

Neuroscientific Contextualization of Conscious Experience and Its Philosophical Implication

B. M. Akinlawonu

*Department of Philosophy & Religious Studies, Adekunle Ajasin University,
Akungba – Akoko, Ondo State, Nigeria
Telephone: +234-08057791378, E-mail: bmakin2003@yahoo.com*

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ABSTRACT This paper makes a significant contribution to the debate on the nature of conscious experience as caused, or not caused, by external objects by providing further arguments for the position that perceptual objects are determined by the causal antecedents of our perceptual experience. This paper shows that it is wrong to seek for a theory of mind purely on a priori ground, and in the same vein, psychologists and neuroscientists are guilty of thinking that they could account for perceptual awareness of physical objects in terms of brain functions or identification of neural correlates of conscious experience alone. While acknowledging the fact that the explanation of the relation between physical objects and their qualities involves a priori consideration, the fact also remains that physical descriptions of conscious experience cannot be ruled out. Neither a descriptive nor a priori method of explanation of the relation between physical objects and their qualities suffices when conceived exclusively of each other.

1. INTRODUCTION

The rationale for this paper is about the need to clarify certain misconceptions surrounding how beliefs about physical objects and the physical world generally can be justified on the basis of sensory or perceptual experience. This requires a clear understanding of a theory of mind. Previous scholars have either sought for a theory of mind purely on a *a priori* ground or purely in terms of brain functions. The subject matter of perception has been of major interest to philosophers because some of the associated issues originally raised by philosophers, neuroscientists and psychologists are still of current concern. Philosophical interest in perception arises from the consideration of questions about the sources, nature and limit of empirical knowledge. This is the reason why epistemologists critically examine whether a real, physical world exists independently of human experience and, if so, how its properties can be learned and how the truth or accuracy of that experience can be determined. Further questions include whether all experience originates through contact with the physical world, mediated by the sense organs (Safra 1998).

Contemporary discussion about the nature of perception focuses on the dispute between the Lockean representative theory and other rival theories of perception. In an attempt to clarify the problem, Armstrong describes perception as a process involving the senses, whereby we are

enabled to arrive at true beliefs about our environment, so as to satisfy our needs (Armstrong 1968). We are however, sometimes being misled as to the exact nature of our physical surroundings. It is indeed the nature of the intervening process that makes up perceptual experience which raises contentious issues.

Paul Coates identifies the central difficulty for theories of perception with the inability to distinguish hallucinatory experiences from perceptual experiences. The statement of the problem is as follows:

Someone who experiences a ringing noise in her ear, which is common enough auditory hallucination, may think that her front door bell is ringing. So, the problem arises: how can a perceptual experience involve the awareness of anything more than the kind of entity that is involved in hallucination? How can perception take the subject further than an awareness of her mental states, and into an experiential contact with the physical world beyond? (Coates 1981)

The skeptic's challenge is that knowledge of independently existing physical objects is impossible (Coates 1998). In order to resist the skeptic's challenge, the intentional account (i.e. purposive explanation of our perceptual experience in which the awareness of sensory qualities in experience is to be construed intentionally) can only make sense if combined with the causal theory (Berkeley 1952).

The causal theory is given schematically as follows:

A subject S perceives X if and only if

1. X is an existing physical object.

2. S has a logically distinct sensory experience

E

3. X causes E in the appropriate way (Coates 1998)

The causal theory of perception shows that perceptual knowledge is in an ontological sense, indirect. A subject perceives an object if and only if such a subject is caused in the appropriate way to have a logically distinct experience by that object. For instance, someone who sees a tree will have a visual experience of something green which is caused by the tree. Hence, the causal theorist is right to claim that the subject's experience and the object perceived are logically distinct.

The major task in this paper therefore, is to show how they are related in perception. However, Paul Coates needs to realise that it is at the point of showing the relationship between the subject's experience and its object that an appeal to some unspecified causal connexion gives rise to causal problem. The main issue at this point is that granted that Locke's representative theory of perception has generated this causal problem, how can it be solved? The following section discusses the computational models of cognition in Neuroscience and localization of psychological function in brain mechanisms.

2. NATURALISM AND THE PHILOSOPHY OF MIND

Naturalism depends on scientific understanding of perception. It is the view that we can use results from psychology, physics, biology etc. to describe the actual process by which human beings gain knowledge of the world around them. To this end, for a belief to be law-like there is a need for a natural connection between the truth of what is believed and the person's belief (Horst 1996). In other words, when the task of discovering reliable belief-forming mechanism is empirical, it is called naturalism.

Quine contends that traditional epistemology has failed because of the quest for Cartesian certainty (Quine 1985). Descartes and Chisholm, for instance, believe that we can discover the general principles of epistemology from the armchair i.e. that traditional epistemology shows

that we do not need to engage in any sociological or psychological research in order to understand epistemology (Descartes 1968; Chisholm 1975). The contention of traditional epistemologists is that as long as we can think, reflect, intuit and mediate, we are in a position to answer epistemological questions, which are a priori knowable truths.

The alternative Quine provides is to study the relation between our sense impressions and our theories about the world. Quine insists that we must reject a concern with justification or quest for certainty. Rather, we are to study scientifically what happens in our brains i.e. the natural phenomenon in a human subject. This is a rejection of normative epistemology.

The philosophy of mind is concerned with the theories about the nature of the human mind. It has to do with the nature of conscious experience which remains a controversial issue among philosophers, psychologists and neuroscientists. Basically, philosophy of mind is concerned with the nature of consciousness.

According to Jerome Shaffer:

.... the philosophy of mind is concerned with all mental phenomena, where "mental phenomena" is understood as all phenomena that exclusively involve beings capable of conscious-ness...mental phenomena such as ways of being conscious (hearing, remembering, imaging, considering, expecting (Shaffer 1986).

The above passage from Shaffer shows that philosophy of mind has the primary responsibility of analyzing the concerns of consciousness and specific mental phenomena.

In his own considered opinion, George Graham maintains that:

Philosophy of mind is the area of philosophy which strives for comprehensive and systematic understanding of that which thinks and experiences, namely the mind. It tries to understand what mind is, what it does and how to uncover it (Graham 1993).

The emergence of the philosophy of mind cannot be precisely dated. According to *Oxford Companion to Philosophy* (Honderick 1995), it is best to think of the emergence of the philosophy of mind during the 19th Century and first half of the 20th Century. The problem of mind-body (dualism) emerges as a fundamental issue within Descartes' epistemological project (Descartes 1968). In the contemporary period, Gilbert Ryle makes a spirited attack on the

Cartesian picture of mind as a “ghost in the machine” (Ryle 1980). Ryle further attacks the doctrine of “privileged access” - the view that the mind is transparent to its owner, i.e. that we each have unmediated and incorrigible access to our mental states. Ryle concludes that talk of mental states, beliefs and desires are just talk of disposition of the organism to behave in certain ways.

Our present problem is how to gain some insight into the neural events that have a necessary relationship to our conscious experience. The subjective appearance of our consciousness is an impediment to the physical scientific understanding of consciousness. It concerns that which must be experienced from the inside such as looks, tastes, pains etc.

The naturalists hold that being conscious is the same as being in a particular sort of physical state of the brain, e.g., the feeling of pains, sweat tastes, red looks which are nothing more than particular sorts of neural conditions. The central thesis is that each type of mental state is identical to some neural state. One important argument for naturalism is the argument from cognitive science. The argument is based on the realization that the sciences of cognition are now yielding explanations of particular features of the mind, thereby confirming the thesis that mental states are determined by brain states. J.J.C. Smart, for instance, argues that conscious experiences are simply brain processes (Smart 1980). The argument can be stated as follows:

The sensory system consists of several receptor organs for touch, vision, hearing etc, that signal to the central nervous system by the firing of impulses or messages to the brain in the manner of the place and intensity of the stimulus. In other words, signals from receptor organs that result in the conscious experiences of vision, touch, hearing etc are transmitted to the higher levels of the central nervous system (Popper and Eccles 1977).

The above passage shows that the rise of cognitive science focussed attention on processes in the brain. Given the objective mechanism of the cognitive system, a perceptual awareness is explained by establishing the way photons strike the retina, how electrical signals are passed up the optic nerve and between different areas of the brain, and eventually our response to stimuli in a way (Chalmers 1995).

Our problem is how to gain insight into the

neural events that have a necessary relationship to our conscious experience. Mountcastle's contribution to the problem of the nature of conscious experience is stated as follows:

Each of us believes himself to live directly within the world that surrounds him, to sense its objects and events precisely, to live in real and current time. I assert that these are perceptual illusions; for each of us confronts the world from a brain linked to what is “out there” by a few million fragile sensory nerve fibres. These are our only information channels, our lifelines to reality. These sensory nerve fibres are not high-fidelity recorders, for they accentuate certain stimulus features, neglect others...never completely trustworthy. Sensation is an abstraction, not a replication of the world (Mountcastle 1975).

We have so far been examining the argument for and against naturalism and particularly the consideration of conscious experiences as brain processes. The pivot claim is that there are features of our conscious experience that cannot be explained in the third-person objective vocabulary of the physical sciences. The opponents of naturalism argue further that science not only lacks conceptually adequate explanations of conscious experience but that the sciences of nature do not possess the explanatory resources necessary for such project. Even considering the above passage quoted from Mountcastle, it follows that the problem of conscious experience goes beyond the explanation of structure and functions.

Naturalists have responded to these objections in different forms or in several ways. The fact that empirical evidence already presents a more powerful claim in favour of naturalism has encouraged the naturalization of minds in an attempt to acquire knowledge of the relation between external physical objects and their qualities. In the succeeding section, we shall examine computational model of cognition in neuroscience.

3. COMPUTATIONAL MODELS OF COGNITION IN NEUROSCIENCE

The position in naturalism is that in accounting for our knowledge of external physical objects, sense experience or observation can be settled in terms of the stimulation of sensory receptors while consciousness can then fall somewhere (Quine 1985). In other words, it is the stimulation of our

sensory receptors that are best looked upon as the input to our cognitive mechanism.

Ordinarily, in everyday life, the commonest empirical reason to assume that there are external qualities of objects is based on our sensory perception. However, our consideration in the preceding section shows that normal sensory perception cannot be based on a direct perception of external qualities. This is due to the possibility of perceptual errors like illusion, hallucination etc.

Neuroscience is relevant to the study of conscious experience because it is capable of revealing the nature of the neural correlate of consciousness i.e. the brain processes most directly associated with conscious experience. The problem of consciousness can be categorized into two: the first one is the problem of how information is integrated in the brain. But the problem of conscious experience goes beyond the explanation of structure and function. The second one is what is beyond neuroscience. It is a more difficult problem-the problem of why the performance of these functions of the brain is accompanied by conscious experience. Let us illustrate the above problems with the following case study by neurobiologists, Francis Crick, of the Salt Institute for Biological Studies in San Diego and Christof Koch of the California Institute of Technology (Chalmers 1995). These scholars put forward the hypothesis that consciousness may arise from certain oscillation in the cerebral cortex, which becomes synchronized as neurons fire 40 times per second. Crick and Koch believe that this phenomenon might explain how different attributes of a single perceived object (its colour and shape, for example), which are processed in different parts of the brain, are merged into a coherent whole. According to this hypothesis, two pieces of information become bound together precisely when they are represented by a synchronized neural firing (Parker 2000). However, the hypothesis only addresses the easy problem of how information is integrated in the brain, but did not address the harder problem of why such processes in the brain give rise to conscious experience. This is what is regarded as an explanatory gap between physical processes and consciousness. Filling such a gap will demand a normative approach.

There is also the claim that computational models of cognition and localization of psychological function in brain mechanisms already provide naturalizations of some aspects of the mind, the philosophical argument for an

explanatory gap notwithstanding. According to Horst Steven, the computational theory of mind is a theory abstracted from the particulars of the human mind and brain, which treats the mind as a digital computer that is realized through a brain (Horst 1996). The computational theory has two important claims. The first is the representational theory of mind, which states that intentional states involve mental representations. Horst Steven contends further that "to form a judgement that a book is on the table entails that there be constituent representations, one of which means "book" and another of which means "table".

The second component of the computational theory is a computational account of reasoning (Bourne and Russo 1980). This involves how we can pass from one thought to another in a fashion dependent upon the meaning of the thoughts in question e.g. that I infer from "the book is on the table" that "there is something on the table" or that "the book on the table is a chemistry textbook". This in a sense shows how the rational connections between thoughts can be linked to a scientifically respectable causal account of mental process.

It follows from the foregoing analysis that what we need is a law specifying how conscious experience depends on underlying physical process. I believe that David Chalmers gets this right when he asserts that a complete theory of conscious experience will have two components. The first component are physical laws telling us about the functions of physical systems and processes (Chalmers 1995). Neuroscience has made a remarkable contribution in this regard by revealing the nature of the neural correlates of conscious experience that is the brain processes, which is most directly associated with conscious experience. However, perception involves processing, comparing and interpreting sensory stimuli to give them meaning.

The second component of a complete theory of consciousness are psychological laws telling us how these physical processes are associated with conscious experience (Chalmers 1995). This is the point at which philosophical arguments and thought experiments have a role to play. Colour, for instance, is not an inherent property of an object, rather, it is the product of our brains, a psychological experience that occurs as neural mechanisms respond to the stimulation of light rays reflected from an external object. Although, our perceptions never perfectly match the real

world, it is obvious that our experiences are caused by things external to our senses.

The philosophical arguments for causal theory of perception hinge on two main principles as identified by Chalmers. First, the principle of structural coherence—that the structure of conscious experience is mirrored by the structure of information in awareness, and vice-versa. Second, the principle of organisational invariance—that physical system with the same abstract organisation will give rise to the same kind of conscious experience, no matter what they are made of (Chalmers 1995). All these boil down to the fact that the process of perception is infinitely more complex than the mere collection of physical “facts” from the environment. There has been the tendency to embark upon the project of understanding perceptual awareness or conscious experience either through a priori reasoning alone or through scientific investigation alone. It can, therefore, be argued that philosophers are guilty of seeking for a theory of mind purely on a priori ground. In the same vein, that psychologists and neuroscientists are guilty of thinking that they could explain conscious experience with specification of brain functions or identification of neural correlates of conscious experience alone. Neither a descriptive nor a priori method suffices when conceived exclusively of each other. Rather, the solution to the hard problem of conscious experience is to be sought in the combination of both methods. This is the major reason why we are defending a naturalized theory of philosophy of mind. According to Warburton, *Psychology is the scientific study of human behaviour and thought: it is based on observation of people, often under experimental conditions. In contrast, philosophy of mind is not an experimental subject; it does not involve making actual scientific observations. Philosophy concentrates on the analysis of our concepts. Philosophers of mind are concerned with conceptual issues, which arise when we think about the mind* (Warburton 1999). Similarly, a neuropsychologist investigating human thought might make observations of the patterns of nerve stimulation in the brain. A philosopher of mind would consider the more basic conceptual question of whether the activity of these nerves amounts to thinking, or whether there is some feature of our concept of thought which means that it cannot be reduced to a physical occurrence (Warburton 1999).

4. CONCLUSION

The main argument for naturalized philosophy of mind rests on the fact that since most of the sciences work by inferring the causes of observed effects, scientific investigation of a non-physical mind would be an instance of this same type of approach.. In a similar vein, we attempt to account for the independent existence of physical objects through their effects on our minds i.e. the thesis that the relation between physical objects and their qualities is a causal one. However, the justification for this, philosophically, may be a priori, but the fact remains that a physical description of conscious experience is also quite germane. This line of reasoning also shows that even though philosophy does not necessarily affect the way scientists work, it can certainly change the way they understand their work. One important thing to note also about naturalism is that nature is in principle completely knowable, and that there is in nature a regularity and unity that imply the existence of objective laws without which the pursuit of scientific knowledge would be a barren exercise.

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