a building etc. Mental processes such as believing, perception, memories and desires 'cause' an individual to display a certain kind of behaviour which is often given a physical interpretation. Epiphenomenalists and reductive physicalists alike will contest this position by asserting that the mental has no causal power and thus all perceived mental causes are actually physical causes. But I maintain that an attempt to ignore or deny mental causation will be a blatant attempt to ignore the obvious and to blur the lines between what is characterised as mental and physical.

In summary the non-reductive physicalist holds that mental properties are not identical to physical properties although they supervene on physical properties and lastly that mental properties are causally efficacious and not epiphenomenal.

3.7. Davidson's Anomalous Monism as the groundwork of non-reductive physicalism

Donald Davidson's work titled *Mental Events*, published in 1970 is the article most acknowledged as laying the foundation for non-reductive physicalism. In this work, Davidson sets out to dissipate certain apparent contradictions about mental events. Davidson agrees with Kant on the view that freedom and natural deterministic laws can coexist within an individual without amounting to any form of contradiction. This apparent contradiction is held by philosophers who believe that freedom which means autonomy cannot coexist with natural deterministic laws in a single individual. Davidson (1970) opines that both freedom and natural laws are facts about the individual and their existence in the individual does not lead to a contradiction. Free will for Davidson is an example of a mental state while natural deterministic laws represent physical events. Thus by extension what Davidson seeks to dissipate in his work is to show that mental events and physical events can interact causally in an individual in a physical universe without any contradiction.

According to Davidson (1970, p. 208), this apparent contradiction about mental events arises because of three principles. The first is that at least some mental events interact causally with physical events, this he terms the principle of causal interaction. He cites the following example to buttress his point,

if someone sank the *Bismarck*, then various mental events such as perceivings, notings, calculations, judgements, decisions, intentional actions, and changes of belief played a causal role in the sinking of the *Bismarck*. In particular, I would urge that the fact that someone sank the *Bismarck* entails that he moved his body in a way that was

caused by mental events of certain sorts, and that this bodily movement in turn caused the *Bismarck* to sink (Davidson, 1970, p. 208).

The second principle which Davidson (1970) advances is “that where there is causality, there must be a law: events related as cause and effect fall under strict deterministic laws. (We may term this the Principle of the Nomological Character of Causality).”

The third principle which Davidson identifies is that there are no strict deterministic laws on the basis of which mental events can be predicted and explained (the Anomalism of the Mental). Therefore for Davidson mental events are characterised by the principle of causal interaction, the nomological character of causality and the anomalism of the mental. A belief in these three principles as integral to mental events does not lead to a contradiction according to Davidson.

The rest of Davidson’s work is dedicated to demonstrating that one can hold on to these principles of mental events without meddling in a contradiction. The apparent contradiction for Davidson seems to arise when the third principle i.e. the anomalism of the mental is held given the other two principles. The claim by the first two principles seem to suggest that because mental events causally interact with physical events and every causal interaction suggests some kind of deterministic law, it becomes untenable and even contradictory to hold the third principle which asserts that there are no strict deterministic laws on the basis of which mental events can be predicted and explained.

Davidson in his attempt to dissipate this apparent contradiction postulates his theory of the mental known as anomalous monism. Davidson (1970, p. 213) asserts:

theories are thus divided into four sorts: *nomological monism*, which affirms that there are correlating laws and that the events correlated are one (materialists belong in this category); *nomological dualism*, which comprises various forms of parallelism, interactionism, and epiphenomenalism; *anomalous dualism*, which combines

ontological dualism with the general failure of laws correlating the mental and the physical (Cartesianism). And finally there is *anomalous monism*, which classifies the position I wish to occupy.

Davidson (1970, p. 213-214) explains his position as follows:

Anomalous monism resembles materialism in its claim that all events are physical, but rejects the thesis, usually considered essential to materialism, that mental phenomena can be given purely physical explanations. Anomalous monism shows an ontological bias only in that it allows the possibility that not all events are mental, while insisting that all events are physical. Such a bland monism, unbuttressed by correlating laws or conceptual economies, does not seem to merit the term 'reductionism'; in any case it is not apt to inspire the nothing-but reflex ('Conceiving the *Art of the Fugue* was nothing but a complex neural event', and so forth). Although the position I describe denies there are psychophysical laws, it is consistent with the view that mental characteristics are in some sense dependent, or supervenient, on physical characteristics. Such supervenience might be taken to mean that there cannot be two events alike in all physical respects but differing in some mental respect, or that an object cannot alter in some mental respect without altering in some physical respect. Dependence or supervenience of this kind does not entail reducibility through law or definition: if it did, we could reduce moral properties to descriptive, and this there is good reason to *believe* cannot be done; and we might be able to reduce truth in a formal system to syntactical properties, and this we *know* cannot in general be done.

In this extract, Davidson clarifies his concept of anomalous monism and provides the bedrock for the thesis of non-reductive physicalism. When Davidson (1970) asserts that 'anomalous monism resembles materialism in its claim that all events are physical', he is not positing that the mental is identical to the physical or that statements about mental events can

be substituted with talk about physical or neural events as the type identity theorists do. Davidson clarifies this statement by introducing the concept of supervenience to explain the statement that all events are physical. He posits a dependency relation and not an identity relation when he asserts that all events are physical and this clarifies the kind of monism he alludes to in his ‘anomalous monism’. Davidson holds on to the primacy of the physical domain as the substrate from which the mental depends or supervenes, this makes him a physicalist but a non-reductivist. Davidson’s account of non-reduction stems from his conception that there are no strict psychophysical laws between the mental and physical domain, as such the mental is irreducible in terms of explanation and definition. Davidson (1970) defines the mental as constituting the entire set of propositional attitudes involving terms such as hoping, desiring, believing, intending, knowing, noticing etc. Davidson expatiates his notion of supervenience when he asserts that “such supervenience might be taken to mean that there cannot be two events alike in all physical respects but differing in some mental respect, or that an object cannot alter in some mental respect without altering in some physical respect.” (p. 214)

Given the definition of supervenience which Davidson provides, I am of the view that his account of supervenience is an account of weak supervenience. This is because Davidson does not make mention of the possibility of individuals within different worlds who are indiscernible in terms of physical properties being indiscernible in mental properties (which will be a case of strong supervenience). Davidson’s account of supervenience compares two events intra-world, by extension, Davidson means that two individuals in world A (let’s call earth) who have identical physical properties will have identical mental properties. This is weak supervenience in action.

Kim (1996) however argues that there are several implications that can be drawn from weak supervenience which do not support 'robust physicalism'. These implications for Kim (1996, p. 577) are:

(1) a world which is exactly like the actual world in all physical respects but which is totally devoid of mentality; (2) worlds that are physically just like our world but in which everything is conscious in exactly the same way; and (3) worlds that, again, are physically indistinguishable from our world but in which unicellular organisms, but no humans or other higher animals, are conscious.

By the expression 'robust physicalism', Kim (1996, p. 577) means that 'physicalism must require at least this much: physical facts of a world determine all the facts of *that* world'. I am of the view that all the implications of weak supervenience drawn by Kim are exactly what a thesis of non-reductive physicalism needs. These implications show that there is the absence of a strong connection between the physical and the mental when it comes to other worlds and as such we cannot predict mentality even if the physical is the same in both worlds. Strong connectibility in my estimation is tantamount to reduction, a position which non-reductive physicalism rejects.

Again I disagree with Kim when he asserts that weak supervenience does not support robust physicalism. Kim shoots himself in the foot when he asserts that "physicalism must require at least this much: physical facts of a world determine all the facts of *that* world", indeed that is what weak supervenience says. According to weak supervenience as Kim (1996) rightly notes "suppose you are creating worlds: weak supervenience *prohibits* you from placing in the *same world* physical duplicates that are not mental duplicates..."

To illustrate weak supervenience let's consider two individuals on planet earth; Vincent and Patrick. They have the same physical properties, i.e. they are both humans, males, have brains, etc. According to weak supervenience these two individuals with the same

physical facts will both have identical mental facts which are true of them, i.e. they both experience pain, hunger and have consciousness. The content of their mental lives may be different as the shape and size of their brains and other physical features may be different, but they will all experience these mental events in certain proportions. Thus weak supervenience meets Kim's own criteria of 'robust physicalism' because in a given world weak supervenience maintains that the physical facts determine the mental facts of that world and that is enough for physicalism to hold true in the least. It is not only when physical facts of one world determine the mental facts of a physical duplicate world that physicalism holds true. Hence weak supervenience meets the criteria of physicalism and by extension can support the thesis of non-reductive physicalism.

Finally, in Davidson's account of anomalous monism the key tenets of non-reductive physicalism are evidently seen and these are: (i) that mental properties are not identical to physical properties, (ii) that mental properties nevertheless supervene on physical properties in the sense that there cannot be a difference with respect to mental properties without a further difference with respect to physical properties and (iii) that mental properties are causes and effects of other properties. Kim criticizes the thesis of non-reductive physicalism on several fronts; his criticism will be assessed in the next chapter.

3.8. Quantum mechanics and the possibility of non-reductive physicalism.

How does the replacement of Newtonian physics with quantum mechanics affect our understanding of physical reality? An answer to this question will throw further light on the particular nature of physical reality which makes room for the uncertainty prevalent in the physical universe. This therefore makes a supervenient relation between physical and mental properties a possibility. Gazzaniga asserts that,

Crazy stuff happens in the quantum world. For instance, photons don't have mass, but angular momentum. Quantum theory was developed to explain why an electron stays

in its orbit, which could neither be explained by Newton's laws nor Maxwell's laws of classical electromagnetism. It has successfully described particles and atoms in molecules, and its insights have led to transistors and lasers. But a philosophical problem lurks within quantum mechanics. Schrodinger's equation, which describes in a deterministic way how the wave function changes with time (and is reversible), cannot predict where the electron is in its orbit at any one state in time, that is a probability. If one actually measures the position, the act of measuring it distorts what the value would have been had it not been measured. This is because certain pairs of physical properties are related in such a manner that both cannot be known precisely at the same time: The more precisely one knows one property (by measuring it), the less precisely the other is known. In the case of the electron in orbit, the paired properties are position and momentum. If you measure the position, then it changes the momentum and vice versa. The theoretical physicist Werner Heisenberg presented this as the uncertainty principle¹⁴.

Quantum mechanics pokes holes into our conception of certainty in the physical universe. This uncertainty that quantum mechanics exposes suggests that there are no strict laws which connects phenomena within physics. The absence of strict deterministic laws in physics makes room for the concept of supervenience. This is similar to Davidson's (1970) assertion that the absence of strict deterministic laws connecting physical properties to mental properties makes mental properties irreducible to physical properties. In order to answer the question of how mental properties are able to supervene on physical properties I believe that quantum mechanics may lead us close to an answer.

Doyle (2011, p. 232) also states that:

¹⁴ Gazzaniga, M. (2012). *Who's in Charge?: Free Will and the Science of the Brain*

Before quantum indeterminacy, many philosophers, mathematicians, and statistical scientists argued that chance was just a name for our ignorance of underlying deterministic processes. They denied the existence of real, objective chance in the universe. They thought that chance was epistemic and subjective, a result of the ignorance of finite minds. As soon as quantum mechanics was established in the 1920s, first scientists and then philosophers began claiming that quantum indeterminism could explain free will.

Doyle maintains that “quantum uncertainty remains the best explanation for breaks in the causal chain of strict determinism.” Quantum mechanism which is characterised by uncertainty and indeterminism makes supervenience of mental properties on physical properties a probability, moreover it makes mental to physical causation possible.

3.9. Physical to mental Causation

The major feature of physicalism is its account of causation from the physical domain i.e. physical to mental causation. The causal efficacy of the physical domain is often taken as given by most physicalists, efforts are not mostly taken to demonstrate or provide explanations of how physical to mental causation comes about. In order for the non-reductive physicalist to remain true to physicalism he or she must admit that the physical domain has a causal effect on the mental, it thus falls squarely on the shoulders of the non-reductive physicalist to offer an explanation or a demonstration of physical to mental causation. By physical to mental causation I mean how brain cells are able to cause mental events such as the act of deciding, hopes, desires or even pains and fear. It seems a matter of common knowledge that touching a hot plate which is a physical activity generates pain which is a mental activity. The activity of touching a hot plate or iron and immediately dropping it or removing one's hand is known as a reflex action. The nature of the process of a reflex action is as follows:

If you accidentally touch a hot pot on your stove while cooking, you would involuntarily (and nearly instantaneously) snatch your hand away from the pot. The contact with the hot pot triggers the start of a series of events in the body to evoke a response. At the point of contact with the hot pot, skin receptors quickly send nerve impulses (electrical) to the spinal cord (central nervous system) via sensory neurons. In the spinal cord, the impulses are processed and a response is relayed back. In the spinal cord, the interneurons (also known as relay neurons) make the connections between the sensory neurons (bringing the message from hand) and the correct motor neurons (taking the response back to the hand). It would not be useful if the response was sent to the wrong part of the body—in this case, a response sent to the leg wouldn't be too helpful as the stimulus is coming from the hand. From the interneurons, the response is relayed to the motor neurons which project out of the spinal cord to stimulate your muscles (effector) to contract, causing you to snatch your hand away from the hot pot. This pathway taken by nerve impulses to elicit a response is known as a 'reflex arc'. This process happens so fast that the response occurs before the message reaches the brain. This results to a quicker time-to-response as the thinking process of the brain may be relatively time consuming.¹⁵

The action of touching the hot iron and the subsequent redrawing of the hand is a purely physical process as explained through the reflex arc, however this physical process leads to mental events such as an almost pre-programmed decision to redraw one's hand, also this purely physical process is accompanied by pain which is a mental event.

Moreover the phenomenon of perception is an instance where physical to mental causation is evident. Davidson (1970) provides an example of this kind of physical to mental

¹⁵ Custers, E. (2017). *Reflex Action and Reflex Arc: What Happens When You Accidentally Touch a Hot Pot*. Retrieved 23 June 2018 from <https://owlcation.com/stem/Here-is-whathappens-when-you-accidentally-touch-a-hot-pot>

causation when he posits that seeing that a ship is approaching causes one to believe that a ship is approaching. Thus sight which involves the use of the eyes which are physical and the subsequent transmission of visual messages to the brain which prompts the viewer that what he or she is seeing is a ship and not a human being leads to a belief that there is a ship approaching. Again a person who perceives that he has a particular skin colour then believes that he belongs to a particular race, hence the statement 'seeing is believing'. The advancement of technology has made it possible to detect certain operations within the brain and how these operations cause certain decisions to be made.

3.10. Are non-reductive physicalists, physicalists?

I wish to state that non-reductive physicalists merit to be called physicalists. Given that non-reductive physicalism relies heavily on the thesis of supervenience it seems appealing to refer to them as 'supervenienists', indeed such a characterization will save them from the attacks they face. Allowing for the existence of mental properties which are irreducible to physical properties appears to disqualify the non-reductive physicalist from properly belonging to the fraternity of physicalists. This notwithstanding, proceeding from the discussions in this chapter the non-reductive physicalist is a physicalist basically because he or she posits that there is only one ontological entity which is the physical and that mental properties exist not as separate phenomena but exist as a derivative category of the physical. As argued in this chapter physicalism is not inherently reductive as such one can be a physicalist without necessarily being a materialist. Again monism should not be equated to existence monism, since this leads to a myopic view of physicalism as reductive.

I am of the view that the only instance the non-reductive physicalist will fail to be a physicalist is when he or she considers mental properties to exist as a separate entity which is non-derivative, non-supervenient and justifying its existence without recourse to the physical domain or any such entity for that matter. This view of mental properties is what pertains in

dualistic conceptions of the mind-body problem, non-reductive physicalism does not characterise mental properties in this way and thus cannot be said to fall outside the ambit of physicalism.

In conclusion, this chapter has attempted to provide an examination of the concept of non-reductive physicalism and its core tenets. To hold on to a thesis of non-reductive physicalism does not contradict the thesis of physicalism since I have shown that physicalism does not presuppose reduction. Also to hold on to a thesis of non-reductive physicalism does not make one a non-physicalist, since the non-reductive physicalist considers all other categories of reality which exist in the physical universe as existing because of the physical and not apart from it. The mental although non-identical with the physical, supervenes on the physical.

CHAPTER FOUR

THE PLAUSIBILITY OF NON-REDUCTIVE PHYSICALISM

At this point it is necessary to provide some arguments for the plausibility of non-reductive physicalism as a theory of consciousness. Non-reductive physicalism holds some attraction which reductive physicalism and non-physicalist theories of mind do not possess. In this chapter I shall attempt to do the following: (1) provide arguments to support non-reductive physicalism, (2) show how the explanatory, knowledge and conceivability arguments against reductive physicalism is answered by non-reductive physicalism, (3) provide a response to Kim's argument against the plausibility of non-reductive physicalism and (4) provide some conceptions of non-reductive physicalism in the works of Kwame Nkrumah and Saint Thomas Aquinas.

4.1. The attractiveness of non-reductive physicalism

Non-reductive physicalism is a plausible theory firstly because it admits that there are both physical and mental properties. As a theory, non-reductive physicalism acknowledges that the human being is made up of the physical and mental aspects. This admission resonates with the experiences present in an individual. A human being performs physical actions such as walking and eating and has tangible physical organs such as a heart, a brain, arms and legs. Apart from these physical components of the human being there are other aspects of the human being that are intangible, examples of these are feelings of hunger, pain, fear, sorrow and joy, including hopes, desires, beliefs and memories. These intangible aspects of the human being are called mental properties or aspects. Thus by asserting that there are physical and mental properties associated with humans, non-reductive physicalism more favorably captures a realist notion of the human experience as compared to reductive physicalism. Unlike idealism and reductive physicalism which posits the existence of just one category; mental or physical, non-reductive physicalism affirms the existence of both the mental and

physical as part of one's experience as a human being. In my view non-reductive physicalism agrees with the common sense notion of what it means to be human.

Secondly, non-reductive physicalism's account of mental properties without reference to the ontology of mind is plausible. The major argument against substance dualism and more specifically Descartes' interactionist dualism is how a mind which is totally different from the body can account for mental properties within the body. Usually the question; 'where is the mind?' is popularly asked the substance dualist by the physicalist, the substance dualist usually does not have a convincing answer to this question. The attempt therefore by the non-reductive physicalist to account for mental properties without resorting to a mind immune to the same criticism that substance dualists are faced with. Mental properties according to the non-reductive physicalist supervene on the physical (i.e. the brain) in such a way that the mental properties cannot be reduced to the brain. Thus, whereas the substance dualist attributes mental properties to a mind we are not sure about, the non-reductive physicalist posits that mental properties supervene on a brain we are sure we have.

Again by asserting that mental properties are not identical to physical properties in the brain, non-reductive physicalism is able to insulate itself against arguments concerning the existence of qualia levelled against reductive physicalism by the substance dualist. The non-reductive physicalist accounts for qualia by asserting that qualia is not a brain state but belongs to the supervenient mental property which is different and not reducible to the brain.

Furthermore, the phenomenon of supervenience which is central to the thesis of non-reductive physicalism is evident in our world. Take a work of sculpture or a painting for instance; it has intrinsic properties - material component, shape, density and texture. It also has aesthetic properties such as beauty, elegance, grace and expressive power. It appears obvious that the aesthetic properties of the sculpture are to some degree a result of its intrinsic properties. The beauty or expressive power of a work of art can be known distinctly from the

kind of paint or brush used for the work. Without the material component of the work we would not have its aesthetic appeal. However its aesthetic appeal once realised is not reducible to its material or intrinsic substrate.

Moreover, non-reductive physicalism admits that the circumstances surrounding the relationship between physical properties and mental properties cannot be accounted for by strict psycho-physical laws. This in my view is plausible in the sense that the non-reductive physicalist is fully aware of the limitations of physical laws and science. There are several occurrences in this physical world that cannot be explained by physical laws completely. Consider how a sperm fuses with an ovum to produce a human being with all his outstanding features. Some may call these miracles of the universe for lack of a better explanation to these events. The gap in the explanatory sequence which non-reductive physicalism admits, is in tandem with the incompleteness in explanation we find in the physical universe.

4.2. Response to the Knowledge, Explanatory and Conceivability Gap

In chapter two I made mention of three main arguments that are levelled against reductive physicalism. These arguments are the knowledge, explanatory and the conceivability arguments. In this section I shall consider each of these arguments in turn and provide responses to them from a non-reductive physicalist perspective.

Firstly, the knowledge argument against physicalism asserts that one can know all the physical facts about the universe but will still be lacking knowledge of other aspects of the universe like consciousness. This argument attacks the core of reductive physicalism as a physicalist theory of mind because it reduces mental states to physical properties. Thus if all aspects of our mental life are reducible to physical processes in the brain how is it possible that all the physical facts we know about the brain do not suffice to explain consciousness? A non-reductive physicalist solution to the knowledge argument is that consciousness supervenes on the physical processes in the brain but tends to have ontological status once it

emerges and truths about consciousness cannot be deducible from the physical processes on which it supervenes. Again as Davidson (1970) posits, there are no strict psychophysical laws between consciousness and physical processes of the brain and thus consciousness cannot be reduced to brain processes.

Therefore, the reason why Mary (a neuroscientist) who is kept in a black and white room all her life but who seems to know all the physical facts about the colour red fails to identify it when she escapes the black and white room is that, to know how red looks like or how it is like to see red is not the same as knowing all the physical facts about the colour red. This notwithstanding, Mary needs the ability of sight and a functioning brain in order to know how red looks like. Consciousness therefore cannot take place in a vacuum, it always requires a physical substrate i.e. a brain.

Secondly, the explanatory argument against physicalism is similar to the knowledge argument, it states that at best physicalism provides explanation for structure and function and since consciousness does not conform to a particular physical structure or tangible pattern then physicalism cannot explain consciousness. Again this objection against physicalism falls squarely at the doorstep of reductive physicalism but not non-reductive physicalism. I make this claim because non-reductive physicalism admits that truths about consciousness are not deducible in principle from physical processes. This notwithstanding, non-reductive physicalism provides a relation between consciousness and physical processes of the brain, this kind of relation is a supervenient relationship. Hence, although physical processes cannot explain the minute details of the phenomenon of consciousness it provides us with a map with which to begin our speculation and investigation. The explanatory gap between consciousness and physical processes is therefore not an ontological gap as pertains in interactionist dualism but rather an epistemic gap. By epistemic gap I mean a knowledge gap which pertains within

the same ontological framework of physicalism. The epistemic challenge is to explain how the subjective quality of a mental state emerges from objective physical properties.

Thirdly, the conceivability argument against physicalism posits that it is conceivable that there is a system that is physically identical to a conscious being but which lacks consciousness, like a zombie. This argument does not categorically assert that zombies exist but provides a logical possibility and does not amount to a contradiction to allow for the existence of a physically identical system to a conscious being but yet lacking consciousness. It must however be noted that non-reductive physicalism is not affected by the conceivability argument. The reason being that, non-reductive physicalism subscribes to weak supervenience which applies the supervenient relationship between mental and physical properties intra-world.

According to weak supervenience two individuals in the same world who are indiscernible in physical properties will be indiscernible in mental properties. Donald Davidson's anomalous monism which lays the foundation for non-reductive physicalism alludes to weak supervenience as I showed in chapter 3. Consequently it follows that because zombies do not exist in the same physical world with conscious humans, the claim that zombies are physically identical to humans but lack consciousness does not affect the thesis of non-reductive physicalism. A real threat to the thesis of non-reductive physicalism will arise if two individuals who are indiscernible physically differ in terms of their capacity for consciousness in the same world.

4.3. Kim's argument against non-reductive physicalism

The most ardent critique of non-reductive physicalism has been from Jaegwon Kim (1993) in his seminal paper titled "The myth of non-reductive materialism". In this paper Kim argues that non-reductive physicalism faces the challenge of accounting for the causal efficacy of mental properties within a physicalist framework. He asserts that the non-reductive

physicalist claims that (1) physical properties are not identical to mental properties and (2) that mental properties supervene on physical properties, contradicts its third thesis which is that mental properties are causes and effects of other properties. Kim criticizes non-reductive physicalism for meddling in a contradiction because he is of the view that any robust physicalist accepts the principle of the causal closure of the physical domain.

This principle asserts that every physical event which occurs at a particular time has a physical cause. Thus the non-reductivist's claim that some mental properties cause physical events violates the principle of the causal closure of the physical which all physicalists supposedly hold true. Kim acknowledges that a sharp pain in a person's limbs causes him or her to move their limb in a particular way, but Kim's understanding of pain leading to limb movement is different from that of the non-reductive physicalist. Kim considers pain to be a neural event and therefore a physical event, the non-reductive physicalist considers pain as a mental event which is not reducible to a neural state. Kim's characterization of pain as a physical event provides a total physical to physical relationship between pain and limb movement and this agrees with the principle of causal closure of the physical domain. Non-reductive physicalism conceives pain as a mental event and therefore provides a mental to physical explanation of the relationship between pain and limb movement. This for Kim is where non-reductive physicalism falls foul of the principle of the causal closure of the physical domain, which for Kim renders the position of non-reductive physicalism inconsistent with robust physicalism. Kim (1993, p. 284) thus asserts that,

Our conclusion, therefore, has to be this: non-reductive materialism is not a stable position. There are pressures of various sorts that push it either in the direction of outright eliminativism or in the direction of an explicit form of dualism.

Eliminativism is the view that there are no mental properties or events, thus Kim by this extract is asserting that in order for non-reductive physicalism to avoid this apparent

contradiction it must denounce the existence of mental states. For Kim if the non-reductive physicalist finds it difficult to part ways with mental properties and events and their causal efficacy then in order for it not to violate the tenets of physicalism it must metamorphose into a form of dualism.

In response to Kim's charge against non-reductive physicalism List and Menzies (2009) have asserted that Kim's account of the causal closure of the physical domain is not an analytic truth but in their work demonstrate that falsity or truth of the principle of the causal closure of the physical domain is a contingent matter. List and Menzies (2009) also demonstrate in their work that even given the truth of the principle it supports the causal efficacy of the mental domain.

I am of the view that it is important to question the sacrosanctity of the principle of the causal closure of the physical domain. Is it just a hypothetical assumption? But quite apart from the truth or otherwise of the principle of the causal closure of the physical domain I posit that granted this principle is central to physicalism, non-reductive physicalism does not contradict it. Non-reductive physicalism does not contradict the principle of the causal closure of the physical domain because of the thesis of supervenience which is central to non-reductive physicalism. The thesis of supervenience as described earlier suggests that there cannot be any change in the mental without a change in the physical substrate. It also further suggests that two individuals who are indiscernible physically will be indiscernible mentally. What this therefore means is that firstly the mental and the physical domains are not ontologically distinct but epistemologically distinct. An ontological gap or distinction between mental and physical properties or events assumes that there are two distinct principles accounting for the independent existence of both the mental and the physical. An epistemic gap or distinction between the mental and the physical domains however suggests that there is

just one principle which is responsible for both the mental and physical domains but there is an explanatory deficit in the physical explanations of all aspects of the mental.

Non-reductive physicalists do not consider the mind as being the principle responsible for mental properties as the substance dualist does, mental properties supervene or depend on the physical level for the non-reductive physicalists. Thus mental properties or events can cause physical events because mental properties are a derivative category of the physical which means the physical domain is that without which there will be no mental property at all. Following from this, when pain (mental event) causes an individual to scream (physical event) what is happening is that there is an indirect physical to physical causal relationship taking place. This pain, a mental state supervenes on a physical substrate (neural base) and it is this physical substrate which serves as the 'source' of pain, thus the reason why pain can cause one to scream (physical event) is because of the underlying physical basis of pain. Hence there is a remote physical cause of the physical event of screaming which was only triggered by an immediate cause which is mental (pain). Therefore the chain of causation can be represented as: neural (physical) → mental supervenient property → physical.

To illustrate further let us consider the concept of beauty and how it relates to physical actions. A woman's beauty to a large extent depends on her physical features. A woman's conception of her beauty (mental) can lead her to engage in some physical activities such as changing her hairstyle, doing make-up, nail extension, choice of clothes and other physical embellishments just to conform to her conception of beauty. It is true that beauty, a mental concept caused her to engage in physical activities but that is not the whole story. If the chain of causation is traced back we realise that beauty supervenes on the physical and that beauty will be impossible to exist where there are no physical features. Thus the remote cause of her physical activities to make her beautiful was the physical domain which necessitated the immediate mental cause of her physical actions.

When causation is therefore seen as a chain of events and not just an instantaneous activity the cause of a physical event can be traced back to a physical level given a non-reductive physicalist framework.

When mental to physical causation under non-reductive physicalism is considered in this way we realise that it upholds the principle of the causal closure of the physical domain and does not contradict it. Mental to physical causation will rather be a problem for the interactionist dualist who posits two distinct principles accounting for mental and physical events. The problem is to determine if ever possible how two ontologically distinct events are able to interact.

4.4. Various formulations of non-reductive physicalism

The thesis of non-reductive physicalism has been employed by Kwame Nkrumah and Thomas Aquinas both from different intellectual periods and for different purposes. Although their conceptions of non-reductive physicalism do not strictly follow the kind explained in this work, what is important to acknowledge is that both Nkrumah and Aquinas try to accommodate the mental within a physical framework. Also they both posit the existence of one substance giving rise to physical and mental properties. Moreover they both agree that mental properties are not identical to physical properties and thus cannot be reduced to physical properties. I shall examine both conceptions in turn.

4.4.1. Non-reductive physicalism in Nkrumah's *Consciencism*

Kwame Nkrumah (1970) subscribes to a type of materialism which he refers to as philosophical materialism¹⁶. According to Nkrumah, this type of materialism differs from traditional notions of materialism because it argues for the primary reality of matter as against the notion of sole reality of matter as pertains in traditional materialism.

¹⁶ Materialism as used by Kwame Nkrumah (1970) is similar to the concept of physicalism as used throughout this thesis. However whereas materialism places emphasis on matter (anything which has mass and occupies space), physicalism places emphasis on the physical (which includes concrete matter and phenomena such as heat, electricity, magnetic force etc. which lack concreteness)

I find the distinction between primary and sole reality of matter by Nkrumah very important and appealing. This is because by primary reality of matter Nkrumah argues that other categories of things exist in the universe aside matter, however all the other categories that exist emerge from matter. The thesis of the sole reality of matter which is found in traditional materialism according to Nkrumah posits that matter is the only category that exists in the universe and that everything else exists as matter.

Again I find this distinction important because it sheds more light on the difference between reductive physicalism and non-reductive physicalism. I opine that while reductive physicalism posits the sole reality of matter, non-reductive physicalism posits the primary reality of matter. It follows from this distinction that mentality if it exists is physical as argued by the type identity theorists, the quintessential example of reductive physicalists. The non-reductive physicalist on the other hand regards mental events as a truly existing category not identical to physical properties but emerging from the physical.

For Nkrumah (1970, p.20);

If, however, the sole or primary reality of matter is asserted, one is brought up sharply against certain hard facts, notably those centering on the phenomenon of consciousness and of self-consciousness. If consciousness is to be explained in terms of overt response to stimuli, then it must be distinguished from self-consciousness, and perception from apperception. Of self-consciousness we only have an internal experience. Another hard fact is the distinction between qualities and quantities, while a third is the distinction between energy and matter.

In this extract, Nkrumah makes the claim that by asserting the sole or primary reality of matter one is immediately faced with the challenge of self-consciousness, the distinction between quality and quantity and energy and matter. This appears to be a problem because the concepts of self-consciousness and brain states belong to different categories likewise the

concepts of quality and quantity. Thus to bundle all these concepts together under the thesis of sole or primary reality of matter will lead to a category mistake or a categorial absurdity.

Therefore in order to circumvent this obvious challenge posed to materialism, Nkrumah (1970, p.20) makes this assertion,

the key to the solution of the problem, the key to the accommodation of these hard facts, lies in categorial convertibility...By categorial conversion, I mean such a thing as the emergence of self-consciousness from that which is not self-conscious; such a thing as the emergence of mind from matter, of quality from quantity.

For Nkrumah the key to avoiding the hard facts of self-consciousness and the overwhelming evidence of other categories aside matter is to turn to his thesis of categorial conversion, which he defines essentially as a theory of emergence from a primary level to another level. The primary level for Nkrumah is matter and out of this all other categories are derived. In relation to the debate about the mind and the body, Nkrumah will assert that the body being material is the primary level and the mind being another category emerges from the body under certain critical conditions.

Thus he asserts that “mind, according to philosophical materialism, is the result of a critical organization of matter. Nervous organization has to attain a certain minimum of complexity for the display of intelligent activity, or the presence of mind.” (Nkrumah, 1970, p. 24). It can be gleaned therefore that for Nkrumah there is no ontological difference between the body and the mind. The mind emerges from the body as quality emerges from quantity, energy from matter, aroma from food, vapour from boiling water or fragrance from a bottle of perfume. Unlike the substance dualist who considers the difference between the minds and body as ontological, Nkrumah’s philosophical materialism considers the difference between mind and body as epistemological, thus staying true to his materialistic leanings.

In order to demonstrate an epistemological and not an ontological difference between the mind and the body Nkrumah (1970, p.23) provides the following illustration,

suppose a man were asked to provide an inventory of objects in a room, and he counted all the legs of tables and chairs, as well as flat tops and backs, then he could not in the same inventory count tables and chairs. True though it is that a table comprises a flat top and legs, there is nevertheless a difference between a table and a flat top and legs. The difference is said to be epistemological, not ontological. That is to say, tables do not exist on the one hand, while on the other, tops and legs exist alongside. In the same way one may admit epistemological differences between mind and brain, quality and quantity, energy and mass, without accepting any metaphysical differences between them, without, in other words, admitting that for mind one needs any more than a brain in a certain condition; for quality any more than a certain disposition of quantity; for energy any more than mass in a certain critical state.

The mind and the body therefore are not two distinct entities; the body is the primary reality and out of it emerges the mind. One may interpret Nkrumah's philosophical materialism as a kind of epiphenomenalist notion, but this is erroneous. This is because while an epiphenomenalist considers the mind a mere by-product of the body's activities, Nkrumah's philosophical materialism typified in his categorial conversion considers mind as a development from the body (or matter) which then constitutes a category different in composition and nature from the primary level from which it emerges.

Nkrumah seems to define reduction in terms of a dependent or supervenient relationship between mind and body. Thus for Nkrumah as long as mind emerges from matter, mind is reducible to matter in terms of explanation and not reducibility defined in terms of identity. Nkrumah (1970, p.25) asserts that,

to say, therefore, that mind, quality or energy arises from, or is reducible to matter, is neither to say that mind has mass, or quality has mass, nor to say that energy has mass. It is to say that given the basic matter of the universe with its objective laws, the universe is forthwith closed in the sense that nothing can become present in the universe if it is not entirely anchored in the initial matter.

A question that arises from Nkrumah's categorial conversion is that if self-consciousness emerges from matter but then is reducible to it, why does Nkrumah claim to be different from traditional materialists? (Ani, 2015). An answer to this query is that Nkrumah differs from traditional materialists on the grounds that by reduction Nkrumah does not mean that self-consciousness is identical to a neural correlate or that quality is identical to quantity as pertains in the case of type-identity theorists. Nkrumah is a non-reductive physicalist because he believes that self-consciousness though reducible in terms of explanation is irreducible in terms of composition or identity. This indeed becomes evident when Nkrumah asserts that by reducibility he does not mean that mind has mass or that quality has mass i.e. reducibility for Nkrumah is not an identical relation but rather an explanatory relation.

Ani's (2015) objection against Nkrumah's notion of reducibility stems from a misunderstanding of what Nkrumah means by reduction and what the term reduction generally connotes. Commenting on Nkrumah's categorial conversion Ferguson II (2017, p. 127) agrees that Nkrumah does not refer to an identical reduction of mind to matter, when he asserts that;

Our biological and physiological makeup, that is, a functioning brain and nervous system, is the *material basis (in a natural sense) for our consciousness*, that is, the mind. Here, Nkrumah avoids dualist accounts that assert the complete independence of the nonmaterial mind from material substances, *and reductionists who reduce the mind to matter.*

In this regard as pertains to the issue of reduction, Davidson may be called a staunch non-reductive physicalist because he believes that mental events cannot be reduced both in terms of explanation and composition, Nkrumah is a mild non-reductive physicalist because he holds on to explanatory reduction without compositional or identical reduction.

Nkrumah's philosophical materialism is silent on mental to physical causation. Although he makes mention of self-consciousness, he does not tell us whether self-consciousness can cause the body to behave in certain ways. This notwithstanding, I infer from Nkrumah's (1970, p. 26) claim that philosophical materialism differs from epiphenomenalism that he subscribes to mental to physical causation. I make this assertion because an important feature common to epiphenomenalism is that mental properties are causally inert or inefficacious. Thus to state emphatically that philosophical materialism differs from epiphenomenalism is to embrace all that epiphenomenalism is not, which in essence means to uphold the efficacy of mental properties on physical ones. By ascertaining through inference that Nkrumah subscribes to mental to physical causation it solidifies my claim that Nkrumah's philosophical materialism is a non-reductive physicalist position. At the heart of non-reductive physicalism is mental to physical causation.

Nkrumah (1970) provided this elaborate account of his philosophical materialism on which he builds a philosophy and an ideology for decolonization. Nkrumah's political ideology rested squarely on his metaphysics which I interpret as a type of non-reductive physicalism. The primary material reality for Nkrumah symbolised the authentic African traditional thought and worldview, which coexisted with Christian and Islamic influences as a result of our history of slavery and colonialism. Nkrumah urges post-colonial Africa to build an identity for herself. This identity shall be a synthesis of the traditional African indigenous culture together with the acquired Christian and Islamic influences. In order for this synthesis

to be authentically African our indigenous African thought must be the primary reality from which we interpret and derive other conceptual categories.

It must be noted that Nkrumah's version of non-reductive physicalism which I explore here rests on the principle of emergence. However, his account of materialism is non-reductive because mental phenomena is not reducible to physical phenomena although the mental emerges from the physical. Again I must state that my consideration of Nkrumah's work is limited because it will require more work.

4.4.2. Thomas Aquinas' Psychology

It must be noted that Thomas Aquinas' conception of the mind was highly influenced by the views of Aristotle. Aquinas in his conceptualization of the mind makes constant reference to Aristotle's *De Anima* and is influenced by themes such as matter and form, actuality and potentiality, species and genus as discussed by Aristotle. For Aquinas the mind and the body are not two distinct substances like Cartesian dualism holds but the mind and the body come together to make up one substance. Thus a human being is composed of mind and body, these two aspects of a human being are conjoined in a union of dependence. The mind is the form of the body and the body is matter to the mind. The body supplies sensations and images to the mind or intellect and the mind interprets and from there develops concepts and generalizations. What then is the nature of the specific union that exist between the mind and the body? In answering this question Aquinas begins with an objection to his claims and provides a defense in **questions 75 and 76 of his *Summa Theologiae*.**

Critics of Aquinas' conception of the union between body and mind assert that,

what belongs to a thing by virtue of what it is always belongs to it. But it belongs to form by virtue of what it is to be united to matter; for by its essence, not by some accident, it actuates matter, otherwise matter and form would not constitute something substantially one, but rather something merely accidentally one. And therefore form

cannot exist without its proper matter. But since, as we showed, the intellectual principle is incorruptible, it remains after the body's corruption, not united to a body. Therefore the intellectual principle is not united to the body as its form.

In response, Thomas Aquinas asserts that,

It belongs to the very essence of the soul to be united to a body, just as it belongs to a light body to float upwards. And just as a light body remains light when forcibly displaced and thus retains its aptitude and tendency for the location proper to it, in the same way the human soul, remaining in its own existence after separation from the body, has a natural aptitude and a natural tendency to embodiment.

For Aquinas, although the mind outlives the body after the death of the body, the mind always craves to be with the body even after the destruction of the body. The specific union between the body and the mind and their dependence demonstrates that they are not essentially different constituents of a human being. If they were essentially different the union between them will be difficult to explain.

Both Aristotle and Aquinas consider Cartesian dualism to be problematic because it cannot explain how the mind is united to the body if they are both essentially different. Aquinas is therefore not a reductive physicalist neither is he a substance dualist. He is not a reductive physicalist because he does not consider the mind to be identical to the body. The mind understands while the body senses. Also the mind cannot be reduced to the body. Aquinas is also not a substance dualist because he does not consider the body to be an ontologically distinct substance existing separate from the mind which is another different substance. He believes that the mind and the body are joined together in a union and together they form one substance. I am of the view that Aquinas' conception of the relationship between the mind and the body is a kind of non-reductive physicalism. I make this assertion because firstly he holds the view that there is just one substance. Secondly that this substance

is composed of mind and body which are not identical (because they all share different properties and functions) and therefore not reducible. It must be noted that the dependency relation between the body and the mind in Aquinas is one of a union, not a supervenient or an emergent relation. However the activities of the mind are realized by the body, hence giving his account some glimpses of physicalism.

In conclusion, this chapter has attempted to provide arguments for the plausibility of non-reductive physicalism as a theory of consciousness. I made the case that non-reductive physicalism corroborates our experience of being humans with mental and physical properties. Again I made the claim that the knowledge, explanatory and conceivability arguments against physicalism is a problem for reductive physicalism and not non-reductive physicalism since the crux of these arguments are the audacious attempts by the reductive physicalist to reduce mental properties to physical properties. I also outlined Kim's argument against non-reductive physicalism and showed that this argument did not render non-reductive physicalism untenable.

CHAPTER FIVE

CONCLUSION

In response to the question: Is non-reductive physicalism a plausible theory of consciousness? I answer in the affirmative. The whole of this thesis has been focused on providing arguments in support of the plausibility of non-reductive physicalism. The question of the plausibility of non-reductive physicalism is often posed because of the assumption that physicalism is inherently reductive. In this thesis I argued that physicalism is not inherently reductive by clarifying concepts such as monism, physical, physicalism and materialism.

It was discovered that monism as a view does not mean the existence of only one mode of existence as is narrowly defined. Monism as defined in terms of priority monism holds that one principle has primary existence which then gives rise to other derivative categories or modes of existence. When applied to the concept of physicalism which is considered a monist theory of mind, what this means is that, physicalism is often narrowly defined as the existence of one substance which is physical. A broader definition of physicalism should posit that the physical is the primary category out of which other modes of existence are derived. When monism is defined not just in terms of existence monism but also in terms of priority monism it makes room for a definition of physicalism which is not inherently reductive but also non-reductive.

Moreover, a conceptual analysis of the term physical gives support to the view that physicalism is not inherently reductive. Hoernlé (1917, p. 298) defines the physical as (a) possesses mass, (b) has position or extensive magnitude in 'real' space, (c) is describable in terms of the laws of the science of energetics. Based on this definition of physical I argued that what Hoernlé meant was that for an entity to be captured under the realm of the physical it must possess either one of these requirements. This is because there are entities which

possess all of these requirements and there are others which do not possess all of these but are still considered to be under the ambit of the physical. A human body, a table, a chair, a book or a car have concrete existence, by concrete existence I mean they can be seen, touched and are composed of material parts. In addition to these they have mass, position or extensive magnitude in 'real' space and are describable in terms of the laws of science of energetics.

However, apart from these entities which have concrete existence there are other entities which are characterized as physical but which cannot be seen or touched but can be felt. Those that fall within this category include air, heat, electromagnetic force, gravitational force, electricity, ultra violet rays among others. Given the above, a physicalist must not only posit the existence of concrete entities (materialism) but must also make room for the existence of other intangible entities which are connected or derived from entities with concrete existence. This discussion is connected to the distinction between materialism and physicalism. Often used interchangeably, materialism differs from physicalism and in my estimation the conflation of materialism with physicalism leads to a narrow conception of physicalism as reductive.

Notwithstanding the case made for the plausibility of non-reductive physicalism on conceptual grounds, Kim (1993) criticizes the main arguments of non-reductive physicalism. Kim argues that non-reductive physicalism faces the challenge of accounting for the causal efficacy of mental properties within a physicalist framework. He asserts that the non-reductive physicalist claims that (1) physical properties are not identical to mental properties and (2) that mental properties supervene on physical properties, contradicts its third thesis which is that mental properties are causes and effects of other properties. Kim accuses non-reductive physicalism of meddling in a contradiction because he is of the view that any robust physicalist accepts the principle of the causal closure of the physical domain. This principle asserts that every physical event which occurs at a particular time has a physical cause. Thus

the non-reductivist's claim that some mental properties cause physical events violates the principle of the causal closure of the physical which all physicalists supposedly hold true. I argued on the contrary that non-reductive physicalism does not violate the principle of the causal closure of the physical domain. This is because given that mental properties supervene on the physical .i.e. there cannot be any change in the mental without a prior change in the physical, any causal power which the mental possesses can be traced to the physical domain. Hence I asserted that if the concept of causation is seen as a process or a chain and not just an instantaneous occurrence it will be discovered that the physical domain serves as a remote cause of a physical event, while the mental is the immediate cause. Hence non-reductive physicalism does not violate the principle of the causal closure of the physical domain and in effect it does not contradict physicalism because the mental domain supervenes on the physical domain and thus mental causation is indirect physical causation.

Non-reductive physicalism is a plausible theory of consciousness because in my view reductive physicalism which takes the form of the type identity theory and behaviourism fail to give a convincing account of our mental lives as humans. While physical theories tend to explain structure and function, it fails to explain consciousness since consciousness does not conform to any tangible structure. Consciousness which covers the entire gamut of mental experiences does not represent a physical-chemical state and thus cannot be reduced to the brain which is characterized by physical-chemical processes.

I argue that consciousness can be accommodated within a non-reductive physicalist framework because consciousness supervenes on physical processes of the brain without being reducible to it. Consciousness does not occur in a vacuum, there are physiological explanations of the workings of mental events such as pain but there is no physiological explanation of the experience of pain or experience of perception. Consciousness is therefore not reducible to brain processes (physical) although it supervenes on the physical, i.e. there

cannot be a change in consciousness without a change in the physical substrate (brain) on which it supervenes. The next time you behold yourself in a mirror remember that you are not just a bag of bones and flesh but you also have an internal mental aspect which is not identical to your brain but which is essential for your optimum functioning as a human being.

The contribution of this work is that it adds to the ongoing debate on consciousness and its place within a physical world. Moreover it provides room for mental aspects of humans such as pains, thoughts, hopes, beliefs and intentions which are considered to cause physical actions. In effect this thesis takes the position that our mental life is not a fluke or some kind of negligible nonentity of humans which is epiphenomenal and which can be reduced to the brain. This work also contributes to the larger discourse on free will and determinism. Does free will exist? If it does, is it reducible to physical processes in the brain, aligning it more to determinism? Or is it better accounted for given a non-reductive physicalist framework? These are questions which are still being investigated.

By way of recommendations, I am of the view that fields of study which examine the mental life of humans such as psychology and psychiatry are valid disciplines which need to be encouraged, well-resourced and actively engaged. Also there must be further research work to ascertain the scientific plausibility of the theory of supervenience which this thesis largely depended on. With the advent of neuroimaging techniques such as Functional Magnetic Resonance Imaging (fMRI) and Magnetic Resonance Imaging (MRI), it will be interesting to investigate how mental events relate with physical events in the body. Apart from this scientific study, philosophically it will be important for further research to be done which spells as the differences or similarities between emergence and supervenience. Also it will require another work to carefully and thoroughly examine Nkrumah's philosophical materialism as a non-reductive physicalist position. In addition, Aquinas' theory of the mind and body must also be given careful attention to determine its physicalistic leanings. It is also

important that works on the conception of a person in African philosophy are explored to ascertain their accounts of consciousness. The rationale behind this recommendation is that the phenomenon of consciousness cuts across different cultures and as such it will be interesting to learn the perspective of African philosophy in the consciousness debate.

The limitation of this work is that given the fact that consciousness studies is a very technical field to explore, this thesis had to be predominantly literature led. This reliance on the relevant literature often clouded my own opinions. I hope to do more ‘boundary pushing’ in my subsequent research.

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