Artificial Intelligence and Neuroscience Research: Theologico-Philosophical Implications for the Christian Notion of the Human Person

Justin Nnaemeka Onyeukaziri

1. Introduction

The Christian revelation, in particular the paschal mystery of Christ, is the intuitive foundation of Christian anthropology. In the history of Christianity, there has been a need to give a theological systematization and articulation of this anthropology that is grounded on the Divine revelation. At every epoch, the challenge has been to interrogate this revelation-based anthropology with the philosophy and/or science of the time. And the choice has always been, first, either to fit revelation into the prevailing philosophy and science at the time by employing the epistemic tools of the philosophy and science of the time, or, second, to avoid the corruption of the revelation-based anthropology by avoiding to interrogate the philosophies and sciences of the time in such a way that the faith remains parallel to the philosophies and sciences of the time. The intellectual history of the Church has always followed the first option.

During the Patristic period in the history of the Church, the Church fathers employed Platonism in articulating a Christian philosophical anthropology. With the encounter of Aristotelianism during the Middle Ages, the scholastics employed Aristotelian philosophy in systematizing and articulating the Christian philosophical anthropology that has more or less endured to this era. Since the modern period of Western intellectual history, the natural sciences have become not only more critical but more experimentally and quantitatively

based. The success and progress of this modern research methodology and attitude in science, has not only emboldened science but has imputed to science an epistemological privilege of a sort: to truth, knowledge, and human understanding. Supported by this epistemological privilege, most contemporary scientists and philosophers with a naturalistic or materialistic philosophical framework, are driven with a mission: Armed with the advancements in the natural sciences, the brain and neurons could be explored and the human person can be more comprehensively understood. That is to say, the vision for a *purely* scientific explanation of the human person as a natural phenomenon could be attained.

This understanding, it is believed, will unfold what hitherto has been said to be mysteries about the human person. Hence, the diverse and multidisciplinary research presently going on in neuroscience, with artificial intelligence (AI) research being a useful inspiration and model employed in the study of the human brain and/or mind, is aimed at the demystification of the human person. Hence, this paper aims at exploring the theological and philosophical implications of AI and neuroscience research on the Christian notion of the human person. A special consideration is a focus on the articulation, in the Constitution of the Second Vatican Council of the Catholic Church, *Gaudium et Spes*, of the Christian notion of the human person. This paper is executed after the introduction thus: Exposition of artificial intelligence and neuroscience research; the Church's notion of the human person; theologico-philosophical implications of AI and neuroscience research; a comment on a case for neuro-theological Christian anthropology, and, then, conclusion.

2. Exposition of Artificial Intelligence and Neuroscience Research

The most critical and fundamental question in the research project of artificial intelligence is the question of intelligence or cognition in general. AI research is aimed at designing and creating non-biological intelligent or cognitive systems. It hopes to give cognitive powers to artificial systems. The sister research project, artificial life (A-life), aims at designing and creating non-biological life forms. The combination of both research projects hopes to design and create non-biological intelligent living systems. (Whether, and when, these combined projects can be actualized requires a separate research paper.) While the research in A-Life is still very far away and mostly on a theoretical level, being a younger project compared to that of AI, the research in AI has made remarkable progress and identifiable empirical and concrete evidence abounds. However, the journey to creating AI systems with human level general cognitive powers, otherwise called artificial general intelligence

(AGI) and AI systems with cognitive powers that surpass that of humans, called artificial super intelligence (ASI), are still very far off – that is, if AGI and ASI will ever be possible.

Most of the AI systems already designed and created are called Narrow AI (also called weak AI). This is because they are a simulation of a singular or a set of human cognitive powers for the purpose of executing a given task or a couple of tasks. On many occasions, these tasks are executed as effectively as the human person, and sometimes even more efficiently. The question is not on the nature or kind of task they are presently capable of executing. It is rather the possibility of creating human cognitive powers artificially, whatever the degree or the kind. Let the question be put thus: What is the anthropological implication if AI systems can do what humans, by the means of intelligence, can do? In respect to this paper, the question can be asked thus: What are the implications for the Church's notion of the human person?

The ability to perform intelligent actions has been the distinguishing mark of the human person. For ages, humans have philosophically defined themselves as rational animals, because it is believed they possess intellect or mind. Notwithstanding the occasional contestation from certain persons that other animals, especially primates, have the power of intelligence too, the fact remains that the cultural and linguistic creativity of the human person, demonstrates the surpassing greatness of human intelligence compared to any other animal. By the means of neuroscience, the unparalleled large size of the cerebral hemispheres of the human brain compared to that of other primates has been the biological evidence for the exceptional nature of human intelligence and cognition generally. As will be explained below, consciousness and self-consciousness in the human person have been maintained as phenomena with neural causal effects that take place in the cerebral hemispheres. Hence, it is argued that humans are intelligent not only because they are conscious beings but, more important, because they are self-conscious beings.

So, the philosophical problematic is that if intelligence in humans is not only because of the possession of consciousness but even more importantly because of the existence of self-consciousness: Can AI systems performing intelligent actions be said to be conscious and even self-conscious? Three things are possible in the relations between intelligence and (self-)consciousness. Either AI systems, if intelligent, have (self-) consciousness, or AI systems do not have intelligence if they are not (self-)consciousness. Or, the third possibility is that intelligence does not require (self-)consciousness. The philosophical and/or scientific stance towards AI depends on which of the above possibilities one holds. It has been thus, since the time of Alan Turing. The question of consciousness was one of the arguments that Turing ([1950] 2004, 441-464) contended with in his paper

dealing with the possibility of an artificially created intelligent system or thinking machine. Therein, Turing defends the possibility of AI by dismissing the problem of questioning whether another thing is conscious or has a mind as leading to solipsism. Subsequently, philosophers such as Hubert L. Dreyfus [with Stuart E. Dreyfus] 1986; 1990) and John R. Searle (1997; 1990; 2002) have criticized the claim for intelligence and other mental phenomena in AI. Their criticisms also revolve around the question of (self-)consciousness. Some, like Daniel C. Dennett (1990; 1991), who believe that AI systems could have intelligence, have either dismissed the existence of (self-)consciousness in humans as an illusion or have naturalized it as a physical phenomenon. This has resulted in the contemporary discussion of: What exactly is (self-)consciousness? Hence not a few theories of consciousness have been proposed (see, Searle 1997 and 2002; Dennett 1991; David J. Chalmers 1996).

The question of (self-)consciousness epistemologically links the research in AI with neuroscience. The ultimate objective of neuroscience is to explain the conscious and intentional behavior of animals, especially humans, by understanding the structure and functions of the nervous system. No doubt, intelligence in humans has to do with the brain and neurons. If the mind exists, almost all believe that it has to do with the brain and neurons. But the explanation of the relationship between brain and mind has been a perennial problem in philosophy, as will be shown below. Notwithstanding the difficulty in explaining the relationship between brain and mind, the theoretical architectures of AI systems have been modeled to the symbolic representation and manipulation of the mind and to the nervous system, as in the symbolic AI and the neural network AI models. A third and current model is the behavioral based AI or *nouvelle* AI, which is aimed at non-symbolic representation of information and the emergence of cognition by the interaction of an AI system with an environment in the real world. In turn, advancement in AI research has given birth to computational understandings and explanations of the nervous system and the mind. This is called the computational modeling of neural systems and the computational theory of mind.

While the existence of the conscious self remains a matter of debate in philosophy and science, the conscious self in religion is theologically understood as a self-subsisting being, the soul. Theologically, the soul is not merely a phenomenon whose action is located or explained by the cerebral hemispheres of the brain, it is an independent subsisting substance that, in this present life, is united with the body and which, after death, will persist in existence – that is, the doctrine of the immortality of the soul. The soul is created by God in the coming to being of every individual person in God's own image and likeness in such a way that it would survive the death of the body. This is the specificity of religious anthropology, especially that of Christianity,

as will be discussed below. This religious or Christian anthropology is no longer taken seriously among most contemporary philosophers and scientists. This paper suggests that for it to be taken seriously, this Christian anthropology must interrogate contemporary philosophy of mind, theories of consciousness and neuroscience, and AI and A-life research. As presented above, at the heart of the question of the conscious self or the soul, is neuroscience. Hence, below is a brief exposition of neuroscience and its relationship with consciousness and other mental phenomena.

Neuroscience is the systematic study of the structure, development, and function of the nervous systems of human and non-human animals that generate behaviors. The nervous system, no doubt, is a complex system, or better put, it is a complex system of units of complex systems. As a system, it is well organized in such a way that it is possible to study its operations and functions by investigating and studying the operations and functions of its separate units. The nervous system consists of these three units of system: the sensory systems, the motor systems, and the associational systems. The sensory systems deal with the transmitting of information about the state of an organism in/and its environment. The motor systems deal with the organization and generation of actions or behaviors by the organism. The associational systems deal with the cognitive operations, otherwise called the higher-order functions, of the brain. The basic cell units of the nervous system as a whole are: neurons and glia. While neurons are nerve cells in the brain with the primary task of electrical generation and transmission across the brain, the glial cells' primary task is to sustain the life and signaling functions of neurons.

The pioneer brain researchers that fostered the research in and understanding of the nervous systems, especially the cellular nature of neurons, that gave birth to modern neuroscience are: Camillo Golgi, Santiago Ramón y Cajal, and Charles Sherrington. Like Camillo Golgi, most brain researchers are interested in brain diseases and, hence, most are pathologists. To cure brain or nervous system related diseases, there was a need to understand the structure and functions of not only the brain but the entire nervous system, hence, earlier major contributions to brain research were by neuroanatomists and neuro-physiologists such as Ramón y Cajal and Sherrington respectively. So, the initial study of the brain was not for the knowledge and understanding of the brain *per se*, but was a study aimed at the understanding and curing of brain diseases and psychiatric problems (see Dale Purves et al 2018, Ch. 1).

It is by the means of these pathological and psychiatric ends that the science of the nervous system *per se* – otherwise called neuroscience – began. As mentioned above, the subject matter of neuroscience is the structure, development and function of parts of the nervous system and/or of the nervous system as a whole, both in humans and non-human animals. Hence, at the heart of the science of neuroscience is the understanding of the structure and function

of the neuron singularly and collectively as neural circuits. For each neuron generates, transmits, converts electrical and chemical impulses within a neural circuit, between neural circuits, and across the central nervous system (CNS) and the peripheral nervous system (PNS). These electrochemical impulses are information processed by the neural machines for the wellbeing of an organism in its interaction with other organisms and in/with an ecological environment.

With the advancement in the design and development of medical technological devices, such as functional brain-imaging techniques: positron emission tomography (PET), single-photon emission computerized tomography (SPECT), functional magnetic resonance imaging (fMRI), and magnetoencephalography (MEG), the research in modern neuroscience has experienced a sharp advance and progress in the understanding of the nervous system (see Dale Purves et al 2018, Ch. 1). As a result of the invention of these techniques, Purves and others sum up the advancement in neuroscience thus:

> The use of modern structural and functional imaging methods has revolutionized human neuroscience. It is now possible to obtain images of the developing brain as it grows and changes, and of the living brain in action, assessing brain activity both in typical individuals and in individuals with neurological disorders (Purves et al 2018, 28).

This advance, in turn, has become a foundational epistemic basis for many modern sciences and has given birth to new neurological based sciences in the understanding of the human person, for example, Neuroanatomy, Neurophysiology, Neuropathology, Neuropharmacology, Neurochemistry, Neurobiology, Cognitive neuroscience, computational neuroscience, and so on. At this point, one may ask: Can there be a Neuro-theological anthropology? This question will be explored in the fourth section below.

The models in AI presented above are applied as models of the computational research in cognitive science and cognitive neuroscience in the study of the human person and its cognitive powers. While cognitive science focuses mainly on human cognition, cognitive neuroscience since the 1980s attempts to explain human body action, otherwise called motor cognition, empirically. That is to say, cognitive neuroscience attempts to utilize cognitive theories, methods and models as well as the findings of neuroscience in the understanding and explanation of human body action. One could also say that cognitive neuroscience is an attempt to give (materialistic/naturalistic) scientific explanation to the mind-body (brain) relation problem, which hitherto has been a problem within the bounds of philosophy of mind or psychology. It is thus, a mechanistic explanation of how the brain causes cognitive phenomena

and how the brain helps in the explaining of the behavioral activities of the body.

3. The Church's Notion of the Human Person

In this paper, the Pastoral Constitution on the Church in the Modern World (*Gaudium et Spes*) will be employed to discuss a synthesis of the Church's notion of the human person. And this synthesis can also be said to contain the substantial tenet of Christian anthropology generally. *Gaudium et Spes*, in discussing the Church in the modern world, assumes an anthropological approach, by putting forth the fundamental philosophical question: "What is [hu]man?" at the heart of its discourse (see no. 12). The Constitution, wherein the Council Fathers invite the Church to engage the world in a sincere and open dialogue, states the pivotal aim of this document as: "[M]an himself, whole and entire, body and soul, heart and conscience, mind and will," when it asserts that "the human person deserves to be preserved" (no. 3). The notion of the "human person" that deserves to be preserved therein is as stated above. The human person has a nature of physical and spiritual substances (or principles) but exists as an ontologically single entity. It maintains the body as not less important to the soul, when it contends: "Though made of body and soul, [hu]man is one. Through his bodily composition he gathers to himself the elements of the material world" (no. 14). To this effect, *Gaudium et spes* submits, the human "is not allowed to despise his bodily life. Rather, he is obliged to regard his body as good and honorable since God has created it and will raise it up on the last day" (no. 14). This understanding of the human person has no doubt drawn on the philosophical anthropology of the Platonic and Aristotelian traditions. The idea of being a "whole" of two principles or substances is Aristotelian-inspired, developed by the Scholastics represented by Aquinas, but the idea of a spiritual substance (soul) that has a subsistent nature, can only be consistently and coherently defended with Platonism (see Onyeukaziri, 2022b).

It is within this dualistic theologico-philosophical anthropology of the human person that every Christian doctrine concerning humans in their relation with the world is expounded, explicated and understood. It follows that any philosophical or scientific explanation or theory that denies the duality of body and soul (mind) in a human person that is a whole or unitary is already theologically suspect. The question is, what attitude should the Church maintain as she is already faced by not a few of these theological suspects? Though the body should be considered as a sacred creation of God, the Constitution maintains that the human person should not conceive itself merely as a part of nature or an ordinary constituent of a society. This is because the human person:

> For by his interior qualities he outstrips the whole sum of mere things…. Thus, when [hu]man recognizes in himself a spiritual and immortal soul, he is not being mocked by a deceptive fantasy springing from mere physical or social influences. On the contrary he is getting to the depths of the very truth of the matter" (no. 14).

The soul, or the existence of a spiritual nature or principle in every human person, therefore, is not an illusion as sustained and argued by a number of contemporary materialistic philosophers and scientists (e.g., the illusionist theorist of the body-soul/mind-brain problem).

In the materialistic or naturalistic metaphysical framework of contemporary philosophy and science, the stated nature of the human person as: "whole and entire"; "body and soul"; "heart and conscience"; "mind and will" is under serious critical evaluation and questioning. For many, there is no question of a "whole and entire" since nothing such as "soul" and/or "mind" exists, thus, there is no question of "body and soul." There is also nothing such as "conscience" since the existence of "will" or "freewill" and "free agency" are being denied. This simply means that there are serious philosophical and theological implications of contemporary scientific research on the Church's notion of the human person. By the possession of mind, the human person in operation of the intellect, is able to share in the divine mind of God, and thus surpasses the material universe within which his body and the bodily senses are limited (see, no. 15). It is by the virtue of the mind that humanity has continued the act of creation by the multiplication of diverse artefacts for the completion and complementation of the natural world (see, no. 15; Onyeukaziri 2022a).

But, more importantly, in the operation of the intellect as the fundamental power of the mind, is the search for penetrating and transcendental truths and apprehension of goodness by humans. As the Constitution states: "For his intelligence is not confined to observable data alone. It can with genuine certitude attain to reality itself as knowable, though in consequence of sin that certitude is partly obscured and weakened" (no. 15). For the intellect enables humans not only to be knowledgeable about realities, by inferences based on empirical data and by deductive reasoning based on first principles, it also enables humans to grasp realities unseen, by discerning the good and the beautiful and making axiological and revelational judgements. This knowledge, though powered by the intellect, is structured in "a law which he does not impose upon himself, but which holds him to obedience" – the conscience of every individual person (no. 16). Another important power of the mind that follows and that is implied by the possession of conscience, is the power of freewill. The Constitution asserts that humans are created as free

agents in order to freely choose to do good and to avoid evil; in order to choose God, the creator, or to choose creatures and make themselves slaves of their own passions (see no. 17). The free choice of God, through faith, assures the immortal subsistence of the soul and the bodily resurrection of those who die in Christ, as a unitary person in the beatific vision of the One, Just, True and Good God (see, no. 18).

Every human person, as a "whole and entire" being, has "the highest destiny of [hu]man" and "the godlike seed which has been sown in him" (no. 3). Humans (especially Catholic Christians) are challenged to "recognize and understand the world in which we live, its expectations, its longings, and its often dramatic characteristics" (no. 4). These include: "social and cultural transformation" with its "repercussions on [hu]man's religious life"; "abundance of wealth, resources, and economic power" as well as "hunger and poverty"; "keenly aware of freedom" as well as "political, social, economic, racial, and ideological disputes"; and "a growing exchange of ideas" as well as "different meanings in diverse ideological systems" (no. 4). The Constitution links these contradictions, especially its negative revolutionary parts to the increment in intellectual formation "based on the mathematical and natural sciences and on those dealing with [hu]man himself, while in the practical order the technology which stems from these sciences takes on mounting importance" (no. 5). At the peak of the natural sciences dealing with humans today are the brain sciences, otherwise known as neuroscience and neuroscience-based sciences, and at the peak of the technological innovations today is the science and technology of artificial intelligence as expounded above. So, it is important to consider the theological and philosophical implications of these sciences and technologies.

4. Theologico-Philosophical Implications of AI and Neuroscience Research

Modern neuroscience research has repositioned the question of the human person, its origin, essence, nature, and purpose, at the center of the human sciences and especially philosophical anthropology. Traditional philosophical problematics concerning the nature of the human person that are usually approached by the epistemic attitude of philosophical analyses and speculations are now acquiring a new epistemic attitude as a result of neuroscience research and its findings. Such questions include: the existence and nature of mind and/or mental events, intentionality, consciousness, self-consciousness, unity of self-consciousness or self-identity, selfhood, Self or human subjectivity, brain-mind interaction and so on. Appealing to neuroscience, some contemporary philosophers and scientists have denied the existence of the mind and all mental phenomena – most have dismissed any

form of religious or spiritual explanations of mental phenomena by maintaining exclusively an evolutionary naturalistic explanation of the mind and its phenomena. However, only a very few contemporary philosophers and scientists still hold the subsisting existence of the mind as a non-material substance interacting with the brain and, through the brain, with the entire body. The notion of the soul has become an exclusive religious or theological term that has no place in any serious philosophical and scientific discourse today.

Today, due to these different epistemic attitudes in the understanding of human nature, new terminologies and categorizations have been developed in the philosophy of mind and/or theories of consciousness, such as: substance dualism (the only theologically relevant position), panpsychism, epiphenomenalism in its different shades as property dualism, identity theory or reductionism, philosophical behaviorism, functionalism, computationalism, illusionism, eliminativism, and so on, that are materialistic or naturalistic.[1] However, it is sometimes difficult for most theorists of mind or consciousness to remain in a categorization, since they tend to adjust their view and position on the nature of the mind and consciousness based on advancement in the brain sciences and due to the serious philosophical nature of these problems. So, it will seem easiest to reduce the categorizations into substance dualism and naturalism. The former maintains the existence of a non-material substance that cannot be exclusively explained by the natural sciences, while the latter maintains that only realities explainable exclusively by the natural sciences exist, thus, the mind or the soul as spiritual non-natural reality does not exist.

For instance, John Searle, who maintains the existence of consciousness and other mental phenomena as ontologically subjective but epistemically objective realities, in respect to the role of neuroscience in the understanding of consciousness, asserts: "first, consciousness and indeed all mental phenomena are *caused by lower neurobiological processes in the brain*; and second, consciousness and other mental phenomena are *higher level features of the brain*" [his italics] (Searle 2002, 18). What he implies is that to understand consciousness and other mental phenomena is to squarely understand the neuroscience of the brain and neurons. So, a comprehensive understanding of the nervous system will result in a comprehensive understanding of consciousness and other mental phenomena. In fact, beyond (or, better, below) conscious phenomena, he maintains the existence of unconscious phenomena as realities that could be understood and fully

[1] For a concise review of these categorizations, see Paul M. Churchland (2013, 11-85); for a review of the mind-brain problem as an ancient philosophical problem since Aristotle, see Daniel N. Robinson (1985, 23-31); and for a detailed collection of articles on philosophy of mind, see David J. Chalmers (2002).

explained by a better understanding of neurobiology, when he contends: "I do not believe we can have an adequate understanding of *unconscious* mental states until we know more about neurobiology of consciousness" [his italics] (Searle 2002, 19). Hence, he posits or, rather, suggests, that "neurons and synapses are the right anatomical units to account for consciousness" (Searle 2002, 19).

Aiming to demystify consciousness as a reality that "often leaves even the most sophisticated thinkers tongue-tied and confused" (Dennett 1991, 22) – that is, as that reality that cannot be understood or explained scientifically – Dennett maintains that consciousness "has an elaborate biological base" (Dennett 1991, 24). Hence, he attempts to posit a sort of scientific materialistic theory of consciousness. So, while Searle believes that consciousness and other mental phenomena can be studied and understood scientifically, Dennett not only believes they can be understood scientifically, but that they *must* be conceived and explained materialistically for them to exist. So, for Dennett, a scientific explanation must be necessarily materialistic, or if you wish, reductionistic. To advance this case, he maintains a sort of functionalism in the explanation of the relation between the brain and its mental phenomena (Dennett 1991, 31). This is a position that contends that it is immaterial whether the heart, the brain, or any part of the body is made up of organic or inorganic molecules, carbon, or silicon, as long as it performs the function(s) of the heart or the brain or that of any part of the body. So, it is irrelevant whether an intelligent system is human or artificial as long as a required intelligent function is executed. And over all, he contends that consciousness and other mental phenomena must be necessarily explained materialistically in the sense that, "there is only one sort of stuff, namely matter – the physical stuff of physics, chemistry, and physiology – and the mind is somehow nothing but a physical phenomenon. In short, the mind is the brain" (Dennett 1991, 33). The conclusion, "the mind is the brain," is what is called the identity theory. To this end, he argues that in the epistemic attitude of all materialistic explanations, consciousness and other mental phenomena in principle should be accounted for "using the same physical principles, laws, and raw materials that suffice to explain radioactivity, continental drift, photosynthesis, reproduction, nutrition, and growth" (Dennett 1991, 33).

The interesting thing about claiming a neuroscientific basis for the understanding and explanation of consciousness and other mental phenomena is that the dualist-interactionalism position of the mind-brain/ soul-body problem also attempts to defend its position based on neuroscience and related brain sciences. As Robinson rightly states: 'The facts of neurophysiology and clinical neurology – to the extent that they are relevant to the issue – will support *epiphenomenalism* and *two-way interactionism* as well as they are said to support the "Identity Thesis"' [his italics] (Robinson 1985, 23-31). A

proficient contemporary example is John C. Eccles (see Eccles 1980; 1989), who, as a neurologist, reflected and wrote several works on the philosophical and theological problems of the mind-brain relationship. An exemplary work is the text entitled "The Self and Its Brain," co-authored with Karl Popper (Popper and Eccles, 1977). As is clear in the title of the work, both authors defend mind-brain dualistic interactionalism.

Eccles (1989) argues that the evolution of the human brain gives the human person a unique transcendental capacity for creativity and other higher level cognitive powers, because of the existence of not just consciousness, but a conscious self or Self-consciousness in the human person. Based on this, he argues that: "there can be no physicalist explanation of this mysterious emergence of consciousness and self-consciousness in a hitherto mindless world" (Eccles 1989, xiii). Arguing against "promissory materialism," a term coined by Popper to designate the belief that a progressive understanding of the brain and the working of the nervous system as a whole will lead to a progressive, and finally, a complete materialistic explanation of all mental phenomena, Eccles contends: "The more we discover scientifically about the brain, the more clearly do we distinguish between the brain events and the mental phenomena, and the more wonderful do the mental phenomena become" (Eccles 1985a, 51-57). Employing Popper's (see Popper and Eccles 1977, 16; Eccles 1980, 16-19) theoretical three worlds of reality, and based on neuroscientific investigations, Eccles (see 1989; 1985, 51-57) dismisses all forms of materialism, epiphenomenalism, identity theory, and panpsychist theories of the mind-brain problem and theories of consciousness.

Eccles (see 1989; 1985a, 51-57) asserts dualist interactionism as not only the theory with more explanatory power in respect to the mind-brain problem, but as the theory that affirms the existence of a self-conscious mind that, by the means of mental events, mutually interacts with the brain and, via the brain, with the rest of the body. This interaction, he claims, occurs by the activities of the liaison modules largely present in most parts of the cerebral hemispheres. As he states: "A key component of the hypothesis of brain-mind interaction is that the unity of conscious experience is provided by the self-conscious mind and not by the neuronal machinery of the neocortex" (Eccles 1985b, 85-101). However, whether or not the conscious self, as the religious soul, will maintain a subsistent existence after bodily death is a mystery or a theological question that Eccles (see 1980, 231-252) also attempted to ask, based on the neuroscience of the mind-brain hypothesis. Nevertheless, it is clear that the dualist interactionism defended by Eccles (and Popper) can be recommended as a philosophical ground for a contemporary Christian philosophico-theological notion of the human person, which in this paper is termed: neuro-theological Christian anthropology.

5. Comment: A Case for Neuro-theological Christian Anthropology

Gaudium et Spes affirms the huge implications of contemporary science and technology for the human person and the human society, when it contends:

> This scientific spirit exerts a new kind of impact on the cultural sphere on modes of thought. Technology is now transforming the face of the earth…. Advances in biology, psychology, and the social sciences not only bring men hope of improved self-knowledge. In conjunction with technical methods, they are also helping men to exert direct influence on the life of social groups (no. 5).

The impacts of these implications cannot be over-emphasized. At the time of Vatican II (1962-1965), during which the Constitution was articulated and the implications of science and technology to not only the Christian faith but to the human person in general were highlighted. The AI research project was only beginning. The first AI academic workshop, during which the nomenclature "artificial intelligence" was employed to designate the research project aimed at designing and building artificial intelligence systems, was held in 1956. It was also during the 1960s that the term "neuroscience" was employed as the name for the general study of the nature and function of the nervous system. So, both research projects started about the time of Vatican II. Since then, both AI and neuroscience research projects have advanced significantly, and their impact on human knowledge and society, but more importantly, on the understanding of the human person, has been remarkable.

These two scientific advancements have, on the one hand, increased the understanding of the human person, especially in respect of the central place of the human brain and neuronal machinery and the nature of information processing operating therein. On the other hand, however, they have raised questions that challenge commonsensical and speculative theological *cum* metaphysical understanding of the essence, nature, and end of the human person, as presented in sections two and three above. Based on sciences like these, it is becoming a given for many scientists and philosophers that *the* intellectual framework for *knowledge* and *truth* must have evolutionary naturalism as its epistemology, and monistic materialistic reductionism as its metaphysics. These intellectual attitudes are maintained to the extent that, in contemporary philosophical and scientific communities, it is becoming a sort of unwritten rule that one cannot be a practicing religious believer and at the same time truly practice philosophy and science. As the Constitution rightly observes: "For today it is not rare for such decisions [denial of God and/or of

religion] to be presented as requirements of scientific progress or of a certain new humanism" (no. 7).

This paper argues that the science and research in AI and neuroscience have the strongest implications on the Church's notion of the human person. This is because it is on them that most of the other human and social sciences are established or inspired, since they raise fundamental questions concerning the notion of person. Hence, the Constitution calls for "new efforts of analysis and synthesis" of the new problems, concepts and realities, created by these contemporary sciences and technologies. For example, Searle and Dennett, as presented above, hold that the human person must be exclusively and fully explained by means of the natural sciences. Dennett, even more so, denies the existence of consciousness and the conscious self, and dismisses the general knowledge of them as, at best, folk psychology. Strengthened by advancement in the design of AI, human persons are conceived simply as deterministic computational systems that have only material differences as compared with artificial cognitive systems. Hence, the question of human free agency, exclusive possession of distinctive cognitive powers, and other metaphysical properties of human selfhood and personhood are radically challenged based on claims proposed by scientific theories. It is to this end that this paper argues for a re-evaluation and a re-construction of the Church's philosophical anthropology that is based on Divine revelation. It should also be based on an anthropology that is systematic and coherent with contemporary philosophies and contemporary sciences, with stronger explanatory power and verifiability. This proposition is in keeping with the Church's intellectual history.

The paschal mystery, but most especially the two mysteries of the incarnation and resurrection of Jesus Christ, are central to the understanding of the Christian faith. But, in a special way, these two mysteries are central to the understanding of Christian anthropology or notion of the human person. Besides the Trinitarian mystery as it relates to the notion of the human person, the mysteries of the incarnation and resurrection of Jesus Christ are the specificity of the Christian religion. Christian persons ought to understand themselves in view of and by the means of these two mysteries. The possession of body and soul is neither unique nor original to the Christian religion. But what differs among cultures and religions is the understanding of the nature, relationship and finality of body and soul. Any authentic Christian anthropology ought to explain the nature, relationship and finality of the body and the soul based on the two mysteries of the incarnation and resurrection of Jesus Christ.

The apostolic church, as exemplified in the New Testament, especially in the writings of the apostle Paul and clearly under the influence of the Hebrew scriptures and Greco-Roman worldview, formulated a notion of the human

person that is based on the paschal mystery of Christ. For example, in 1 Corinthians 15, we see how the apostle Paul discusses the nature, relationship and finality of the body and soul of Christians, based on the mysteries of the incarnation and resurrection of Christ. It is clear that neither Paul nor other New Testament writers intended to write a systematic treatise on Christian anthropology, but this does not mean there was not the intention to assert their Christian notion of person. During the patristic period of the Church leading up to the time of Augustine of Hippo, the Church, represented by some Christian thinkers and scholars of Greco-Roman thought, was challenged to write treatises and sermons that gave a systematic and coherent Christian anthropology. The standard philosophy (and, if you like, science) at the time was Platonism. There were other rival schools of philosophy, such as Epicureanism and Stoicism, and a number of mystical doctrines, but Platonism had the greatest and widest influence and impact at the time. More importantly, besides the influence of Platonism, Christians saw in Platonism the best philosophical categories, concepts, and theories to articulate and systematize Christian anthropology based on the incarnation and resurrection of Christ.

After the Patristic period, during the scholastic period, Platonism was intellectually supplanted by Aristotelianism. So, the influence and greatness of Platonism was replaced by Aristotelianism as the philosophy and science of the time. Thus, Christian thinkers and scholars of the time, even though they maintained the Augustinian theological tradition, saw the need to systematize the Christian notion of the human person that was either based on or consistent with Aristotelianism, while remaining faithful to the revelational doctrine of the incarnation and resurrection of Christ and the implications of these mysteries to self-knowledge. This is notwithstanding certain contradictions existing between Aristotelianism and certain traditional beliefs in Christianity. For instance, Aristotle's philosophy and science do not support the immortality of the soul or bodily resurrection of the dead, yet the great Christian scholastic theologian and philosopher, Aquinas, still employed Aristotelianism in his articulation and systematization of a Christian anthropology. Onyeukaziri (2022) has argued that the Christian's philosophical anthropology remains fundamentally based on Platonism, notwithstanding the scholastic efforts to Aristotelianize it. Notwithstanding the epistemic and metaphysical shortcomings in Aristotelianism in respect to certain Christian beliefs, the scholastic thinkers and theologians considered it necessary to update the patristic Christian anthropology they received. This they did, to ensure that the Christian church during their time had a notion of the human person that was consistent and coherent with the concepts and theories of the standard philosophical and scientific systems of the time, which was Aristotelianism. For example, the concepts of substance, nature, essence, subsistence, the four causes (especially material and formal causes), hylomorphism and entelechy,

and the logic of genus-species-specific difference, and so on, thanks to Aristotelianism, were employed by Aquinas. He employed them to argue for the unitary nature of every individual human person possessing two separate substances, a corruptible material body and a self-subsisting immortal spiritual substance, the soul, that would necessarily assume a body at the resurrection of the dead. This has become the standard Christian theologico-philosophical anthropology up until today.

While both Aristotelian philosophy and science has been supplanted (or, at least, is believed to have been supplanted) by the empirical and experimental sciences of the modern period, Aristotelianism as interpreted by the scholastic theologians and philosophers, especially Aquinas, has remained still the scientific and philosophical theoretical systematization of the Church's anthropology based on the paschal mystery of Christ. This is obvious as clearly expounded in the Constitution of the Church presented above. Hence, this paper argues that in the spirit of the intellectual tradition of the Church, there is need for a new Christian anthropology based on a new interpretation and re-theorization of the paschal mystery of Christ that is consistent with contemporary science and philosophy, especially as informed by research in AI and neuroscience. That is to say, there ought to be a Christian anthropology today that is fully aware of the theological and philosophical implications of AI and neuroscience research. This new Christian anthropology this paper denotes as neuro-theological Christian anthropology.

A neuro-theological Christian anthropology, like the Christian anthropology at each epoch of the Christian faith, ought to do the following: 1. Affirm the unity of each human person as created in the image and likeness of God. 2. Affirm the duality of two substances, material body and spiritual soul (or conscious self). 3. Unlike the theological and philosophical systematizations of the patristic and scholastic church thinkers in the intellectual history of the Church, this new systematization ought to defend the unitary of dual substances in the conception of the human person, based on contemporary philosophical dualist interactionalism that is consistent with neuroscience. 4. It ought to be able to explain the relationship between the brain and mind (consciousness and other mental phenomena), as two distinct substances that interact in such a manner that a conscious self exists, but that is not of the nature of physical phenomena.

In contemporary times, arguably no Christian thinker has done more than the neuroscientist John Eccles in arguing in defense of the neuroscientific bases for a dualist interactionalism in the philosophy of mind and theories of consciousness. Hence, this paper suggests the theological reading of his works for a contemporary Christian theologico-philosophical anthropology.

6. Conclusion

This paper aimed at exploring the theological and philosophical implications of AI and neuroscience research on the Church's notion of the human person. It has attempted to accomplish this task by first, presenting the state of AI and neuroscience research. Second, it discussed the Church's notion of the human person as synthesized in *Gaudium et Spes*. Third, it expounded what it considered to be the theological and philosophical implications of AI and neuroscience research for the Christian notion of the human person. Finally, it makes a comment, proposing a new Christian anthropology which interrogates the paschal mystery of Christ with contemporary research findings in AI and neuroscience. It calls this new Christian anthropology "Neuro-theological Christian anthropology." It has been argued in this paper that it is in the spirit of the intellectual tradition of the Church to re-interpret and re-theorize the paschal mystery of Christ to be consistent with the best explanatory science and philosophy of the time. The option to maintain the theological *status quo* has often been the intellectual attitude of some persons in the Church, but the intellectual history of the Church tells us that this option has never been the preferred option.

Fu Jen Catholic University
Taipei

References

Abbot, Walter M., ed. (1966). "Pastoral Constitution on the Church in the Modern World." In *The Documents of Vatican II*, tr./ed. Joseph Gallagher (New York: Guild Press).

Chalmers, David J. (1996). *The Conscious Mind: In Search of a Fundamental Theory* (New York/Oxford: Oxford University Press).

Chalmers, David J. (2002). *Philosophy of Mind: Classical and contemporary readings* (New York/Oxford: Oxford University Press).

Churchland, Paul M. (2013). *Matter and Consciousness* (Cambridge, MA: MIT Press).

Dennett, Daniel C. (1990). "Cognitive Wheels: The Frame Problem of AI." In *The Philosophy of Artificial Intelligence*, ed. Margaret A. Boden, 147-170 (Oxford: Oxford University Press).

Dennett, Daniel C. (1991). *Consciousness Explained* (New York: Back Bay Books).

Dreyfus, Hubert L. and Stuart E. Dreyfus (1986). *Mind Over Machine: The Power of Human Intuition and Expertise in the Era of the Computer* (New York: The Free Press).

Dreyfus, Hubert L. and Stuart E. Dreyfus (1990). "Making a Mind Versus Modelling the Brain: Artificial Intelligence Back at a Branch-Point." In *The Philosophy of Artificial Intelligence*, ed. Margaret A. Boden, 309-333 (Oxford: Oxford University Press).

Eccles, John C. (1980). *The Human Psyche* (Berlin: Springer).

Eccles, John C. (1985a). "A Critical Appraisal of Brain-Mind Theories." In *Mind and Brain: The Many-Faceted Problems*, ed. Sir John Eccles, 51-57 (New York: Paragon House Publishers).

Eccles, John C. (1985b). "The Human Brain and the Human Person." In *Mind and Brain: The Many-Faceted Problems*, ed. Sir John Eccles, 85-101 (New York: Paragon House Publishers).

Eccles, John C. (1989). *Evolution of the Brain: Creation of the Self* (London: Routledge).

Onyeukaziri, Justin Nnaemeka (2022a). "Artificial Intelligence and the Notion of the 'Artificial' and the 'Natural'." *Journal of Data Analysis*, 17(4):101-116. doi.10.6338/JDA.202212/SP_17(4).0009.

Onyeukaziri, Justin Nnaemeka (2022b). "The Platonic Influence on Early Christian Anthropology: Its Implication on the Theology of the Resurrection of the Dead." *Philosophia: International Journal of Philosophy*, 23(1): 48-63. doi.org/10.46992/pijp.23.1. a. 3.

Popper, Karl and John C. Eccles (1977). *The Self and Its Brain: An Argument for Interactionism* (London: Routledge).

Purves, Dale, George J. Augustine, David Fitzpatrick, William C. Hall, Anthony-Samuel LaMantia, Richard D. Mooney. Michael L. Platt and Leonard E. White (2018). *Neuroscience*, 6th ed. (New York/Oxford: Oxford University Press).

Robinson, Daniel N. (1985). "Some Thoughts on the Matter of the Mind/Body Problem." In *Mind and Brain: The Many-Faceted Problems*, ed. Sir John Eccles, 23-31 (New York: Paragon House Publishers).

Searle, John R. (1990). "Minds, Brains, and Programs." In *The Philosophy of Artificial Intelligence*, ed. Margaret A. Boden, 67-88 (Oxford: Oxford University Press).

Searle, John R. (1997). *The Mystery of Consciousness* (New York: The New York Review of Books).

Searle, John R. (2002). *Consciousness and Language* (Cambridge: Cambridge University Press).

Turing, Alan (2004). "Computing Machinery and Intelligence (1950)." In *The Essential Turing*, ed. Jack B. Copeland, 441-467 (Oxford: Oxford University Press/Clarendon Press).