



Do Humans Have Souls? Perspectives from Philosophy, Science, and Religion

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Abstract

This essay seeks to promote a concept of human nature that is usually called nonreductive physicalism, which is at least not ruled out by Scripture, and may in fact be closer to biblical thinking than dualism. The essay then looks to neuroscience to show that it provides useful insights into how and why we behave as we do.

Keywords

Physicalism, Dualism, Soul, Trichotomism, Aspective, Partitive, Self-concept

Introduction

What are human beings? Are we non-material beings temporarily housed in physical bodies, or are we fully physical, essentially enmeshed in the natural world? It is a strange feature of our culture that individuals hold radically different views about this, and until some troublemaker like myself comes along, people are often unaware of the differences. And these differences matter. They have huge implications for a variety of ethical issues. For example, when Dolly the sheep was cloned I received a call from a reporter who seemed frustrated that I had no strong condemnation of the idea of cloning humans. After his repeated attempts to provoke me to express some sort of horror at the prospect, light dawned; I asked him: “Are you imagining that if we try to clone a human being we’ll clone a body but it won’t have a soul? It will be like the zombies in science fiction?” He replied, “Yes, something like that.” “Well,” I said, “Don’t worry. None of us has a soul and we all get along perfectly well.”

When I lecture on this topic, I often poll my audiences in order to find out for myself what they think and also to illustrate my claim about the differences within our population. Here is the quiz I give, asking participants to raise their hands:

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The question is which of the following comes closest to your view of human nature?

- a. Humans are composed of three parts, a body, soul, and spirit. This is called trichotomism.
- b. Humans are composed of two parts. This is called dualism, and there are two versions here, a body and a soul or a body and a mind.
- c. Humans are composed of one “part”: a physical body. This can be called either materialism or physicalism.
- d. I don’t understand why you’re asking.

Once I lectured to 2,000 people who had come to hear a science and religion presentation. Everyone who responded, except one, was either a dualist or trichotomist. I have also determined by this “highly scientific” research of mine that husbands and wives often do not even know what their spouses think on this issue. I say, “Raise your hands, those of you who are married, if you would not have been able to guess your spouse’s position. Aha, unbeknownst to you, you may be sleeping with a trichotomist.” The fourth option is meant as a teaser: I believe that this would be the response of the biblical authors.

I referred to myself above as a troublemaker. In fact, I suspect that some of my colleagues wish I would just leave this issue alone, so I will start by explaining why I think it is important, and why I got involved in it about 17 years ago. Next, I will talk about the relation of physicalism to Scripture, and finally I will provide some examples of the way neuroscience is now helping us to understand our human selves better than dualism was able to do.

Why Argue for Physicalism?

I was persuaded by my colleague in our School of Psychology, Warren Brown, to do a project on dualism and physicalism in Christianity. We had just had lectures by Malcolm Jeeves, a neuropsychologist from Scotland, who argued on the basis of brain localization studies that neuroscience was making the concept of the soul increasingly problematic. Warren said that most Christians were dualists—I did not know this; as I say, no one ever talked about it. He predicted that as the results of neuroscience were popularized and interpreted by non-religious scientists and philosophers, it would appear that science and Christianity are incompatible. He believed that if we could get a book out *before* the issue became as heated as the evolution controversy has become, it might be possible to evade the conflict. So I agreed to help organize a conference, with representatives from the relevant disciplines, and we published our collection, entitled *Whatever Happened to the Soul?*, in 1998.¹ Our representative from biblical studies was Joel Green, and since then, the three of us—Joel, Warren, and I—have been busy on the Christian lecture circuit. As it has turned out, all of the discussions of this issue, even at institutions where

1 Warren Brown, Nancey Murphy, and H. Newton Malony, eds., *Whatever Happened to the Soul: Scientific and Theological Portraits of Human Nature* (Minneapolis: Fortress, 1998).

nearly everyone disagrees with me, have been quite cordial. So, I think Warren's strategy has been working.

I have to say, though, that I was reluctant to get into this issue. In graduate school in the 1970s, I was studying the mind-body problem: philosophical arguments, usually on the basis of conceptual analysis, for and against the mind-brain identity thesis, for and against dualism. I found these collections of arguments so frustrating that I resolved to stay away from the topic forever—as soon as I had passed my qualifying exams. But when Warren raised the specter of conflict with science, I decided that it was too important to the church to stay on the sidelines.

I speak on physicalism at colleges and universities all over the country (and in fact, around the world), not so much to argue *against* the dualists, but to make it clear that nonreductive physicalism is an acceptable position for Christians to hold. I have also done so in a few Jewish and Muslim contexts. My principal reason is that I do not want courses in neurobiology to drive our young people out of the church.

I have equally serious reasons for addressing the issue in another context. I regularly teach an intensive course in philosophy at the International Baptist Theological Seminary in Prague. Most of the students there are from formerly Communist countries. They ask why I bother them with this problem, and I point out that the people they are attempting to evangelize have developed their thinking within a materialist worldview. I ask them if they really think that they need to convince people that they have a soul before they can lead them to Christ. If dualism is *not* an *essential* Christian teaching, then why erect this stumbling block?

I have also been pleased to speak at science gatherings. I appreciate this, as it gives me a chance to point out that writers such as Francis Crick, who promotes a conflictual view of the relations between neuroscience and religion, are wrong. Crick, who shared the Nobel Prize for discovering the structure of DNA, has written a popular book on consciousness, *The Astonishing Hypotheses*; in it he says that “The Idea that man has a disembodied soul is as unnecessary as the old idea that there was a Life Force. This is in head-on contradiction to the religious beliefs of billions of human beings alive today.”²

Physicalism and Scripture

My colleague Joel Green has spent years addressing the various New Testament texts that are used to support dualism, in each case showing that a physicalist reading is possible. He makes it clear that he does not expect to “convert” dualists to physicalism by this means: In an essay, addressing three more NT passages, he says that this sort of work could be endless. He anticipates that still

2 Francis H. Crick, *The Astonishing Hypothesis: The Scientific Search for the Soul* (London: Simon and Schuster, 1994), 7.

other texts will be presented as counter-testimony for dualism, *ad infinitum*, because we are so predisposed to a dualist reading by the “science” that influenced Descartes and his followers.³

Since this text-by-text approach is not likely to succeed, and especially because I am not a biblical scholar myself, I find it useful to attempt to provoke something akin to a Gestalt shift for readers of the texts. The problem is to answer this question: If it is the case that body/soul dualism is foreign to the Bible, then how is it that Christians for centuries could have been so wrong in believing dualism to be biblical teaching? A crucial distinction for understanding this comes from NT scholar James Dunn. Dunn distinguishes between what he calls “aspective” and “partitive” accounts of human nature. Many Greek philosophers were interested in a partitive account: what are the essential parts that make up a human being? In contrast, Dunn says, the biblical authors were interested in an aspective account. Here, each ‘part’ (“part” in scare quotes) stands for the whole person, thought of from a certain angle.⁴ What the NT authors are concerned with, then, is human beings in relationship to the world, to one another, and especially to God. Paul’s distinction between spirit and flesh is not our later distinction between soul and body. Paul is concerned with two ways of living: one in conformity with the Spirit of God, and the other in conformity to the kinship loyalties that were so powerful in the Mediterranean culture of the time.

Dunn’s insight explains how Christians for hundreds of years could have taken dualism to be scriptural teaching. The Hebrew Scriptures were translated into Greek (the Septuagint). Both the Old and New Testaments then contained the Greek terms that *in the minds of philosophers* referred to constituent parts of humans, and Christians have obligingly read them and translated them in this way for centuries. One widely accepted instance of this is the Hebrew word *nefeš*, which was translated as *psychē* in the Septuagint and later translated into English as “soul.” More recent translations, however, use a variety of English words. For example, Gen 2:7 used to read: “. . . the Lord God formed man of the dust of the ground and breathed into his nostrils the breath of life and man became a living soul.” Recent translations say that “man became a living *being*” (NIV) or a “living *creature*” (REB).

Thus, following Dunn, I conclude that there is no such thing as *the* biblical view of human nature *insofar as we are interested in a partitive account*. So the point of the fourth option in my quiz at the beginning of this essay (“I don’t understand why you’re asking”) is this. If Dunn and other scholars are correct, and if we could go back in time to present my quiz to biblical authors about how many parts a human is composed of, they would be puzzled. Well, head, hands, feet—but why are you asking? Notice that in both the Old and New Testaments there are a large number of references to the heart, and one part of humans is the heart, but of course it is being used metaphorically to refer to an *aspect* of human life.

3 Joel B. Green, “Eschatology and the Nature of Humans: A Reconsideration of Pertinent Biblical Evidence,” *Science & Christian Belief* 14.1 (April 2002): 33–50.

4 James D. G. Dunn, *The Theology of Paul the Apostle* (Grand Rapids: Eerdmans, 1998), 54.

I have written a little book titled *Bodies and Souls, or Spirited Bodies*, and it is the one among all of my books that is most often misunderstood.⁵ Imagine my excitement to find that a whole issue of a Mennonite Brethren journal had been devoted to my book. Unfortunately, the reviews were awful. But bad reviews can serve a valuable purpose by forcing an author to ask how she could have been so badly misunderstood. In one case, the answer is clearly that while the reviewer repeated what I have just written about aspective versus partitive uses of anthropological terms, he apparently did not understand it.⁶ I can use his review to reinforce this point. I state in my book that physicalism is easier to reconcile with my own Christian sub-tradition than with Catholicism or Calvinism. My tradition goes by a lot of names. The founders were called the radical reformers, politely, and Anabaptists (that is, re-baptizers) impolitely. Their best-known representatives today are the Mennonites, but my own little Church of the Brethren is in the same tradition. The reason why physicalism is easier to accept for an Anabaptist than for a Catholic or Calvinist is that both Calvin and the Catholic Church have given doctrinal status to the “intermediate state,” that is, a period of conscious awareness between the believer’s death and the general resurrection. The only way, it seems, to make sense of this doctrine is to assume that we have a soul that will continue to be conscious during that time. But this has never been an essential teaching for Anabaptists.

On the basis of this claim, the reviewer, Terry Hiebert, takes me to be making a much more radical claim: that the early Anabaptists were *not* dualists, and he provides a historical account to show that they were. He concludes by saying that “historic Anabaptist writers and church confessions were remarkably unified in using the biblical language of the soul. . . . [A]pparently most Anabaptists . . . were either implicit or explicit dualists.”⁷ But shortly afterward he says: “Anabaptists practiced a restrained use of this interior language of the soul in worship and ministry. They believed in the soul’s engagement with God and people through baptism, the Lord’s Supper, foot washing. . . . [and so on]. This rich *metaphor* evokes the moral, emotional, *relational*, volitional, rational, and spiritual *dimensions* of human experience.”⁸ Notice how he has shifted in his use of the word “soul” in these two passages: In the first, he is attributing a partitive use of the term to the Anabaptists; in the second, very clearly an aspective use. And with a few exceptions, all of the uses of the terms “soul,” “spirit,” and “flesh” that he cites in his historical survey are aspective. One important early source was Michael Sattler, leader of the first Anabaptists to break away from Zwingli’s reforms in Zurich in 1525. Hiebert says that for Sattler, flesh and spirit are scriptural terms contrasting the *life* devoted to Christ with that yoked to Belial—and I could fairly add to that: so neither flesh nor spirit is a *part* of the person. Hiebert says that both Sattler and Menno Simons referred to the soul as “a believer’s openness to God.”⁹ One notable exception was Balthasar Hubmaier. He is one of a few

5 Nancey Murphy, *Bodies and Souls, or Spirited Bodies?* (Cambridge: Cambridge University Press, 2006).

6 Terry Hiebert, “Is the Search for the Anabaptist Soul a Dead End? Historic Anabaptism Meets Nancey Murphy’s Nonreductive Physicalism,” *Direction: A Mennonite Brethren Forum* 37.2 (Fall 2008): 185–200.

7 Ibid., 95.

8 Ibid., 96; my italics.

9 Ibid., 89.

trichotomists in church history, and he taught that humans are composed of three substances, flesh, soul, and spirit, that separate at death. His *is* clearly a partitive use of the terms.

I hope that this quick look at a small piece of church history not only clarifies Dunn's concept of aspective uses of anthropological terms, but will also promote a Gestalt switch for readers of Scripture—a strategy for reading terms such as “soul,” “mind,” and “spirit” that does not automatically commit Christians to body/soul-mind dualism. This negative conclusion would certainly mean that Christians are free to consider physicalism as an option.

How Neuroscience Helps Us Understand Ourselves

I have given a lot of papers in which I have provided a sort of eclectic sampling of what cognitive neuroscientists are learning about particular brain systems and their correlation with *very* particular cognitive abilities. I do this in order to show that the characteristics of humans that have historically been attributed to the mind or soul can better be understood as brain functions. One of my favorite examples is a person who had very localized brain damage after a stroke, and the only cognitive deficit afterward was the loss of his ability to use color terms, suggesting that this capacity is very precisely located in the brain. There is also the famous story of the 19th-century railway worker, Phineas Gage, who accidentally exploded a charge prematurely and sent a tamping iron through his left cheek and out the top of his head, damaging his frontal cortex. All of the abilities that we think of as typically intellectual were intact, but he lost the ability to control and direct his own actions. Thus prudence and morality are pretty obviously dependent on the functioning of particular regions of the brain.

I recently finished a chapter for a book, edited by Thomas Nadelhoffer, which will be published by Oxford under the title “The Future of Punishment.” Given this current interest, my example of the way understanding ourselves physically—that is, understanding the brain and associated systems as that which makes us who we are—will be drawn from this area of research. Phineas Gage is, in fact, discussed in that book, and is used to raise questions about moral and legal responsibility, and about personal identity. Authors often quote his doctor as saying after the accident that “Gage was no longer Gage.” I also want to address this issue of personal identity, since recently one of my doctoral students told me that when he was introduced to a physicalist theory of human nature, his question was: “Well, if I don't have a soul, then how can I be me?”

I will break this presentation down into three subtopics. First, I want to provide a little information on how knowledge of brain *deficits* bears on judgments to the effect that people are *not* legally responsible for their actions. My real goal, however, will be to provide some insights on how neuroscience helps us to understand, positively, how we get to the point of being morally and legally responsible for our actions.

1. How Brain Damage Contributes to Criminality

Scientific studies showing correlates between brain damage and lack of behavioral control are immensely important because of their relevance to the criminal justice system. Studies show that 25%

of defendants are medically or legally incompetent to stand trial. Clinical diagnosis of antisocial personality disorder, defined as lack of regard for others' feelings and failure to abide by societal rules, has been found to be ten times higher in the prison population than the rate in the general population. In addition, people with antisocial personality disorder often have a history of childhood trauma and maltreatment. Dean Mobbs and his colleagues argue that the primary role of neuroscience in the legal system will be to improve the court's ability to identify those cases that fall within the category of "not guilty by reason of insanity."¹⁰ However, as important as these findings are for understanding the behavior of people with abnormal brain function, it would be wrong to conclude *directly* from them that they call moral or legal responsibility into question for those without neural deficits.

2. Clearing Away Some Conceptual Confusions

A different sort of neuroscientific research has been taken to call free, conscious agency into question, even for those with intact neural systems. Benjamin Libet's research has shown that the performance of "self-paced voluntary actions" is preceded by a slow electrical change, recorded on the scalp, called the "readiness potential." He devised a method for measuring the relations among the readiness potential, subjective feelings of volition, and action. Subjects in his studies were told to flick their wrists "at any time they felt the urge or wish to do so." These acts were to be performed "capriciously, free of any external limitations or restrictions."¹¹ He used an electroencephalogram (EEG) to measure the readiness potential, and an electromyogram (EMG) to record muscle movements. He also devised a clever method to allow the subjects to report exactly when they were first aware of the wish or urge to act.

Averaging across numerous trials, Libet found that the readiness potential preceded the conscious wish to act by approximately 350 milliseconds. The significance, according to Libet, is that the volitional process is initiated unconsciously, whereas in the traditional view of conscious will, "one would expect the conscious intention to appear before the readiness potential and thus command the brain to perform the intended act."¹² Many have followed Libet in concluding that his research has negative implications regarding free will. However, I side with those who argue that Libet's research has limited relevance for understanding responsible action.¹³

Nonetheless, Libet-style research does raise an interesting question regarding what it means to say that *I* acted. Who or what is the *I*? If the subjects of the research are in fact identical with their conscious awareness, then the acts they performed in the lab were initiated by their brains, but not

10 Dean Mobbs et al., "Law, Responsibility, and the Brain" in *Downward Causation and the Neurobiology of Free Will* (ed. Nancey Murphy, George Ellis, and Timothy O'Connor; Berlin: Springer, 2009), 243–69.

11 Benjamin Libet, "Do We Have Free Will?" in *The Volitional Brain: Towards a Neuroscience of Free Will* (ed. Benjamin Libet, Anthony Freeman, and Keith Sutherland; Exeter, UK: Imprint Academic, 1999), 47–57; quotation at p. 49.

12 Ibid.

13 See Murphy, Ellis, and O'Connor, eds., *Downward Causation and the Neurobiology of Free Will* for a variety of responses.

by the subjects, and this does suggest that they were not acting freely. However, I suggest that the identification of the person with her or his conscious awareness is a hold-over from dualist accounts of human nature.

To see how this conception of the person leads to philosophical muddles, consider this simple example. I usually jump if the phone rings while I am working. If my startle response is particularly active, then I jump twice: I jump, then I actually *hear* the phone ring, and then jump again. This fits with what we know about two routes by which information is processed in the brain. Our older danger-recognition system (older in the sense of being shared with earlier life forms) operates faster than the system that allows for conscious interpretation of the signal. If one equates the *I* with conscious awareness, then we get the paradoxical conclusion that hearing the phone caused me to jump (once) *before I heard it*.

In contrast to the view that *I* am my consciousness, Warren Brown and I argue that all brain events, including whatever turns out to be the source of conscious awareness, need to be understood within the context of the operation of the whole brain, within the whole body, and acting in the environment, particularly the social environment. Humans (as with other animals) are always already acting, and their acts form part of an action-feedback-evaluation-action cycle.¹⁴ Questions of moral responsibility and free will rightly pertain to the whole person and to this larger picture of human action. While it is good to recognize the degree of automaticity in many of our responses to stimuli, this does *not* detract from our ability to become the authors of our own more significant acts, within the context of social expectations, long-term goals, and ethical norms. I hope to support this claim in what follows by turning to the question of what neuroscience provides so far to explain these capacities.

3. How Science Helps to Explain the Development of Our Capacity for Responsible Action

I have claimed thus far that Christians might think more in harmony with the Bible if they adopt a physicalist anthropology. Doing so would have the further advantage of avoiding conflict with science. But a huge caveat is in order here. Many secular philosophers and scientists are content with a reductionistic account of human nature—that is, humans are *nothing but* bodies, and we have to give up on traditional concepts such as free will and moral responsibility. This is a position that is absolutely unacceptable to Christians.

The examples of brain damage and lack of legal responsibility given above show that there are cases in which people's behavior can be largely reduced to (considered to be entirely determined by) brain functions. But my example from Benjamin Libet's work is an instance of an unwarranted assumption that brain activity alone is the cause of behavior.

14 Nancey Murphy and Warren S. Brown, *Did My Neurons Make Me Do It?: Neurobiological and Philosophical Reflections on Moral Responsibility and Free Will* (Oxford: Oxford University Press, 2007).

Warren Brown and I devoted a book, *Did My Neurons Make Me Do It?*, to explaining why it is *not* the case, ordinarily, that our (supposed) higher capacities can be explained away by science. In contrast to the reductionist view that the behavior of any complex entity is entirely a product of the behavior of its parts (e.g., neurons), we argue that complex entities have “downward effects” on their own parts, and that they display “emergent” properties that are not to be found at lower levels of complexity.¹⁵

We set out to demonstrate how this can be the case with regard to moral responsibility. We argue that we cannot begin directly from brain science and then try to derive an account of responsibility from it. Instead, we need to work the other way around. We need to begin with 1) an account of the high-level cognitive capacities that are needed for morally responsible action (this is a philosophical task); then 2) ask what elementary cognitive abilities go into each of these (a cognitive-science task); and finally, 3) consider what we know about the neural substrates that enable each of these more basic cognitive capacities. In this section, I draw on the work of Alasdair MacIntyre for the philosophical analysis, and then summarize some of my work with Brown on the second and third sorts of analysis.

MacIntyre is justly famous for his contributions to virtue theory. He published *Dependent Rational Animals* in part to remedy what he came to perceive as an inadequacy in his earlier accounts of morality, namely the assumption that one could do ethics independently of biology. He says that “no account of the goods, rules and virtues that are definitive of our moral life can be adequate that does not explain—or point us to an explanation—[of] how that form of life is possible for beings who are biologically constituted as we are. . . .”¹⁶ His contribution to this explanation begins with what we share with the higher social animals. He then works out an account of what needs to be added to our animal capacities in order to allow us to become moral reasoners.

What constitutes the difference, then, between animal and human rationality? MacIntyre argues that the ability to act voluntarily and for a reason depends on the capacity to evaluate one’s own reasons. The capacity to evaluate one’s reasons depends in turn upon language, and not only on possession of abstract concepts but also on a high level of syntactical competence. This sort of meta-level judgment requires language with the resources necessary for constructing sentences that contain as constituents a representation of the first-order judgment.¹⁷ That is, mature human rationality develops when children attain the ability to consider why they are doing what they are doing, and then to raise the question of whether there might be better reasons for acting differently.

MacIntyre’s concern here is not to present a criterion by which particular actions can be judged as morally responsible, but rather to ask the philosophical question of what are the essential

15 Ibid.

16 Alasdair MacIntyre, *Dependent Rational Animals: Why Human Beings Need the Virtues* (Chicago: Open Court, 1999), x.

17 Ibid., 53–4.

requirements for anyone's attaining the capacity to act in a fully mature, rational, responsible, and moral manner. For practical purposes weaker criteria apply. For example, much behavior is based on previous reflections of our own or of others. Here is how MacIntyre ties together the capacities that comprise practical reasoning:

as a practical reasoner I have to be able to imagine different possible futures *for me*, to imagine myself moving forward from the starting point of the present in different directions. For different or alternative futures present me with different and alternative sets of goods to be achieved, with different possible modes of flourishing. And it is important that I should be able to envisage both nearer and more distant futures and to attach probabilities, even if only in a rough and ready way, to the future results of acting in one way rather than another. For this both knowledge and imagination are necessary.¹⁸

Brown and I have analyzed MacIntyre's account of moral responsibility into five major component cognitive capacities. To be able to act morally, one needs:

1. A symbolic sense of self (as MacIntyre says, "different possible futures *for me*").
2. A sense of the narrative unity of life (as he says, "to imagine myself moving forward from . . . the present"; "nearer and more distant futures").
3. The ability to run behavioral scenarios (this is MacIntyre's "imagination") and predict the outcome (he speaks of "knowledge"; "attach[ing] probabilities . . . to the future results").
4. The ability to evaluate predicted outcomes in light of goals.
5. The ability to evaluate the goals themselves ("alternative sets of goods . . . different possible modes of flourishing") in light of abstract concepts.¹⁹

Each of these five capacities involves a complex set of more basic abilities, but I do not have space to deal with all of them here. Since I expressed an interest above (on the part of my student) of what *I* am if I am a physicalist, I will focus on the first prerequisite, which we called having a symbolic sense of self, and note, as well, a small sampling of the neural structures and systems involved.

What is *not* at issue here is the (confused) idea of *being* a self, but rather of having a self-*concept*. Such a concept arises early in life but becomes much more complex through maturation. Michael Lewis distinguishes two stages of development. The first is implicit self-awareness, which he calls the biological machinery of self. The second is explicit self-awareness, "the idea of me."

18 Ibid., 94–95.

19 Murphy and Brown, *Did My Neurons Make Me Do It?*, 244.

We share the machinery of self with other animals—the distinction of self from non-self.²⁰ Some of the brain systems involved relate to awareness of bodily states such as hunger, posture, location in space. A part of the brain called the temporal-parietal juncture is known to play a role in the experience of embodiment—that is, a sense of being spatially situated within one's body.

Explicit self-consciousness depends on the development of a “theory of mind.” This refers to the capacity to recognize others in the environment who not only have bodies of their own, but also thoughts and feelings. This in turn allows me to be able to recognize myself as a member of the class of persons. Neuroscientist Leslie Brothers has shown that we come well equipped neurobiologically to develop and use what she calls the “person concept.” We have remarkable abilities to recognize faces and we have neurons that specialize in detecting bodily motions that indicate other actors' intentions.²¹

Terrence Deacon emphasizes the essential role of language in the development of a *symbolic* self-concept:

Consciousness of self in this way implicitly includes consciousness of other selves, and other consciousnesses can only be represented through the virtual reference created by symbols. The self that is the source of one's experience of intentionality, the self that is judged by itself as well as by others for its moral choices, the self that worries about its impending departure from the world, this self is a symbolic self.²²

Thus, it is no accident that use of personal pronouns serves as a *measure* of the possession of a self-concept and that the appearance of personal pronoun use correlates with development of a theory of mind. M. R. Bennett and P. M. S. Hacker point out that to have concepts is to know how to use words. “The idea of me” is thus dependent on the ability to use the words “I” and “me.” These words cannot be used correctly without acquisition of a *system* of words including second- and third-person pronouns, which depends on the ability to distinguish other people from inanimate objects.²³

There is a vast amount of knowledge about the brain regions and systems that underlie the capacity for language. Two major parts of the brain are Wernicke's and Broca's regions, but many other systems are involved as well, such as the motor cortex in making the movements that produce vocalizations.

20 Michael Lewis, “The Emergence of Consciousness and Its Role in Human Development” in *The Self: From Soul to Brain, Annals of the New York Academy of Sciences*, Vol. 1001 (ed. Joseph LeDoux, Jacek Debiec, and Henry Moss; New York: New York Academy of Sciences, 2003), 104–33.

21 Leslie Brothers, *Friday's Footprint: How Society Shapes the Human Mind* (New York: Oxford University Press, 2007).

22 Terrence Deacon, *The Symbolic Species: The Co-evolution of Language and the Brain* (New York: Norton, 1997), 452.

23 M. R. Bennett and P. M. S. Hacker, *Philosophical Foundations of Neuroscience* (Oxford: Blackwell, 2003), 348.

I have provided here one of the ingredients that humans need in order to become responsible for their own actions, and then, later to acquire moral and legal responsibility. I called it a symbolic sense of self. The recognition that such a self-concept needs to develop before anyone can begin to be held accountable for his or her behavior comes from a philosophical analysis. We can then ask what has to happen developmentally in the life of the child in order to acquire such a concept, and finally turn to neuroscience to see what is known so far about what innate and learned structures and systems make this development possible. Thus, I conclude, we have here but one tiny example of how (on the assumption that we are indeed purely physical creatures) neuroscience can contribute to our self-understanding.

Conclusion

I will end with a brief summary. I began by noting that we have a variety of sharply conflicting views of human nature at work in our culture—roughly dividing between those that identify the person with a non-material substance such as a mind, soul, or spirit, versus those who say that our human capacities all arise from our complex physical bodies (in interaction, of course, with the environment—an environment in which I would include God as well as other humans).

I have not argued against non-physicalist accounts except to say that there is an increasing consensus that neither dualism nor trichotomism is to be found in the Hebraic or Christian Scriptures. Instead, interpreters, working in light of later dualist theories of human nature, have read dualism back into the texts, and the texts have been translated this way into modern languages.

I provided examples to try to show that accepting physicalism, and then tying our higher human capacities to brain functions, is beginning to shed light on how we come to have those higher capacities. I focused on morally and legally responsible action. There is clear evidence that brain damage can result in loss of responsibility for our actions. I also took one of the cognitive prerequisites for responsibility—the ability to recognize myself *as* myself, one among a community of persons—and said a little about how and when it develops in children. I mentioned a few of the brain systems that make this sense of self possible.

Before I end, I want to remind you of the purpose of this essay. I want to get the word out to as many people as I can that it is possible to reconcile the exciting developments in neuroscience with Christian belief. Physicalism is a perfectly acceptable alternative to dualism. And, although I do not have the space to go into it here, I predict that it will have interesting implications for all aspects of religious thought, ranging from ethics to theories of the afterlife.



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