



Dialogue: Article

Legitimacy and Scope of "Naturalism" in Science

Part I: Theological Basis for a "Naturalistic" Science

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The crucial reason for naturalism in science is theological – God’s transcendence with respect to creation. “Naturalism” limits science to the “creaturely” domain – and gives it legitimacy as a discourse distinct from theology. Adam naming the creatures forms the biblical paradigm for science: reason is a creaturely gift, not an autonomous power to subject God or divine agency in creation to our mundane scrutiny. Theological grounds for naturalism also affect its potential scientific meaning. Mechanistic assumptions adequate for physical science do not provide a final definition of “naturalism.” Part II discusses important implications for biology in particular as a “naturalistic” science.

For theological reasons, “naturalism” is an appropriate presupposition of science.

This first half of a two-part essay argues that for *theological reasons*, “naturalism” is an appropriate presupposition of science. It intentionally limits the scope of science to its proper “creaturely” domain, giving it legitimacy as a discourse distinct from theology. Such limited, “naturalistic” enterprises are necessarily sustained and informed by some broader, essentially religious/philosophical understanding. Adequacy of such a sustaining framework or world view is then a crucially important issue.

The crucial theological basis for scientific “naturalism” is God’s sovereign transcendence with respect to creation. God and his agency in creation are mysterious, not subject to routine scrutiny by human reason; they are apprehended only by faith, involving the human will and attitude in

relation to God as personal. Correspondingly, human reason should not be understood as an autonomous power for knowing transcendent, divine realities; it is a “creaturely” gift, appropriate to the vocation and setting of human beings within creation. As a creative achievement of our reason, science finds its defining paradigm in that context. Theological reflection on creation is entirely legitimate, but must be clearly distinguished from the mundane study of creation with which science is concerned. “Naturalism” in science is thus a methodological policy, rooted in the understanding that God is transcendent—not an object of autonomous rational scrutiny as created things are.

Persistent use of quotation marks is meant to flag two difficulties in using the very controversial term “naturalism” for this theologically based approach. *PSCF* readers are well aware of the extended debate among Christian thinkers regarding the legitimacy of naturalism in science—a debate now more than ten years old, with entrenched positions on both sides. To use the “N-word” at all seems asking for trouble, especially since I shall argue for a position having points of agreement/disagreement with both sides of the debate.

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The first difficulty is one of substance. I do *not* argue for the current *status quo* concerning what naturalism means. The “naturalism” presented here is radically different from the *philosophical* or *metaphysical naturalism* assumed in the “scientific world view.” That religious/philosophical viewpoint is better described as atheistic materialism. Christian thinkers correctly criticize its prejudicial influence as a tacit (and perhaps even dogmatic) bias in the contemporary scientific community. Theological justification for “naturalism” as a scientific presupposition must first make it clear that such religious/metaphysical dogmatism misses the essential point about what science means as a *limited* discourse about the world. But a theological understanding of “naturalism” also provides a basis for more open thinking about science and its explanatory paradigms. Following this up, Part II considers the scope of a theologically based “naturalism.” I argue there that a *mechanistic reductionism which sees nature in terms of physics alone* need not be the exclusive basis for scientific understanding, and that scientific problems are presented by living things for which it is not an adequate basis. New paradigms are needed which recognize that the central problems of biology and cognition *logically transcend* a merely mechanistic, physical account of the phenomena involved. These phenomena, though still “natural,” exhibit a logically distinct aspect or “level” of creation from the purely physical.

My second difficulty is semantic. For the most part, Christian debate over the legitimacy of naturalism in science tacitly shares the contemporary secularist, materialistic definition of the “N-word.” Therefore, even though the presuppositional framework presented here offers a fundamentally different meaning for the term, and even if Christian readers agreed that this framework provides a legitimate basis for science, they might still object to using the word *naturalism* for it. The objection has some merit, and if a suitable but different term “XYZ” were available, I would gladly use it. However, the currently accepted meaning of the word *naturalism* is really the result of a cultural and philosophical drift from an original presuppositional context for science very close to “XYZ.” I therefore believe that “*naturalism*” is both appropriate and economical to denote “XYZ,” at least for the time being. My persistent use of quotation marks signals this. Where *naturalism* appears without quotation marks, I allow for ambiguity in its meaning or for a generic, *status quo* usage.

Historically, Robert Boyle advocated naturalistic presuppositions in physical science (the “mechanical philosophy”) for reasons rather similar to those given here.¹ Boyle’s theological grounds for “naturalism” are relevant to us because in his day they gave science legitimacy as a separate discourse from theology. The limiting assumptions of “mechanical philosophy” offered a heuristic working proposal for *physical* science, and were *not* adopted to

provide a fixed paradigm of “nature” adequate for all future science. Cultural/philosophical drift away from this understanding came later, with the rise of Deism and the rationalism of the Enlightenment. Naturalism then became progressively identified with the specific idea of a mechanical, physical, and purely material world as a self-sufficient metaphysics—and progressively detached from the fundamentally theological context that gave it legitimacy.

Naturalism in Science Requires Theological Foundations

Science always has *some* religious context.

Modern culture thinks of science as an autonomous, self-justifying and self-sustaining enterprise. But this presupposes that the particular metaphysical idea of “nature” underlying physical science is an adequate view of the whole of reality. Sometimes people immersed in this reductionist world view even claim that belief in God subverts scientific inquiry by imposing on it the broader context of compatibility with theological understanding. Such claims reveal amazing ignorance of the roots of modern science in Judeo-Christian understanding of creation. They also ignore a more important point: the question is never *whether* people have a framework of religious beliefs, but *what those beliefs are*—and how they affect one’s approach to the world. Ideas promoted by science popularizers like Carl Sagan, Richard Dawkins or Richard Lewontin are rooted in their ultimately religious belief in a certain metaphysical view of “nature.”

However, modern philosophical naturalism really presumes an unlimited *human* autonomy, not merely an autonomous science. In the Bible, Cain symbolizes this claim to autonomous power independent of any relation to God, as he creates technology, culture, and an entire world “*away from the presence of the Lord.*”² The claim is based on the creative power of human reason: modern Cain recognizes as valid only that which he grasps and fashions with his own mind.

Postmodern philosophy is no real friend to Christianity because it denies any objective truth. Yet it has correctly understood that modernity’s real religion has always been the covert worship of reason as divine. In Western culture, long before the rise of modernity, Christian understanding found a religious basis for human enterprise in creation in the biblical notion of the *imago Dei*, God’s creation of humankind in his own image.³ But the long-standing parallel idea that identifies this *imago Dei* with our *reason* owes much more to the influence of Greek philosophy on medieval thought than to the Bible. In contrast to this rationalistic bias in medieval thought, Calvin and some other Reformers followed the New Testament’s understanding of the image of God as *relational*—taking its



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primary meaning from the renewing personal relationship between God and humans mediated by God's grace, rather than being defined in any *a priori*, *metaphysical* terms. There is evidence that this shifted emphasis influenced the rise of modern science.⁴

Francis Bacon, for example, did not base his vision of the scientific enterprise on an inherent human autonomy derived from reason, but on the theological ground of a restored relationship to God in Christ. He argued polemically against rationalism in all its forms—and in favor of a basic humility toward the two books, nature and Scripture, which, he said, should result from a renewal of proper attitudes to their Author.⁵ While there are deep flaws in Bacon's thinking which we should reject, especially his tendency to think of science as a domination or exploitation of nature, these steps toward a theological rather than a rationalistic basis for science were sound, and they in turn influenced pioneers like Robert Boyle in thinking scientifically about creation.

Yet today it is Cain's assertion of human autonomy based on reason that covertly underlies the modern notion of an autonomous science and the materialist metaphysical picture of nature it presupposes. This belief-context which frames modern secularist understanding of science is clearly a form of *religion*.

Recognizing the biblical portrait of Cain in modernity's spiritual intentions, some Christians may mistrust the creativity exhibited by the naturalistic approach of physical science to the world. However, the point of biblical commentary on Cain's culture is not to demonstrate the entire depravity of creative human enterprises, but their *radical ambiguity*.⁶ The value of reason and its creativity, like all the gifts of God in creation, is conditional, and depends on maintaining a sustaining context in which humanity can live: "*not by bread alone, but by every word that proceeds from the mouth of God.*"⁷

These theological and historical issues are relevant to the current debate about naturalism as a presupposition of science. Some Christian critiques of the contemporary scientific establishment identify its a

priori assumption of naturalism as the main issue at stake, claiming that this simply reflects its underlying materialist religious beliefs. Debate has focused particularly on the problem of biological origins, especially for those who argue for "intelligent design" as an alternative *scientific hypothesis*. Such critics accurately point out that today the scientific community is not really neutral on underlying spiritual issues. If the "scientific establishment" also promotes a philosophical agenda deeply contradicting Christian understanding of creation, it is proper to criticize its dogmatic metaphysical naturalism as a form of religious belief. As a scientist, I have considerable trust and respect for the scientific tradition; but I also realize that human enterprise is radically ambiguous.

For the Christian, then, naturalism in science clearly requires a theological basis; otherwise its legitimacy is in question. Uncritical, tacit acceptance of scientific naturalism as it now stands merely concedes Cain's autonomous terms of reference for the enterprise.⁸ I am especially concerned to show here that sound theological justification for "naturalism" in science is not *a posteriori*, i.e. after the fact; and also, that it does not imply mere acceptance of the *status quo* for a scientific paradigm of "nature." Instead, it radically renews our thinking about what such "*naturalism*" really means, and opens horizons to possible novel paradigms consistent with its broader terms of reference.

The theological issue cannot be sidestepped by a simple distinction between philosophical and methodological naturalism.

To avoid entanglement in theology, some people try to resolve these problems more pragmatically. Thoughtful people realize that the values, habits of mind, and intellectual passions which sustain scientific enterprise can be shared and promoted by persons with a wide variety of religious beliefs. For them, the argument that naturalism in science is a purely *methodological* presupposition is a way of expressing the generosity of mind needed to sustain a fragile enterprise in a fragmented culture. Christians may accept such a notion *in prin-*

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cipline, seeing it as a proper admission of limits to the claims of science. But one person's methodological naturalism may be seen by another as philosophical in practice. This has been amply demonstrated in ongoing debate, both in the pages of *PSCF* and more generally.

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Phillip Johnson's widely read books may have initiated current debate on naturalism; they have certainly stimulated it.⁹ His works have strongly attacked the tradition of scientific naturalism, arguing that it merely expresses the atheism prevalent in modern scientific culture. In a *PSCF* review critical of Johnson's *Darwin on Trial*, Owen Gingerich defended naturalism in science as purely methodological: he argued that science is a game with widely agreed-upon rules, one of which is that to qualify as *scientific*, an explanation is necessarily *naturalistic*.¹⁰ However, to help define "naturalism," Gingerich used the adjectives *mechanistic* and *automatic* – terms I do not use, for reasons made clear in Part II. In effect, Gingerich's argument accepted the *status quo* for the meaning of "naturalism," i.e. the particular metaphysical view of nature as seen by physical science. But for critics like Johnson that view itself is part of the issue, since they question whether it is *theologically* appropriate. In a parallel and more philosophical *PSCF* critique of the same book, Nancey Murphy made another apology for methodological naturalism. She stated: "Isaac Newton and Robert Boyle, two of the scientists who led the move to exclude all natural theology from science (then called 'natural philosophy') did so for *theological* reasons."¹¹ While this indicated that "naturalism" was originally methodological rather than philosophical, Murphy did not make clear what these theological reasons were, or how they might affect what we understand by "naturalism."¹²

Critical opposition to naturalism (philosophical or methodological) is often more explicitly defined by claims, for example, that the agency of a creative intelligence as the source of informational complexity in living things must be considered to be a legitimate *scientific* hypothesis.¹³ A pragmatic apology for naturalism as "purely methodological" cannot address these arguments on the necessary theological grounds, and failure to provide a theological basis for treating the issue simply allows the discussion to be framed in terms defined by current culture.

Of course I argue that "naturalism" is *methodological*, an assumption which limits and distinguishes scientific

discourse from a wider, essentially theological context in which it is placed; but the theological ground which justifies this policy is really the issue.

"Rules for the game of science"

In a *PSCF* article responding to critics of methodological naturalism, Dickerson appealed to the maxim "*If it isn't broken, don't fix it.*"¹⁴ Why, he asked, is naturalism proper for physical science but inappropriate for biological science? Should we have been doing a fundamentally different sort of physical science all these years since Boyle and Newton, one which was *not* naturalistic in the way they intended? His point is relevant: The "naturalism" familiar to us in the presuppositions of physical science is entirely appropriate to the scope of that enterprise, and invoking miracles, intelligent design, and special divine intervention certainly would have hindered its progress. Many critics of "naturalism" seem to agree tacitly with this specific claim—for physical science. However, they argue that biology is really different and that there it *is* appropriate to suppose "intervention by an intelligent agent."

The idea of science as a game with rules *does* help, because it recognizes that science has some sustaining human context which transcends science itself: some limiting reference frame in which the validity of presuppositions like "naturalism" can be assessed. "*If it isn't broken, don't fix it*" is a conditional statement, based on a notion of achievement or success in some larger context. Participation in the game of science tacitly includes agreement to modify the rules if our conception of "meaning" or "progress" demands it. As Toulmin argued, it is essential to science that we do not indefinitely play games offering us no progress in explanatory power.¹⁵ A decision that the rules of the game need to be changed is not itself a move within the game; yet the capacity for appropriate rule changes may sometimes have crucial importance to scientific progress. If "naturalism" is a sound rule for the game of science, its justification and definition will not come from within the narrowly limited world picture in use for current versions of the game itself, but from a deeper understanding of ourselves and those ends to which our science is appropriate.

For the Christian, that understanding is ultimately theological. The claims of the Christian religion are "legislated with universal intent," i.e. we assert they are a true account of the way things are.¹⁶ This does not mean a Christian understanding of the scientific enterprise must be shared by everyone participating in science (even though such an understanding was widely accepted in its infancy). Whatever the historical origins of the modern scientific tradition were, the enterprise today is open to all who agree to accept its limited values, ideals, and obligations. As a scientist, I share some common ground with all



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scientists because of the agreed terms on which the enterprise is conducted. In part, this means that "naturalism," rightly understood, is a presupposition both appropriate and necessary to science. Those who see its deliberate exclusion of theological terms of reference as an error in the original framing of the rules of the game are overlooking the theological principles which make science legitimate, limiting its scope and meaning. Since, as a Christian, I ultimately see the world as the creation of God, these theological principles are essential. Thus, Part I of this essay is concerned with a sound theological basis for "naturalism" in science.

In Part II, I consider the scientific scope implicit in such a theologically grounded presuppositional framework. There, I shall differ with Dickerson's maxim, "If it isn't broken, don't fix it," arguing that real progress in tackling major conceptual problems of biology may require new scientific paradigms. Though still "naturalistic" in the theological terms presented here, these are not limited to the reductionist, mechanistic terms of reference adequate for physical science.

Theological grounds for distinguishing science from theology

If creation is God's handiwork, how can a discourse about creation be distinguished from theology? In my own scientific work, God's absence as *an object of scientific discourse* never created discomfort or a sense of impropriety. In fact, I argue that a scientist must carefully *refrain* from making God such an object. But if we believe that God is the Author of that "book of nature" which science reads, how can such a policy be legitimate? What in the world of human discourse is *not* theology? I think this was also the central theological question resolved in Robert Boyle's decision to adopt "naturalism" in science. At least that is how I interpret his thinking, and some clues suggest it is a reasonable historical reading.¹⁷ Today this question may seem contrived, but remember that in Boyle's day the imposing tradition and achievements of physical science *did not yet exist*. Boyle's decision to embark on the enterprise of a naturalistic "mechanical philosophy" was very bold, but it was not irreverent and certainly not atheistic.

There are roughly two theological arguments for naturalism in science. One places primary weight on some kind of theological/metaphysical doctrine of "Nature"; the other emphasizes the *legitimate vocation of humanity* in fulfilling the Creator's intentions. The second view stresses our role within creation and does not claim to offer a specific metaphysical account of what the natural world *is*. Of course, the distinction between these two approaches cannot be made too extreme, since neither fully excludes all aspects of the other. Nevertheless, the two emphases have different effects and tendencies. Boyle seems to have preferred the second approach—and so do I.

Boyle argued against the idea of Nature as a metaphysical entity having quasi-divine status or autonomous directive power. He was reacting especially to the teachings of Aristotle as they had influenced medieval thought about creation—for example, in the idea of Nature as a kind of sub-deity who rules here in God's place. He was aware how Aristotelian doctrine about forms and development in nature had controlled natural philosophy up to his own time, embedding a divine *telos* in all natural processes, and even supporting organismic models of physical phenomena which interpreted them as an embodiment of essentially divine principles.

It is ironic that today this religious notion of Nature to which Boyle objected so vigorously has crept back into the language of secular culture about creation. It shows up, not only in openly pantheistic views of the natural world, but in the unguarded language of agnostic scientists who try to form understanding of the world as something other than the creation of God. It is latent in the common notion many Christians share, that "laws of nature" describe how nature behaves *in the absence of divine agency*. In secular culture, positing Nature as the proper noun for the mystery behind creation is a widespread, practically uncontested usage. Religious ideas of nature fill the vacuum left when we deny God as the Author of creation.

Boyle thought this concept of Nature to be at best a "*vulgarly received notion*" (i.e. mere superstition), and at worst "*an impious blasphemy*" against the true, sovereign, and

living God. Consistent with this he favored a *voluntarist theology of creation* which argued that the dynamics of a changing universe should be understood theologically as the manifestation of divine sovereignty, divine establishment, divine intentions; there just *is not any* sub-deity ruling in God's place here. Our concept "*laws of nature*" is originally derived from this voluntarist view; as a nineteenth-century writer said, they are really just "*customs of God.*"

This doesn't mean that the created universe or the order it manifests are not objectively real. Since antiquity, Christian theology has understood the relationship of God to creation in terms which clearly give it an authentic being distinct from God, while taking care to stress God's role as creator and conserver. There is wide scope in creation for a capacity to bring forth new levels of complexity and richness without implicating God in the machinery as a specific, "secondary cause."¹⁸ An emphasis on God's transcendent sovereignty and the vocation of humanity in response to God's purposes does not deny creation's authentic being or the rich capacity for change and development with which the Creator has endowed it.¹⁹

However, such an emphasis still leads to a different approach, because it does not aim to offer any explicit metaphysical account of "nature." It is unwilling to justify scientific naturalism by extended *a priori* metaphysical claims about what creation is in itself, or how God is related to it in itself, apart from our participation. That is a wise policy! Our metaphysical views tend to be biased and severely limited by the *current* state of our scientific, creaturely knowledge. The essential point here is *epistemological*: No matter how extensive it may be, our knowledge of creation remains *our* knowledge—creaturely in its character, its limits, and its intentions. What nature's being really *is*, is fully known only to God. A metaphysical doctrine of nature is not needed to justify science and the "naturalism" proper to it.

Theological Reasons for "Naturalism" in Science

Divine Transcendence, Divine Purpose, and the Creation

The most important biblical doctrine for science is not the *order* or *rationality* of creation, but *the transcendence of God*. The Bible uniquely presents creation as the free, contingent expression of God's sovereign intentions. It is neither a *direct embodiment of*, nor a *necessary generation from*, the divine nature and being. Genesis carefully uses *distancing* terms: God *creates, forms, makes, speaks* creation into being; it is clearly distinct from God, who generously grants it an *authentic existence*. It is neither the dream nor the body of God.

Significantly, the Bible gives two distinct accounts of creation. They are complementary in certain ways, but

this complementarity should be understood in terms of priorities established by the first account. Genesis 1, which is like a literary and theological prologue to the Pentateuch (and indeed, to the entire Bible), presents a transcendent, determining perspective on creation. Even though this perspective is not accessible to us who live in creation, we need to know it exists. In Genesis 1, God is the only speaker and agent; there is no challenge to divine intentions and their fulfillment. The narrative ends with the seventh day which *has* no end, unlike the six preceding it; it is eternal day, the day of God's completed work and God's rest. In this perspective, divine purposes and actions are fulfilled and completed. But such a perspective cannot actually be a human one, set within space-time.

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It is the unique, transcendent view of creation as only God can see it, the "view from outside." Though its order of creation has correspondences in space-time, this order is not primarily *chronological*, but describes the unfolding logic of divine purpose. We learn that God has called a complete realm into existence and human beings have a unique meaning and role in it. God's sovereign purpose generously places creation in human hands, giving everything to us in gracious kindness; but the grant of dominion also implies human accountability to him. I do not think Genesis 1 is primarily concerned with the actual processes by which God created, though it suggests ordering principles we may correlate to these. The central theme is that *creation in all its fullness is the result of specific divine intentions – intentions essential to the identity and vocation of humanity.*

Key biblical truths regarding God and humans are implicit in this view of creation; they have a bearing on science. The most important is that God has chosen the relation of transcendence to creation as a direct result of his absolutely sovereign decision to be known as *God in Jesus Christ*. We do not know God himself through the knowledge of creation, although it bears witness to his power and transcendent nature as God. Nor do we know him (as Greek philosophy presupposed) on the basis of some similar divinity in our own nature, such as reason and its cognitive power. We can know God only on the ground of his gracious decision to be revealed and related



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to us personally, in Jesus Christ. To bear witness to this fact is the essential aim of all the Scriptures.

Secondary, derivative truths follow: *Imago Dei*, the image of God, expressing the divine purpose in creating human beings, should not be misunderstood as some metaphysical essence or “stand-alone” quality of human beings in and by themselves. Instead, it refers to an identity with transcendent meaning, rooted in the divine purpose of personal relationship, to be realized/developed in a sustaining relationship to God—as the New Testament always teaches. In particular, the common idea that *imago Dei* should be identified with our *reason* and the power it gives us in creation is a dangerous misconception, really coming from Greek philosophy rather than the Bible. Its dangers are manifested in modern culture’s idol of an autonomous reason and autonomous humanity, which have made science the basis for a claim to power and god-likeness without God—the claim *Cain* symbolizes.

The second account of creation provides the “creaturely” context for science.

The second narrative, Genesis 2:4bff, offers the complementary perspective from *within* creation. It has a clearly temporal setting and merges gradually into the ongoing story of humanity. In this account, human identity is linked to a vocation given humans by God: *to cultivate and to keep* the garden in which God has placed them. This vocation has deep theological meaning, and should not be dismissed as merely “ecological.” Ultimately it points to the deep connection of servanthood and lordship expressed so perfectly in Jesus Christ, and links it to the purpose of God in creating humans. Because of the irrevocable calling and gifts granted to them by God, human beings are unique; but their uniqueness is not a basis for autonomy without accountability, as Cain presumed. We are responsible to the divine purposes or *dedication* which formed us.

The theological justification for scientific enterprise arises out of this vocation to cultivate and keep creation, which includes the power to know it and exercise responsible authority within and for it—a part of the

gardener’s calling. This offers a quite different understanding from the traditional notion that science expresses dominion implicit in *imago Dei* (Gen. 1:26b). It emphasizes the biblical truth that our identity is not autonomously defined, but realized in relationship to God and his intentions.

In Genesis 2, God’s intentions are supported by his endowment of human beings with unique gifts and powers to sustain human life and creativity, providing means by which our calling can be fulfilled. Specifically, creative powers of our rationality and its legitimate exercise—including the biblical paradigm for the meaning and legitimate scope of science—are presented in the story of Adam naming the living creatures.²⁰ It is very important that this incident is not the main point of the Genesis 2 narrative! The gift of rationality and the authority it gives us in creation is secondary; God’s much greater gift is the potential for intimate personal communion between human beings, so that they are no longer *solitary individuals*. Exclaiming “*this at last is another like me,*” Adam finds in Eve one mysteriously and complementarily *other* to himself, yet equally bearing the divine image.

However, for a brief moment the gift of reason and its powers *is* the focus of the narrative: “*He brought them (the creatures) to the Adam to see what the Adam would call them; and whatever the Adam called each living creature, that was its name.*” Encouraged silently by the Lord’s presence and sponsoring action, the human being has the wonderful task to name the creatures—and has the ability for it. For Semitic peoples, to know the name of something, even more to *give it a name*, was to possess a crucial privilege, knowledge, or authority in relation to it. Genesis 2 asserts that we have such authority and power within creation—linked to our vocation to cultivate and keep. The *contingency of creation*, the reason for the empirical methods of science, is implicit here; names for the creatures must be a response to examining them. Finally, while placing great value upon this enterprise by his presence and his interest in the outcome, *God delegates the enterprise entirely to us*. In this narrative, we can see the deep philosophical insight of the Bible. While we must understand that science is our own

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creative work, it is an essential motivation of science that the order in creation it describes is objective. Creative scientists continually testify to this spiritual legitimacy of the enterprise by insisting that its truths are not invented, but *discovered*.

“Naturalism” in science reflects essential limits to the “naming” power.

In evident contrast to this, the Bible as a whole, and the Pentateuch in particular, consistently emphasizes that *God cannot be named by us in this way*.²¹ God is not an object of scrutiny to our autonomous rational powers; and this inability is not a matter of degree, as if a divine mind were greater (even infinitely greater), but essentially of the same kind as our own. The inability to name God as we name created things is categorical: as transcendent, God is not related to created things either by *logical necessity* or *essential nature*. God cannot be subjected to mundane scrutiny at our will. His relationship to us and to all creation is a matter of his sovereign and free authority, and is properly described by terms such as *faithfulness, love, and grace*. We do have names for God, but these are the express tokens of his favor, not achievements of our creative powers. No one has argued this point more powerfully in modern times than the theologian Karl Barth.

What is true of God himself is also true of his mysterious agency in creation. Scientific study of the physical universe has revealed an awesome complexity and detail we can organize descriptively under the general concept of laws of nature. These in no way imply an *absence* of divine agency, replacing God by “Nature”; rather, they are a deliberately *non-theological* way of describing certain limited aspects of God’s agency. People who argue for “intelligent design” in relation to the biological creation, however, often speak as though in that case we must somehow adopt a different stance—as though we should suppose that in biology, God’s agency is a more discernible kind of “intervention” in some otherwise “natural” order, and is routinely open to detection and mundane scrutiny—so that in effect we can “fingerprint” God’s acts within creation in some fashion not possible in the merely physical order.

There are clear cases in human experience where we are driven by the facts to speak, however incompetently, of divine “intervention”; we call such events *miracles*. But miracles too are mysterious, not subject to our rational and mundane scrutiny. Above all, as the Bible consistently shows, the encounter with God’s direct agency in miracles always demands of the human beings involved a serious examination of their own wills and attitudes in relation to the divine purpose, i.e. it raises issues of faith in relation to God. Discussing this question, Austin Farrer argues convincingly that the “metaphysical joint” where divine agency intersects the created world is fundamen-

tally inscrutable.²² God’s agency is essentially mysterious at *every* level, both in the mundane order of creation and in the events we are constrained to call miracles; it cannot be subjected to scientific, rational analysis.

Science is an enterprise whose aim is to offer understanding and explanation of created things in the (limited) context of cultivating and keeping them. It is a response to what the natural world is, as manifested in certain kinds of mundane, controlled experience which are subject to our rational scrutiny; and it is also uniquely a result of human intelligence and its creative powers of naming.

The argument for “naturalism” as a presupposition of science is now evident. Science is an enterprise whose aim is to offer understanding and explanation of created things in the *(limited) context of cultivating and keeping them*. It is a *response* to what the natural world is, as manifested in certain kinds of mundane, controlled experience which are subject to our rational scrutiny; and it is also uniquely a result of human intelligence and its creative powers of naming. It is particularly *not* an attempt to understand, to explain or name God, or to detect God’s agency in nature. It cannot address the unique nature of human identity, the relation of human beings to God, or even the full depth of human interpersonal relationships, since we are made *in God’s image and likeness*. Such concerns are necessarily theological, transcending the task of naming the creatures and the stewardship role toward which it aims.

Exploring what is and is not within the scope of science, Michael B. Foster offers a further relevant insight. He acknowledges that it *is* the legitimate aim of science to clarify what can be mundanely known about creation by human reason, *i.e. to remove mystery from it*. However, he emphasizes the *limits* of science arising from this aim and its presuppositions about what lies within the human grasp.²³ In particular, *God, and those things which are God’s*, such as true peace, reconciliation, and genuine unity and harmony, are beyond our mastery. Scientific knowledge and the mastery of creation it provides must be universally available on the basis of ordinary human life and thought. Thus, in science we are necessarily speaking of that which can be known and is accessible to us without change in ourselves or our personal condition: that is,



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without repentance. The Bible teaches that knowledge of God or of God's agency is not accessible to us on such terms.

Theological terms of reference for "naturalism" invite open discussion regarding its scope within creation.

I have argued here that "naturalism" is really a theologically based policy aiming to discuss creation in terms of reference defined by creaturely things themselves. It deliberately refrains from claims to name God or detect God's agency by our own powers. While such discussion is therefore limited in scope, within its own terms of reference it remains indefinitely open for the exercise of our synthetic rational powers in studying what has been created. The terms of reference established for *physical science* even by the severely limited paradigm of a mechanistic, purely material world have proved remarkably broad, and we have not yet finished exhausting their possible implications.

However, the theological grounds given for "naturalism" also open the potential for "naturalistic" thinking about creation which is not necessarily constrained by the specific working assumptions of physical science. Negative Christian critiques of Darwinist claims that the merely physical, mechanistic order is sufficient to explain the biological creation do have scientific merit. But I believe the proper positive response is to offer "naturalistic" alternatives to such dogmatically constricted thinking. In the second half of this essay, I consider the open scientific scope of "naturalism." In particular, I shall argue for possible new paradigms of biological science; these appeal to the idea of a contingent order which, though still "natural" and seamlessly compatible with the physical order, is logically disjoint, not derivable from or reducible to it. ◇

Notes

¹ (a) Cf. R. Hooykaas, *Religion and the Rise of Modern Science* (Edinburgh, UK: Scottish Academic Press, 1973; paper ed., Grand Rapids, MI: Wm. B. Eerdmans Publishing Company, 1980). See esp. chap. 1, section E; chap. II, section D. (b) For a more detailed and careful study of Boyle's views

in particular, cf. E. M. Klaaren, *Religious Origins of Modern Science* (Grand Rapids, MI: Eerdmans, 1977); chaps. 2, 4, 5, & 6.

² Genesis 4:8-24. A valuable theological commentary on the significance of Cain to continuing secular culture is given by Jacques Ellul in *The Meaning of the City*, esp. chaps. 1, 5. (Grand Rapids, MI: Eerdmans, 1970).

³ Genesis 1:26-28.

⁴ For some helpful discussion of Calvin's influence on thinking about various matters relating to science, see T. F. Torrance, *Theology in Reconstruction*, esp. chap. I, sections 4, 5, & 6. (London: SCM Press, 1965; paper ed. Grand Rapids, MI: Eerdmans, 1975). See also T. F. Torrance, *The Hermeneutics of John Calvin* (Edinburgh, UK: Scottish Academic Press, 1988).

⁵ See Hooykaas, op. cit., Ref. 1, chap. II, Section B.

⁶ This point about ambiguity of fallen human creativity is well developed by Ellul in *The Meaning of the City* (op. cit., Ref. 2).

⁷ Matthew 4:4.

⁸ While I do not agree with his implicit rejection of naturalism in science, this point about conceding autonomy to science by uncritical acceptance of naturalism is made clear by Alvin Plantinga, "When Faith and Reason Clash: Evolution and the Bible," *Christian Scholar's Review* 21 (1991): 80.

⁹ Phillip E. Johnson, *Darwin on Trial* (Downers Grove, IL: Inter-Varsity Press, 1991); —, *Defeating Darwinism by Opening Minds* (Inter-Varsity Press, 1997); —, *Reason in the Balance: The Case against Naturalism in Science, Law and Education* (IVP, 1998); —, *The Wedge of Truth: Splitting the Foundations of Naturalism* (IVP, 2000).

¹⁰ Owen Gingerich, "Review of *Darwin on Trial*," *Perspectives on Science and Christian Faith* (this journal, abbreviated hereafter as *PSCF*) 44 (June 1992): 140; cf. also, "Further Reflections on *Darwin on Trial*," *PSCF* 44 (December 1992): 249.

¹¹ Nancey Murphy, "Phillip Johnson on Trial: A Critique of His Critique of Darwin," *PSCF* 45 (March 1993): 26.

¹² Murphy's use of the term *methodologically atheistic* to define or clarify *naturalistic* is not very satisfactory from the standpoint of this essay. Comments in her article could appear to suggest that the decision of Newton and Boyle for naturalism in science might have had better alternatives, though I do not think that was intended. I argue that the assumption of naturalism, properly understood, is essential to the *theological* legitimacy of science, and that Newton, Boyle, and their contemporaries were correct in making it; hence the framework supporting science is explicitly *not* atheistic.

¹³ See, for example, J. P. Moreland, ed., *The Creation Hypothesis: Scientific Evidence of an Intelligent Designer* (Downers Grove, IL: Inter-Varsity Press, 1994); cf. also J. P. Moreland, "Conceptual Problems and the Scientific Status of Creation Science," *PSCF* 46 (March 1994): 2; for further commentary, cf. Stephen C. Meyer, "The Use and Abuse of Philosophy of Science: A Response to Moreland," *PSCF* 46 (March 1994): 14.

¹⁴ R. Dickerson, "The Game of Science: Reflections after Arguing with some Rather Overwrought People," *PSCF* 44 (June 1992): 137.

"Naturalism" is really a theologically based policy aiming to discuss creation in terms of reference defined by creaturely things themselves. It deliberately refrains from claims to name God or detect God's agency by our own powers.

¹⁵Stephen Toulmin, *Foresight and Understanding: An Enquiry into the Aims of Science* (New York: Harper and Row, Harper Torchbooks, 1963; first published, Indiana Univ. Press, 1961).

¹⁶The phrase “*legislated with universal intent*” was widely used by Michael Polanyi to stress that while truth claims are finally expressions of personal, responsible commitment by the speaker, they place emphasis on the universal validity for others of what is claimed. Cf. Michael Polanyi, *Personal Knowledge: Toward a Post-critical Philosophy*, esp. Part III and Part II, chap. 6; (first published London, UK: Routledge and Kegan Paul, 1958; paper ed., New York: Harper Torchbooks, Harper & Row, Inc., 1977; and later printings) In using Polanyi’s phrase here, I want to draw attention to the fact that merely because others do not share a Christian understanding of the way the world is does not make such understanding irrelevant to the actual situation of science—or any other pluralistically shared cultural enterprise. Christians should not suppose that science is illegitimate unless everyone practicing it has Christian presuppositions; but they should also not suppose that a Christian understanding of the proper basis for science is irrelevant to the future of science, simply because Christians are now a minority in scientific culture. Some Christian critics of science too quickly adopt these extreme views.

¹⁷Cf. Eugene M. Klaaren, *Religious Origins of Modern Science*, op. cit., Ref. 1 (b); esp. chaps. 4 & 5.

¹⁸Ernan McMullin, “Evolution and Special Creation,” *Zygon* 28 (September 1993): 299.

¹⁹Howard J. Van Till, “Evolutionary Science and the Forgotten Doctrine of Creation’s Functional Integrity,” *Christian Scholar’s Review* 21 (1991): 80.

²⁰Genesis 2:18ff.

²¹This point is emphatic in the Pentateuch. In an intimate encounter with God [Genesis 32:22–32] Jacob is told he cannot know God’s name “*since it is wonderful*”; Moses’ request to know it [Exodus 3:1–15] is answered by an enigma—“*I Am what I Am*”; and, in these and other cases (e.g., Abraham) where God names himself to those who meet him, it is a mark of divine favor or privilege. The specific sense of awe in which Jewish tradition has always held the divine name *JHWH* directly reflects this same understanding. Further, the Old Testament identifies attempts to name God, or to give an identity to the divine being in terms of created things, as *idolatry*. The critique of idolatry is twofold: First, such gods as we fashion cannot deliver us from our own crisis; second, the direct result of such misuse of our creative skills and reason is *spiritual emptiness* (*feeding on ashes*) and *intellectual blindness* [cf. Isaiah 44:9–20]. Claims that we can rationally test or “detect” God’s specific involvement in the processes of creation must be approached with deep reservation, given this biblical teaching.

²²Austin Farrer, *Faith and Speculation: An Essay in Philosophical Theology* (originally published, London, UK: A.&C.Black Ltd., 1967; paper ed., Edinburgh, UK: T. & T. Clark Ltd., 1988). Farrer’s work was a Christian response to the *genre* of works in speculative (and mostly atheistic) philosophical theology popular in the 1950s and ‘60s.

²³Michael B. Foster, *Mystery and Philosophy* (London, UK: SCM Press Ltd., 1957, in series “The Library of Philosophy and Theology”; reprinted by permission from SCM Press, 1980, by Greenwood Press, a division of Congressional Information Service, Inc., 88 Post Road West, Westport, CT 06881).