Christianity, Science, and the Three Phases of Being Human

Abstract

Most especially in philosophical anthropology Christianity and science appear to clash. The traditional Christian view that humans are ensouled creatures, intrinsically and intricately connected to the transcendent God, encounters Darwinian evolution, where the human place in nature is biological, not divinely established. If advocates of robotics and strong artificial intelligence have their way, even this biological, evolutionary conception of humans can, must, and will be supplanted by new forms that ultimately reduce humans to computerized software installed in complex machines. As evolutionary science put souls out of business, artificial intelligence ultimately will do likewise to the biological human. This paper traces the evolution of these views of human beings, notes critical issues that they pose, and assesses the prospects for a healthy relationship between Christianity and science regarding anthropology.

Many contemporary thinkers envisage serious conflict between religion and science. The roboticist Hans Moravec writes, “Science seeks objective interpretations of observations, independent of human feelings, tribal values, and even its own traditions. Its mercurial course often subverts religion’s role as social conservator, contradicting religious tenets and creating disturbing new options. Yet, despite a demonstrated potential for societal disruption, science has increasingly usurped religion’s ancient explanations and rules because its material benefits outweighed the costs in peace of mind and social order” (1999, 75). This view of science triumphant is hardly new. Half a century before, Julian Huxley advocated an evolutionary, scientific humanism. Whereas “earlier religions and belief systems were largely adaptations to cope with man’s ignorance and fears, … the need to-day is for a belief-system adapted to cope with his knowledge and his creative possibilities” (*Religion*, 1957, 188). According to Huxley, the key to accomplishing this is for religion to abandon its traditional dalliance with the transcendent and “ally itself wholeheartedly with science,” for it is empirical science that will enable human progress through “self-transformation, during which new possibilities can be realized” (189–90). Of course, suspicions can run both ways; religious people can be suspicious of the naturalistic metaphysical presuppositions that lie behind scientistic theorizing (Johnson, 116–18).

Perhaps nowhere else than in philosophical anthropology do Christianity, as the exemplification of religion we will employ, and science appear to clash more stridently. Humans, not a god about whom naturalistic, empirical science has nothing to study or pronounce, are the issue (Midson, Part 1). The traditional Christian view is that humans are ensouled creatures, intrinsically and intricately connected to the transcendent God who in one way or another implanted in them their vital soul. With Darwinian evolution, the human place in nature becomes biological, not divinely established. According to Darwinians, we are, at this moment, the supreme product of the extensive evolutionary process, the result of many millennia of genetic mutations culled through natural selection, possessing brains that produce consciousness and its correlates of belief, will, and reasoning, first in other animals and then in us. But if advocates of robotics and strong artificial intelligence (AI) have their way, even this biological, evolutionary conception of humans can, must, and will be supplanted by new forms that ultimately recreate humans as computerized software installed in complex machines, cyborgs, robots, or merely computational machines. Evolutionary science put souls out of business, and strong artificial intelligence ultimately will do likewise to the biological human. A Christianity that endorses divine souls or teleologically-guided evolution will recede, as have phrenology, alchemy, astrology, and scientology, into well-deserved oblivion. Whereas traditional religion was concerned with giving us immortality through our souls and Neo-Darwinism furnished us immortality through our selfish genes, the new AI immortality will preserve our software-being intact so that it can be easily replicated and passed on among diverse versions of humanly constructed hardware. Genesis tells a mistaken myth: we are not made of dust and will not return to it (Hanaway, 151).

The burden of this paper is to briefly trace the evolution of these views of human beings, to identify issues that arise, and to assess the prospects for a healthy relationship between Christianity and science regarding anthropology in the projected futuristic scenario.

Phase One: Humans as Divinely Endowed Bodies with Souls

The traditional (although currently not unanimous) Christian view of human beings is that we are dualistically composed of physical body and immaterial soul.[[1]](#endnote-1) Creating in his own image, God formed in the human earthly body “a soul endowed with reason and intelligence, so that he might excel all creatures of earth, air, and sea” (Augustine 1948a, XII, 23). Although the soul permeates the body, they are separable at death (Augustine 1948b, XVI, 25). Even when separate from the body, the soul can continue to exist until it is divinely reunited with a resurrected body in a perfected and unblemished state, fleshly yet spiritual (Augustine 1948a, XXII, 19, 21).

Influenced by his Neo-Platonism, Augustine was neither the first nor the last Christian thinker to aspire to these anthropological views. Two centuries earlier Irenaeus of Lyon developed his own view of the human being in triadic terms. Not separately but together body, soul, and spirit constitue the human being (Irenaeus 2016, V.9.1). [[2]](#endnote-2) Humans have their source, nature (in the image of God), and goal in God, and cannot be truly or completely understood apart from that fundamental, divine connection.

Some have questioned whether substance dualism comports with the biblical picture of human beings. They contend that the picture of humans in the Old Testament is primarily ontologically monistic.[[3]](#endnote-3) Dualists respond that the Old Testament anthropological terms—*nephesh* (often translated as living being), *ruach* (associated with breath), *basar* (flesh, body, etc.), *qereb* (bowels), and *leb* (heart), with their variety and interchangeability, provide no basis for any ontological position, whether monism or dualism. Rather, the terms are to be understood as affirming the *functional* unity of human beings on earth. The dualist John Cooper, however, claims, the OT treatments of these terms “provide a footing for a clearly dualistic reading” (47). Cooper sees the dualism especially in the sources of the human components. The body comes from the earth and returns to it. The *ruach* or breath (life-force) comes from God: God breathed into what he made and it became a living being (Gen. 2:7). “Whatever each is, they amount to a mutually irreducible duality which God puts together to get one person. And that does not look as though it could be philosophically elaborated into monism” (Cooper, 53).

The New Testament, he further contends, “neither implicitly contains nor explicitly teaches a philosophical anthropology as such or any theoretically precise or systematically consistent definitions of body, mind, soul, or spirit. Its use of anthropological terminology is extremely complex and diverse” (Cooper, 106). However, here again he argues that although the NT continues the functional holism of the OT, it contains enough evidence to show that it embodies the holistic dualism that is more clearly present in the Intertestamental period. He particularly draws his evidence from the NT teaching that the resurrection does not occur immediately after death and that it posits an interim period between our death and resurrection during which the deceased exists as a soul and is to some extent conscious.[[4]](#endnote-4)

This dualistic perspective, developed in the Church Fathers under Platonic influence, predominates throughout church history. It is typical of the Reformation thinkers. For example, John Calvin writes, “[T]hat man consists of a soul and a body ought to be beyond controversy. Now I understand by the term ‘soul’ an immortal yet created essence, which is his nobler part…. [T]he conscience… is an undoubted sign of the immortal spirit… [T]he very knowledge of God sufficiently proves that souls, which transcend the world, are immortal, for no transient energy could penetrate to the fountain of life.” (I, XV, 2).[[5]](#endnote-5) The subsequent Westminster Confession of 1646 affirms that “The bodies of men, after death, return to dust, and see corruption; but their souls, which neither die nor sleep, having an immortal subsistence, immediately return to God who gave them…. At the last day, such as are found alive shall not die, but be changed: and all the dead shall be raised up, with the selfsame bodies, and none other (although with different qualities), which shall be united again to their souls forever” (32, 1 & 2).

For Christians like Calvin, not only is God the source of the human essence, which embodies God’s image, but the human essence makes possible our very knowledge of God. Christianity is thus integrally intertwined with anthropology. To understand humans in their deepest being is to understand them religiously, in relation to God. “Man’s being, man’s nature, is to *stand in grace*, God’s grace…. [H]is essence is to be an object of God’s grace,… ‘to be related to God.…’ [T]his essential nature of man can never be without God, and turning away from God is not a possibility for this nature: it is ‘the ontological impossibility of man’s nature’” (Berkouwer, 91–92).

Despite the rise of modern science in the post-Darwinian age, anthropological dualism has not faded away but currently remains the most commonly accepted Christian view, although contemporary discussions are much more sophisticated, carefully attuned to scientific data, theories, and discussions. Richard Swinburne provides one of the more philosophically refined and thorough articulations of substance dualism.[[6]](#endnote-6) The physical properties belong to the body; the (pure) mental properties belong to the soul. In our current state, the brain and nervous system are necessary for human mental life. In making possible our reasoning ability, memory, and character these physical components are more intimately related to who we are than are any of our other physical parts, which also are necessary for our continued bodily survival. But although bodies are necessary to our current existence, we are not identical to our bodies. Swinburne gives the example of a neurosurgeon transplanting each of the two halves of the human brain respectively into two different bodies. In such a case, we could not tell which, if either, of the implanted bodies is us. Hence, persons are not the same as their brains (or bodies) (Swinburne 1986, 150). It is not that bodies are unimportant, but their continuity provides only indirect evidence of a person’s identity. There is something more to us than our continuing body, something that is the seat of our consciousness.[[7]](#endnote-7) What differentiates individual persons is not their mental properties, which as contingent could be duplicated in others, but their “thisness” to which each person has privileged access.

Swinburne does not deny the biological evolution of human beings. Indeed, animals also have souls, though structured differently from ours.[[8]](#endnote-8) But his creationist account of souls allows Christianity more fully to enter the anthropological picture and is more in line with Thomas Aquinas, who held that God implanted a unique soul in each individual prior to their birth. Swinburne is dubious that evolution can explain how the soul and its mental life arose, for science is incapable of explaining the evolution of mental life. “As far as we can see, there is no law of nature stating that physical events of certain kinds will give rise to correlated mental events, and conversely, there is nothing in the nature of certain physical events or of mental events to give rise to connections” (Swinburne 1986, 198). As to the latter, science cannot provide an explanation of why particular brain events cause particular mental events, and vice versa, for it is unlikely to be able to discover natural laws among or governing the phenomena. “There may be some natural law concerning when and how soul and body interact, but my argument suggests that there is not ... and in consequence scientists are unlikely to find one…. There are reliable correlations between the functioning of the brain and the functioning of the soul in general and in detail…. But the source of these correlations remains a mystery” (Swinburne 1986, 195; 1979, 161). Reliable correlations, yes; natural laws, no, if for no other reason than that mental properties differ from physical properties and cannot properly be reduced to physical properties that could be correlated with them; they fall outside the scope of physics and chemistry (Swinburne 1986, 192; 1979, 161–75).[[9]](#endnote-9) Furthermore, what no law of nature could determine is which, of all the many possible humans who have all the same properties as each other, come into existence as the result of some kind of process (for example, a process initiated by human sexual intercourse). This is because the difference between such humans (and so their souls) is not a difference of properties. Opting for a personal as over against a scientific explanation, he traces both the origin of the soul and its functioning in terms of the established correlations between brain states and mind (consciousness) to God. “Only chance or God could determine that I rather than someone else with all the same properties as myself emerged from my mother's womb” (Swinburne, forthcoming). What must be sought for is a personal explanation of the establishment of the functional relationship that holds between brain states and mental events, and this relationship is provided through the creative, law-setting activity of God, “who, intentionally keeps the laws of nature operative … and also brings it about that there is linked to the brain of an animal or man a soul which interacts with it in a regular and predictable way” (Swinburne 1986, 198). As to the former—the origin of the soul itself—Swinburne adopts a creationist view, namely, “the creation of each human soul anew by God who gives one to each embryo able to receive it” (1986, 199).[[10]](#endnote-10) In Swinburne’s dualism, Christianity envisions God involved in the origin and functioning of something that science cannot explain, or at least has been unable to explain to this point.[[11]](#endnote-11)

#### A more traducian view of the soul can be found in William Hasker’s emergentism. Taking inspiration for his anthropology from contemporary science, Hasker holds that “the human mind is produced by the human brain and is not a ‘separate element’ added to the brain from the outside.” “When elements of a certain sort are arranged in the right way, something new comes into being, something that was not there before.” (Hasker 2012, 481). Mental properties, not explicable in terms of brain functions, “manifest themselves when the appropriate material constituents are placed in special, highly complex relationships…. Mental properties are emergent (when) they involve emergent causal powers that are not in evidence in the absence of consciousness” (Hasker 1999, 189–90). What emerges is a substantial individual that has a unity of consciousness and exercises causal powers. Religion plays into this scenario differently from traditional Christian substance dualism. Since matter contains the potentiality of life inherently, there is no need for God or religion to explain how souls arise. It is only at the other end of life’s spectrum that God appears to be necessary to give life after death, since the ground of mind, the brain, experiences death.[[12]](#endnote-12)

Both of these views—that the soul emerged at some point in the ancestral human lineage or that God implants it in humans—encounter the problem of the “first.” At what point did the first ensouled *human* being arise? On the creationist account, did God implant souls into Neanderthals or Denisovans, or only in homo sapiens? Did the first ensouled human wonder whether his or her parents had self-consciousness, moral consciousness, or free choice? If one takes the view that even animals have souls (Goetz and Taliaferro, 201), then at what point did the first human deriving from a proto-human have the self-consciousness, freedom, and moral awareness that characterizes *human* souls? Would the parents of the first human have had an animal soul and hence not been morally accountable, or does the ensouled lineage prior to humans include beings that are morally accountable and self-consciously aware? It might be replied that the absence of a definitive break with our ancestors is not all that significant, though this fails to accord with the significance dualists give to self-consciousness, freedom, and moral choice in determining that humans have or are souls (in a functionally unitive way) and have a trajectory toward immortality that animals lack.

For the anthropological dualist perspective, Christian concerns also enter in end-of-life discussions, when one thinks about death and the possibility of life after death. The question remains whether “this evolved human soul can survive on its own apart from the body which sustains it” (Swinburne 1986, 298). Without continuity of brain or body and denying the Platonic view that the soul is naturally immortal, Swinburne is left to consider the continuity of existence of the soul without its natural biological accompaniment. At this point he relies on the possibility that “God, being omnipotent, would have the power to give to souls life after death (and if there is no natural law which ties the functioning of a soul to the operation of a brain, God would not need to suspend natural laws in order to do this)” (1986, 309).

At death the body ceases to function, and is often totally destroyed in the crematorium. Hence the goodness of the Christian doctrine of the resurrection of the body. But what makes a body my body is its connection with my soul; and it is only the continuing existence of my soul after my death which would make possible the resurrection of a body which is mine; that would consist in a body being joined again to my soul. I have not argued that the soul continues to exist after death. I believe that we need the Christian or some other religious revelation to show this. But what I have shown is that we each have a soul as our essential part, and so that the destruction of our bodies does not entail the destruction of us. It leaves open the possibility that the soul continues to exist and will be joined again to a body (Swinburne, forthcoming).

The continuance of the soul for Swinburne, in contrast to Plato (*Phaedo* 100–107), is not a given but due to an intentional act of God. During this process, persons continue their personal existence possessing their “most central desires and beliefs.” The functions this disembodied soul might have can be debated, but he thinks that it is reasonable to believe that at some point God will provide the soul with a body, either temporary or permanent, to enhance its functioning.[[13]](#endnote-13)

Christianity, affirming the existence and activity of a personal God, and not philosophy or science, is the guaranteeing advocate that individual human existence does not end in death. For Christians, all of this is presaged in the death and resurrection of Jesus Christ. The Apostle Paul constructs what might be termed a historical-theological argument for life after death. He contends that if there is no resurrection of the person from the dead, then not only has Christ not risen from the dead but our faith in him is wasted effort. But, in *modus tolens* fashion, Paul contends that Christ not only died for our sins, but was given new life following his crucifixion. Because Jesus Christ historically died and lived after his death, though we die, we also shall live after death. The historical fact grounds the theological promise (Davis 1993; Craig 1989; Reichenbach 1978, ch. 8).

There are oft-repeated philosophical difficulties with this dualist view of the human person. One is the problem of accounting for the possibility of causal interaction between two radically diverse substances with nothing in common, one that is non-spatial, non-physical, and private and the other that is spatial, physical, and public. One response is that often we don’t know *how* things happen, only *that* they do, and soul-body causation constitutes one such instance (Goetz and Taliaferro, ch. 5). I know that I can voluntarily raise my arm, but I do not know how my intending causes it to happen. Another problem is how to account for the identity of the soul over time if being embodied is not essential to it. What noncontingent properties (for example, other than individual memories, beliefs, desires, etc.) would it have that would individuate it? Swinburne suggests “thisness,” but what individuates particular instances of thisness? Others suggest self-consciousness or a first-person perspective, but these presuppose a unique self or soul rather than identifying its uniqueness. Others suggest that although the soul is simple, it has multiple properties (Goetz and Taliaferro, 144). But these properties, delineating powers and capacities, would be contingent and insufficient to account for identity over time. A third objection arises from the ability of neuroscience to identify brain locations for what appear to be mental processes, such as reasoning, memory, and perception. The dualist’s response is that this establishes only causal correlation, not causation (Goetz and Taliaferro, ch. 6),[[14]](#endnote-14) but neuroscience and technology have advanced significantly our ability to identify precise connections.

My interest is not in rehearsing or debating the critiques but in tracing dualism’s close connection to the religious concept of human beings that has informed much of Western thought prior to and through the twentieth century. Significant challenges to this anthropological dualism, where God places souls in each individual and gives hope for life after death, arose out of the Darwinian worldview of the 20th century, and to this we turn.

Phase Two: Humans as Biological Evolutes

Traditional Christian anthropology underwent significant reassessment in the 19th century. Although anticipated by the thoughts and writings of others, Darwin’s theories expressed in *Origin of the Species* in 1859 and *Descent of Man* in 1871 established a turning point in the scientific understanding of human beings. Darwin replaced divine teleology with a non-teleological theory of natural selection that lacked any anticipatable evolutionary direction or definite outcome. While intentional animal selective breeding imitated in part the process of natural selection, in species development no predetermined outcome was to be achieved or overall plan to be sustained. Natural selection had no master or divine operative breeder comparable to the inferred master designer in William Paley’s *Natural Theology*. The process was unconscious and random, the governed biological parts strictly material, not spiritual. Applied to humans, Darwinian thought pushed us closer to simians than to the angelic. Richard Dawkins writes, “If superior creatures from space ever visit earth, the first question they will ask, in order to assess the level of our civilization, is: ‘Have they discovered evolution yet?’ … (After Darwin), [w]e no longer have to resort to superstition when faced with the deep problems: Is there a meaning to life? What are we here for? What is man?” (Dawkins 1989, 1). For Neo-Darwinians, humans are the accidental product of eons of genes and their mutations, shaped by the changing environment through natural selection, possessing no transcendent significance.

Although many 19th century Christians accepted Darwinism, “opposition arose from the concern that common descent with the rest of the animal kingdom might reduce humanity’s special role and value in creation … and subvert the moral order” (Alexander, 235), and these concerns in turn had implications for the compatibility of the Darwinian view with Christianity. As far as the rise of human beings goes, it is suggested that “The interlocking evidence for our origin in ordinary, endless processes explains and makes possible far more than do exalting stories of divine creation” (Moravec, 75). If the materialistic view of human persons is philosophically and scientifically satisfactory, God is not necessary to account for how humans came to be and for their nature and conscious functioning.

What then are we to make of the Genesis account of human creation; does not Darwinian science lay the axe to the Edenic forest? The answer depends on how one understands the Genesis narratives. One line of interpretation treats Genesis 1 and 2 as a foundationally historical and scientific account of how and for some when God originated the universe and its contents. This book of beginnings provides the Hebraic response to the ancient question why things exist and are as they are. Viewed as quasi-science or history, the story of God’s special act of creating the man out of dust and the woman from the man’s rib is difficult to square with a Neo-Darwinian account of human origins and lineage. However, an older tradition interprets the Genesis accounts not literally but theologically. From Philo and Origen to Augustine and Calvin the stories are treated figuratively, allegorically, or as literarily appropriate to the cultural context (Alexander, 239–40). If one understands the opening Genesis narratives as functioning as a theological-political document that describes how the Supreme Monarch establishes his kingdom and thereby justifies not only his claim to exclusive possession of everything in it but to his distribution of it, the hermeneutical focus properly changes from a scientific or historical account to theology (Reichenbach 2003). Establishing just claim to the promised land is critical to the text, for the remainder of the biblical Hexateuch focuses on how God assigns and administers specific portions of his land, selecting and assisting a particular group of persons, to the exclusion of others, to occupy and labor on it.[[15]](#endnote-15) Given this hermeneutic, no conflict arises with the Darwinian account of the biological origin of humans. The purpose of the Genesis creation accounts is not science or history, but theology that helps us understand how Israel viewed divine sovereignty in regard to their occupation of the land. The Genesis writers did not have the modern sense of science and history, but rather saw and wrote about human events as they connected with God and his sovereign purposes.[[16]](#endnote-16) It puts us in position to anticipate two central motifs of the Pentateuch: the promise of a specific portion of the land to Abraham and his descendants and the justification of its conquest and resettlement.[[17]](#endnote-17)

But, one might retort, what about the Christian central doctrine of the *imago Dei*? Many Christians have understood the image of God ontologically or *substantively*, expressed in human features like intelligence, ability to reason, and the moral decision-making faculty that emulate, in some analogical way, those of the creator. Augustine held that the *imago Dei* refers to the rational soul, and specifically to its unique Trinitarian abilities of memory, understanding, and will (love) (1948c, 6.12; 141.6). Thomas Aquinas maintained that although the likeness is analogical in that God possesses the characteristics virtually but not formally, the ontological likeness in humans is grounded in the intellectual or rational soul (I, Q4, a.3). Similarly for John Calvin, “The proper seat of his image is in the soul…. The image of God … is spiritual” (I, 115.3). At the same time, other Christians have different views on the *imago Dei*. Martin Luther, speaking of our *moral status* before God, sees in it the claim that humans were created holy, morally perfect (62-63). This is consistent with the Apostle Paul’s emphasis on the image’s moral dimension that the new self that Christians are to clothe themselves with is to be like God in righteousness and holiness (Eph. 4:24; see also Col. 3:10 and 1 Cor. 11:7). Karl Barth interprets it *relationally* and interpersonally as emulating the relationship within the Trinity (184–86). The interpersonal I-Thou relationship between the persons in the Trinity models the relations holding between us and God and among human persons. A fourth view is that the *imago Dei* is *functional*, addressing the representative and stewardship functions that, in the ancient cultural context, held between emperor and vassal and that hold between God and us (Reichenbach 2003).

What legitimizes diverse interpretations of the doctrine of the *imago Dei* is the significant ambiguity of the biblical data. In various ways, scripture uses but does not define the term. The meanings Christians give to the term are refracted through the philosophical, theological, scientific, and cultural lenses of the interpreters. Dualists envisage the *imago Dei* in terms of the implanted soul. Non-dualistic existentialists interpret the concept ethically, relationally, or functionally. This legitimizes the claim that the biblical concept of the *imago Dei* is, to a significant degree, open to interpretation, depending on the presuppositional framework invoked. Thus, although the *sine qua non* of the concept is that it connects the person to God, we do not have to adopt an ontological interpretation. Relational and functional interpretations suffice. As divinely appointed stewards, placed on earth in God’s image, we have the function to act on behalf of God with respect to other persons and to the environment, implementing God’s commands to fill, rule over, and care for the earth. “As Paul Ricoeur has said, the concept of the image of God contains a ‘wealth of meaning’ not exhausted in a single interpretation” (Herzfeld, 504).

What can we say about the role of religion at the other end of the life spectrum if we adopt a Neo-Darwinian view of human beings? Neo-Darwinian materialists almost uniformly maintain that there is little room for persons’ conscious life after their death. If mental states are identical with, the phenomena of, or supervenient on brain states, the demise of the brain should make life after death impossible. “In the face of all the evidence that is being accumulated by modern research in neurology, it is hard to believe that after the dissolution of the brain there could be any thought or conscious experience whatever.”[[18]](#endnote-18) “It seems preposterous to assert that, when the brain is completely destroyed, the mind suddenly returns intact, with its emotional and intellectual capacities, including its memory, restored” (Edwards, 296).

These objections are raised apart from the consideration that God might be involved in some special way in bringing about our personal life after our death. After all, from the beginning Christians believed in resurrection of the person. If the psychophysical person is completely destroyed, then resurrection must be understood in terms of God’s re-creation of the person. Theologically it sounds simple; if God could create the world initially, it seems reasonable to maintain that an almighty, omniscient God could re-create us physically with all the brain properties we had prior to death so that, with our minds and consciousness emerging from the physical, we are the same person who died. To accomplish this God could program our re-created brain to have neural components and structures identical or fundamentally similar to those we had when we died (or at some time prior to our death) so that we would have substantially the same ideas, perspectives, memories, and personality traits that we had, at their maximal functioning, before we died. The result would be that we are gap-inclusive persons: we live a life on earth, die, and then are re-created at some future time (Hick, 278-96). God, being central to Christian thought, would thus have a central role to play in this dimension of our future ontological existence.[[19]](#endnote-19)

# Some have questioned whether re-created persons would be identical with the deceased rather than merely replicas. “Attempts to conceive of a resurrection without a soul have encountered serious difficulties over the personal identity of the resurrected (or recreated) person with the individual who previously lived” (Hasker 2012, 485–86.) One might suggest several criteria that something (B) must satisfy to be the same as A and not merely a replica. For one, since B is physical it must look the same as A. By using this criterion I recognize my car in the parking lot. In walking down the aisle I see that other cars differ from mine in not being a blue Buick Verano. However, physical similarity is not a necessary condition of identity, for although we are ontologically the same persons as when we were in utero, there is little if any physical similarity between us now and this early stage of our existence. And if an identical physical replica can be created, it is not sufficient to establish identity either.[[20]](#endnote-20)

# A second suggested criterion of identity is spatiotemporal continuity; if one thing is to be identical with another they must be connected spatiotemporally; possession of essential properties *connectedly* over time and space is necessary and sufficient for something's identity. Since the deceased and the re-created fail on this criterion, it is argued that the re-creation scenario itself fails. Now it is true that we generally consider spatiotemporal continuity necessary for identity.[[21]](#endnote-21) And if we invoke this criterion, it must be admitted that it is difficult to find material objects that fail this criterion and still are identical rather than replicas. Yet we make interesting exceptions to the spatiotemporal continuity criterion of identity. We do not require connected continuity for abstract objects such as wars, pieces of music (the same piece can be played by different orchestras at different times and places), or even this chapter that, if erased on my hard drive after being copied onto another computer, would be the same chapter.

# In particular, we allow exceptions to spatiotemporal continuity in special considerations of persons. Consider the way persons *as characters* function in plays. Hamlet has identity throughout the acts of Shakespeare’s play *The Tragedy of Hamlet*; we experience no logical difficulty considering him *in the play* as a gap-inclusive person whose existence is punctuated by intermissions between the five acts. He appears in Act I, disappears, and then reappears in Act II. He could even have new memories, perspectives, and ideas in subsequent acts and still be Hamlet. Of course, the actor Richard Burton who plays Hamlet has spatiotemporal continuity between acts, but we clearly can distinguish between Burton and Hamlet. We could go back stage and talk to Burton between acts, but not to Hamlet. He simply does not exist between acts. Indeed, the very questions we would pose to Burton about his acting would make little sense to Hamlet. It might be objected that the content of the respective acts in the play, which may contain references to experiences off-stage, requires we assume that the character has a life between acts. But one could write a play in which the characters expressly have no experiences between the acts (it would take little modification of Beckett’s *Waiting for Godot* to accomplish this). As persons in the context of plays have identity despite being gap-inclusive, so it is possible for people in real life to be gap-inclusive (lack spatiotemporal continuity) with God’s re-creating assistance.

Some formulate a third criterion of personal identity in terms of psychological criteria such as one’s memories and other mental states (Locke, II, 27). Others have replied that even here, psychological criteria fail to sufficiently establish identity, so that although re-created persons possess the same memories, beliefs, intentions, desires, and so forth once possessed by the deceased, they might not be the same as the deceased. B. A. O. Williams suggests that we consider the case of Guy Fawkes (Williams, 239). After Guy’s execution for trying to blow up Parliament, Robert and Charles both claim to remember being Guy Fawkes and hatching the plot. That is, they both claim to have Guy’s memories and possess other psychological features that are identical with Guy’s. If just one person had the deceased Guy’s memories, we might feel free to identify that person as Guy Fawkes, using a psychological criterion. But if two persons claim to have those memories, we cannot say that only one really is Guy and the other a replica, or even that both are replicas and not Guy. Both satisfy the psychological criterion for being Guy. But neither can we say that both are Guy, for by the principle of the identity of indiscernibles one person cannot be two numerically different people. Hence, the objection goes, God could not recreate one person, since this entails the possibility that as omnipotent he could make multiple copies of that person.

But granting that God is omnipotent, what we mean by omnipotence is that God can do what is logically possible or that the doing of which by an omnipotent being is logically possible (Mavrodes 1963). It is logically impossible that God create two or more numerically distinct individuals to be simultaneously identical to each other [either re-create Guy (say Guy2) while Guy is still alive or create Guy2 and Guy3 to be identical while living simultaneously]. But this does not prevent God from re-creating one person when the first is deceased. Williams’ multiple replica criticism fails, for it violates God’s omnipotence. The objector is misled by contending that since *a* (God can create Robert to be identical to Guy) can be true and *b* (God can create Charles to be identical to Guy) can be true, both *a* and *b* can be true simultaneously. But this does not follow: although it is true that I can plant a red oak tree in my front yard and that I can plant the same tree in my back yard, it does not follow that I can plant it in both simultaneously. In short, re-creation of the deceased person is a possible divine action.[[22]](#endnote-22)

Lynn Baker claims that “since the universe itself and its inhabitants evolve, human persons come into being at some time. But that only means that they are emergent, that they are not reducible to subpersonal or nonpersonal items” (Baker 2011, 14). She goes on to suggest that a person is a person because it possesses a first-person perspective. Suppose that God made 100 replicas of my body. Although these replicas have identically constituted bodies, they cannot have my first-person perspective, what makes me me. And even though others are not able to distinguish me from the replicas, I know who I am in virtue of my first-person perspective (a view that is similar to Swinburne’s “thisness,” except that the first-person perspective is not substantial). We don’t need to appeal to a criterion to establish personal identity, for there is no criterion for sameness of first-person perspective. We have reached a basic experience. She notes that a distinct advantage of this is that it “allows that a person’s resurrection body may be non-identical with her biological body” (Baker 2000, 160). Indeed, it may even be a spiritual body; “all that is needed is God’s free decree that Smith be constituted by (a) resurrection-body” (Baker 2011, 16). The upshot of this is that God’s re-creation of the person is possible.

Hence, there is no reason to dismiss religious ontological considerations per se as being incompatible with a Neo-Darwinian view of the human person. The Genesis scenario of human arising might no longer have currency where this is taken as a piece of science or history, but it can still tell us about God’s sovereignty, about how God looks at and cares for humans, and about desired human responses to God. And even on a reductionistic, Darwinian materialism, life after death is possible wherethere is an omnipotent or almighty God who can re-create persons who have the same first person perspective and psychological features had by someone some time before death. No obvious logical objection makes this impossible when we consider what it is to be omnipotent. Indeed, in the next section we will extend the discussion to whether ordinary human beings can bring about human re-creation.

Of course, while these ontological considerations are relevant to the question of whether a Darwinian anthropology runs counter to Christianity, it also is the case that nothing in the post-Darwinian account militates against human beings being religious, practicing religion, having a relationship with God, or having meaningful and true religious beliefs. In the case of the latter, the causes of having the beliefs about God or spiritual things are irrelevant to the truth of those beliefs. Thus, the claim that the science of humans is incompatible with Christianity reflects a certain bias but is groundless. The existence of God, the objectivity of salvation, and the meaningfulness of a religious life must be determined on grounds other than those having to do with the causes and grounds of these mental concepts.

Phase Three: Humans as Replicable Programs

# “As the archaeology of our thought clearly shows, man is an invention of recent date. And one perhaps nearing its end. If those arrangements were to disappear as they appeared, if some event of which we can at the moment sense the possibility…were to cause them to crumble, … then one can certainly wager that man would be erased, like a face drawn in the sand at the edge of the sea” (Foucault, 387).

The biological changes that led to the development of homo sapiens have proceeded exceedingly slowly. It took hundreds of millions of years to evolve from single to more complexly-celled organisms, and from there to fish, reptiles, and mammals, and finally to homo sapiens. Even the development of humans has been painstakingly slow, their coming into existence within the last million years or so. Similarly with the evolution of human knowledge and understanding. Although the speed with which technology has progressed has dramatically improved—from fire and the wheel to metal working and on to complex communication and computational technology—human mental development remains challenged by several intrinsic features. It is limited physically by the size of the brain and the container in which it is housed. We cannot grow a bigger cranial cavity rapidly enough to accommodate evolving a bigger brain with greater mental capacity and functionality.[[23]](#endnote-23) Second, it is limited by the number of connections that the human brain can make. Third, it is limited by the speed at which the brain can function. Although it possesses a strength in redundancy and parallel processing, the brain has the “excruciatingly slow speed of neural circuitry, only 200 calculations per second,” which ultimately will be outstripped by modern high-speed computers (Kurzweil 1999, 103). Fourth, all of this means that human mental development is limited in the amount of knowledge it can possess and transfer. Finally, it is limited by the physical bodies required to enable the transfer of knowledge. In a Nietzschean sense, “The world is a bad place not because it is evil, but because it is ignorant and inadequate” (Geraci, 148).

Strong artificial intelligence (AI) advocates project the eventual (sooner rather than later) replacement of DNA-based human evolutes with human-created, silica-based computational machines that can process information, without loss, millions of times faster and more accurately than the carbon-based neurons in our brain. They look forward to “a mechanical future in which human beings will upload their minds into machines and will enjoy a virtual paradise in perfect, virtual bodies” (Geraci, 140). “Ultimately, billions of nonbiological entities can be the master of all human and machine acquired knowledge” (Kurzweil 2002, 13).

This evolution of the new human will occur in various stages, depending on the speed of technological advance. First, we will implant mechanical devices directly into our brains.

The implant will generate the streams of sensory input that would otherwise come from our real senses, thus creating an all-encompassing virtual environment that responds to the behavior of our own virtual body (and those of others) in the virtual environment. This technology will enable us to have virtual reality experiences with other people—or simulated people—without requiring any equipment not already in our heads (Kurzweil 2002, 14).

The virtual reality apparatus now marketed are toy harbingers of this technological future extravaganza. Subsequently, we will download all the information now contained within our brains to computers. Our personal reality will accompany that downloaded information to machines that possess numerous positive features, including that they can live forever. Even if one computational machine begins to break down it can transfer its information to other computers, so that its demise will not terminate our personal existence. We will move to the new machine, being not only immortal but without loss of content, memory, emotion, or belief.

Strong AI argues that we need to go beyond simulating and replicating the brain structures to downloading the content of the biological structure. Downloading will occur by reverse engineering our brain. “We can tap the architecture, organization, and innate knowledge of the human brain in order to greatly accelerate our understanding of how to design intelligence in a machine. By probing the brain’s circuits, we can copy and imitate a proven design” (Kurzweil 1999, 120). The first step is to perform multiple MRI scans of brains, one layer at a time, to see every neuron and its connections. Eventually, the data acquired can be

assembled into a giant three-dimensional model of the brain’s wiring and neural topology…. Once the structure and topology of the neurons, the organization of the interneuronal wiring, and the sequence of neural firing in a region have been observed, recorded, and analyzed, it becomes feasible to reverse engineer that region’s parallel algorithms. After the algorithms of a region are understood, they can be refined and extended prior to being implemented in synthetic neural equivalents (Kurzweil 1999, 121, 124).

In a slightly different, more recent scenario, Kurzweil thinks that this can be done by scanning the brain from the inside, thereby identifying all the neurons, axons, dendrites, synapses, and other neural components (Kurzweil 2002, 36). To accomplish this Kurzweil suggests that we imbibe self-replicating nanobots that can swoop into the all the regions of the brain, sidle up to the functioning neurons, and then spy on the firings and connections that they make. When the information these nanobots acquire is transmitted to the computer systems, these systems will then be able to mirror everything going on in the biological brain and eventually become that brain. In the meantime, these systems can even create a virtual reality in our own brains by creating their own “sensory information.”

Nanobot technology will provide fully immersive, totally convincing virtual reality … by taking up positions in close physical proximity to every interneuronal connection coming from all of our senses…. If we want to experience real reality, the nanobots just stay in position and do nothing. If we want to enter virtual reality, they suppress all of the inputs coming from the real senses, and replace them with signals that would be appropriate for the virtual environment (Kurzweil 2002, 48–49).

In the age of the mind, machines will be self-taught and self-communicating. “Once a computer achieves a human level of intelligence, it will necessarily roar past it. Humans will no longer have intellectual advantages over machines.” (Kurzweil 1999, 3). Intelligent machines will have values and emotions, although not necessarily the same as ours. These cognizant machines will be able to read natural language documents, distill the information, and share it with others. In effect, computers will be able to access and read all of the world’s writings, from books and magazine to pamphlets, and put the meaning of it into digital form that can be searched and shared in fractions of a second. The glorious paradise of the information age will occur when the biological is surpassed by the most learned, complex, rapidly-processing machines that embody our software. The Age of Mind will arrive.

But are these machines truly learned; is reading the literature of the world’s libraries the same as understanding the writings? Is there reason to think that the machines have attained to the stage of semantical apprehension? We have yet no reason to think that our computers not only process data but understand the data and their significance. My computer program can scan and print a book it finds on Google Books, but it gives no evidence of understanding the story. Siri can talk to me and answer my questions, but she gives no indication that she understands and is able to reason or cognitively appreciate what she communicates.

Furthermore, if all information can be shared, what constitutes our individuality or the individuality of the software of the machines? In this complex downloading and replication will personal identity be lost; will it be an identity disbursed on a number of machines that precisely replicate the information derived from the human brain? Will the information’s original uniqueness be realized only because it is housed in different hardware? And even if we can get the matching structures to replicate the patterns of the biological entity, what reason do we have for thinking that the experienced phenomena are the same, that the mind of one is the mind of the other?

We might raise this question from two perspectives. Suppose that the function of identity is fostered by at least two things, memory and body. If memory is merely neural, then replicating the memories in the machines—remember that this information is sharable—will not enable us to differentiate beings. Multiple beings will be programmed with the identical downloaded memories. What about bodies? Kurzweil notes that “many of our thoughts and thinking are directed towards our body and its survival.” So, at least at this present state of human being, the body plays an important role. But strong AI envisions various scenarios: using technology to gradually replace parts of our body that are defective or nonfunctional, building mechanical bodies using nanotechnology (constructing them atom by atom) (Kurzweil 1999, 148), or employing virtual bodies (to avoid the dangers of nanotechnology going astray). The individual body becomes less significant; everything is converted into “increasingly pure thinking stuff. A ‘Mind Fire’ will burn across the universe” (Moravec 1999, 14). If we need bodies, we can link the AI with these other bodies, even just virtually, so that in effect the particular body housing us becomes irrelevant; we are software, not hardware (Kurzweil 1999, 129). But then the physical body is irrelevant to who we are, and the same software—programs and data and memories—are capable of being replicated in multiple physical or virtual theaters. The availability of multiple program instantiations eliminates any identity: this very chapter, replicable on innumerable machines, will be identical across them. If merely virtual, our software existence will not be differentiable. Kurzweil’s reductionistically rationalistic understanding of human beings omits so much of what it is to be human: our interaction with the environment, our ability to converse, and our ability “to navigate the world of relationships, … express and perceive emotions, to manage one’s own emotions, and to use emotions to facilitate thought” (Herzfeld, 506).

Suppose, instead, we think of identity in terms of Baker’s first-person perspective. Will each of these machines have the same first person perspective, let alone have a first-person perspective at all? To determine this, we need first to determine whether these new human beings have consciousness or self-consciousness. We might look at their hard- and software and analyze their circuits. But this only tells us what they are structurally. It delineates their mechanisms but it does not tell us about their self-consciousness or first-person perspective. They might give behavioral responses that indicate something about their memories, perceptions, or feelings, but again, how do we know that these objective reports indicate subjective consciousness or reflect a first-person perspective, that there is a unique (somehow different from all the other computational machines), conscious (aware that it is a being) being present?

Simulation of consciousness is not real consciousness, just as simulation of digestion is not real digestion. “Actual human brains cause consciousness by a series of specific neurobiological processes in the brain. What the computer does is simulate these processes, constructing a symbolic model of the processes. But the computer simulation of brain processes that produce consciousness stands to real consciousness as the computer simulation of the stomach processes that produce digestion stands to real digestion” (Searle, 66).[[24]](#endnote-24) Computers cannot think or be conscious, Searle argues, because they are not structured to cause thinking or consciousness, only to simulate it. More is needed than mere computation using symbols to create consciousness. Here is the disputable difference: Kurzweil does not think that he is creating simulations, but rather that the mechanical is a “functionally equivalent recreation” of the biological brain and hence of the person (Kurzweil 2002, 133).[[25]](#endnote-25) Critics of AI think that creating simulations is all that is being accomplished by this science fiction scenario.

Supposing that strong AI’s conception of the future is possibly realizable, that re-creation does not violate identity (as we discussed above). What has this to do with religion? First, the limited success but hopeful projections of AI have led to skepticism regarding the relevance of religion to AI’s conception of future human existence. While many see no place for religion, others appear more conciliatory. The title of Kurzweil’s book, *The Age of Spiritual Machines*, seems to indicate that religion will play a significant role in the “new human.” We will be “spiritual machines.” On closer inspection, however, by “spiritual” Kurzweil means something quite different from those who use the term religiously. For him, to be spiritual is to be conscious. It is that by which we “transcend our everyday physical reality” (Kurzweil 1999, 149). “Just being—experiencing, being conscious—is spiritual, and reflects the essence of spirituality” (Kurzweil 1999, 153). This “new being” will have access to spiritual experiences—“a feeling of transcending one’s everyday physical and moral bounds to sense a deeper reality”— at will (Kurzweil 1999, 151). If there is a God spot—a particular locus of nerve cells in the frontal lobe that is active in religious experiences, this could be recreated in the computerized “brain,” such that, when stimulated, the computational person would have religious experiences of God. With its virtual body, it can experience activities such as worship, praying, meditating, even evangelizing other spiritual machines by connecting with their “spiritual dimension.”

On this scenario, God no longer is relevant to the origins of the new being. Humans now are free to create the new humans in their own image, either as bodily disconnected computational machines living in virtual reality, or as cyborgs manipulating a mechanical body. The *imago Dei* will be replaced with the *imago māchinae*, or better, *imago indiciōrum*. One looks to the replicators for guidance as to what the new being will remember, think, feel, desire, and believe, for the downloading and replication can now be selective, taking from the individual human brain what it wants and discarding the rest. Once downloaded, the information can be shared selectively among other machines, either actually or virtually.

As to the other end of life, immortality will be achieved by human disposition of information segments without any reliance on God. If humans can replicate individuals programmatically in machines, they can continue to replicate that program in future machines, so that the program can live forever, connected with diverse virtual or artificial bodies. Humans now are ontologically freed from God and mortality. As Donna Haraway puts is, “The cyborg would not recognize the Garden of Eden; it is not made of mud and cannot dream of returning to dust” (Haraway, 151). It might be granted that the machines could have spiritual experiences and be virtually connected to others, but God is no longer necessary for any religious behavior, encounter, or experience. We might even create a virtual God to create God experiences.

Morality, Freedom, and the Person

Sherry Turkle writes, “An unstated question lies behind much of our current preoccupations with the future of technology. The question is not what will technology be like in the future, but rather, what will we be like, what are we becoming as we forge increasingly intimate relationships with our machines” (quoted in Wallach, 38). Indeed, what will we be like if strong AI has its way with us, making the intimacy complete by incorporating us as software into machines? If we are merely software accessible by diverse computation machines or if we are software programmed into robotic bodies, have we lost our selves? It is true that we have abandoned our biological heritage, but neither Christian anthropological dualists, some Christian anthropological monists, nor strong AI theorists have felt it necessary to preserve the biological. The Christian dualist understands our fundamental selves to be non-biological, divinely implanted spiritual souls. Some Christian Darwinists, such as Baker, following 1 Cor. 15, do not see us as essentially biological, for we can be divinely re-created as spiritual bodies (without specifying what this means other than it is nonbiological). The strong AI theorist understands us as fundamentally replicable programs that can be taken out of the biological and inserted into the computational or robotic. Consequently, it is not the departure from the biological per se that might, in itself, prove worrisome—though indeed it might if we are intrinsically biological.[[26]](#endnote-26) Bostrom’s Principle of Substrate Non-Discrimination—“If two beings have the same functionality and the same conscious experience, and differ only in the substrate of their implementation, then they have the same moral status”—can be relevant here (Bostrom and Yudkowsky, 323). Whether our origin is biological or mechanical is irrelevant to our standing as moral agents valuable as ends in themselves; functionality not origin is key. Of a greater concern, however, is the possible loss of our selves. “The boundaries between self and other, between organisms and technologies, between same and different have not been more explicitly porous and contestable” (Midson, 195).

The ultimate goal of strong AI is the acquisition of knowledge. Its desire is to be able to access all acquirable information, to achieve the Kurzweil’s Singularity, when in the moment of supreme consciousness machine-instantiated knowledge surpasses that of all humans. In our new existence, we become like all-knowing gods. But knowledge simply for its own sake is not a worthy goal; we desire knowledge directed toward action, toward meaningful involvement in our environment and personal relationships with others. And not just any action, but from the religious perspective, toward morally significant choice and action toward other humans and God that invokes our self-awareness, freedom, and ability to make moral decisions. To what extent, we might ask, will these be affected by our being uploaded into computational beings or translated into robots or cyborgs?

If we are merely software programs with digital content, where the lines between our human selves and all else are definitively blurred, wherein will our freedom to choose and act lie? If we are the mere products of electrical discharges between silicon or biologically-structured chips, can we *choose* to do otherwise? It would seem that any “choice” made by us results from our computational settings. And just as worrisome will be the loss of our freedom to *act*, for as software we will not necessarily have access to anything that will implement our decisions. Our connections to implementing hardware may rely on other beings supplying us with relevant information and tasked with implementing our choices, either in facilitating our action or in granting us access to machines that can implement our desires. In our software state, we become restrictedly reliant upon others, whether masters, minders, or makers. The makers might be drudges that carry out our wishes, or more frighteningly, programmers and censors who select and channel our choices, inputs, and desires to serve their own purposes. In an utopian setting we allegedly have nothing to fear. But alas, utopias turn eventually and often quickly into dystopias, championed and led by those who would be our masters. Freedom of choice and action becomes a noteworthy casualty of human “progress” to the computational.

This loss of freedom leads to worries concerning moral decision making. Moral agency involves more than having functioning algorithms that are used to select between diverse if-then statements that calculate to the best probable outcome based on generalized experience with past events. Although not denying this utilitarian ethical function, moral agency presupposes self-conscious understanding of the role and position of the agent in the environment and use of deontic principles that themselves may be in conflict and need to be prioritized and contextualized. Both understanding and self-consciousness are problematic for both Darwinism and strong AI. Morality involves not mere assessment of consequences, but also intentionality, motivation, and reflection on the rules or duties that affect or govern our existence. These are distinctively mental properties that physicalists generally reject or else explain as mere phenomena of the physical.[[27]](#endnote-27) Those who hold to epiphenomenalism contend that mental properties are given off by or produced by physical properties and possess no causal powers of their own. We think and act when physical neural impulses motivate our physiological features, but according to them mental events make no difference to the physical world. Intentionality and motivation provide no independent, causal account of behavior.

The major argument against the causal efficacy of the mental is formulated in terms of the principle of physical closure. According to this principle, every physical event has a sufficient physical cause, such that physical events are caused solely by physical events. “A state that is causally sufficient for some effect excludes any mental state that supervenes on it from being causally efficacious with respect to the effect” (Menzies, 60).

This epiphenomenalist view encounters several difficulties; we note two. First, in denying causal activity to the mental, epiphenomenalism runs counter to our phenomenal experience where our mental events, like perceptions, pains, thoughts, beliefs, and intentions, affect our behavior. This position seems patently mistaken. I take pain relief medicine because I *feel* pain. I drive to church on Wednesday evening I *believe* the choir is practicing. I *desire* a burrito and so walk at noon to a nearby Mexican restaurant.

Second, there is reason to think that the mental makes a real difference. In particular, a real difference holds between a choice that results from mere physical causes and a choice that results from rational deliberation, that is, a choice that we make for good reasons. Only the second allows us to assess the *rational* value of our choices. We not only want to make choices, we want to make good choices, where good is considered as both successful and moral. To do this requires that we deliberate carefully about the options, and if our deliberation is rational, we decide based on sound and cogent argumentation using what we take to be the best evidence. But if our mental processes are caused, determined or realized by arational neural events, we can account causally for our choosing but not for our drawing *rational* conclusions, deliberating *rationally*, or choosing based upon the strength of the support we find in the evidence. Physical, electro-chemical transferences in the brain are entirely arational, governed by deterministic or probabilistic physical laws about energy transfer, with their own subterranean randomacy. But when we speak about assessing the evidence and engaging in sound, cogent, or moral reasoning, we introduce values and norms. Epiphenomenalism faces seemingly insuperable odds in attempting to explain the rationality of human mental life (Reichenbach 2016, 62-–65; Hasker 1999, 64).

Defenders of AI reply that this abstract, mental-map approach to understanding and consciousness can be overcome through concrete exemplifications. Understanding is the successful behavioral manipulation of concrete objects. We say that a child understands a mathematical equation (1 + 1 = 2) not when it can discuss this abstractly, but when the child can take one object, meld it with another, and treat the two conjointly or perhaps count them. If robotic machines can be complexly programmed to respond appropriately to diverse environmental clues repeatedly over time, do we not have grounds to say that they understood the situation? To understand, must it have a mental map of the situation it faces? But one might reply that understanding differs from mere behavioral response; even a robot can smile without getting the joke. It is not clear that materialistic machines and software can move from providing the appropriate response to mentally recognizing and assessing the situation.

Similar things might be said about self-consciousness or a first-person perspective. Some suggest that “perhaps the important properties of consciousness are best understood functionally, too. Even if computers won’t be conscious in exactly the same way as humans, perhaps they can be designed to function as if they have the relevant similar capacities…. Just as a computer system can represent emotions without having emotions, computer systems may be capable of functioning as if they understand the meaning of symbols without actually having what one would consider to be human understanding” (Wallach 68–69). But when we talk about reincarnating humans into machines, the “as if” won’t suffice. If the actual first-person perspective is lost, so is the self, and the machine is only “as if” me. If we are to be moral agents in this computational incarnation, we must be more than mere responders to the environment but be able to engage in intentionality and to provide moral justification of our actions, to be able to contend reasonably that particular actions are morally right and others morally wrong. This the arational cannot do; we must look elsewhere for consciously implementing the normative.

# To forsake our freedom to choose and act, to hand these over to censors and minders and implementers, to lose the rational, to abandon intentionality and moral conceptualization, to replace any real experience of God with any number of virtual realities hardly seem like advancements in morality, understanding, and, ultimately, in what it is to be fully human. In strong AI, even the functional understanding of the *imago Dei* has disappeared in the human drive to create from our own resources our own omniscience and immortality. No longer is it simply that the pig is our brother and the ape our sister; intelligent machines are our new relations. Reason and spirituality, once considered as the defining marks of humans, are welcomingly replaced by the reliance on science and technology. “If human beings are constituted by matter that obeys the same laws of physics that operate outside us, then it should in principle be possible to learn to manipulate human nature in the same way that we manipulate external objects” (Bostrum, 3) The posthuman, the “‘human,’ is achieved by escaping or repressing not just its animal origins in nature, the biological, and the evolutionary, but more generally by transcending the bonds of materiality and embodiment altogether” (Wolfe, xv). It is to move beyond a mere extension of the human (Wolfe, xviii).

# The post-humanist contention is that we must leave behind the discrete distinctions thought to separate the human from nature and from machines. Once done, we can open up the human to new possibilities not confined to traditional or current conceptions of being human. Categories of freedom, self-consciousness, moral decision making, even the *imago dei*, fade as new, trans-human constructs arise. The human is deconstructed and rearticulated with new, unforeseen prospectives. As in the nineteenth century we transcended the biblical and Enlightenment dualism between animals and humans by seeing how evolution ended speciesism, so now we can transcend the Cartesian distinction between animals and machines to welcome the extension or transcendence of the human. “The enhancement of human intellectual, physical, and emotional capabilities, the elimination of disease and unnecessary suffering, and the dramatic extension of life span. What this network has in common is in the engineered ‘evolution’ of post-humans, defined as beings ‘whose basic capacities so radically exceed those of present humans so as to no longer be unambiguously human by our current standards.’… ‘Transhuman’ is their description of those who are in the process of becoming post-human” (Garreau, 231-32). Julian Huxley wrote: “The human species can, if it wishes, transcend itself—not just sporadically, an individual here in one way, an individual there in another way–—but in its entirety, as humanity. We need a name for this new belief. Perhaps *transhumanism* will serve: man remaining man, but transcending himself, by realizing new possibilities of and for his human nature” (Huxley, *New Bottles*, 17). More radically, the “openness and incompleteness of the human” moves us, if not to this transcendence, to the breaking down of distinctions between human, animals, and machines, making us more readily acceptive of mechanistic or computational transformation (Midson, 45).

At the same time, we are left to wonder what values and virtues will guide science and technology and their craftsmen in this final proposed remaking of humanity (Lewis; Reichenbach 1982). We are assured that posthumanism, which “emphasizes empirical science and critical reason—rather than revelation and religious authority —as ways of learning about the natural world and our place in it,” will provide the ground for morality (Bostrum, 3). The morality, however, is not a traditional morality, but one of posthuman construction, where what is valued is independent any human uniqueness and traditional humanist values. But when one couples this outlook with Huxley’s view that “the working out of an effective and acceptable eugenic policy will be seen as not only an urgent but an inspiring task, and its political or theological obstruction as immoral” (Huxley, *Religion*, 206), we have legitimate grounds for significant worry.

Ultimately, we must decide whether or not Christianity has made a cardinal error (Midson, 23) in affirming the uniqueness of the human, of seeing a difference between humans, animals, and machines. Post-humanism thinks that we have erred. But if there is something uniquely worth preserving in humans, in their self-consciousness, in their first-person perspective, in their freedom and moral choosing, even in their earthly biologicalness, then the third stage of being human or post-human, and whatever succeeds it, poses a serious concern for Christian theology.[[28]](#endnote-28) As Fukuyama warns,

Biotechnology will cause us in some way to lose our humanity—that is, some essential quality that has always underpinned our sense of who we are and where we are going, despite all the evident changes that have taken place in the human condition throughout the course of history. Worse yet, we might make this change without recognizing that we had lost something of great value. We might thus emerge on the other side of a great divide between human and posthuman history and not even see that the watershed had been breached because we lost sight of what that essence was (101).

It is a vision of humans, proffered not only theoretically but researched practically, that Christian theology must address in its on-going dialogue with science.

References

Alexander, Denis R., 2012, “Creation and Evolution,” in *Christianity and Science,* Stump and Padgett, eds., 234–45.

Anderson, V. Elving and Bruce R. Reichenbach, “Imaged through the Lens Darkly,” *Journal of the Evangelical Theological Society* 33 (2): 197-213.

Augustine, 1948a, *City of God,* in *Basic Writings of Saint Augustine* II, Whitney J. Oates, ed. Grand Rapids, MI: Baker.

——, 1948b, *On the Immortality of the Soul,* in *Basic Writings of Saint Augustine* I, Whitney J. Oates, ed. Grand Rapids, MI: Baker.

——. 1948c. *On the Trinity*, in *Basic Writings of Saint Augustine* II, Whitney J. Oates, ed. Grand Rapids, MI: Baker.

Baker, Lynn Rudder, 2011, “Christian Materialism in a Scientific Age,” International Journal for Philosophy of Religion, 69 (1): 1–12.

# ——, 2000, *Persons and Bodies: A Constitution View*. Cambridge: Cambridge University Press.

Baker, Mark and Stewart Goetz, 2010, *The* *Soul Hypothesis: Investigations into the Existence of the Soul*. New York: Continuum.

——, 2001, “Material Persons and the Doctrine of Resurrection,” *Faith and Philosophy* 18 (1): 151–67.

Barth, Karl, 1958, *Church Dogmatics* III. Edinburgh: T. & T Clark.

Berkouwer, G.C., 1962, *Man: The Image of God.* Grand Rapids, MI: William B. Eerdmans.

Bostrum, Nick, 2005, “A History of Transhumanist Thought,” *Journal of Evolution and Emerging Technolog*y, 14 (1): 1–25.

Bostrom, Nick and Eliezar Yudkowsky, 2014, “The Ethics of Artificial Intelligence,” in *Cambridge Handbook of Artificial Intelligence,* Frankish and Ramsey, eds., 316–34.

Cooper, John W., 1989, *Body, Soul, and Life Everlasting.* Grand Rapids, MI: Eerdmans.

Corcoran, Kevin, ed., 2001, *Soul, Body, and Survival: Essays on the Metaphysics of Human Persons*. Ithaca: Cornell University Press.

Craig, William Lane, 1989, *Assessing the Evidence for the Historicity of the Resurrection of Jesus.* Malden, MA: Edward Mellen.

Davis, Stephen, 1983, *Risen Indeed: Making Sense of the Resurrection.* Grand Rapids, MI: Eerdmans.

Dawkins, Richard, 1989, *The Selfish Gene.* New York: Oxford University Press.

Eccles, John and Karl Popper, 1977, *The Self and Its Brain.* New York: Springer.

Edwards, Paul, ed., 1992, *Immortality.* New York: Macmillan.

Foucault, Michael, *The Order of Things: The Archaeology of the Human Sciences*. New York: Pantheon, 1971.

Foster, John, 2001, “A Brief Defense of the Cartesian View,” in *Soul, Body, and Survival: Essays on the Metaphysics of Human Persons*, Corcoran, ed., 15–29.

Frankish, Keith and William Ramsey, eds., 2014, *Cambridge Handbook of Artificial Intelligence.* New York: Cambridge University Press.

Fukuyama, Francis, 2003, *Our Posthuman Future: Consequences of the Biotechnology Revolution*. London: Profile Books.

Garreau, Joel, 2005, *Radical Evolution: The Promise and Peril of Enhancing our Minds, our Bodies – and What It Means to be Human.* New York: Random House.

Geraci, Robert M. 2008, “Apocalyptic AI: Religion and the Promise of Artificial Intelligence,” *Journal of the American Academy of Religion* 76 (1), 138–166.

Goetz, Stewart and Charlies Taliaferro, 2011, *A Brief History of the Soul*. Malden, MA: Wiley-Blackwell.

Haraway, Donna, 1991, *Simians, Cyborgs and Women: The Reinvention of Nature.*  London: Free Association Books.

Hasker, William, 2012, “The Emergence of Persons,” in Stump and Padgett, eds., 480–90.

——, 1999, *The Emergent Self*. Ithaca, NY: Cornell University Press.

——, 1983, *Metaphysics*. Downers Grove, IL: InterVarsity.

Herzfeld, Noreen, 2012, “In Whose Image? Artificial Intelligence and the *Imago Dei*,” in *Christianity and Science,* Stump and Padgett, eds., 500–09.

Hick, John, 1976, *Death and Eternal Life*. New York: Harper and Row.

Huxley, Julian, 1957, *New Bottles for New Wine*. London: Chatto & Windus.

——, 1957, *Religion Without Revelation*. New York: Harper*.*

Irenaeus, 2016, *Against Heresies*. New Advent. http://www.newadvent.org/fathers/0103.htm.

Johnson, Phillip E., 1993, *Darwin on Trial*. Downers Grove, IL: InterVarsity.

Kurzweil, Ray, 1999, *The Age of Spiritual Machines.* New York: Viking.

——, 2002, “The Evolution of Mind” in *Are We Spiritual Machines,* Jay W. Edwards, ed. Seattle, WA: Discovery Institute: 12–55.

Lewis, C. S., 1946, *That Hideous Strength*. New York: Macmillan.

Locke, John, 1995, *An Essay Concerning Human Understanding*. Amherst, NY: Prometheus.

Lowe, E. J., 2013, “Substance Causation, Powers, and Human Agency,” in S. C. Gibb, E. J. Lowe, and R. D. Ingerthorsson, eds. *Mental Causation and Ontology.* New York: Oxford University Press.

MacKay, Donald, 1980, *Brains, Machines, and Persons.* Grand Rapids, MI: Eerdmans.

Mavrodes, George, 1977, “The Life Everlasting and the Bodily Criterion of Identity,” *Noûs* 11 (1): 27–39.

——, 1963, “Some Puzzles Concerning Omnipotence, *Philosophical Review* 72: 221–23.

Menzies, Peter, 2013. “Mental Causation in the Physical World,” in *Mental Causation and Ontology*, Sophie C. Gibb, et al. eds. New York: Oxford University Press, 58–87.

Merricks, Trenton, 2001, “How to Live Forever without Saving Your Soul,” in *Soul, Body, and Survival: Essays on the Metaphysics of Human Persons*, Corcoran, ed., 183-–200.

Midson, Scott, 2018, Cyborg Theology: Humans, Technology and God. London: I.B.Tauris.

Moravek, Hans, 1988, *Mind Children: The Future of Robot and Human Intelligence.* Cambridge, MA: Harvard University Press.

——, 1999, *Robot: Mere Machine to Transcendent Mind.* New York: Oxford University Press.

Moreland, J. P., 2012, “Christianity, Neuroscience, and Dualism,” in Stump and Padgett, eds., 467-–79.

Moreland, J. P., and Scott Rae, 2000, *Body and Soul*. Downers Grove, IL: InterVarsity.

Peoples, Glenn Andrew, 2008, “William Hasker at the Bridge of Death: Emergentism and the Prospects of Survival*,*” *Philosophia Christi* 10 (2): 393–409.

Price, H. H., 1953, “Survival and the Idea of ‘Another World,” *Proceedings of the Society for Psychical Research* 50 (182): 465–73.

Reichenbach, Bruce R., 1982, “C. S. Lewis on the Desolation of De-valued Science,” *Christian Scholar’s Review* 12 (2): 99–111.

——, 2016, *Divine Providence: God’s Love and Human Freedom*. Eugene, OR: Wipf and Stock.

——, 2003, “Genesis 1 as a Theological-Political Narrative of Kingdom Establishment,” *Bulletin for Biblical Research* 13 (1): 47-69.

——, 1978, *Is Man the Phoenix? A Study of Immortality*. Grand Rapids, MI: Eerdmans.

Searle, John, 2002, “I Married a Computer,” in *Are We Spiritual Machines?* Jay W. Edwards, ed. Seattle, WA: Discovery Institute, 56–77.

——, 1980, “Minds, Brains and Programs,” *Behavioral and Brain Sciences*, 3: 417–57.

Scheutz, Matthias, 2014, “Artificial Emotions and Machine Consciousness,” in *Cambridge Handbook of Artificial Intelligence,* Frankish and Ramsey, eds., 242–67.

Stump, J. B. and Alan G. Padgett, eds., 2012. *Science and Christianity.* Malden, MA: Wiley Blackwell,

Swinburne, Richard, forthcoming, “Cartesian Substance Dualism.”

——, 1986. *The Existence of God.* New York: Oxford University Press.

——, 1979. *The Evolution of the Soul.* New York: Oxford University Press.

Thomas, Aquinas, 1945, *Summa Theologica,* I, Anton C. Pegis, ed. New York: Random House.

Wallach, Wendell, and Colin Allen, 2009, *Moral Machines: Teaching Robots Right from Wrong*. New York; Oxford University Press.

Warwick, Kevin, 2012, *Artificial Intelligence: the Basics*. New York: Routledge.

Williams, B.A.O., 1956, "Personal Identity and Individuation," *Proceedings of the Aristotelian Society* 57: 229–52.

Wolfe, Cary, 2009, What is Posthumanism? Minneapolis: University of Minnesota Press.

Wolfson, Harry, 1965, “Immortality and Resurrection in the Philosophy of the Church Fathers,” in *Immortality and Resurrection*, Krister Stendahl, ed.New York: Macmillian.

NOTES

1. “Man is neither the soul alone nor the body alone, but both together, … the body and the soul being each a part, but the whole man being both together” (Augustine 1948a, XIX, 3).

   “The conception of the soul common to all the Fathers is essentially Platonic. The main characteristic of that Platonic conception of the soul is its separability from the body” (Wolfson, 79). [↑](#endnote-ref-1)
2. “Thus also, if any one take away the image and set aside the handiwork, he cannot then understand this as being a man, as I have already said, or as something else than a man. For that flesh which has been molded is not a perfect man in itself, but the body of a man, and part of a man. Neither is the soul itself, considered apart by itself, the man; but it is the soul of a man, and part of a man. Neither is the spirit a man, for it is called spirit, and not a man; but the commingling and union of all these constitutes the perfect man” (Irenaeus, V.6.1). How this breaks down in terms of Irenaeus’s use of “image” and “likeness” is disputed, which we need not address here. [↑](#endnote-ref-2)
3. M. E. Dahl, *Resurrection of the Body* (London: SCM, 1962); George E. Ladd, *A Theology of the New Testament* (Grand Rapids, MI: Eerdmans, 1974; Walter Eichrodt, *Theology of the Old Testament* II (Philadelphia: Westminster, 1967). [↑](#endnote-ref-3)
4. For the contrasting view that while the NT evidence is ambiguous, a monistic holism is more consistent with the data in the NT, see Anderson and Reichenbach, 1990. “Ontologically speaking, the Apostle Paul’s analysis of human persons is generally consistent with the Hebraic monist view. For one thing Paul does not use *sōma* (‘body’) in contrast to *psyche* (‘soul’). Indeed, the infrequency with which Paul uses ‘soul’ (thirteen times) is noteworthy. It suggests the relative unimportance of the ‘soul’ concept for his understanding of persons. And where he does use the term he is speaking not about an ontologically distinguishable part of human persons but about human functions or aspects. For another thing, though Paul affirms that the body will be raised, it is not the body alone that will be raised, to be reunited with the soul. As Christ was raised as a complete person, so we as complete persons are to be raised to eternal life” (198–99). [↑](#endnote-ref-4)
5. The Reformed theologian Charles Hodge writes, “The Scriptures teach that . . . man consists of two distinct principles, a body and a soul: the one material, the other immaterial: the one corporeal, the other spiritual. It is involved in this statement, a substance distinct from the body.” Charles Hodge, *Systematic Theology* 2. Grand Rapids, MI: Eerdmans, 42. [↑](#endnote-ref-5)
6. See also the first six chapters of Moreland (2000) and also Goetz and Taliaferro. [↑](#endnote-ref-6)
7. J. P. Moreland articulates five arguments for substance dualism. (1) Physical objects, as extended, cannot provide an unextended center of consciousness. My states of consciousness are mine and cannot exist without me, whereas if I were a physical object the sensations could exist without being mine. (2) Since various physical and psychological conditions (e.g., memory) cannot function for personal identity, something more is needed. These conditions function as predicates of myself and cannot account for our experienced unity of consciousness. (3) “The first person indexical ‘I’ is irreducible and ineliminable, and this feature of ‘I’ …. is explained by claiming that ‘I’ refers to a non-physical entity—the substantial self with at least the power of self-awareness.” (4) Since material objects cannot exercise libertarian agency but I can, I am not a material object. (5) I can conceive of myself as disembodied, but I cannot conceive of disembodied bodily existence, and whatever I can strongly conceive as possible is possible. (2012, 471–73). [↑](#endnote-ref-7)
8. Although Swinburne believes that animals have souls because they have consciousness, his interest is in human souls, which he believes differ from animal souls. He elicits various evidences for the uniqueness of a human soul. For one thing, although animals have beliefs and purposes, they are “immediately manifest in action.” They lack the ability to form universal concepts, to have a concept of truth and negation, to engage in logical reasoning, or to entertain concepts that are irrelevant to non-verbal behavior (1986, 208–09). For another, they lack the ability to engage in moral reasoning and perhaps lack free will. [↑](#endnote-ref-8)
9. Specifically, mental events and brains events are of two different kinds. To the first, the person has privileged access that gives privileged knowledge of the phenomenal, whereas brain events, as physical events, are public (Swinburne, 1979, 164–65). Furthermore, no scientific laws can be formulated that govern the production of particular phenomenological events from physical brain events. But without scientific laws, there can be no scientific explanation (172). [↑](#endnote-ref-9)
10. “We should explain (the existence and function role of the soul) by appeal to the creative role of God. Whether by a general decree or by specific acts for each occasion, it is God who … creates the nonphysical subjects and arranges for their functional attachment to the appropriate organisms; and, at least in the case of human beings, theology can offer some account of God’s purpose in doing this, and of why that purpose is rationally appropriate to his nature” (Foster, 29). [↑](#endnote-ref-10)
11. At times Swinburne seems to affirm that the human soul has evolved out of and along with the biological. “What seems to have happened in the course of evolution is that when genetic changes gave to animals beliefs and desires, they were beliefs about how to attain fairly immediate goals and desires for those goals…. But gradually our ancestors began to have more sophisticated beliefs and desires which came to form a structure, so that the causal efficacy of beliefs and desires now included causing other beliefs and desires” (1986, 296–97). Souls, it seems, both of animals and of humans have emerged out of the physical. “[M]anifestly the evolutionary process has thrown up consciousness and more sophisticated forms of consciousness,” which in turn have the ability to cause not only other forms of consciousness but physical effects in the organism itself. “Four thousand million years of evolution produced man, a body and soul in continuing interaction” (1986, 298). “But given my definitions and earlier arguments, it is evident that humans do have souls, and so they must come into existence caused by the development of a foetus, itself caused by human sexual intercourse."  Later, "the brains of human foetuses cause the existence of a soul.” This seems to link Swinburne to the traducian view of the origin of the soul, which Swinburne defines as “the doctrine that men derive their soul from their parents” (1986, 199). Traditional traducians, such as Augustine, Tertullian, and Gregory of Nyssa, held that God implanted a soul into Adam and that each person’s soul is derived from the souls of their parents. The theological advantage of this view is that it can provide a natural explanation for the transmission of original sin. [↑](#endnote-ref-11)
12. This emergent dualist position faces the uphill battle of showing how fields can exist independent of their generating bodies and become independently existing entities that have independent causal powers. The analogies Hasker provides of magnetic fields and black holes fail to establish the independent existence and causal powers of fields (Peoples). Although it is granted that these examples are only analogical or comparative, the problem affects the emergent soul entity as well. [↑](#endnote-ref-12)
13. For a provocative description of what experiences might be available to a disembodied soul, see H. H. Price, 1953. [↑](#endnote-ref-13)
14. For other critiques of dualism and responses, see Goetz and Taliaferro, chaps. 6 and 7. [↑](#endnote-ref-14)
15. “What is the reason that (the Torah) begins with the Book of Genesis? Because it wished to convey the message of the verse, ‘The power of His acts He told to His people in order to give them the estate of the nations.’ So that if the nations of the world will say to Israel, ‘You are bandits for you conquered the lands of the seven nations who inhabited the land of Canaan,’ (Israel) will say to them, ‘The whole earth belongs to the Holy One, Blessed is He. He created it and he gave it to the one found proper in his eyes. By His wish He gave it to them, and by His wish He took it from them, and gave it to us’ (*The Torah, with Rashi’s Commentary* 1. Brooklyn, NY: Mesorah Publications, 1995: 2). [↑](#endnote-ref-15)
16. Note that the assessments of the reigns of the Israelite kings in Kings and Chronicles are based upon their treatment of the exclusivity of Yahwehistic worship, not their governmental success. [↑](#endnote-ref-16)
17. This hermeneutical approach clearly mimics Galileo’s response to the Church: “The Bible tells us how to go to heaven, not how the heavens go.” [↑](#endnote-ref-17)
18. J. J. Smart, quoted in Edwards, 293. [↑](#endnote-ref-18)
19. It should be noted that the Christian dualist likewise believes in re-creation, not of the entire person, but only of the physical body into a spiritual body. See Augustine 1948a, XII, 21. [↑](#endnote-ref-19)
20. It is important to distinguish epistemological questions of identity (how we know B is identical to A) from the ontological question of identity (what makes B identical to A). The two are not unrelated, but our concern is with the latter. [↑](#endnote-ref-20)
21. Mavrodes (1977), however, raises serious questions about how to formulate this criterion. [↑](#endnote-ref-21)
22. This argument applies whether or not we affirm a criterion for personal identity. See Merricks, who argues that no criterion for identity is necessary and hence no explanation of the identity of the re-created with the deceased is necessary. He sees it as intuitively possible (not incoherent) that we could time travel, skipping into the future without temporally experiencing the intermediate time. [↑](#endnote-ref-22)
23. That we use only a fraction of our brain capacity is well-debunked myth. Robynne Boyd, 2008, “Do People Use Only 10 Percent of Their Brains?” *Scientific American* (Feb. 7). https://www.scientificamerican.com/article/do-people-only-use-10-percent-of-their-brains. [↑](#endnote-ref-23)
24. John Searle’s argument repeats his famous Chinese Room Argument (1980). [↑](#endnote-ref-24)
25. “There are two basic attitudes in AI towards the question whether machines *actually* can have emotions (e.g., like human emotions) or be conscious (e.g., like a normal human in waking states). The first is a pragmatic attitude that underlies much of AI research and connects to related attitudes in psychology: Emotion terms and ‘consciousness’ are used in a pragmatic operational way that allows researchers to make progress without having to solve all the conceptual problems that beleaguer these concepts. Researchers in AI who are assuming this attitude will look at results from psychology for the types of processes that psychologists take to underlie or be involved in human mental activity and attempt to formalize aspects of them algorithmically.… The other attitude is to seek to refine, revise, or replace emotion concepts or concepts of consciousness as a result of attempting to formulate processes that can implement emotions or bring about consciousness. This attitude is closely aligned with the endeavor of computational modeling in cognitive science, where the goal of a computational model is to replicate human performance while providing mechanisms that explain how humans perform a given task” (Scheutz, 247–48). Kurzweil seems to adopt the former, pragmatic perspective, although delineation of the uploading of information and processes derived from individual brains suggests the latter. [↑](#endnote-ref-25)
26. One might well argue that all sides, religious as well as scientific, have too readily surrendered the biological. Perhaps this suspicion of the biological or physical is an unwelcome ideological endowment from Plato. [↑](#endnote-ref-26)
27. Bostrom and Yudkowsky suggest two criteria aligned to moral agency: sentience (“the capacity for phenomenal experience”) and sapience (“capacities associated with higher intelligence”), both of which necessitate the causal functionality of mental properties (322). [↑](#endnote-ref-27)
28. [↑](#endnote-ref-28)