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Mismeasuring Humanity: Dangers of "The Contemporary Orthodoxy"

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Mismeasuring Humanity: Dangers of “The Contemporary Orthodoxy”

Abstract

The various unjust discriminations (racism, sexism, xenophobia, etc.) that plague society are tied to the larger question of how human lives and minds are regarded in society as a whole. Humans have always had a problem of mismeasuring the “other,” but this problem is compounded by promotion, from powerful voices, of the view that humans are just so much physics and chemistry, that the mind is the brain, and that humans are deluded about the power of consciousness and freedom. Daniel Dennett refers to the latter as “the contemporary orthodoxy,” as though it is the view of humanity that all educated people should take for granted (many do). On the other hand, there has been something of a growing flood of protests against this “orthodoxy,” and it is by no means coming only from theologians. This article will review some studies that protest what they see as the mismeasuring of humanity, and will aim to show that such re-evaluation is essential as an aspect of the battle not only *against* racism and sexism, but also *for* our amazing capacities for love, justice, and peace.

Introduction: Types of Mismeasuring¹

Mismeasuring humans is an old habit, and sadly it is still very much around, even in the most enlightened circles. In ancient times, tribalism and xenophobia were the probable equivalents of what today we usually refer to as racism, and, in both ancient and modern times, racism has often been connected with violence, including the horrors of genocide. In his book *The Third Chimpanzee*, Jared Diamond (biologist) draws on “biology, ethics and psychology” to “understand genocide,” and to explore whether the wholesale killing of populations is exceptional or commonplace,

whether it is decreasing or not in human history, and whether its perpetrators are “normal people.”² The answers, like the chapter as a whole, are all very chilling. But genocide is only the most extreme manifestation of mismeasuring humans; it occurs in all forms of sexism and racism. Indeed, prosperous white males being granted inordinate privilege is one of the most common and enduring forms of mismeasuring. For some, mismeasuring results in unearned privilege, for others, in undeserved violence.

We tend to think of genocidal mismeasuring being the preserve of the ignorant or of the viciously cruel. “We,” we tell ourselves, “would never do that.” And *perhaps* we would not, but Jared Diamond suggests that “the potential for genocide . . . lies within all of us.”³ I fear that he is right about that, though I would stress the word “potential,” and would insist—for reasons that I hope will become clear—that we also have the potential to resist evil, and indeed to espouse, even sacrifice ourselves for, the good. Be that as it may, I am certain that we have tendencies to mismeasure other humans and are guilty of it more than we care to admit. Our communal mismeasuring is the feeding ground that keeps racism and sexism strong.

Further, racist and sexist mismeasuring is compounded by a more subtle and scholarly type of mismeasuring—that, at least, is largely my thesis. In this essay, I mostly want to discuss the type of mismeasuring, which is regularly advocated these days by prominent and quite brilliant scholars. I have to emphasize immediately that none of these scholars is advocating for racism, sexism, or any other type of violent prejudice. Indeed, they would be horrified, probably offended, at my argument that their measuring of humanity is a “*mismeasuring*” that potentially has deleterious consequences, not unlike the harmful consequences of sexism and racism. I am nevertheless convinced that it is bound to do so, since their philosophy—as I will show—amounts to a denigrating of mind and consciousness, and eliminating mismeasuring is going to take vigorous exercise of the very capacities they throw into doubt. In any event, I will make my case, and leave it to my readers to decide whether or not it is plausible.

From Meaningless Universe to Mindless Humans

The roots of the questionable perspective I have in view are very ancient. Daniel Dennett (philosopher) points to the Greek philosopher Democritus (5th c. BCE), and his philosophy of atomism (i.e. the idea that reality comprises only atoms) as an ancient warrant for the view that reality is to be defined purely in terms of materiality.⁴ Like other popular and famous writers, Dennett argues that atomism, as refined by modern science, requires us to abandon notions of meaning and purpose. Nowadays, not just atomism, but also (perhaps especially) evolution convinces many that all notions of minds meaningfully pursuing purpose are nonsense. Early in *Darwin's Dangerous Idea*, Dennett asks whether “*any* version of this attitude of wonder and purpose” can “be sustained in the face of Darwinism,”⁵ to which his book comprises a resounding “No.” To the contrary, he claims:

There is only one sort of stuff, namely *matter*—the physical stuff of physics, chemistry and physiology—and the mind is somehow nothing but a physical phenomenon. In short, the mind is the brain ... we can (in principle) account for every mental phenomenon using the same physical principles, laws and raw materials that suffice to explain radioactivity, continental drift, photosynthesis, reproduction, nutrition and growth.⁶

This is what Dennett refers to as “the contemporary orthodoxy.” What it means, in his view, is that life and its laws emerged as “the outcome of a blind, uncaring shuffle through Chaos.”⁷ Richard Dawkins is similar; the universe, he claims, “has precisely the properties we should expect if there is, at bottom, no design, no purpose, no evil and no good, nothing but blind, pitiless indifference.”⁸

This claim that the universe comprises “only one sort of stuff,” and is therefore blind and meaningless, leads inexorably to the view that human beings, specifically human *minds*, are utterly reducible to the stuff of physics and chemistry. Dennett claims, as though it were a dogma of science (which it isn't), that “the mind is the brain.” Edward Wilson believes that the human intellect was constructed by evolution simply “to promote the survival of human genes,” an idea which, he admits, leads to

“the rapid dissolution of transcendental goals toward which societies [or individuals] can organize their energies.”⁹ As Richard Dawkins expresses it, “[w]e are built as gene machines,” to whose “music” we “dance.”¹⁰ This philosophy—this *interpretation* of science—had its most immediate forebear in the theory of behaviorism that dominated much of psychology in the mid-twentieth century, and which consistently denied the reality of consciousness, and so laid the groundwork for notions like “the mind is the brain” and that transcendence is an illusion.

In his recent encyclical *On Care for Our Common Home (Laudato Si')*,¹¹ Pope Francis, echoing Catholic Social Teaching generally, warns against philosophies which deny “any pre-eminence to the human person.” Philosophies which mistakenly “put all living beings on the same level,” depriving “human beings of their unique worth and ... responsibility”—which deny the reality of mind, consciousness, and free will—such philosophies too easily lend themselves to “enormous inequalities,” such that some consider themselves “more human than others.”¹² Where humanity as a whole has no transcendence, it is easy for the poor and minorities to be denigrated, and for the rich and powerful to claim all the specialness for themselves.

A Self-Contradictory Creed

Jerry Coyne (biologist) would no more advocate such an idea than would any of the other scholars whose ideas I am contesting here. But consider the following from a recent interview about his book, *Faith Versus Fact: Why Science and Religion Are Incompatible* (2015). Coyne fully endorses the materialist view of reality advocated by Dennett and others, and subscribes without question to the notion that the mind is the brain. He was asked in the interview why he is so sure humans have no free will, and what are the “social consequences” of the belief that they do not:

I can explain it to you in one second why we don't, and it's this: our brains are made of molecules. Molecules obey the laws of physics. Therefore everything that comes out of our brain, including our behaviors and choices, must obey the laws of physics. ... insofar as

those laws apply, everything we do is basically determined. ... we cannot affect how our brains work by thinking about it, because even our thinking is physically-based. ... we can't make a choice. ... [w]e are physical automatons. ... That has enormous consequences for how we treat people, for punishment and reward, as well as how we regard our own lives. Our feelings of sorrow ... will all vanish, as well as invidious social consequences like the theory that people are poor because they deserve it, or that people get what they deserve in this life. ... it's all wrong. People don't get what they deserve, they get what they get because of the laws of physics.¹³

The point of citing this is not to accuse Coyne of advocating what I am sure he would regard as abhorrent (abandon the poor and marginalized to the fate which “physics” has dealt them). The point is, rather, to show how self-contradictory is the philosophy which teaches that humans have no “pre-eminence” such that they have no transcendent abilities to rise above their limiting conditions, to understand their origins and promise, and so to make responsible—even heroic—choices about their lives and the lives of others. I do not know the politics of Coyne or of the other scholars I am contesting, but I am certain they reject racism, sexism, and the other inordinate prejudices which plague human existence.

And yet their philosophy represents a measuring of humanity—I would say a “mismeasuring”—which leaves humans utterly trapped in a fate over which they have no control. None of these scholars likes, or even subscribes to, this idea. Each, in their own way, somehow comes round to the idea that we can escape. For instance, they all write lengthy books trying to convince their (presumably somewhat intelligent) readers of the rightness of their ideas. So, they must believe that those readers' minds are pliable enough to absorb the utterly counterintuitive view that, in reality, their (the readers') minds do not exist. Dawkins' attempt to escape is illustrative of the general trend, and will be useful for later discussion. Dawkins thinks that “we, and all other animals, are machines created by our genes.” We are, therefore, liable to “ruthless selfishness,” and are capable only of “a limited form of altruism.” “Universal love,” he says, simply does “not make evolutionary sense;” in fact, “pure, disinterested altruism ... has no place in nature,” and “has never existed before in the whole history of the

world.” And yet, somehow, he believes we should “try to teach generosity and altruism,” and even says that we are capable of cultivating it.¹⁴ But how are we to teach something which is not only contrary to nature, but “has never existed before in the whole history of the world”? Dawkins here, like other materialist thinkers, simply does not follow his own creed. Indeed, we might begin to suspect that the creed¹⁵ itself makes no sense.

And we should note, before moving on, that the materialist creed is just that—a creed. It is not science. Of course, it wraps itself in the cloak of science, and speaks as though materialism follows from atomism and evolution as naturally as night follows day. But the view that all reality is definable in terms of materiality is as much a matter of faith as is any (more obviously religious) doctrine to the contrary. How we (mis)measure reality has everything to do with how we (mis)measure humanity. There is no science that could even examine whether reality amounts only to materiality, much less prove or disprove it. A contrary (not necessarily religious) view to materialism is idealism, by which I do not mean to invoke the numerous idealist-type philosophies of the (mostly) nineteenth century; I mean simply the fundamental notion that reality is at least as much mind-like as it is stuff-like. Keith Ward (Christian philosopher) defines idealism as the view that reality is “founded ... on some form of purposive consciousness.”¹⁶ Idealism, of course, is no more ultimately provable than is materialism; I maintain, however, that it is a far more reasonable theory in terms of accounting for all of the evidence than is materialism. Ultimately, however, the decision comes down to faith and commitment.¹⁷

“Faith and commitment” are essential in this entire debate—on both sides. Materialists generally believe that physical stuff and laws account for, and thus control, everything, and therefore they are committed to the notion that only physics, chemistry, and biology should be allowed to guide human action. Materiality, for them, is the “measure” of everything, even mind and free will. Sam Harris, a very committed-to-atheism neuroscientist, wrote *The Moral Landscape* to demonstrate that science is all that is needed for ethical decision-making.¹⁸ He is vigorous in his view that religion is evil. Edward Wilson is not as vitriolic toward religion,

but he is clear that biology alone can guide moral action.¹⁹ In Wilson's account, "universal human rights"²⁰ are identified as a "primary value," but the "true reason" for it, he says, is its "raw biological causation." Once the latter is recognized, it will be found far more compelling, he thinks, than "any rationalization contrived by culture." In other words, we won't value human rights because of lessons learned from past violence and warfare, or from the inspirational teachings of a Gandhi, Martin Luther King, Jr., or Jesus. No, it will be because "we are mammals" who value "personal reproductive success" and grant one another "grudging cooperation" so that we can "enjoy the benefits of group membership."²¹

Apart from the inherent implausibility of fighting the evils of war or racism on the basis of concerns about "reproductive success" and/or "group membership," note again the self-contradiction in which this philosophy is inevitably mired. Biology has no capacity to tell us that we should grant people their "rights" as a "primary value." Biology is utterly blind to values; human values are not why we do biology. *People* do biology; biology is their servant, not their master, and whether they interpret biology to foster human rights is why people do philosophy, not biology. Why would thinking people ever allow "raw biological causation" to be the ground of their ethical values or their policies about "human rights"? Wilson only talks in that way because he wants to preserve two contradictory ideas: 1) "Raw biological causation" (we have no capacity for "transcendental goals"), and 2) We should follow only the dictates of biology (not of, say, the "transcendental goals" of religion). It takes only a little thought to recognize that the power to decide whether or not we value human rights, and what is the best way to implement them, presupposes the transcendence that Wilson denies. My contention is that we need to measure humanity not only by the criteria of the natural sciences—valuable as they are—but also by those of the humanities. Humans have the ability to rise above limiting conditions and to make judgments about how best to overcome them. This raises the issue of what human consciousness is, and brings us to some scholars who strongly reject the philosophy of materialism.²²

Protests Against Mismeasuring

There are numerous such scholars, of course, just as there are numerous advocates of materialism. I will briefly focus here on a few scholars, representative of many more (see note 22), who were (are) profoundly engaged in both the scientific and the philosophical issues of what constitutes a human being. Roger W. Sperry (1913-1994) was a neuroscientist, who won the Nobel Prize (along with others) for split-brain research (the functions and relationship of the right and left brain hemispheres). Already from the 1960's, Sperry began reacting against behaviorism and particularly its theory that the mind is the brain. Sperry wrote numerous books and even more numerous scholarly articles; he also received many science awards beyond the Nobel Prize. Short quotations from just one article, and from a book about Sperry's ideas, will have to suffice here to make the point.

Sperry had no theological agenda; as far as I can tell, he was an agnostic (maybe atheist). He believed that science could provide a basis for ethical decision-making (see note 17), but it could only do so, he insisted, so long as it was not tied to a materialist, reductionist philosophy:

Once science modifies its traditional materialist-behaviorist stance and begins to accept in theory and to encompass in principle within its causal domain the whole world of inner conscious, subjective experience (the world of the humanities), then the very nature of science itself is changed.²³

Sperry was convinced that science, as a method of inquiry, was vitiated by materialist philosophy. Particularly, the understanding of the human mind could not, he believed, properly proceed on the conviction that the mind is the brain and has no existence apart from brain-chemistry. In other words, long before Coyne, and with an expertise that Coyne himself admits he does not have,²⁴ Sperry rejected the view that there is no such thing as free will.

Basing himself on the concept of emergence (more on this below) and recent research, Sperry wrote an article on the “The Consciousness Revolution” in which he described not only why behaviorism is no longer adequate for understanding the mind, but why the recent findings of neuroscience should lead to the abandonment of a view of science as dominated by materialism. “In the final analysis,” he wrote, “we come down to two opposing views of physical reality, two different worldviews,” materialism or mentalism. By “mentalism,”²⁵ he simply meant the notion that “things are controlled not only from below upward by atomic and molecular action but also from above downward by mental, social, political and other macro properties.”²⁶ In other words, humans have the capacity for freedom. It was essential, he thought, to overcome a purely materialist (the-mind-is-the-brain) philosophy, since such a view prevents science from making its essential contribution to the moral challenges facing society. Human values, he believed, flourish best when ethics can draw on the entirety of human knowledge, science no less than the humanities. Materialism is inadequate for measuring either the world or humanity.

In that regard, Sperry shared a lot in common with Michael Polanyi (1891-1976), and in fact regarded Polanyi as the scholar with whom he had the most in common.²⁷ Polanyi was a scientist-turned-philosopher. He was horrified by the perversion of scientific knowledge in Soviet Russia and Nazi Germany, and feared that materialist thinking was becoming prevalent throughout industrialized societies.²⁸ Having spent the first part of his life studying and teaching chemistry, he turned increasingly in its second half to philosophy, specifically epistemology (how do humans attain knowledge?). He rejected the view that life is reducible to the definitions of physics and chemistry, and believed that the prevailing objectivist view of science lay at the root of much of the malaise in the Western world.²⁹

Like Sperry, Polanyi drew on the concept of emergence for his understanding of reality. Emergence is a concept of physics, but it has also become an important idea in philosophy. Emergence accounts for “novelties [in nature] that follow from the system rules but cannot be predicted from properties of the components that make up the system.”³⁰ Think for instance, in the very early universe, of the properties which we

study in chemistry “emerging” from (what we call) physics. More germane to this essay, think of the numerous levels of emergence, which have been necessary in order for life, mind, and human values to emerge from the rock, fire, and water of the Earth. That creativity of the universe led Polanyi to the view that life has an inherently purposeful character—not a view that is popular among biologists.³¹

Be that as it may, Polanyi is most revered for his philosophy of mind. He was horrified by behaviorism and its diminution (its mismeasuring), as he saw it, of the powers of the mind. Behaviorism deals with the brain as a mechanism, and things like mind-altering drugs seem to confirm the point. Polanyi accepts that a person is a mechanism, and then shows that precisely as a mechanism, a person (or any living thing) is a hierarchy, comprising numerous levels of (emergent) reality. A simple mechanism, like a watch, illustrates the point. It functions by operational principles that have nothing to do with physics and chemistry. These principles were imposed on the parts of the watch by a watchmaker, and so hard science “cannot reveal the practical principles embodied in a machine, any more than the physical chemical testing of a printed page can tell the content of its text.”³² Physics and chemistry provide the *conditions* for the watch’s functioning, and may account for its failure (if it rusts or whatever), but they cannot account for it being a watch. And what is true of simple mechanisms is all the more true of living beings; they function by principles far beyond the realms of physics and chemistry. The distance between the *physico-chemical composition* of a page on which is written a Shakespearean sonnet and the *meaning of the words* on that page is precisely the distance between seeing a person as so much physics and chemistry (*merely* a machine) and seeing that person *as a person*, who lives by realities far beyond those described by the hard sciences.

Other recent scholars, who have made much of opposing materialist views of reality, and thus of views of human beings, which deny the reality of consciousness and free will, include Thomas Nagel (atheist philosopher) and Raymond Tallis (atheist neuroscientist).³³ I stress their “atheist” credentials, because I want to show that the deep questioning of materialism is not simply the preserve of the religious or of theologians. As

I have tried to show, materialism has deep flaws, regardless of its obvious hostility to theist views of reality. Tallis refers to the excessive conclusions drawn from Darwin and neuroscience as “Darwinitis” and “Neuromania”; they are, as he sees them, foolish and shallow misreadings of modern science, and mismeasurements of humanity. He says at one point:

Things must be pretty dire when even an atheist like me wants to rescue, if not God, at least the idea of Him (or Her or It). But it’s true. Neuromaniac and Darwinitic approaches to religion do such inadequate justice to the most profound, and possibly the most terrible, idea mankind has ever entertained, that I feel almost protective toward the Old One.³⁴

After briefly, and half-heartedly, defending “the Old One,” Tallis critiques (not for the first time in the book) the claim of Sam Harris that brain scans demonstrate that religious beliefs are nothing more than brain chemistry. He concludes:

What motivates Harris and some other neuro-theologians [scholars using neuroscience to prove theology to be delusional] is the wish to cut religion down to size. The trouble is that this diminishes not only religious belief, but also diminishes all kinds of belief and, indeed, diminishes humans as believers. Irrespective of whether you are an atheist or a religious believer, to naturalize one of the greatest (for good or ill) and most extraordinary expressions of our distinctive humanity cannot be a good thing.

Conclusion: The Human Vocation

We need liberation from ideologies that would confine us to the level of the physical every bit as much as we need liberation from the worst of religious fanaticism. Neither dogma is worthy of the depth and beauty of the human spirit. In 1994, over the course of about a hundred days, eight hundred thousand people—mainly Tutsis—were slaughtered in the Rwanda genocide. The following year, Archbishop Desmond Tutu, who was awarded the Nobel peace prize in 1984 for his nonviolent struggle against the humiliations of apartheid in South Africa, went to Rwanda in his capacity as president of the All Africa Conference of Churches. The

message he preached was, “no future without forgiveness.”³⁵ He knew what he was talking about, since in the previous years—at the behest of Nelson Mandela—he had headed South Africa’s “Truth and Reconciliation Commission,” whose charge was both to uncover the atrocities of the apartheid period and, far from seeking revenge, to bring about peace, reconciliation, and even forgiveness. Even so, it was a stunning message: forgive those who slaughtered your family and friends!

Those of us spared such horrific experiences as apartheid and genocide can barely grasp the concept, and yet we know—though we cannot prove—the truth of what Tutu, Mandela, and others have embodied by their lives of courage and sacrifice. We *know* that violence, hatred, and revenge hold no future for the human animal. We know, as surely as we know ourselves, that our humanity has capacities for love, as it has capacities for forgiveness, justice, and hope. Our capacities, however, are not automatically realized; we must begin by believing in them.³⁶ How we measure or mismeasure ourselves and the humanity of which we are each a part has everything to do with whether or not we will ever rid ourselves of the horrors of racism and sexism, and of the violence that they so easily spawn.

Notes

1. I should acknowledge that I am indebted to the late Stephen Jay Gould and his book *The Mismeasure of Man* for my use of the word “mismeasuring.” This essay accords with the spirit of Gould’s book, but I make no claim that he would agree with my philosophy, much less my theology. Gould was something of a materialist.
2. See the chapter entitled, “In Black and White,” 276-309, here 277-278.
3. Diamond, *Third Chimpanzee*, 308.
4. Dennett, *Freedom Evolves*, 7-8.

5. Dennett, *Darwin's Dangerous Idea*, 18.
6. Dennett, *Consciousness Explained*, 33. See also Dawkins, *River Out of Eden*, 133, and Wilson, *On Human Nature*, *Consilience* and other books.
7. Dennett, *Darwin's Dangerous Idea*, 185.
8. Dawkins, *River Out of Eden*, 133.
9. Wilson, *On Human Nature*, 2-3, 4, respectively.
10. Dawkins, *Selfish Gene*, 201, and *River Out of Eden*, 133. Dawkins nevertheless goes on to admit that “we have the power to rebel against our creators” (genes and memes—*Selfish Gene*, 201), which is something of a self-contradiction—a feature, as I shall argue below, that characterizes much of this thinking.
11. *Laudato Si'* means “Praise be to you [my Lord].” This is a quotation from a prayer of St. Francis of Assisi, and it constitutes the opening words of the encyclical.
12. Pope Francis, *Laudato Si'* #90. Note also the following, in which Francis laments the modern “technocratic paradigm” (#106) and an “excessive anthropocentrism” (#116) which have “led to a constant schizophrenia, wherein a technocracy which sees no intrinsic value in lesser beings coexists with the other extreme, which sees no special value in human beings. But one cannot prescind from humanity. There can be no renewal of our relationship with nature without a renewal of humanity itself. There can be no ecology without an adequate anthropology. When the human person is considered as simply one being among others, the product of chance or physical determinism, then ‘our overall sense of responsibility wanes.’ ... *Human beings cannot be expected to*

feel responsibility for the world unless, at the same time, their unique capacities of knowledge, will, freedom and responsibility are recognized and valued" (#118—emphasis added. Francis quotes from Benedict XVI, "Message for the 2010 World Day of Peace").

13. Available at <http://fivebooks.com/interview/jerry-coyne-on-the-incompatibility-of-religion-and-science/>.
14. *Selfish Gene*, 2-3, 200-201.
15. This argument is well articulated by Haught, *Is Nature Enough?*, 97.
16. Ward, *Big Questions*, 183.
17. Insofar as they have such utter faith in the materialist creed, it seems to me that Dawkins, Dennett, Coyne, and Wilson are, in their own way, every bit as religious as ordinary churchgoers.
18. He also has written a book on *Free Will*, denying that any such thing is actually real. How, therefore, he thinks we can employ science (presumably, determine values based on scientific knowledge) for ethical *decisions*, is utterly mysterious.
19. I should emphasize that I agree with the notion that evolution is *essential* for understanding the moral nature of human beings (e.g. emotions and the development of altruism) and therefore has a role in ethics. What I am contesting is the view that science alone is *sufficient* for ethical decision-making.
20. He must be referring to the Universal Declaration of Human Rights of the United Nations, which is easily available at

www.un.org. It includes in its preamble: “Whereas the peoples of the United Nations have in the Charter reaffirmed their faith in fundamental human rights, in the dignity and worth of the human person and in the equal rights of men and women ...” Surely this declaration of “faith” is completely cultural, deriving from lessons learned from wars and genocides; how could it be improved by reducing its motivation to biology?

21. *On Human Nature*, 198-199. Wilson is not a lone voice in this view; witness the fact that his book received a Pulitzer prize, not to mention the supporting chorus of voices like Harris, Dawkins, Dennett, and others.
22. To name a few: Stephen M. Barr (Catholic physicist), Ian Barbour (Professor of Physics and Religion), Francis Collins (Christian geneticist), Paul Davies (mathematical physicist), John Haught (theologian), Martinez Hewlett (biologist), Alister McGrath (scientist turned theologian), Kenneth Miller (Catholic biologist), Thomas Nagel (atheist philosopher), Arthur Peacocke (theologian and biochemist), Ted Peters (theologian), Michael Polanyi (scientist turned philosopher), John Polkinghorne (physicist and theologian), Roger Sperry (agnostic neuroscientist), Raymond Tallis (atheist neuroscientist).
23. Quoted in Erdmann and Stover, *Beyond a World Divided*, 29.
24. See the interview at <http://www.skeptiko.com/161-outspoken-atheist-jerry-coyne/>.
25. Sperry, *Consciousness Revolution*, 44.
26. Sperry, *Consciousness Revolution*, 45.

27. Erdmann and Stover, *Beyond a World Divided*, 149.
28. Polanyi, *Science, Faith and Society*, 7-9, 78.
29. Polanyi, *Personal Knowledge*, 139-142; “On the Modern Mind,” 12-13.
30. Morowitz, *Emergence*, 13.
31. Polanyi was well aware of this, and forthrightly disagreed with the biologists of his time—e.g. “The Modern Mind.” Recently, Pross (biologist), *What is Life?*, 9-23, has written forcefully of “Life’s purposeful” and “dynamic character;” life (unlike physics and chemistry) “has an agenda.”
32. Polanyi, “On the Modern Mind,” 14.
33. Nagel, *Mind and Cosmos* (2012); Tallis, *Aping Mankind* (2011).
34. Tallis, *Aping Mankind*, 327.
35. Tutu, “No Future without Forgiveness,” 390-396.
36. Parts of this essay have depended on research and writing I have done elsewhere—notably Smiles, “Persons Knowing Life,” and “Transcendent Mind.” This last section was mostly taken from my book, *The Bible and Science*, 132-133.

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