In this essay, the author examines some of the troubled interactions between science and religion in the West, attributing part of the trouble to a reliance upon anthropomorphic models of God and to an illusion of human separateness from the rest of creation. Citing recent findings of biology, neuroscience, and cognitive science, he argues that the human species is religious by its very nature.

**Introduction**

When I consider your heavens, the work of your fingers, the moon and the stars, which you have set in place, what are human beings that you are mindful of them, mortals that you care for them? Yet you have...crowned them with glory and honor.

--Psalm 8:3-5

The psalmist’s question springs from a sense of wonder, occasioned by contemplation of the starry fields in their vastness and beauty. An answer is woven from the threads of God’s majesty, the puzzle of human existence, and the order of the cosmos. All three elements play upon each other and find their meaning in relation to each other. Likewise, the most satisfying answers we give ourselves about the meaning of human existence flow from our investigation of the world in which we live, and are bracketed by a sense of the mysterious, majestic, otherness of God.

“Nearly all the wisdom we possess,” writes John Calvin, “consists of two parts: the knowledge of God and of ourselves. But while joined by many bonds, which one precedes and brings forth the other is not easy to discern.”¹ What can we learn about God through scientific exploration of ourselves and the world around us? Surely a methodological approach to increasing our knowledge of God, apart from the study of Scripture, must focus on increasing knowledge of ourselves and our world, for God is not an object among objects nor a cause among causes. Growth in our knowledge of God does not occur as does progress in “normal” science.² Rather, our knowledge of God functions more like a theoretical construction, organizing our experience, informing the meaning we find and attribute to human existence, and ordering our relation to the cosmos and to each other.³ The findings and theories of science can either confirm the adequacy of a religious worldview as an intelligent, coherent, and comprehensive view of ourselves and our world, or can display the weakness of our conception of God to account for all phenomena.

**A view from the Reformed tradition**

Four themes recurrent in the Reformed tradition shape my perspectives and inform my disposition towards the sciences: God’s otherness, human creatureliness, life’s religiousness, and a desire to relate all things to a unifying reference.⁴,⁵ I propose that anyone, working from a perspective informed by these four themes, may benefit from, and dialogue with, other scientific disciplines in several ways. I argue that the findings and perspectives of the physical and human sciences can enrich the meaning of the first three themes by correcting the too-often closed and limited understanding of the nature of God, confirm convictions about the wonders and limits of creaturely
existence, and corroborate the irreformably religious character of all human acts of meaning-making. The fourth theme, that of a unifying vision, I believe, dictates a disposition of openness, humility and wonder.

a. God’s otherness
   Different thinkers have expressed the otherness of God in various ways. Calvin meditates on the absolutely sovereign Governor who rules all parts of the universe.6 Edwards savors the sweet glory that appears in all things as expressions of his “great and glorious God.” Schleiermacher identifies God as the “Whence” of our existence, upon which we sense ourselves as absolutely dependent.8 Augustine perhaps best indicates the otherness of God in the following: “We are speaking of God. Is it any wonder that thou dost not comprehend? For if thou dost comprehend, He is not God.... [T]o reach God by the mind in any measure is a great blessedness; but to comprehend Him is altogether impossible.”9

b. Our creatureliness
   As creatures we are aware that we have not called ourselves into being; we belong to something much greater than ourselves, and our existence is intertwined with the fabric of the natural order. Our creatureliness speaks to the relative significance of our existence and to the limited perspective of our understanding. This limits our ability to know God. It also limits our knowledge of ourselves.10 Augustine cries in his Confessions, “I myself cannot grasp the totality of what I am. Is the mind, then, too restricted to compass itself...?”11

   Yet, our creatureliness also suggests a degree of dignity resulting from the imprint of the Creator’s image. It is our status as image-bearers that allows us to comprehend the intelligibility in the world and to respond in gratitude to its Author. That our minds can calculate probability waves of sub-atomic particles, that we can trace the Universe’s history in cosmic radiation, that we can relieve mental anguish through pharmacological therapy, all speak not only of the wonderfully intelligible patterns in nature, but also—and more surprisingly—of our uncanny ability to perceive it. The wonder inspired by the human body and our ability to measure the universe point, in turn, to the character of the Creator. “In regards to the structure of the human body, one must have the greatest keenness in order to weigh its articulation, symmetry, beauty and use,” writes Calvin; “but as all acknowledge, the human body shows itself to be a composition so ingenious that its Artificer is rightly judged a wonder worker.” 11 As Einstein said, “In every true searcher of nature there is a kind of religious reverence; for he finds it impossible to imagine that he is the first to have thought out the exceedingly delicate threads that connect his perceptions.” 12

c. Life’s religiousness
   “He who rejects one religion (or god) can only do so in the name of another,” writes Cherbonnier.12 That humans are irreformably religious is a recurrent theme in the Reformed tradition. Calvin, with all of Augustine’s concern for concrete issues, insisted that there is no neutral ground from which to contemplate the meaning of life. Reinhold Niebuhr writes: “Implicit in the human situation of freedom and in man’s capacity to transcend himself and his world is his inability to construct a world of meaning without finding a source and key to the structure of meaning which transcends the world beyond his own capacity to transcend it.”15

It is our status as image-bearers that allows us to comprehend the intelligibility in the world and to respond in gratitude to its Author.
d. A unifying vision

A great contribution of the Reformers was their insistence on including all areas of life within the purview of religious concerns. Religion can no longer be viewed as a personal matter of one’s supernatural end, super-added to the self-sufficient spheres of science and society. One’s religious commitments must inform one’s public life. And, likewise, what one encounters in the physical and social worlds must register in one’s religious commitments. An absolutely sovereign God assures ultimate harmony among all elements of human existence. Behind this concern is the ancient notion that God is the one author of two great books: Scripture and nature.6

The desire for a unifying vision of all human experience suggests several things for theology’s dialogue with the sciences. First, we should not hesitate to look closely at the physical world, out of fear of what we may find. Neither should we be too certain in advance of what we might find. The Galileo affair was a lesson in the cost of suppressing acknowledgment of the contingencies of nature in the name of religious preconceptions. Second, growth in our knowledge of ourselves and consequently our knowledge of God, comes through humbly listening, looking, feeling and pondering. And finally, to benefit from our dialogue with nature, we must be willing to feel, as well as to think. Full understanding emerges only when the cool dispassion of controlled investigation is coupled with the drive of curiosity, the wonder of being, the excitement of discovery, and the response of gratitude.

Such a disposition can lead the theologian into fruitful conversation with the sciences, conversation that “trades in intellectually satisfying understanding,” as Polkinghorne says, “rather than in logically coercive demonstration.”17 The sciences can offer greater insight, corroborating and possibly correcting theological truths; but they can never fully “prove” religious claims. Likewise, theological truths can enlighten the findings of science, directing us in their application, explicating their significance, and even predicting possible findings.18 To gain the most from this dialogue, the theologian must move beyond the realm of general epistemological and meta-methodological concerns, and into the consideration of particular, concrete observations.19 In choosing to utilize conclusions drawn from such dialogues, we should exercise a good deal of parsimony, neither too quickly abandoning elements of the tradition nor too rashly constructing theories on debated issues in science.

Three themes in conversation with the sciences

a. The idolatry of anthropomorphism

Personhood is a central aspect in the Judao-Christian conception of God. God is portrayed in Scripture as one who feels love, friendship, anger, and jealousy; as one who calls, chooses, chastens and engages others. If our concept of God did not include the notion of personhood, we should not be able to engage God as another, as a Thou; we would cease talking of God’s love for us and of our affection for God. While personhood seems a formal necessity in our talk of God,20 it can also lead to the mistake of conceiving God as too much like ourselves. We may affirm notions of the omnipresence of God, but we are unable to imagine a person without temporal and spatial locality. Likewise, the affirmation of the omniscience of God is typically no more than an allegory of human knowing extended without limit. Consequently, the notion of personhood, conjoined with other divine attributes, leads us to imagine that God is a personal agent who attends, intends, desires, knows, purposes, and acts much as we do, but on a much grander scale. What Charles Coulson has labeled the “God of the gaps” is an idol based on a too-human-like notion of God.21 These anthropomorphic images have led to at least two historic clashes between theology and science, and have eventually yielded either to the recovery of neglected elements in the tradition or to the creation of new models and images of God.

The first instance arose in the cosmological debates of the seventeenth and
eighteenth centuries. Spatial images of a god who literally abides above the Earth in an immutable sphere of perfection and who orders the universe around the theater of human activity contributed to the resistance to accepting the Copernican model of the cosmos. Even after a heliocentric model was widely accepted, such an accomplished scientist and theologian as Sir Isaac Newton could still imagine God as tinkering with the planets and stars, much as a mechanic would fine-tune a clockwork. Such an overly anthropomorphized image of God, as a causal agent manipulating objects, was easily dismissed by Laplace as a superfluous hypothesis.  

The second instance arose in the theological responses to Darwin. Scientists and theologians such as Frederick Temple, Asa Gray, B. B. Warfield, Joseph van Dyke, W. B. Pope, and J. McCosh, all found meaning in an evolving universe only through recourse to an image of God as one who plans, plants, purposes, directs, guides, intervenes, and nurtures creation and its growth in ways allegorical to human activity in mechanical or horticultural projects. Those who were best able to accept and assimilate evolutionary theory were those who were able to maintain a view of God as an active creative agent, but without casting their image of the divine in analogies of an inattentive watchmaker or an attentive gardener. Those who could free themselves from the powerful mythical images of God as one who fashions figures from clay and bone were able to integrate evolutionary theory fully within their theology. Aubrey Moore, James Iverach, H. W. Beecher, J. R. Illingsworth, 23 and more recently Pierre Teilhard de Chardin and Charles Hartshorne are such theologians. Teilhard and Hartshorne present novel and progressive notions of the nature of God, while the others, at the prodding of the natural sciences, were perhaps doing no more than recovering lost aspects of the tradition. In an often-neglected passage, Calvin asserts that we may rightly say that “nature is God,” if we do so with a reverent mind. 24

b. The illusion of self-possession

If the idolatry of anthropomorphism is the mistake of imagining God as too similar to ourselves, the illusion of self-possession is the mistake of supposing too great a difference between ourselves and the rest of creation. The illusion of self-possession suggests that we are transparent to ourselves, that our desires and behaviors are controlled by rational reflection, that our being and destiny is a matter to be determined by conscious deliberation. Recent theoretical and experimental work in the sciences confirms the limits of our self-knowledge and of our relative significance in the universe.

The illusion of self-possession began to crumble with the post-modern critique of epistemology and science. Contemporary thought in philosophy, science, literary theory, and critical theory suggests that we do not belong to ourselves as much as we belong to traditions, interests, biases and socially constructed and transmitted institutions. 25 Likewise, what we do know as a matter of conscious reflection and focal attention is meaningful only against the backdrop of what is known tacitly. 26 At a fundamental level, the meaning of scientific language—and all other language—is “relational, multiple, and does not necessarily involve conscious categorization.” 27

In a similar vein, recent experimental work in the physiology and psychology of perception suggests that “scientific knowledge [of ourselves and our world] is (1)
limited and relative, (2) social, (3) tacit and dispersed, and (4) contextually constrained and value laden." Neuroscientists tell us that the brain is in some ways "hard wired" to recognize certain sensory input as meaningful, to "make decisions," and to prompt behavior without the input of conscious deliberation. These neurological shortcuts have probably arisen to insure the survival of our species better, but they pay no homage to the self-identified "I" that would exercise sovereign control over the "self." By this account, we are more like cockroaches—whose legs begin to move before the message of perceived danger reaches their brain—than like the masters of the universe of modern mythology. Recent advances in psychopharmacology and neuroscience leave no mistake about the complicity of mind and body; we are a part of nature. On our inability fully to comprehend ourselves, cognitional theorist and naturalist philosopher Colin McGinn seems to repeat St. Augustine, as quoted earlier, when he says, "the brain is an object of perception, laid out in space, containing spatially distributed processes; but consciousness defies explanation in such terms. Consciousness does not seem made up out of smaller spatial processes; yet perception of the brain seems limited to revealing such processes."

But just as we are part of the natural order, we are also unquestionably set apart from it. All the experimenting and theorizing that has lead to the above conclusions also serve as demonstration that we are unique creatures in our ability to ask the questions of who, what, and where we are. Still, as regards our relative significance in the cosmos, geology and astrophysics teach us that human existence comprises an infinitesimal portion of time and space. This does not mean that humans do not hold a unique position in the universe, but it does suggest that the extinction of our species would not much alter the great cosmic scheme. Some have argued from this "objective" view for a style of theological reflection that is truly theocentric rather than self-referenced.

c. Homo religiosus

Where Calvin speaks of the religious character of human life in theological terms and Niebuhr explicates the religious dimension in existential and phenomenological categories, a case can also be built for the necessity of religious commitments, using evidence provided by natural history and cognitive science.

Neuropsychologist Rodney Holmes traces the family tree of the genus Homo and notes the following:

The key to the hominid story is that with each major increase in the functional ability of a hominid species, there is a major increase in cranial capacity. Each hominid takes its name from its new proficiency: able tool user, erect explorer, and wise deliberator. The significance of each new ability is understood better in terms of neuroanatomy than in terms of the skeletal anatomy of each hominid. In the details of this story one can see an emergent human character: intelligent, conscious, imaginative and religious.

From these observations, along with insights from linguistics and neuroscience, Holmes concludes that we are "fundamentally a Homo religiosus" and that there is "a naturalistic justification for the reality of our interpretation of ourselves as part of ecology." That the emergence of neurological structures responsible for the creation of religious meaning can be identified is not cause to dismiss the objects attended by religious notions, but, rather, argues for accepting the religious picture of Ultimate Reality on the basis of natural history.

Others have traced the meaning-making activities essential for maintaining a unified sense of self and world and for forming the social relationships essential to human life to the normative operations of neural structures. It seems as though the human brain operates in such a way so as to necessitate the formation of "myths"—the cognitive elements of which are set by the environment, and which secure a pattern of valuation and behavior within a social environment. Given the ecological reciprocity of human meaning-making and the environment, J. Ashbrook concludes that "neutrality about life—its purposes and processes—is no
longer an option.” 35 Instead, based on the neurological evidence we can affirm that:

Religion itself reflects humanity’s meaning-discerning/meaning-constructing participation in the ecosystem of which it is a part and which it most fully expresses. Sensory processes awaken symbolic processes and, in turn, are shaped by symbolic processes.

...Religion reminds us of God and the soul. It directs our attention to the depth of experience. It seeks the value of what is. It insists upon the relatedness of everything, in a universe that is to be cherished even as it gives birth to Homo sapiens, Homo religiosus. 36

Conclusion
What, then, can we learn about God from the sciences? In addition to a renewed sense of marvel at our creaturely existence in a complex and orderly universe, we can learn with assurance that the posture most appropriate to our species is a religious orientation that unifies our sense of self and world and that spurs us to piety.

Works cited:


Fish, Stanley. Is There a Text in This Class? The Authority of Interpretive Communities. Cambridge, MA: Harvard University Press, 1980.


**Endnotes:**

1Calvin, I, p. 35.
2Kuhn, chaps. 2-5.
3See Kaufman.

4I am not claiming fidelity to the theology of Calvin or any other Reformed theologian. Nor do I limit my theological language and categories to those of the tradition. Rather, much as J. Gustafson does in his *Ethics from a Theocentric Perspective,* I have a preference for themes that are evident in a trajectory leading from Augustine through Calvin, Schleiermacher, Edwards, and Reinhold and Richard Niebuhr.

5Other theological themes—such as the role of affections in religious experience, the preference for a “salvation history” approach of reading scripture, God’s good and faithful provision for human needs—can also be easily brought into conversation with scientific notions. Consider the essential role of emotions in rationality, that perception occurs as things manifest themselves over a length of time, and what some physicists call the “anthropic principle.” But the limits of this essay necessitate selectivity.

6Calvin, I, p. 200.
7Edwards, p. 285.
8Schleiermacher, p. 16.
9Quoted in Reinhold Niebuhr, pp. 157-58.
10Calvin, I, chapt. 1.
11Augustine, p. 187.
12Calvin, I, p. 53
13Quoted in Polkinghorne, p. 30.
14Cherbonnier, p. 41.
16For a full discussion of the ancient and medieval notion of the unity of nature and Scripture, see Dupré, Otten.
17Polkinghorne, “Response,” p. 98
18In his recent book, *Intersections,* James Gustafson traces several “themes” of interaction between theology and the sciences. Some of these intersections emphasize theology’s ability to shape and inform the findings of science and others emphasize science’s ability to ground and shape theological concepts while others indicate no real substantial interaction between the two. For a working criterion of genuine integration, see Wolfe, “Introduction.”
19Gustafson, p. 130 ff.
20See Kaufman.
21See Coulson.
22For a good discussion of the scientific and theological notions surrounding the cosmological debates, see essays by Westman, Shea, Westfall, Jacob, and Hahn.
23For a presentation of the thought of these men and those mentioned in the previous sentences, consult Moore, Livingston.
24Calvin, I, p. 58.
25See, for example, works by Berger, Fish, Gadamer, Habermas, Kuhn, and Popper.
26See Polanyi.
27Hodges draws his conclusions from the work of psychologists Gibson, Bransford & McCarrell, Michaels & Carello, Neisser and Burke. A similar argument, cast in philosophical language, was used by Carnap in his refutation of Popper’s criterion of falsifiability.
Gregory Carmer holds a B.A. in philosophy and social sciences from Spring Arbor College. He is currently working toward the completion of his Ph.D. from Boston College Department of Theology. His current areas of research are in theological method and philosophy of science.

This essay received a First Prize.