Stellenbosch Theological Journal 2025, Vol 11, No 1, 1–27
DOI: http://dx.doi.org/10.17570/stj.2025.v11n1.3
Online ISSN 2226-2385 | Print ISSN 2413-9459

Artificial intelligence and human nature: Consciousness the final frontier and humanity's cosmic footprint

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Abstract

Artificial intelligence transcends the borders between disciplines, and it is a vital component of current and future space exploration. Its applications surpass mere technical issues and the question regarding its ability to obtain consciousness needs to be resolved. The true nature of AI and the essence of humanity is at stake. The author proposes that true consciousness derives from God's act of bestowing an awareness of the self, a mindfulness of the triune God as depicted in the narrative of Genesis 2 verse 7. The paper's premise is that AI systems or robots could never lay claim to this unique encounter, and that true consciousness will forever be a bridge too far. A dominant feature of humanity's scientific evolution in the last decades is the shallow base from which it originates and the inability to comprehend where novelty fits into the bigger picture. The author argues that the current hype about AI may fall prey to this dilemma. There is a growing need to connect the dots between the spiritual and the physical, between theology and natural science. Human beings leave cosmic footprints. It is our legacy and responsibility as imagers of the cosmic Christ, and the question about AI's role in this process needs to be addressed.

Keywords

artificial intelligence; Astrotheology; space exploration; consciousness; human nature

Introduction

Artificial intelligence is big news and news that is becoming bigger by the day! It is also a big business with the potential for huge revenues. Technological innovations during the last decade led to exponential growth in the design,

abilities, and potential applications of artificial intelligent (AI) systems and robotics. AI moved stealthily into every fabric of society with its promise to simplify our post-modern world. Smartphones to government agencies utilize their algorithmic abilities to manage vast amounts of data and make informed choices. It is not limited to experimental labs and board games, but used routinely throughout our society, in ways both big and small, opaque and transparent, benign and violent (Gaudet 2022:2). With the introduction of ChatGPT in 2022, AI became a household name. However, certain dangers might lurk in the shadows of technical brilliance. Although popular culture is quick to embrace AI's virtues, conspiracy theorists argue that *I, Robot*[1] might have entered our living rooms, while politicians, ethicists, and theologians grapple with its implications. The continuous development of AI's capabilities explores the boundaries of consciousness, poses difficult ethical questions, and confronts us on what it means to be human.

There is a growing need for continuous research concerning the status and applications of AI systems. If one considers all the research papers published every year, it seems as if this requisite has been met, and all the potential dangers and weaknesses of AI have been exposed. Why then the need for another article? The answer is obvious. Artificial intelligence transcends the borders between disciplines, and it is a vital component of our current and future endeavours into space. Theology should explore these boundaries and give guidance on fundamental questions about human nature, consciousness, and technological innovation. Some critics may question this interdisciplinary stance and the need to engage with space exploration on this subject. However, the incarnation of Christ and His cosmic supremacy (Colossians 1) communicates the all-encompassing reign of God. As conscious human beings, transformed to the likeness of Christ, we have a testimony and a responsibility to convey the intricacies constituting the Kingdom of God.

What is humanity's cosmic footprint? The speculation about other possible lifeforms (intelligent?) in the universe led to the establishment of the SETI institute and fuelled NASA's projects to Mars and distant moons. Therefore,

1 *I, Robot* is an American science fiction movie (2004) which explores the dangers of rogue AI systems and robots.

this exposition of a possible conscious AI becomes extremely important, since it would probably be the first contact. Humanity's obsession with the cosmos is not a modern pastime. The Babylonian and Egyptian cultures were inexplicably linked to the stars. The first chapter of Genesis engages with the cosmos and the last chapter of Revelation has cosmological significance. Space exploration is embedded within a specific cosmological orientation. In their research, Halvorson and Kragh (2021) explore these fine nuances between ancient cosmology and modern scientific theory. Artificial intelligence leads to an increase in complexity and requires contextualization.

The essence of human nature as *imago Dei* is indeed a complex issue deserving an extensive overview. In the context of this article, only introductory thoughts are possible, specifically regarding consciousness as a uniquely human attribute. The author intends to investigate a possible link between God agency in Genesis 2 verse 7, and the dawn of consciousness in human beings. The author recognizes the complexity of the issue at stake, but from a faith-based paradigm it is the logical place to begin our quest.

Is it possible to create a conscious AI being? Du Toit (2019:1) correctly argues that AI will change humanity's self-perception, our experience of reality, our value systems and our style of living. It poses important questions about the very nature of what it means to be human. Therefore, we need a robust doctrine of humanity. It will guide our evaluation of emerging technologies and alert us to the temptations of a transhuman world. Technology even at the most basic level, was always embedded within a certain culture and confronted humanity with its ethical implications. But technology also exposes the flaws in our human ability which regularly utilise technical brilliance for wicked objectives (Shatzer 2021:128,146). Space is the final frontier, as the introduction to *Star Trek* kept reminding us. The boundaries of AI's utilization concerning space exploration must be set. I believe that this article could present us with clear guidelines.

The word *artificial* usually describes an entity that simulates an authentic product or object. It is not and could not replace or replicate the original article. One might ask if this idea applies to Artificial intelligence, or has technological invention and expectations outgrown its original identity? The cultivation of consciousness (self-) in AI robots is the holy grail that

would unlock a new age, not only for innovation but for the very essence of what it means to be human. What are the boundaries of AI's ability and what are its essence? It is important to note that the term AI represents different levels of progress and diverse expectations. It will be dealt with in due course. Du Toit (2019:4) points out that the advance of AI technology is primarily money-driven and big corporations invest millions of dollars in research promising attractive profits. Yet, certain fundamental aspects are at stake that exceed our technical faculties or short-term monetary gains.

For example, if artificial intelligent systems are spearheading our exploration of space, it is important to clarify what it means to be human and conscious. Reese (2018: XI) points out that this question is significant and precedes the issues in the current dialogue about AI that focus mostly on the possible loss of jobs in future. The nature of human nature is a complex issue encompassing the insight of various disciplines and locates its completion in the incarnation and resurrection of Christ. (Pieterse 2020). In this article the author strides down this familiar theological path and intends to relate human nature to consciousness, but more specifically, consciousness that emerges from our ability to have a spiritual connection with God.

This article has 3 main objectives. The nature of human nature, specifically the dawn of consciousness will be explored. Secondly, the author will argue that a conscious AI is not possible given the status of Human beings as *imago Dei*, and the question of our cosmic footprint will be examined. As conscious beings embedded into the cosmic Christ, living and exploring His creation, we communicate our character. Consequently, I will propose that true consciousness[2] derives from God's act of bestowing an awareness of the self, a mindfulness of the triune God as depicted in the narrative of Genesis 2 verse 7. From a theological point of view, one could argue that God's *Breath of life* awakened the potential of a spiritual responsiveness[3] in human beings that culminated ultimately in the recognition of the

2 A clear definition of consciousness is a contentious issue.

3 Anthropologists have presented different theories regarding the nature and origin of human spirituality. Vernon (2019) for example, refers to *Big God's theories* which argue that religious awareness emerged as a means strengthen social cohesion, and the *false agency hypothesis* which aims to related religion with superstition.

incarnated Christ within our multi-dimensional reality[4] through the illumination of the Holy Spirit. Only conscious beings could discern and celebrate the immanent presence of the transcendental in a world that demands mere survival from its inhabitants. The paper's premise is that AI systems or robots could never lay claim to this unique encounter, and that true consciousness will forever be a bridge too far.

Why is this article important? I believe that space exploration, as well as any other technological or cultural undertaking that is being hailed as progress, needs a secure theological foundation. Although there has been a resurgence in the domain of Astro theology, the implications of AI concerning space exploration need contextualization. A dominant feature of humanity's scientific evolution in the last decades is the shallow base from which it originates and the inability to comprehend where novelty fits into the bigger picture. The author argues that the current hype about AI may fall prey to this dilemma. Although thorough research is being conducted on a technical level, there is a growing need to connect the dots between the spiritual and the physical, between theology and natural science, the flip sides of the same coin.

Artificial Intelligence is a single term that describes multiple applications and philosophies. For the sake of the argument, it is necessary to revise certain fundamental aspects and technical issues of AI systems (many of which have been dealt with in literature), to familiarise the reader. Therefore, after this concise introduction, it is important to highlight specific waypoints in this debate and clarify technical jargon. Then, we will explore the possible relationship between AI and (self-)consciousness. In the second half of this article, the issue of human nature and consciousness will be discussed, and the probability of a conscious AI examined. In conclusion, introductory notes on our cosmic footprint will be noted.

Artificial intelligence and machine learning

The continuous evolution of AI systems and robotics generates a paradigm crisis. Scholars and laymen from various disciplines debate the technical

4 I use this phrase deliberately to highlight the existence of more than four dimensions in creation and the spiritual significance it represents.

and ethical implications of AI, but the absence of a definitive definition often leads to misunderstanding. Samuelson (2020:41) views AI at the most basic level, as the ability of computer systems to perform tasks that one normally associates only with human intelligence. This distinction is continually shifting, and he argues that AI is best described as the ability of machines to learn themselves. Du Toit (2019:1) follows the narrow path and regards AI as a generic term referring to machines, robots and computers that can perform tasks that we consider intelligent. The difficulty is that human intelligence and/or consciousness also do not have a distinct definition. Some might pose the question, is it even possible to describe a machine as intelligent? (Du Toit 2019:1).

To clarify this semantic confusion, scholars differentiate between different adaptations of AI. As a rule, a division is made between *artificial intelligence* and *machine learning*. AI serve as the general category that defines machines or software capable of performing tasks commonly associated with intelligent beings, including learning, reasoning, and problem-solving. Du Toit (2019:3) refers to these abilities as *Artificial Narrow Intelligence* (*ANI*) or *weak AI* (e.g. Chatbots and facial recognition).

Machine Learning (ML) is more complicated and is seen by many as the future of AI systems and robotics. It is important to note that *machine learning* and subsequently, *deep learning*, are nothing like the conventional computational devices that we are familiar with. Gaudet (2022:4–6) categorises ML as a subfield of artificial intelligence in which a computer *learns* how to do its task by analysing either a set of training data or its success and failures in prior iterations of its task or both. At the onset, the AI system obtains specific data. This data might include the rules of the game, as well as some examples of good output derived from input. The AI system, through spotting statistical patterns in the data, gathers how to produce good output from a given input. (Erisman and Parker 2019: 96). In this method of trial and error a computer could learn to identify specific patterns from vast amounts of data. The input of data could be supervised by humans, or the machine could discover its patterns and use them to solve a problem (unsupervised ML). Using *parallel distributed processing* (PDP), which allows many separate units to carry out operations simultaneously and to interact with each other without centralized control, substantial computational power is created. (Barbour 1999:376). The process and

resulting patterns are, from a human perspective often clouded in mystery, due to the vast amounts of input data and the intricate configurations that are not easily recognised.

Deep learning (*DL*) is the next level in ML where *Artificial Neural Networks* (*ANN*) are developed to mimic how neurons work in human or animal brains (Dorabantu 2021:31). These multi-layered neural networks consist of algorithms that feed data through different layers or *neurons* to come to a deeper understanding. More than two decades ago Barbour (1999:375) identified this mimicking of the brain as one of the goals of AI research to create intelligent computers and understand how the human brain functions. It was dubbed *symbolic AI*[5] and sought to explain all cognition in terms of information. The ultimate objective of all these processes is to create robots with the capability of an *Artificial General Intelligence* (AGI). If this objective is accomplished, it would pose important multi-disciplinary questions regarding personhood and the criteria that constitute consciousness. The holy grail in AI evolution would be an *Artificial Super Intelligence* (*ASI*) which refers to machines that far exceed human abilities. (Du Toit 2019:3). Choi (2016:70) points out how leading futurists embrace these prospects through popular literature, though their expectations might be too optimistic. It is this form of AI that society embraces and fears at the same time.

The roots of symbolic AI could be traced to the 1950s when it was believed that the foundation of higher intelligence was in the manipulation of specific symbols through logical operations. Just as complex information could be communicated by myriad permutations of a fixed set of 26 characters in the alphabet, all human knowledge could be expressed by combining certain basic symbols. In theory, these symbols and sequential rules could be taught to a machine, and AI would surpass human intelligence. Dorabantu (2021:30). More recently, the focus shifted to the design of embodied robotics, where a robot within a specific environment, could interact with

5 There are fundamental problems in the philosophical framework of symbolic AI. Proponents make certain assertions that associate human brain function with that of a computer. This reductionistic approach discounts the complexity of the mind/brain problem and creates a new kind of dualism, "in which software and hardware, like mind and body, (could) be analysed independently" (Barbour 1999:375).

the world through sensory perception by *doing* specific symbols. Through "bodily actions" deep learning is stimulated.

Algorithms[6] are the foundation of all AI technology. While the creation and application of algorithms are not a new concept in computer science, an important boundary was breached with the development of AI. Shatzer (2021:132) points out that conventional *rule-based algorithms* created by humans directly are being replaced by *machine-learning algorithms*. What does it mean? Artificial intelligence scientists shifted their focus from creating algorithms for desired outcomes to the creation of learning algorithms whereby AI machines are set up to learn by themselves and create novel algorithms without any human input. An AI system identifies specific patterns from given data sets and in time creates its algorithms which becomes the basis for interpreting future data. AI algorithms lack basic human common sense. Although the performance of AI algorithms may exceed the human intellect, there seems to be a real lack of understanding in certain scenarios. Dorabantu (2021:32) for example refers to the misclassification of AI algorithms used in self-driving vehicles when confronted with conflicting road signs.

But the genie is out of the bottle. Currently, there is a movement from governments and big tech companies to regulate the use and application of AI technologies out of fear that it could sideline or even destroy humanity. Therefore, it comes as no surprise that scholars plead for an integrated approach in the construction of AI. It is vital to introduce social, anthropological, philosophical, and theological insights into the technical programs to create a moral AI that potentially could make correct ethical decisions in future. Graves (2022:185) refers to this *Two Cultures Problem* where computer scientists and moral theologians receive non-overlapping educational training which severely limits the construction of robust theories incorporating both advanced technical understanding and

6 "An algorithm is a sequence of instructions that a computer must perform to solve a well-defined problem. It essentially defines what the computer needs to do and how to do it. Algorithms can instruct a computer how to perform a calculation, process data, or make a decision." (Nikolopoulou 2023). Shatzer (2021:130) identifies 4 types relating to AI: prioritization algorithms; classification algorithms; association algorithms; and filtering algorithms.

scholarly insight. The question is, could an artificial intelligent system even lay claim to being conscious?

Artificial intelligence and (self)-consciousness

A potential link between consciousness and its emergence in AI is a well-documented and studied subject. The scope of this research requires concise but guiding reflections about the current situation. *Therefore, the reader needs to take note of the current situation, as opposed to the proposal presented in this article*. The definition of consciousness and its association with intelligence presents a challenge. Voss (2005:89) points to its ambiguous nature and diverse opinions among scholars. The irony is that some technologists are dreaming of, and planning the creation of a conscious AI, even lobbying for its "human rights", while a standard definition of consciousness does not exist (Shatzer 2021:133). Psychological definitions of consciousness usually identify certain aspects which might clarify the enigma, for example, awareness and response, a subjective experience of being, and a self-conscious awareness.

The contemporary dilemma was highlighted decades ago. Searle (1980:74) deconstructs consciousness into an intentional first-person ontology, typified by a unified and qualitative character, and experienced as one large conscious state over some time. Profound words which need to be clarified. Barbour (1999:371,386) refers to the diverse philosophical attempts to define cognizance but states that various degrees of consciousness are more probable. Despite this theoretical conundrum, continuous efforts are made to relate AI technology to an intellectual and conscious substance.

The systems theory, which was developed to organize the scientific study of reality, is often applied to AI's analysis of being and divides its evolution into different interpretive levels or models with personhood as the final stage (Graves 2022:194,5). Graves suggests an organization for moral AI systems and a staged taxonomy that could be incrementally built before making an AI that seems like a full person to us. In layman's terms, consciousness could be constructed, and AI would emerge as a formal agent within the various interpretive levels. I would argue to the contrary and propose that

consciousness cannot be fabricated, but that it is the product of divine intervention into an embodied self.

The idea that consciousness could evolve in AI if the necessary hard- and software are in place, has its roots in the philosophy of the mind and the optimistic jargon of scientific materialism. Decades ago, Searle (1980:422,23) bound to biological naturalism, claimed that lower-level neurobiological processes in the brain cause consciousness and indeed all mental phenomena.[7] For many neuroscientists, there appears to be a simple causal interchange between mind and brain where physical processes dictate higher-level functions and substance. Hence, it seemed logical for AI scientists to believe that if human brain function could be replicated, consciousness would be a natural occurring phenomenon.

But the reality is more complex. The scientific optimism of the 1950s led to the Turing argument,[8] and a bridge between human intellect and digital processes was constructed. However, its logic was challenged by Searle in 1980 with his famous Chinese Room Argument.[9] He argued that computer programs only use symbols in a formal syntactical way, but that important semantic content is often misunderstood. The processing of data is merely the following of syntactic symbols and rules, but the computer does not have an intrinsic feature of reality that ascribes meaning to the combination of the symbols (Choi 2016:72,73). Although AI is far superior to its rudimentary ancestors, the argument is valid. Consciousness implies different levels of intentionality that exceed a basic neurobiological

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7 The mind/brain problem is a complex issue that transcends any one discipline. A reductionistic approach to this problem is still a common mistake. Kärkkäinen (2015:307) concludes that among scientists studying human nature and nonreligious philosophers, by far the most common notion of human nature is physicalist (materialist) monism. See Pieterse (2020) for an alternative proposal.

8 Alan Turing, a computer theorist, suggested that if a computer is advanced enough to function undetected for a human in online conversation, it has passed the test, and we should regard that the computer understands and that it is intelligent. (Choi 2016:72).

9 "Searle imagines that he is sitting alone in a room having no knowledge of the Chinese language, but he is secretly given slips of paper that instructs him to produce Chinese characters in a particular sequence as a response to the questions posed by those outside the room. He shows that he can deceive people outside the room to think that there is a person in the room who understands Chinese simply by mechanically following the instruction in manipulating a string of Chinese symbols in proper sequence." (Choi 2016:72,73).

explanation. Choi (2016:80,81) refers to certain orders of intentionality that move beyond bodily-induced impulses. Humans can direct them to imaginary objects and possibilities, even when these objects do not exist, for example, mermaids. In addition, as self-aware individuals, we can perceive and grasp abstract concepts like beauty and love.

However, there are even deeper levels of consciousness. The subconscious mind[10] precedes consciousness and is continuously interpreting context and data. Dorabantu (2021:30,31) refers to the *conscious mode* of cognition as sequential and algorithmic. It operates with symbols and can solve complex logical problems. AI systems excel in this type of scenario. Yet, the *subconscious* mind is faster and more frequently used in regular activities. This intuitive cognition makes it possible to assess a situation based on context. AI systems generally struggle to grasp the bigger picture, especially when intuition is required. Du Toit (2019:7) elaborates: "The human mind does not simply supervene on brain physicality. Mind supervenes on brain and body. Ninety-five per cent of consciousness is on a subconscious level and we do not know the mechanisms responsible for consciousness." He draws attention to the influential relationship between human memory and consciousness and the inability of AI to *remember* because all information is immediately present. Although *Deep learning* uses historical data to evolve its algorithmic abilities, the most recent upgrade of an AI system or robot is always in the present.

There is a reason why the word *artificial* precedes intelligence in AI systems. Ironically, one of the reasons for the current hype in popular culture about AI is based on a misunderstood definition of intelligence. Human intelligence is directly related to consciousness. Du Toit (2019:8) explains eloquently why true intelligence is only reserved for human beings. The capacity to store and process data in a blink of an eye does not imply knowledge or wisdom. The latter includes a sense of self, embedded in a personal and cultural environment, and entrenched in specific values. Values cannot be programmed into a machine but evolve from within a certain spiritual milieu. It might be possible for an AI system to do the

10 "the part of your mind that notices and remembers information when you are not actively trying to do so and influences your behaviour even though you do not realize it".(Cambridge Academic Content Dictionary 2024).

right thing in a specific context, but it will not understand *why* this action was appropriate. In addition, in the real-world contexts change frequently, and this might call for an opposite response. This could be very confusing, especially for an advanced system that has not learned to expect the unforeseen. Peters (2019:1,3) concurs and argues that even the ability to solve complex problems does not imply intelligence. AI machines lack the agency which accompanies selfhood. There is nobody home! Green et al. (2022:26) cautioned us about the wider cultural implications this debate might have. He argues that our reduction of intelligence to logic and problem-solving behaviour – without reference to an interior life – risks shifting our cultural language. Some might begin to measure human value only in terms of quantifiable actions with no regard for the true me and you.

One of the goals of the strong AI movement is the physical integration of humans with AI technology. If successful it would signal a new era of *transhumanism*. It is an independent topic, but due to the context of this analysis, a few cursory remarks are required. Transhumanism could be explained as, "an attempt to transcend the limitations of our present human condition and possibly even reach immortality through biotechnology and information science." (Choi 2016:70). Some advocates of the movement see transhumanism as the next step in our evolutionary process. (Shatzer 2021:134). Voss (2005:94) points out that if consciousness was merely the storage and application of information, it might be possible to program it into a trans-humanoid. This could be a first step to the immortality of humanity. But cognizance is far more complex and it is imbedded into the very essence of what it means to be human!

However, from a theological perspective, it is necessary to engage with the transhumanist narrative. Shatzer (2021:138) is correct when he envisions a possible scenario in the future where human beings are increasingly reduced to sets of data that could be manipulated and analysed. Not only our football abilities but the core of our existence might be laid bare on the altar of scientific ingenuity. From a Biblical perspective though it is important to remind the world that a human person transcends a mere physical body of which its chemical interactions can be recorded and stored. Technological progress in medicine is vital, but it is necessary for

scholars to debate the boundaries between a transhumanist cyborg and the grateful recipient of a bionic arm.

Maybe Samuelson's (2020:48) emphasis on eschatology is correct. He reflects on Paul's teaching in 1 Corinthians 15 which emphasises that resurrected humans will not be spirits without bodies. The resurrected body of Christ paved the way for a re-evaluation of the entrenched Platonic view which states that our physical bodies are mere vessels enclosing the more valuable soul. In the article, "The nature of human nature: Christ's resurrected body as the theological response to the mind/brain" problem (2020), Pieterse (2020:514–18) argues that proleptically, the resurrected Body of Christ is the embodiment of human nature. What does it mean? "Christ, although unique in character, one Person (*vere Deus et vere homo*), displayed after his resurrection the restored essence of humanity, an embodied, a physical and spiritual unity." The resurrected Body imposed the picture of human nature found in both the Old and New Testaments. Humans are non-dualistic: a human psychosomatic unity (Pieterse 2020: 514,5) In his exposition Scriptural references about the resurrection (e.g. I Cor 15; Jn 20,21) are exegetically scrutinized, as well as Gregersen's proposal of a *deep incarnation*.[11]

These references have important implications for the various transhumanist agendas which view the human body as a disposable inconvenience that will eventually be discarded with the help of AI. This neo-Platonic rhetoric of monistic efficiency and complexity ignores the Biblical insight that an embodied relational community will exist in the New Creation.

Will AI be able to evolve into a conscious entity, capable of deep emotional relationships with the ability to make ethical decisions in unexpected circumstances? I suspect not. The reason is that *consciousness emerged as the product of divine illumination. Thus, I will conclude this preliminary investigation by conveying a Scriptural perspective on the essence of*

11 "It is an attempt to paint a comprehensive view of what transpired when God became flesh in Christ and presupposes a radical embodiment that reached into the roots of our material and biological existence. (Gregersen 2015:225–226) Gregersen employs this notion to move away from anthropocentrism in our conception of Christ" (Pieterse 2020:515).

consciousness. This insight will have important consequences for AI's application in the future of space exploration.

The *imago Dei* and human consciousness

If one considers the relationship between science and religion as a complementary consonant, an Astrotheological[12] approach towards AI and space exploration is not only possible but necessary. What does an astrotheological approach regarding space exploration mean? In his article, Astrotheology is *a proactive contextualization of novelty within space exploration*, Pieterse (2021) gives a detailed account of the origins and purpose of Astrotheology in a scientific age. Perhaps Peters (2016:4; 2014:446) definition is applicable in this context, "Astrotheology (is) that branch of theology which provides a critical analysis of the contemporary space sciences combined with an explication of classic doctrines such as creation and Christology to construct a comprehensive and meaningful understanding of our human situation within an astonishingly immense cosmos." Thus, it is important to explain in what sense cultural expressions (for example, technical innovation) relate to Scriptural confessions. In this context, Scripture enables us to ask important questions about AI's ability to attain consciousness and what makes human beings unique.

The preceding paragraphs explored the challenges facing the creation of, or the evolution of a conscious AI from a technical perspective, *although a definitive definition of consciousness remains unclear.* In the following paragraphs, the author intends to argue from a Scriptural point of view why consciousness[13] as experienced by human beings is not attainable using *Machine Learning* or the uploading of specific software. The intent is to explore possible Scriptural waypoints in the emergence of consciousness, as opposed to the usual anthropological and philosophical rhetoric.

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12 Pieterse (2021:159,160) argues that Astrotheology has a proactive responsibility to contextualize natural science and technical innovation within the broader framework of God's agency in creation.

13 Even though there is not one definitive definition of consciousness, in this context, the author associates consciousness with a sense of history, the potential for a spiritual connection that transcends mere technical abilities, and the competence to apply intuition even though the rule book prescribes a different approach.

Consciousness has historic transcendental origins which instilled within humanity specific traits and an awareness of the self and the Divine. This subject justifies a thorough investigation, but due to the constraints of this article, the author will focus on specific texts to clarify the argument.

In his work *How God Acts* (2010), Edwards entertains a particular view of God's agency. He follows Aquinas' proposal that secondary causes are the primary way of God's action in the world, although he deviates from Aquinas' view of miracles as acts that transcend secondary causes in nature. Edwards accepts an agency that is non-interventionist and objective (NIODA) and where every process in creation, including miracles, together with the known and unknown laws of nature, are all expansions of God's one continuing act of creation. Thus, the advent of consciousness is part of an evolutionary emergence where God's creative presence through the Spirit propels organic matter into a personal relationship with the Creator. Although the author does not agree with every detail of, Edwards' proposal, he believes that the relationship between God's agency and consciousness is worth investigating.

Any deliberation about the essence of human nature must engage with the seminal work of David Kelsey, *Eccentric Existence: A Theological Anthropology* (2009). It may seem strange that he deliberately shifts the exposition of the imago Dei to the second half of the book, but it is a calculated move to contextualize the complexity of the subject and its relation to the incarnation of Christ (VanDrunen 2010). Kelsey diverts from classical theological tradition which explores the imago Dei primarily as an umbrella term rooted in Genesis 1 verse 26, as Kärkkäinen (2015:269) points out, and finds credible references in the Wisdom literature of the Old Testament, although the theological context of the post-exilic period should be noted. The author finds this commendable because I believe that the second creation narrative, Genesis 2 verse 7, is regularly overlooked in contemplating the imago Dei and its connection with consciousness. Kärkkäinen (2015:270) though, argues that Kelsey's either-or method, concerning the testimony of the Genesis narratives and Wisdom literature about the image of God, is not helpful. Rather, Scripture should be read in unity and different traditions not pitted against one another.

In her analysis of Kelsey's work Marais (2011:126,7) states, "The value, worth and reality of the earth and her ecology lies not in herself, but outside of herself, in the threefold relating of the triune God to all that is not God. Emphasizing the eccentricity of all living beings and all of created life deals appropriately with the mystery of living beings that are related to a mysterious God and that are caught up in the mystery of God's purposes of creation." This is an important observation because it asks serious questions about the definition of life, the preservation of consciousness for human beings, and creation's ultimate relationship with the triune God. These issues transcend the scope of this study, but the author believes that the magnitude of Christ's *deep incarnation* (Gregersen 2016) could assist in this quest. Kelsey's premise about the prominence of Christ as the true image of God, and humans as imagers of Christ (Kelsey 2009:10), attests to the complexity when reflecting on the imago Dei. Considering consciousness, this study follows the traditional view as it is indicative of human beings, specifically their ability to engage with the triune God. Could animals be conscious?[14] or an Artificial intelligent being?

In his review of *Eccentric Existence* (2009), Wells (2010) points out, "This is a trinitarian anthropology. Human existence, (argues Kelsey), is eccentric because it is centred outside itself in the triune God regarding its being, value, destiny, identity and fundamental relations to its immediate and ultimate contexts. This is Kelsey's central thesis, and it is thoroughly, indeed exhaustively, explored. If I were commending a quotation to go on the dedication page, it would be "Your life is hidden with Christ in God." Christian Anthropology is located within our understanding of the triune God. This observation underlines the premise of this article about Human nature and consciousness. Human consciousness is a necessary consequence, flowing from God's engagement with man, and it finds its essence in the triune God's agency in and through human beings.

As noted, the concept of imago Dei is a complex subject that evolved with theological tradition throughout the ages, and any simplistic references

14 Edwards (2010) considers the possibility of animals as conscious and ponders about their eternal wellbeing. He suggests that traditional views on the subject should be re-evaluated. The problem persists that there is a definitive definition of consciousness, and it leads to ambiguous opinions on the subject.

should be avoided. Kärkkäinen (2015:269–92) provides an important and extensive overview to warn any exegete of possible pitfalls. With that in mind it is necessary to engage with specific texts.

In Genesis 2 verse 7 we read, "then the Lord God formed the man of dust from the ground and *breathed into his nostrils the breath of life, and the man became a living creature*" (ESV 2016). This verse has been thoroughly dissected throughout the ages. I believe it could also clarify important issues in the age of space exploration and AI. It is important to remember that all texts are embedded into a broader theological framework. In this instance, the author applies metaphorical language to describe the indescribable. How do we interpret this classical text, and could it be associated with consciousness? A common thread among commentators is the connection, as well as the progression that takes place from man's creation into the image of God in Genesis 1:26–28, and him being the recipient of the breath of life in chapter 2 verse 7. In his research about possible competing creation traditions in early Judaism and early Christianity, Montgomery (2021:687) pointed to the theological evolution that took place between Genesis 1:26–28 and Genesis 2:7. The creation of man into the image of God in Gen 1, found its fulfilment in Gen 2 where God breathes life into the nostrils of man. The breath of God endowed the first humans with the image of God. This advance was highlighted by Calvin. In his commentary on Genesis 2:7, Calvin (1965:111,112) states that, in contrast to the animals in Genesis 1 (which arose from the earth in an instant), man was gradually formed. His body was created out of the dust of the earth, but he became a vital spirit through the breath of God. After the resurrection, this living soul becomes celestial through the quickening spirit which Christ confers upon the faithful (1 Cor 15:45).

Cherney Jr (2022:24) follows Calvin's assessment of a two-stage process in the creation narrative of man whereby he becomes a living person. He believes that this revelation also influenced the theological dualism about man's body and soul. But, contrary to Calvin, he states that animals also became living agents that received the breath of life (Gen 7:22): "The mode of the man's creation in Gen 2 is completely analogous to the way God created the animals, and this is not what distinguishes them" (Cherney Jr 2022:24). What makes humans unique? The revelation that they were

created in the image of God! This duet between the two creation narratives of Genesis 1 and 2 paints a vivid picture of what makes us human.

At this point, it is important to mention Middleton's detailed historical exegesis, The Liberating Image (2005) which explores the meaning of imago Dei. Middleton gives an important historical oversite on the image of God Imago Dei to contextualise the complexity of understanding the concept. For example, he refers to Reformation theology which followed Irenaeus's proposal which led to the broad and narrow senses of the image – *humanitas* and *conformitas*. (Middleton 2005:21). Although the interpretation of the image of God has been open to subjective and contextual misuse throughout the ages, he argues that a subjective approach could also be fruitful. It connects Biblical narratives with new avenues previously overlooked. The current debate about the nature of AI begs for new avenues of investigation.

He starts his exposition by referring to the lack of texts in OT and NT explicitly pointing to the imago Dei. (Middleton 2005:16) A critical question might be, has a numerical argument any impact on the importance of a matter? It has been standard practice in the Biblical sciences to count words to validate their importance. I will argue that minimal texts on a central theme in Scripture by no means diminish its importance. The relationship between man created in God's image in Genesis 1, and the second creation narrative in Genesis 2 verse 7 needs to be explored. It must be noted that Middleton does not mention this second act in much detail and focuses primarily on the first creation narrative. Throughout the ages, there was a common tendency to associate man with the governance and ruling over creation, as co-rulers with God. (Middleton 2005:27,28, 51). Middleton though argues for a more interdisciplinary reading of the text, but with the original context still in mind. In our exploration of consciousness, these insights might be helpful. See also Pieterse (2015:9–12), where he gives a detailed exposition of the quest to explore human uniqueness and its place in the Genesis narratives, about the current anthropological data.

Thus, any enquiry about the origins of consciousness will have to get a clear picture of what it means to be created in God's image. Hefner (2009: 163) points out that, like consciousness, there is no standard definition regarding

the image of God[15]. Although early theologians (e.g. Philo of Alexandria) associated the image of God with the human mind and consciousness (Cherney 2022:14), the Aufklärung introduced a new paradigm, and these traditional notions were entombed for pure rationality to flourish. The author believes that in this new era of AI, these time-honoured views might once again become significant.

Dorabantu (2021:28,29) points out that even if AI manages to completely emulate human behaviour, man would still be distinctive. Artificial General Intelligence (AGI) might be a challenge for secular anthropology, but theological anthropology is grounded on a different paradigm. Humans are special and unique because they are created in the image of God (Latin, imago Dei). The progression of AI might also be a blessing in disguise. For the first time in human history, we are faced with the possibility that something else might exceed our mental abilities and we are forced to reassess what it means to be human (Dorabantu 2021:37). What is the verdict? The breath of God transformed the dust figure not only into a biologically living creature, but into one who has a life in experiential terms, including the capacity for religious awareness, female companionship, and an individual who is capable of a personal relationship with Yahweh (Raison 2022:104,105). Samuelson (2020:43) develops this notion and point out that we are created in the image of a relational God. We are only fully human when we have meaningful relationships with others (Genesis 1:26). The author suggests that a mutually significant relationship is only possible due to the presence of consciousness. In addition, we have the potential to reflect God's purposes for the world (Barbour 1999:364). The image of God attained its fulfilment in the incarnation of Christ as the embodied[16] nature of the resurrected Body eradicated any Cartesian dualism that sets

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15 Dorabantu (2021:29) identifies three traditional views about the image of God. The substantive interpretation locates the divine image in some (usually intellectual) ability or set of capacities that humans have. The *functional* interpretation understands the image as something that humans are appointed to do (e.g. stewardship over creation). The *relational* interpretation understands the image of God through the prism of the covenantal I-Thou relationship that humans are called to have with God.

16 Gregersen (2016:2) developed his concept of *deep incarnation* where incarnation also operates within the horizon of a cosmic Christology. The resurrected Body of Christ, as the fulfilment of incarnation, extends into and has definite implications for the whole fabric of physical and biological creation.

body, soul, and spirit apart (Pieterse 2020:508). The resurrected Body has a proleptic[17] significance (Pieterse 2023:226), signifying the natural and seamless interchange between matter and spirit as demonstrated by the risen Christ. In the interim, we desire to be transformed, and as entwined mortals and we find meaning in the chaotic interplay between rationality, emotions and fragility. Du Toit (2019:9) makes an important point and states that "… it is precisely human vulnerability and notions like emotion, desire, dependence, sin, hope and mortality that make us human. Human greatness is characterised by human's interaction with transcendence." The author believes that AI systems or robotics will struggle to comprehend these contradictory states and often ambiguous emotions that set humans apart.

It is important to note that this elevated view[18] of man emerged because of a Divine encounter that cannot be replicated or taught to an AI system. Shatzer (2021:146) concurs and points out that if we identify the image of God with a series of capabilities, we might very well see that AI can replicate many of them. But even then, it would not transform a robot or AI system into a person. Personhood is a gift from God, the Creator, and we can only acknowledge and receive it as a gift. This insight is important due to the exponential growth of technological innovation and the specific questions it raises. Green et al (2022: 23) refer to the practice of merging biology with technology, a theme that was pointed out earlier in this article. The implantation of microchips in the body, the development of exoskeletons and bionic limbs, designer babies, smart contact lens technology, and brain-computer interfaces, are not science fiction anymore but pose honest questions about the essence of what it means to be human.

It is important to note that the arguments presented are faith-based assertions and the acceptance or rejection thereof are influenced by the

17 In and through the resurrected Body of Christ, the natural interchange of matter and spirit is anticipated and represented, although the proper historical time of disclosure is still in the future.

18 It is important to contextualize this pre-eminence of humanity. Peters (2016:17,18) examines the origins and implications of the medieval concept of a geo-centrism from an astro theological perspective. The discovery of exoplanets and speculation about intelligent life in the universe led to a vigorous discussion about humanity and our place in the universe.

observer's perspective on the relationship between science and religion, as well as his view on the agency of God. The author holds a complementary consonant view on the relationship between science and religion. Thus, the development and significance of AI is seen as an important waypoint in the development of human culture, and as an acknowledgement of the cultural command given to human beings in Gen 1 to take command over nature and develop it. We are indeed vice-regents serving God as responsible custodians of His creation (Choi 2016:69,70). Erisman, Parker (2019:99) reminds us that His purpose for humans in the design and discovery process is not unique to the creation of accounts. Proverbs 25 verse 2 expresses humanity's delight in its discovery of the hidden things in God's world. Also, advances in technology, by the grace of God and through the empowerment of the Spirit, manifest some glimpses of God's presence in our incarnated reality (Green et al. 2022:14,15). But currently, we live in an era between the resurrection and the Parousia. It is still a period when thorns and thistles grow together with crops and humanity's malicious nature imprints on our cultural practices, as well as our technological innovations and exploits. The development and operation of AI systems are not excluded from these hazards. Despite altruistic motives, potential human malicious intent in the design and application of AI is always a real possibility. In addition, it also became clear that conclusions drawn from incomplete, or false information in the process of machine learning (ML) can be dazzling, but also very dangerous in its distortion of reality (Erisman, Parker 2019:100). Gaudet (2022:7) makes a valid point when he argues that if an algorithm is set up to learn from interactions with our real, sinful society, for example, daily tweets on Twitter (now X), it will naturally come to reflect the inherent biases of that society.

Therefore, given the above information and with the premise of this study in mind, one has to pose the question: are there limits to AI's application concerning space exploration? And are these limits also applicable to Artificial General Intelligence (AGI), when and if it is realised? The author's answer to both questions would undoubtedly be, yes. The inability of AI to attain consciousness (as explained and experienced in a general sense by human beings) creates certain difficulties. One of its most pressing challenges relates to *ethics*. The question presented to technicians and

prophets of AGI is: could AI act morally[19] in specific circumstances? Even if the answer is affirmative, would it possess the underlying subconscious or gut feeling required in a particular context? An appropriate ethical response often requires action that contradicts the textbook answer, but the response is proper within that specific situation. The author believes that this type of awareness by AI might be a bridge too far. Graves (2022: 196,7) reminds us that in the construction of a moral AI, "… one must remember that one does not add ethics on top of how one apprehends reality, the apprehension includes an ethical responsibility for what one apprehends. Instead, one brings an ethical imperative of acting morally to every apprehension one makes of reality, and that imperative infuses the conceptualizations one generates in constructing one's historical world." He believes that this type of morality is already present in certain AI systems, although it is poorly understood and implemented. A moral AI could be constructed by exposing it to different ethical theories and through machine learning (ML) accidental or intentional immoral bias could be erased (Graves 2022:206). I would disagree if one considered the important role consciousness plays, and AI's inability in that regard.

Samuelson (2020:46) exposes the human condition and points to Jesus' teaching that behind correct actions there often lurks the wrong posture of the heart. When applied to AI it means that, "… attempts to transcend human faults and discover 'perfect morality' using AI are misguided. Indeed, perfection should never be attributed to machines, created as they are by imperfect humans." This struggle to harmonize ethical behaviour with AI and ML pivots on the concept of phronesis.[20] It serves as the foundation for ethical decision-making. Graves (2022:206), as an optimistic prophet of a moral AI, believes that an interdisciplinary approach is required. Although AI researchers could build an AI system for moral reasoning, they are not sure what moral skills are needed for effective ML. Moral philosophers and theologians could provide the necessary input. Whereas his proposal

19 Morality is a complex subject impacted by social, historical, and anthropological contexts. The author acknowledges the fact that there exists more than one moral framework, but for the sake of the argument the generic term is used.

20 Collins (2019) defines phronesis as, "wisdom in determining ends and the means of attaining them". Aristotle claimed phronesis included an ability to deliberate well in both general and situation specific understandings of the good. It is a form of practical wisdom (Graves 2022:206).

should be commended from a science/religion perspective, the inability of an AI system to learn phronesis should be emphasised. Phronesis is entrenched within a consciously embodied self from where ethical decisions then originate. This embedded relationship between body, consciousness, and mind in the process of ethical decision-making is important. Du Toit (2019:1) points out that machine processing might eventually exceed the human brain's abilities, but its lack of a human body would diminish its proficiency. I would add, that AI's inability to attain consciousness, as understood in this study, remains its biggest shortcoming.

Humanity's cosmic footprint

Do humans have a cosmic footprint? If we have, what does it look like and who will see it? Eighty years ago, you would expect these types of questions from the works of HG Wells and other science fiction visionaries. Currently, Voyager 1 and 2 (launched in 1977) have reached interstellar space and are on course to eventually leave our solar system. On board are the famous gold plates with information stating who we are as a species and where we live. Is this the epitome of our cosmic footprint? We live in an age of space exploration, and I believe that questions about the *imago Dei* and a possible conscious AI transcend the physical boundaries of our beautiful blue planet. But it also confronts us as human beings with our place in the cosmos, and the agency of the triune God who cares for and directs the universe through the loving work of the Cosmic Christ, as Paul states in Colossians 1. The issue of our cosmic footprint requests further research but serves as a necessary conclusion to this proposal.

A confessional theology is needed to engage with continuous technological innovation. That is why Astro theology becomes an important tool in the dialogue with the sciences. We are pilgrims with new visions and new destinations, and we are also created in God's image. Beltramini (2019:502,506) raises this issue. Although speculative, the status quo introduces specific *anthropological questions* concerning AI and future space exploration. The vision of interplanetary travel and the colonization of space transcended the realms of science fiction in recent years and marked a change in narrative. Carl Sagan, Stephan Hawking, and recently Elon Musk argued on different platforms that a multiplanetary humanity

could serve as a hedge against threats to the survival of the human species. Although methods of propulsion and technological challenges may banish these ideals in the short and medium term, it is worth considering possible applications of AI and its consequences. Beltramini (2019:503,4) foresees that, to overcome the enormous distance between our planet and planets beyond our solar system, humans probably must fuse with technology, the transhumanist argument presented earlier. In this context, a valid question might be: When first contact is made, who will an alien species meet? *Imago Dei*, a semi-conscious being, or a very clever machine? This might be an insignificant question today or tomorrow. Then again, considering the effort made by humanity with the Voyager project[21] to explain itself in the event of an extra-terrestrial encounter, it might well be considered important.

Conclusion

The objective of this article was to explore the possibility for consciousness to emerge within AI systems. The author argued conclusively that the origins of consciousness, as experienced by human beings, are related to God's act of bestowing an awareness of the self, and a mindfulness of the triune God as depicted in the narrative of Genesis 2 verse 7. This unique experience is reserved for human beings who could lay claim to *imago Dei*, and it could not emerge, be programmed, or be taught. Machine Learning and the possible emergence of an AGI could indeed present humanity with endless possibilities, specifically if one considers its applications in space exploration. This, despite the current fears and challenges. However, AI systems or robots, due to their composition and origin, could never lay claim to being conscious individuals. Human beings as imago Dei leave cosmic footprints. It is our legacy and responsibility.

21 The twin spacecraft Voyagers 1 and 2 were launched in 1977 to explore the solar system and beyond. NASA placed aboard Voyager 1 and 2, a kind of time capsule, intended to communicate a story of our world to extra-terrestrials. The Voyager message is carried by a phonograph record, a 12-inch gold-plated copper disk containing sounds and images selected to portray the diversity of life and culture on Earth.

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