

Consciousness and Intentionality in AI and the *imago Dei*

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Introduction

Apple' Siri and IBM's Watson were welcome as convenient tools for a quick information access especially when we were on the road, but the recent match between Google DeepMind's AlphaGo and the world's best Go player Lee Sedol in March 2016 perhaps raised the question among some people whether Artificial Intelligence (AI) will one day replace our own limited mental capacities. The essential question is whether these latest innovations show that computers are intelligent enough to think on its own? And if so, are we about to enter an age when machines and digital computers will soon surpass human intelligence and possibly even threaten to take over the world? How shall we assess the significance of such techno-scientific progress?

From making potteries to X-rays, technology has been, no doubt, indispensable to civilization because it has facilitated us to use creative powers given by God to fulfill the cultural mandate, that we are "to be fruitful and multiply and fill the earth and subdue it, and have dominion"¹⁾ over his creation

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1) *ESV*, Gen 1:28.

as vice-regents under him according to Genesis 1:28. Who would argue against the benefits of antibiotics, automobiles, and computers, including the affirmation of human dignity with each acts of labor that served humanity through techno-scientific progress? Recently, some of the most impressive feats in the field of medicine includes computer programing that sorts out analogues of neural networks. The computer will rapidly search in medical databases to know which diseases potentially correspond to a certain set of symptoms. Since the genome sequencing breakthrough, discovering solutions to a countless number of diseases using the super computers now seems like a near possibility.

Moreover, encouraged by the exponential increase of speed and power built into modern computers in this digital age, there have been considerable literature and attractions to a movement called ‘transhumanism’, which is basically an attempt to transcend limitations of our present human condition and possibly even reach immortality through bio-technology and information science. Although John McCarthy first coined the term ‘artificial intelligence’, some like Nick Bostrom, Hans Moravec, and Ray Kurzweil, who are leading futurists, use the term ‘super-intelligence’ to designate “an intellect that is much smarter than the best human brains in practically every field, including scientific creativity, general wisdom and social skills.”²⁾ They claim that superintelligence may even be created within a few decades since computer hardware will be able to perform algorithms and architectures much like the human brains.³⁾

2) Bostrom, Nick, “How Long Before Superintelligence?” *Linguistic and Philosophical Investigations* 5:1 (2006), 11–30. See also his new monograph, *Superintelligence: Paths, Dangers, Strategies* (Oxford: Oxford University Press, 2014).

3) Ray Kurzweil, *The Age of Spiritual Machines: When Computers Exceed Human Intelligence* (Viking: New York, 1999); see also Hans Moravec, *Robot: Mere*

In the midst of this proliferation of literature on transhumanism and the enthusiasm thereof, some opine that adherents of transhumanism are drawing even religious and existential value from the idea of the ‘myth of progress’ and therefore, it “ought to be viewed as a form of ‘secularist faith.’”⁴⁾ Other critics are skeptical that computers even have these capabilities at all. In fact, philosopher John R. Searle who teaches at U.C. Berkeley has decisively argued that it is impossible to develop ‘strong’ AI (artificial intelligence).⁵⁾ Searle, however, also suggests that we may one day possibly be able to create a fully functional brain by research, but not through digital computer programing. Instead, he muses that it might be possible through research in neuroscience, though it would be very challenging. Both of these assessments by Searle are based on his argument that animal and human consciousness is a biological phenomenon. In this article, a survey of all aspects of debates for the possibility of AI will not be provided; instead, I should like to present a theological perspective on this multi-faceted debate by addressing two things: I shall 1) begin with and affirm Searle’s demonstration that based on the absence of consciousness and intentionality, producing strong artificial intelligence by computer programing is not a logical possibility; and 2) argue why I differ with Searle’s naturalistic premise that consciousness and in-

Machine to Transcendent Mind (Oxford University Press: New York, 1999).

- 4) Michael Burdett, “The Religion of Technology: Transhumanism and the Myth of Progress” in *Religion and Transhumanism: The Unknown Future of Human Enhancement*, ed., Calvin Mercer and Tracy Trothen (Westport: Praeger, 2014), 144.
- 5) John R. Searle, “Minds, Brains, and Programs,” *Behavioral and Brain Sciences* 3 (1980), 417, distinguishes ‘strong’ from ‘weak’ AI, whereby the latter, albeit very powerful, is merely a tool for humans to formulate and test hypotheses. The strong AI, on the other hand, means “the computer really *is* a mind, in the sense that computers given the right programs can be literally said to *understand* and have other cognitive states.”

tionality are entirely neuro-biologically caused, and that substance dualism cannot be ruled out as a reasonable account for the interactive relation between free will and bodily induced intentionality in consciousness.⁶⁾ The latter argument will be based on empirical, logical, and Scriptural grounds regarding the human constitution.

1. More than syntactical arrangement

1.1. Inadequacy of the functional argument in AI

In 1950, 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.⁷⁾ In 1980, this ‘Turing Test’ was famously challenged by Searle. This was demonstrated by the famous Chinese Room Argument. Not many philosophical arguments make the mainstream press, but this argument by Searle became the best-known philosophical argument in the world today in the subject of the philosophy of mind. This illustration was used to show that computer programs merely use symbols in a formal way, that is, only syntactically, without having any understanding of its semantic content: Searle imagines that he is sitting alone in

6) Two common body-mind dualisms are represented by Thomistic substance dualist and Cartesian substance dualist thinkers do not subscribe to Searle’s assertion that meaning and intentionality in consciousness is caused and sustained by the brain. On the contrary, dualists believe that consciousness as belonging to the immaterial domain causes the function of the brain in the material domain to impact the rest of the physical world.

7) See Alan Mathison Turing, “Computing Machinery and Intelligence,” *Mind* 49, no. 236 (1950).

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 actually understands Chinese simply by mechanically following the instruction in manipulating a string of Chinese symbols in proper sequence.

Searle therefore demonstrated quite convincingly that programming a digital computer does not entail real understanding because syntactical rules, however complex, do not produce semantic content. Digital computers, of course, are similar to human minds insofar as operating syntactic arrangements, but unlike human minds they have no power to grasp the content at the semantic level. We generally say that the computer can ‘process’ the data, but such computation is merely relative to the programmer who imposes a computational interpretation on the phenomenon.⁸⁾ In other words, no matter what data and inferences have been programmed, the computer does not have an intrinsic feature of reality, namely its own interpretation that gives *meaning* to them; they are simply meaningless symbols. While some disagreements continue, one philosopher assessed that Searle “came up with perhaps the most famous counter-example in history – the Chinese room argument – and in one intellectual punch inflicted so much damage on the then dominant theory of functionalism that many would argue it has never recovered.”⁹⁾

8) John R. Searle, *Consciousness and Language* (New York: Cambridge University Press, 2002), 17.

9) Julian Baggini, “Painting the bigger picture,” *The Philosopher’s Magazine*, 8 (2009), 37–39.

1.2. Computers and consciousness

What, then, is the key difference between the computer and the human (and even animal) mind that enables the latter to draw semantic meaning from a given data? Specifically, Searle rightly argues that this question of grasping meaning must be answered by the traditional mind-body problem in philosophy, seeking to answer how consciousness relates the activities of the brain to the rest of the world. The Turing Test was mere functionalism that makes the mistake that consciousness can be analyzed simply on the basis of behavior—that is, a computer, though lacks consciousness, can behave as if it is conscious. He quips: “Behavior, even linguistic behavior, is only relevant given certain assumptions about structure. That is why we attribute consciousness to humans and animals, with or without language, and we do not attribute it to radios.”¹⁰⁾

How does Searle define consciousness? He outlines four necessary features to explain how the mind differs from computers, and therefore the latter does not have the capacity to think. First, every conscious state has a ‘first-person ontology’ intrinsically possessed by a subject ‘I’, independent of another observer, programmer, or interpreter. Second, every conscious state has a ‘qualitativeness’ about it, a touchy, feely character as an ordinary property of the brain which has little or nothing to do with knowledge. Third, our conscious experience is ‘a unified conscious experience’ so that the awareness of warmth, texture of clothing around one’s body, sight and sound of people’s voices, furniture, and possibly a memory that passes by, and so on are all experienced as one large conscious state over a period of a certain time continuum. And fourth, there is ‘intentionality’ in consciousness so that a conscious state is *about* or *directed*

10) Searle, *Consciousness and Language*, 74.

at something. While all of the above are distinguishing features of consciousness when compared to the computer, this last feature, according to Searle, is particularly decisive as an argument why computers cannot think, because it does not have consciousness:

The formal symbol manipulations by themselves don't have any intentionality; they are quite meaningless; they aren't even symbol manipulations, since the symbols don't symbolize anything. In the linguistic jargon, they have only syntax but no semantics. Such intentionality as computers appear to have is solely in the minds of those who program them and those who use them, those who send in the input and those who interpret the output.¹¹⁾

Hence, Searle rightly concludes that running a computer program will not cause consciousness to emerge.

1.3. A causal relation between brain and consciousness

What, then, causes consciousness to emerge in humans and animals? Searle believes that firing neurons in the brain and chemical synapses operate to produce this consciousness, a higher level feature of the brain system:

What is the general character of the relations between consciousness and other mental phenomena on the one hand and the brain on the other? The solution to the easy problem can be given with two principles: first, consciousness and indeed all mental phenomena are *caused by lower level neurobiological processes in the brain*; and, second, consciousness and other mental phenomena are *higher level features of the brain*.¹²⁾

11) Searle, "Minds, Brains, and Programs," 422-423.

Searle labels his theory ‘biological naturalism’, because he thinks consciousness is an ordinary part of nature, and he attempts to give a scientific explanation of consciousness at the biological level.¹³⁾ What does it mean that there is a causal relation between the brain and the consciousness? At the formal level, anyone can observe that certain chemicals supplied to the brain in humans or higher animals directly diminish the effective functionality of their consciousness in proportion to the amount of chemicals administered. But Searle is referring to a causal relation at the semantic level: He claims that those meaningless biological elements interacting at one level (neurobiology) effect a production of meaning at another level (consciousness). For example, the brain provides certain bodily signals, e.g., hunger, to be recognized as a datum to be held true by the consciousness. And if one’s intentionality toward this datum presented is part of one’s sustained consciousness, it follows that intentionality and mental processes are caused by the brain, at least in part. Searle properly recognizes, then, that this causal relation between the brain and the consciousness is absent in the computer programming: In running a computer program transference between input and output remains in one single continuum (from one form of data arrangement to another form of data); whereas in the case of humans and animals, there is actual transference of one kind of activity to another (from the biological phenomenon of firing neurons and chemical synapses to the non-biological phenomenon of modification in conscious states). Once again, AI is impossible on this argument because the data form transferred from the first data form arrangement is still waiting for some kind of intentionality provided by consciousness.

Searle’s claim that there is causal relation between the brain and the consciousness seems justified to some extent, given that

12) Searle, *Consciousness and Language*, 18.

13) Searle, “Consciousness,” *Annual Review of Neuroscience*, 23 (2000), 567.

bodies are able to act on minds, perhaps to have some degree of intentionality both in the case with animals as well as humans. But is Searle correct to assert that *only* neurobiology is responsible for intentionality and consciousness? Here the evidence is lacking and unpersuasive. Certainly, neurobiology has a greater causal relation to consciousness in the case with animals than with human beings. But even in the case with animals, it is not convincing that only neurobiology is at work. But before addressing the question whether animals are also endowed with souls, let us follow through with some arguments why human consciousness is not caused and sustained by neurobiology alone. Since Searle seems to implicitly argue by analogy from animals to human beings, I shall first sort out how consciousness in humans and animals differ from each other.

2. More than neurobiology behind consciousness

2.1. Different orders of knowledge in human consciousness

On the one hand, Searle rightly perceives that “our conscious states have quite specific irreducible phenomenological properties,”¹⁴) and recognizes “the enormous variety of our consciousness life.”¹⁵) On the other hand, his “biological naturalism” indeed shows his naturalistic faith, because he says “consciousness is entirely caused by neurobiological processes and is realized in brain structures.”¹⁶) Such claim by Searle is based on his premise that intentionality need not be thought of as belonging

14) John R. Searle, *The Rediscovery of the Mind*, Representation and Mind (Cambridge, Mass.: MIT Press, 1992), 28.

15) *Ibid.*, 227.

16) Searle, “Consciousness,” *Annual Review of Neuroscience*, 23 (2000), 557.

only to human beings, because intentionality of beliefs and desires are embedded in a network of perceptions and actions in animals as well:

Typically, for animals as well as humans, perception fixes belief, and belief together with desire determines courses of action. Consider real-life examples: Why is my dog barking up that tree? Because he *believes* that the cat is up the tree, and *he* wants to catch up to the cat. Why does he believe the cat is up the tree? Because *he saw* the cat run up the tree. Why does he now stop barking up the tree and start running toward the neighbor's yard? Because he no longer believes that the cat is up the tree, but in the neighbor's yard. And why did he correct his belief? Because he just saw (and no doubt smelled) the cat run into the neighbor's yard; and *Seeing and Smelling is Believing*. The general point is that animals correct their beliefs all the time on the basis of their perceptions.¹⁷⁾

Here, Searle implicitly claims that animals correct their beliefs in the same way humans do because they both have the same powers to distinguish the state of affairs presented to them. Since we cannot examine the internal states of a dog's mind, Searle is justified to attribute to his dog by analogy those inner states to account for the dog's behavior based on our awareness of how things are with us internally. We are not justified, however, to use this approach to give an account of the human self or person, as if we may extrapolate from this account that human functional capacity is different only in a degreed way. Dogs seem capable of distinguishing from direct perception of choices presented to them then and there during a brief time or by habit from having been conditioned, but this illustration does not even address whether there are different levels or kinds of intentionality that accompanies different orders of knowledge

17) Searle, *Consciousness and Language*, 67-68.

outside the parameters of what a dog can grasp.

It is generally acknowledged that there are two different kinds of knowledge. First, there is ‘knowledge by acquaintance’,¹⁸⁾ or it may be expressed more broadly, as first-order knowledge (received via *a posteriori* knowledge such as hunger, thirst, or any immediate data received through sensory stimuli) which is rooted in, or enters through, the body; and so they are causally related to neurons and synapses in the brain. But ‘knowledge by description’ or more broadly, second-order knowledge (deduced as *a priori* knowledge,¹⁹⁾ i.e., knowledge about the first-order knowledge, such as the proposition ‘Socrates is a mortal because all men are mortals’) does not seem accessible to the animals. If my dog is presented a raw meat and a cooked meat side by side, he has first-order knowledge that cooked meat has a stronger flavor than the raw meat. But he cannot reflect on this to draw the second-order knowledge that all cooked meat have stronger flavor than the raw meat.

Since human beings have the power to grasp this second order knowledge, humans are capable of grasping true universal judgments (e.g., ‘a true statement and its contradiction cannot both be true’). And since these true universal judgments are not directly observed from physical objects, it does not follow that all thinking in our consciousness are caused and sustained only by biological neurons. Similarly, philosopher David Chalmers refuted the physicalists’ claim for absolute continuity

18) Bertrand Russell, “Knowledge by Acquaintance and Knowledge by Description,” *Proceedings of the Aristotelian Society* 11 (1910), 108, introduced the difference between ‘knowledge by acquaintance’ and ‘knowledge by description’: The former has to do with a subject standing in a “direct cognitive relation to the object, *i.e.* when [one is] directly aware of the object itself.” This immediate awareness stands in contrast to ‘knowledge by description’ which is derived or inferred as a propositional knowledge.

19) See Alvin Plantinga, “*A Priori Knowledge*,” in *Warrant and Proper Function* (New York: Oxford University Press, 1993), 102-21.

between the physical world and our consciousness: “There is an explanatory gap between the physical level and the conscious experience. If this is right, the fact that consciousness accompanies a given physical process is a further fact not explainable simply by telling the story about the physical facts. In a sense the accompaniment must be taken as brute.”²⁰⁾

In other words, Chalmers is arguing that our awareness of our consciousness and its certain qualitative features is knowledge by acquaintance, not deduced from our knowledge of facts about the physical process in the brain. Therefore, concluding that those features of consciousness we experience are physical is groundless.

2.2. Different orders of intentionality in human consciousness

That there are different orders of intentionality in our consciousness also provide strong arguments why neurobiology cannot be the only source that causes and sustains our consciousness. We are aware of different orders of intentionality beyond bodily induced impulses that may qualify as the basic kind of intentionality in human consciousness. Perhaps more can be listed, but at least four arguments can be given here as a start.

First, our experience of introspection can tell us that literally an unlimited number of objects may be directed by intentionality in human consciousness. This is self-evident because our intentionality can be directed at imaginary objects and possibilities even when these objects do not exist, such as unicorns, mermaids, and so on. This continues the argument that no causal relation exists between neurons and intentionality toward

20) David Chalmers, *The Conscious Mind: In Search of a Fundamental Theory* (Oxford: Oxford University Press, 1996), 107.

imaginary objects outside space and time.

Second, human intentionality can be engaged in self-awareness. J. P. Moreland makes this helpful remark: “On a certain understanding of intentionality according to which it is a monadic property, when one is aware of oneself (as opposed to a mental state one has), in direct self-awareness, one simply directs one’s intentionality onto oneself and the subject and object of awareness stand in the identity relation to each other.”

²¹⁾ This phenomenon is easily recognized especially when memory becomes acutely contrasted with the present quality of one’s mental state. Consider this famous psalm of David:

Why are you cast down, O my soul,
and why are you in turmoil within me?
Hope in God; for I shall again praise him,
my salvation and my God. (Ps. 42:11)

Here David is directly aware of himself, whereby he experiences deep feelings of discouragement at present, but this awareness of his consciousness seems particularly acute because he also remembers what it was like to experience joy that came from another act of his interiority, namely praising God. This ability to be aware of his present inner state that is not directing praise toward God and holding it as the object of consciousness against a memory of his inner state when he did direct praise to God indicate how distinctly one can engage in self-awareness. Anyone is hard pressed to attribute such intentionality to see oneself in two different circumstances as having been caused by neurobiology.

Third, even as Searle recognizes that free will is a mystery that cannot be resolved by neurobiology,²²⁾ the naturalist stand-

²¹⁾ J. P. Moreland, “Substance Dualism and the Argument from Self-Awareness,” *Philosophia Christi* 13:1 (2011), 29.

point leaves no room for agency so that a human being is responsible for a rational and free decision, e.g., to make an ethical decision. Philosopher Thomas Nagel observes: “There seems no room for agency in a world of neural impulses, chemical reactions, and bone and muscle movements. Even if we add sensations, perceptions, and feelings we don’t get action, or doing—there is only what happens.”²³⁾ This is particularly problematic as we consider the moral dimensions of our lives. In a world where human beings make carefully thought-through decisions to forgive deeply hurtful offenses over a sustained period of time—often by persons with no blood relations—such mental acts or intentionality simply cannot be explained away as neural impulses freely floating on their own. If neurons are all there is, it appears that naturalistic theories affirm by default, that there is no direct access to ‘the self’ responsible for all of the ethical decisions made by humanity.

Fourth, we have the capacity to look at an object such as a flower or a butterfly, and be able to perceive and grasp an abstract universal property (e.g., beauty) that belongs to it. Since an abstract property is not some material object in space and time, it does not stand in causal relations to neurobiology. How then does our consciousness and intentionality operate so that we abstract these properties? Aristotle provided one answer:

Now of the intellectual faculties that we use in the pursuit of truth some are always true, whereas others admit falsity; and no other kind of knowledge except intuition is more

22) John R. Searle, *Mind, Language and Society: Philosophy in the Real World*, The Masterminds Series (New York, NY: Basic Books, a member of the Perseus Books Group, 1999), 107, says, “It remains an unsolved problem in philosophy how there can be freedom of the will, given that there are no corresponding gaps in the brain.”

23) Thomas Nagel, *The View from Nowhere* (New York: Oxford University Press, 1986), 111.

accurate than scientific knowledge. Also first principles are more knowable than demonstrations, and all scientific knowledge involves reason. It follows that there can be no scientific knowledge of the first principles; and since nothing can be more infallible than scientific knowledge except intuition, it must be intuition that apprehends the first principles. . . . the starting-point of demonstration is not itself demonstration, and so the starting point of scientific knowledge is not itself scientific knowledge. Therefore since we possess no other infallible faculty besides scientific knowledge, the source from which such knowledge starts must be intuition.²⁴⁾

Aristotle explains how perception and enduring memory are necessary steps for producing art and scientific knowledge, but intuition is always employed in the process because it is the ultimate ground for abstracting the universal concepts in nature. All perception aided by memory must be transformed by intuition for acquiring reliable knowledge. How is this possible in human beings? He answers: “The soul is so constituted that it is capable of this sort of process.”²⁵⁾ It appears that Aristotle saw the need for a substance that combines and integrates an order of intentionality provided by the body and another order of intentionality that seems to be grounded in our mental capacities alone.

Along this line of reasoning, Edmund Husserl, the famous pioneering philosopher of Phenomenology reached a similar conclusion concerning how knowledge is grounded in intuition by intentionality: “Scientific knowledge—the kind of knowledge which will first come to mind—is totally based upon the possibility of being able purposively to choose such thinking, with certain precautions, over thought more closely bound to intuition.”²⁶⁾ Again, this intentionality is the function of the

24) Aristotle, *Posterior Analytics* II.19.100b 14-15.

25) Aristotle, *Posterior Analytics* II.19.100a 16.

26) Edmund Husserl, “Psychologische Studien zur elementaren Logik,” *Philosophische*

soul in enabling the consciousness to conceal meaning.²⁷⁾

We shall now turn to this integrating role assigned to the soul according to the testimony of the Christian Scripture.

2.3. Enfleshed souls and *imago Dei*

Does the Scripture attribute souls only to human beings or to animals as well? It is often assumed that only humans possess souls, but the New Testament seems to use the word soul (*psyché*) in reference to animals (Rev 8:9; 16:3). Also in the Old Testament, we are told that man became a *nepes* (Gen 2:7), but this is also said of animals (Gen 1:30). In other places (Gen 7:15; Eccl 3:21; Ps 104:25, 29) animals also share the *rûaḥ* (breath, mind, spirit). Bruce Waltke, an Old Testament scholar, makes helpful comments when he describes *nepes* as ‘passionate vitality’, and goes on to explain the distinction between humans and animals: “What distinguishes humanity from animals is the *imago Dei* and a passionate appetite for God (cf. Ps. 42.1). Our distinctive *nepes* distinguishes us from the rest of creation.”²⁸⁾ In other words, if we use the word ‘soul’ generally to mean immaterial substance that animates the material body, we have to conclude that both animals and humans possess it according to substance dualism. Does this mean that all animals will receive the afterlife based on their possession

Monatshefte 30, trans., Dallas Willard as “Psychological Studies in the Elements of Logic,” *The Personalist* 58 (1977), 316.

27) Edmund Husserl, *Ideas: General Introduction to Pure Phenomenology*, Routledge Classics (London: Routledge, 2012), 251, asserted that the essential nature of consciousness is “to conceal ‘meaning’ within itself, the quintessence of ‘soul’, so to speak, of ‘mind’, of ‘reason’.”

28) Bruce K. Waltke and Cathi J. Fredricks, *Genesis: A Commentary* (Grand Rapids, Mich.: Zondervan, 2001), 71.

of this immaterial substance? An answer need not be definitive, unless God had so intended it that way in the first place. If any setting where animals are mentioned in Scripture refers to the eternal state, it is still unclear if they have continued from this side of eternity or if they are altogether different creatures made to live in heaven.

What, then, would be the difference between the human soul and the animal soul? It would simply mean that human beings have been endowed with a distinctive soul that is much more rich and complex in structure (both in degree and in kind) than the soul belonging to animals. Within the animal kingdom, primates obviously have a far more developed consciousness and intentionality than a lizard; and so the degree of complexity in the structures of the soul as the animating principle in each species is diverse and fitting to each species, according to the wisdom of God who created them all. But between humans and animals, our analyses above have shown that beyond degreed complexity, human beings have certain *kinds* of knowledge and intentionality absent altogether in animals.

Conclusion

The essential functional difference between computers and human beings is the capacity to think, because there is a difference of ontology between them: The former simply lacks consciousness as Searle had decisively pointed out. In the similar vein, when we considered the difference between the animals and human beings, the essential functional difference between them is not merely degreed complexity but the *kinds* of meaning only human beings have capacity to grasp. These different levels of knowledge and intentionality observed and analyzed in humans and animals must also be assumed to be rooted at the

ontological level. Here, both creatures possess souls or the animating principle, but there is less clarity on how the richly structured soul in a human being at the ontological level qualitatively differs from the soul belonging to an animal. The *imago Dei* points to many unique functions that set us apart, but its particularity at the level of attributes is unique in the constitution of the human soul. This distinction of ontology would be consistent with the Scriptural testimony that we can be regenerated to commune with the incarnate Logos because he came to share our human nature and heal it by making us alive with him (Eph. 2:5).

<주요어>

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References

- Aristotle., *Loeb Classical Library, Greek Authors*, Vol. 391, *Posterior Analytics*, Cambridge, Mass.: Harvard University Press, 1960.
- Baggini, Julian., "Painting the bigger picture," *The Philosopher's Magazine*, 8 (2009), 37-39.
- Bostrom, Nick., "How Long Before Superintelligence?" *Linguistic and Philosophical Investigations* 5:1 (2006), 11-30.
- Burdett, Michael., "The Religion of Technology: Transhumanism and the Myth of Progress," *Religion and Transhumanism: The Unknown Future of Human Enhancement*, ed. Calvin Mercer and Tracy Trothen, Westport: Praeger, 2014, 131-147.
- Chalmers, David., *The Conscious Mind: In Search of a Fundamental Theory*, Oxford: Oxford University Press, 1996.
- Husserl, Edmund., "Psychologische Studien zur elementaren Logik," *Philosophische Monatshefte* 30, 159-191, Translated by D. Willard, "Psychological Studies in the Elements of Logic," *The Personalist* 58 (1977), 297-320.
- Husserl, Edmund., *Ideas: General Introduction to Pure Phenomenology*, Routledge Classics, London: Routledge, 2012.
- Kurzweil, Ray., *The Age of Spiritual Machines: When Computers Exceed Human Intelligence*, Viking: New York, 1999.
- Moreland, J. P., "Substance Dualism and the Argument from Self-Awareness," *Philosophia Christi* 13:1 (2011), 19-34.
- Nagel, Thomas., *The View from Nowhere*, New York: Oxford University Press, 1986.
- Plantinga, Alvin., "A Priori Knowledge," *Warrant and Proper Function*, New York: Oxford University Press, 1993, 102-21.
- Russell, Bertrand., "Knowledge by Acquaintance and Knowledge by Description," *Proceedings of the Aristotelian Society* 11 (1910),

108-128.

Searle, John R., "Consciousness," *Annual Review of Neuroscience* 23 (2000), 557-578.

Searle, John R., "Minds, Brains, and Programs," *Behavioral and Brain Sciences* 3 (1980), 417-457.

Searle, John R., *Consciousness and Language*, New York: Cambridge University Press, 2002.

Searle, John R., *Mind, Language and Society: Philosophy in the Real World*, The Masterminds Series, New York, NY: Basic Books, a member of the Perseus Books Group, 1999.

Searle, John R., *The Rediscovery of the Mind*, Representation and Mind, Cambridge, Mass.: MIT Press, 1992.

Waltke, Bruce K., and Cathi J. Fredricks., *Genesis: A Commentary*, Grand Rapids, Mich.: Zondervan, 2001.

<Abstract>

Consciousness and Intentionality in AI and the *imago Dei*

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This article investigates the plausibility of developing artificial intelligence by computer programming from the perspective of philosophical analysis, specifically asking (1) whether or not independent thinking by AI is possible, and (2) whether or not knowledge acquisition and the use of intentionality is unique to human beings in any way. On the one hand, John Searle's assessment of computer based artificial intelligence compared with the human mind is adopted to frame the inquiry as a philosophical mind-body problem. The causal relation between the brain and the consciousness with its attendant intentionality for mental activity in both human beings and animals is affirmed, at least in part, and therefore this phenomenon for transference of basic semantic meaning from neurobiological elements is to be differentiated from mere syntactical arrangement in computer programming. On the other hand, Searle's premise that neurobiology is wholly responsible for the thinking process is not well grounded. On the contrary, philosophical or empirical analyses as well as arguments from the Christian Scripture seem to affirm that the ontology of the soul specially designed for the *imago Dei* sets humanity apart from the rest of the creatures.

<초록>

인공지능(AI)과 *imago Dei* 안의 의식과 지향성

최진

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이 논문은 철학 분석의 관점에서 컴퓨터 프로그래밍에 의해 인공지능 개발의 타당성을 조사하고자 한다. 구체적인 연구 질문으로는 (1) AI에 의한 독립적인 사고가 가능한지의 여부가 있는지를, (2) 지식 획득과 지향성의 사용에 있어서 어떠한 부분은 부인할 수 없는 인간 고유의 성격이라고 말할 수 있는지를 고찰하려 한다. 한편, 컴퓨터에 의한 인공지능과 인간의 마음을 비교하는 John Searle의 평가를 받아들이므로 연구접근의 방법은 심신관계의 철학적 문제로서의 구도를 사용한다. 의식, 그리고 이에 따르는 지향성 (intentionality)과 뇌 사이의 인과관계가 있음을 인간과 동물에게 있어서 적어도 부분적으로 인정하고, 따라서, 신경 생물학적 요소에서부터 시작된 것들이 마음의 의식에 도달했을 때는 기본적 의미로 전이되는 현상은 컴퓨터 프로그래밍의 단순한 구문 배열과는 전혀 다름이 구별되는 것이다. 다른 한편, 우리의 모든 의식과 생각들이 전적으로 신경생물학적 요소들로 유래하며 유지된다는 Searle의 전제는 근거가 약한 이론이다. 반대로, 철학적 또는 경험적 분석뿐만 아니라 기독교 성경에 비취볼때, *imago Dei*를 위해 특별히 설계된 영혼의 존재는 나머지 모든 피조물로 부터 구별된 인류를 확인하고 있다.