
**MISLABELING, MISCALCULATING, AND
MISUNDERSTANDING:
THE SCIENTIFI COMMUNITY AND THE CHALLENGE OF INTELLIGENT
DESIGN**

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Abstract

Today many of the science classrooms in the United States. are troubled; teachers are reluctant to teach what the curriculum requires; students are stressed between academic expectations and the religious commitments of family and church. The public media thrive on the controversy and the public discourse on the question of intelligent design is compromised by the deep “innocence” of the public both about science and about religion. If the scientific community is going to most constructively engage in the resolution of these issues, it will need to avoid better three errors that have tended to mark its response to the intelligent design movement: mislabeling, miscalculating, and misunderstanding.

Introduction

During the controversy over state public school science education standards in Kansas in the summer of 1999, advocates for so-called “intelligent design” (ID) first entered the public debate about teaching evolution in public classrooms. By 2002, when Ohio was adopting new standards for its public schools, ID advocates were the leading voices seeking to compromise mainstream science education. Today, local school boards all cross the nation find themselves being encouraged internally and externally to adopt policies that, at the very least, permit ID to be taught as a “scientific” alternative to contemporary evolutionary theory.

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Those promoting ID have seen significant success in the court of public opinion, though not in the federal courts nor within the scientific community itself. There are *bona fide* scientists who publicly support the ID position, though they a small minority, their expertise lies outside the relevant scientific disciplines, and they do not present original research supporting ID at professional meetings nor publish such research in peer reviewed journals. A small furor occurred this past summer when an article advocating ID was published in the journal of the Biological Society of Washington, one of the founding scientific societies of the Washington Academy of Sciences. It should be noted, however, that the author was not a scientist in a relevant field but a philosopher of science, and the content of the article was not a report on the author's own original biological research but a review of the research of others, which the author asserted supported an ID position.

Why in the face of no legitimate scientific support has the ID movement had such success in getting their views aired in public and gaining some degree of purchase in the administration of public science education? So far, whatever policy success ID has had at the local level has not stood the test of judicial review. But such review is an ongoing process and, in principle, bad science education is not unconstitutional.

Why has the primary position put forward by the scientific community to defend itself not found resonance with a large segment, perhaps a majority, of the American public? That position has been that science and religion are fundamentally different domains of human life, what the late Stephen Jay Gould generously called "non-overlapping magisteria," and therefore science should be the exclusive subject in the science classroom.

In this brief paper I would like to suggest answers to these two questions. I can not claim that these answers are definitive. I can affirm that they grow out of a 37 year career in relation to scientific and religious communities in which I have tried to understand the science and religion relationship historically, in western culture and especially in America.

Mislabeling

It has been common for those defending mainstream science against attempted inroads by the ID movement to label ID as form of "creationism." This strategy is to link ID with its predecessor anti-evolution movement, so-called "scientific creationism" (SC). The U.S. Supreme Court found that the proposal to teach SC in the public schools

was a violation of the Establishment Clause of the First Amendment of the U.S. Constitution.

In the context of SC the word “creationism” refers to a religious doctrine that the universe and all if its constituents were created directly by God 6,000 to 10,000 years ago over a period of six 24-hour days, that human beings were created in a way separate from the other creatures (i.e., “in the image and likeness of God”), and that the source for this position is an inerrant sacred scripture.

While this definition does identify one form of creationist view, it is by no means the only definition of creationism. The tendency of the defenders of evolution to treat the definition of creationism univocally amounts to a case of historical mislabeling.

Creationism is not a four letter word for adherents of the three Abrahamic religious traditions (Judaism, Christianity, and Islam). All are creationist in the technical sense that they hold that the reason for the universe ultimately lies in a transcendent source, a creator. Although there are a variety of explications of this view, both among and within these traditions, the combination of Scriptural literalism and a “young Earth” cosmology represents a minority interpretation.

In addition, the linking of the term “creationism” in the narrow sense with the label “fundamentalism” is also historically problematic. Not all fundamentalists hold a literalist or young Earth view. Fundamentalism arose largely among Protestant Christians in early 20th century America with the publication of a series of tracts called “The Fundamentals.” It was primarily a movement that sought to articulate a set of essential or fundamental Christian doctrines in the face of, on the one hand, the critical movement in Biblical interpretation that had begun in the 18th and 19th centuries, and on the other hand, what was seen by some as a secularizing of American religious culture. Those who identified themselves as fundamentalists more often held that the Bible was infallible rather than inerrant or literally true.¹ Like William Jennings Bryan—the populist Presidential candidate, self-affirmed fundamentalist, and member of the prosecution in the infamous Scopes trial—many held an “old Earth” view. As Bryan himself suggested the “days” of creation could have been 600 million years old.

As a minimum typology there are at least four forms of Christian “creationism.”

- **Strict creationism:** This is the type most commonly identified with the term “creationism,” especially in public media, and is the reference among many of the defenders of evolution. This type is characterized by a young Earth view, a belief in Biblical inerrancy and an interventionist understanding of divine action in the world. It holds that God created the universe directly in six 24-hour days.
- **Progressive creationism:** This view is often confused with the first (as in the case of William Jennings Bryan). While this view holds that God creates directly at various points (and so is interventionist in its view of God’s relation to nature), it views the “days” of the Genesis account to be metaphorical. It generally accepts the geological account of the age of the Earth. It views the Bible as infallible in what it intends to reveal but not inerrant in every respect. This is the view of classic Protestant Christian fundamentalism as described above.
- **Theistic evolution creationism:**² This type views the primary form of divine creative activity as the process of evolution itself, though it often will designate some limited points of intervention (e.g., at the very beginning, perhaps at the origin of life, and almost certainly at the origin of humankind). Persons with this view usually hold that the Bible is infallible. A good example of this view in a very sophisticated form would be the position of Pope John Paul II as he articulated it in a statement to the Pontifical Academy of Science in October 1996.³
- **Evolutionary theism creationism:** This last type is fully non-interventionist, viewing God’s creative activity as cohesive with but not directly obvious in any way in the evolutionary processes. Here there are no “divine fingerprints” on nature. In fact, evolutionary processes are seen as theologically suggestive that metaphorically God also evolves. The Bible is viewed as the textual foundation of a community of faith and so authoritative for that community, but also as a living document historically formed that depends on an ongoing interpretative process for its meaning.

As a way of illustrating the qualified value of such a typology it needs to be said that the “center of gravity” of the ID movement is somewhere between “progressive creationism” and “theistic evolution creationism.” The most articulate of the ID advocates argue that standard evolutionary theory has real but limited applicability and must be supplemented by the ID position in order for there to be a full explanation of biological phenomena. Among the American public ID is most attractive to folks in these two groups. Yet, it is also seen as a pragmatic option for some “strict creationists” who view the movement as a way to get some of their interests served in public education.

The intellectual roots of the ID movement are not in the fundamentalist movement but in the much older tradition of “natural theology” that has been a part of the broader Christian tradition from its earliest days, though it was a prominent position in the 18th and 19th centuries. This is a tradition of seeing evidence for God in the structures and processes of nature. It can be found in the writings of Thomas Aquinas (1225-1274) in the 13th century but is perhaps best seen in the writings of William Paley, especially his *Natural Theology: or, Evidences of the Existence and Attributes of the Deity, Collected from the Appearances of Nature*, first published in 1802.

It is important to understand that for non-literalist interventionist creationists of the progressive or theistic evolution sort, the issue is not about mechanisms but about principles; so the focus is hypothetical and not experimental. Therefore, proposed ID “principles” like “irreducible complexity” or “complex specified information,” which purport to offer evidence of a non-natural intelligence as the source of biological structure or processes, have an appeal quite apart from whether they have any actual empirical warrant.

But if the problem of “mislabeling” contributes to public confusion about what is actually at issue (e.g., is it science as contrasted with biblical literalism or with natural theology?), lack of care about the term “faith” further contributes to the confusion. “Faith” is not the opposite of “fact,” much less the opposite of “knowledge.” In the first place, the meaning of the term “faith” is not any more univocal than the term “creationism.”

At perhaps its most basic, the term faith means trust or commitment. It is a matter of having faith, placing trust in something. In this regard science is itself a faith-founded enterprise, trusting in the intelligibility of the world and in mathematics as a means to articulate that

intelligibility. Contemporary philosophers of science, perhaps most notably physical chemist turned philosopher Michael Polanyi (1891-1976),⁴ have suggested that without some prior commitment to something, some act of faith, no knowledge is possible at all.

Faith can also refer to that set of ideas in which one places trust, a faith. Here faith can mean the defining doctrines of a faith community; or, in a relative sense, the defining or prevailing theoretical framework of a scientific discipline (what Thomas Kuhn called a “paradigm”).⁵ While it is the case that the theoretical frameworks of science are more publicly open to revision than those at the foundation of religious communities, studies in the history of religious doctrines demonstrate that they are also malleable in relation to the historical experience of the community which holds them.⁶

Lastly, the term “faith” may apply to the historical community (i.e., religion) that is the bearer of a particular doctrinal tradition. This is the reference when one asks a person what “faith” he or she is.

With regard to “facts,” without some framework of “faith” there are no “facts,” only raw unmediated sensory experiences. In the public mind, the purported opposition between “faith” and “fact” is related to the supposed opposition of “theory” and “fact.” A “theory” is an explanation of the “facts” in which one places one’s “faith;” and in so doing provides the opportunity to uncover new “facts.” Those new facts may call the adequacy of the theory (and so one’s faith in it) into question, which in turn can lead to a theoretical reformulation. But in no case are facts acquired or observed apart from some explanatory theory.

It is perhaps also worth noting that facts in and of themselves do not provide theoretical innovation. Anomalous facts may very well be a stimulus for such innovation. But, as Karl Popper argued, theoretical development depends foundationally on the human imagination. And the motivation for a proposed theoretical innovation does not disqualify it. If Abbe Georges Lemaitre’s Christian belief that the universe had a beginning motivated his proposal for a “big bang” cosmology, and if Sir Fred Hoyle’s atheism stimulated his preference for a “steady state” cosmology, in neither case was the motivation relevant.⁷ What was relevant is which of the theoretical options did most justice to the facts at hand and led to the most fruitful research program. The “accidental” discovery of the microwave background radiation in 1964 was one of the

major facts that gave precedence to Lemaitre's proposal over that of Hoyle.

If the above description of some of the basic misunderstandings that exacerbate the public discussion of ID is itself adequate to some degree, then it helps to explain why efforts by the scientific community to address the challenge of the ID movement may miscalculate the appropriate point of engagement.

Miscalculating the Point of Engagement

Unfortunately, good science is not enough. The scientific community has tended to act as though all that was necessary would be for it to provide the public with the appropriate scientific information and the ID problem would go away. But, even if in principle providing scientific information were enough, failures in the public educational system to provide a sound basic understanding of the nature of science and its findings for all citizens undermines the ability of the scientific community to communicate its understanding of the evolutionary sciences to the community-at-large.

In addition, the focus of action or engagement has been less educational than judicial. As noted above, the ID movement has yet to meet the test of judicial review. But as also noted, bad science is not a constitutional violation. Even if every judicial challenge of ID is successful in every particular case, such success is unlikely to eliminate the ongoing need for such legal challenges. The situation is a bit like being able to successfully treat the symptoms of a disease but never being able to completely remove it as a threat to public health.

A third miscalculation has been to underestimate the sophistication of ID proponents. The first level of this sophistication is in the area of political skills and public relations. They have far more successfully been able to stimulate grassroots public support for their position (as indicated regularly by public pollsters) than has the scientific community been able to even achieve public clarity about the relation of theories and facts. The second level of sophistication is intellectual, in the domain of the philosophy of science. This is not to suggest that ID proponents are the best philosophers of science (though some are philosophers of note, e.g., Alvin Plantinga at Notre Dame). But it is to suggest they are often more appreciative of the philosophical issues involved in the controversy than are many, though certainly not all, of the defenders of the evolution from within the sciences. This is not too surprising given that most scientists are

too busy doing science to be also broadly philosophically or historically knowledgeable. On the other hand the apparent sophistication of ID proponents helps to provide them with a public aura of intellectual authority, and so a source of justification for those in the public who are for religious reasons predisposed to agree with their views.

Ultimately the ID controversy is not about particular scientific findings but about the nature of science itself and the relationship of science to broader culture frameworks and in particular to religion. Unless the controversy is engaged at this point, where scientific information is relevant but not decisive, it is unlikely that it will soon diminish.

Misunderstanding the Relation of Science and Religion

But here is another rub. There has been and is a wide range of views about just what the relationship of science and religion is, let alone what it ought to be. One need not look very far in the media to find that the prevailing public view is that science and religion are and always have been in conflict with one another. This view is so pervasive and common that words like “versus” or “debate” or “warfare” are commonly used in the public media along with “conflict” to refer to the relationship.⁸ References are regularly made to Galileo’s trial in 1633 and the Scopes trial in 1925 as paradigmatic examples of the relationship. Yet, contemporary historical scholarship has persuasively demonstrated that both of these incidents are far more complex than a simple conflict between science and religion. In fact renewed historical interest in the interaction of science and Christianity from the first century forward has led to recognition that the relationship has been far richer and more dynamic than adversarial images can encompass.⁹

At the risk of using another idiosyncratic typology, let me suggest that the field of science and/ religion relationships can be mapped in relation to three basic types (within which there may be several forms): dualist (separation), imperialism (conflict), and interactionism (engagement).

The dualist type rather than the imperialist comes first because it seems to be the default position when you really press people on what they think the relationship is. They may acknowledge that the public account of and perhaps the public dynamic of the relationship is conflictual, but they personally hold that science and religion are fundamentally different human endeavors. This view is one of the legacies of the formation of “modern” culture out of the Renaissance that witnessed the birth of

science in its modern form. The shades of Rene Descartes and Immanuel Kant hang over this division that separates matter from mind, acquired knowledge from revealed knowledge, facts from values, and science from religion. It is what might be characterized, slightly tongue-in-cheek, as the “Robert Frost hypothesis” of the science and religion relationship: “Good fences make good neighbors.”

More seriously, this is the view that has tended to predominate within established science. Perhaps the most articulate recent expression of this view was made by the late Stephen Jay Gould in his article, “Nonoverlapping Magisteria,” that appeared in the March 1997 issue of *Natural History* magazine.¹⁰ This view has also been embraced by many in the religious communities because it would appear to allow continued use of traditional religious concepts without the necessity to take account of ongoing developments in the sciences. The 1996 statement of Pope John Paul II on evolution, which prompted Gould’s article, is itself finally an expression of such a dualist view.

Yet this dualist or separatist view has never been entirely satisfactory. Even Descartes and Kant found it to be problematic. Scientists like paleontologist Gould recognize that new scientific insights will have a bearing on the credibility of some religious convictions (e.g., the idea of a divine plan for the universe in the face of evolutionary contingency). More harshly the biologist Richard Dawkins and Nobel laureate Steven Weinberg view the development of science as necessarily undermining the credibility of any religious perspective. Religious conservatives, for their part, have also been reluctant to live in “two worlds,” one described by science and the other by religion.

Thus, an imperialist type of view of science and religion has emerged as a way to overcome the dualism. For religious fundamentalists, whether strict or progressive creationists, there is a conviction that the fundamental authority is the sacred text and that any true science must of necessity conform to that text. Their opposite number are those committed to an ontological reductionist and materialist metaphysical view. Religion by their lights has no *sui generis* reality but is the expression of some natural force or set of forces (e.g., biological, psychological, economic, political, historio-cultural).

The third alternative way to think about the science and religion relationship is some form of constructive interaction. As it turns out, even taking account of particular points of conflict or forms of cultural

separation of science and religion, the historical record is one of interaction, which at its best has been constructive. Certain human values and cosmological assumptions like truth-telling, on the one hand, and the intelligibility of nature, on the other hand, pre-date the scientific enterprise and have their historical roots in religious history. That the cultural phenomenon of “modern” science arose in the midst of an Abrahamic culture (i.e., one shaped by Jewish, Christian and Islamic traditions) is not an historical coincidence. That the young “new science” of Galileo *et al* found a hospitable cultural environment in which to flourish in northwestern Europe is not unrelated to theological and ecclesiological features of the Protestant Reformation.

At the same time scientific development has stimulated the religious imagination. In the early 18th century, the American Calvinist theologian, Jonathan Edwards, drew substantively and metaphorically upon both John Locke’s *Essay on Human Understanding* and Isaac Newton’s *Principia Mathematica* in the construction of his theological works.¹¹ The point of stimulation is that of the narrative we tell ourselves, which reflects our understanding of the place that we are. Every religious tradition has such a narrative and that religious narrative has embedded in it from its time of conception whatever was the then prevailing general cultural understanding of the order and processes of nature. What science is always doing is introducing new nature narratives. These will invariably have an impact on religious narratives, unless the religious narratives are artificially culturally isolated, as in a dualist model. One of the most provocative voices in this regard, both scientific and religious, was that of the Jesuit paleontologist Pierre Teilhard de Chardin. He summed up the challenge that religion must confront in the face of ordinary scientific development when he wrote:

When we speak of a ‘theology of modern science,’ it obviously does not mean that by itself science can determine an image of God and a religion. But what it does mean, if I am not mistaken, is that, given a certain development of science, certain representations of God and certain forms of worship are ruled out, as *not being homogeneous* with the dimensions of the universe known to our experience. This notion of homogeneity is without doubt of central importance in intellectual, moral and mystical life. Even though the various stages of

our interior life cannot be expressed strictly in terms of one another, on the other hand they must agree in scale, in nature and tonality. Otherwise it would be impossible to develop a true spiritual unity in ourselves – and that is perhaps the most legitimate, the most imperative and most definitive of the demands made by man (sic) of today and man (sic) of tomorrow.¹²

This is the issue that does not seem to be well appreciated by the scientific community, except perhaps by those who have abandoned traditional faiths in the light of their scientific experience.¹³ The ordinary development of science has a religious effect. Therefore, teaching nothing but straight science in the public school science classroom has a religious bearing. It is, what I have called in the past, the unacknowledged “elephant in the classroom.”

Conclusion

Today many of the science classrooms in the United States are troubled; teachers are reluctant to teach what the curriculum requires; students are stressed between academic expectations and the religious commitments of family and church. The public media thrive on the controversy and the public discourse on the question of intelligent design is compromised by the deep “innocence” of the public both about science and about religion (even their own religion).

The comments above have not been addressed to my colleagues in the religious communities. I would say some, perhaps most of the same things to them. However, they have a huge task of constructive theology that they need to be about and for which the scientific community has not direct responsibility. At the same time, these communities are not isolated from one another. In their 1997 replication of a survey first done in the early part of the 20th century, Larry Witham and Edward Larson discovered that 40 percent of rank and file scientists were willing to assent to an extremely traditional affirmation of God (namely, one who answers prayer in some direct interventionist manner). Given that even some theologians would not affirm such an interventionist notion of God, it is likely that the number of theists within the scientific community is larger than the number reported in the survey. This suggests that even beyond the 40 percent, there are scientists who participate in religious communities all across the nation. Both existentially and institutionally

these are the persons who provide the first best point of coalescence from which to encourage support for public science education that has integrity, that recognizes the deeper and broader cultural significance of scientific development, and that is robustly resistant to imperialisms of whatever sort.

NOTES

¹ It is worth noting, ironically, that the author of one of the definitive essays on Biblical inerrancy, B. B. Warfield, was also a qualified supporter of Darwinian evolutionary theory. See “B. B. Warfield (1851-1921). A biblical inerrantist as evolutionist.” David Livingstone, *Isis*. 2000 June, 91(2):283-304.

² Just as the opponents of ID wish to link it with its Constitutionally invalidated “creation science” predecessor, a not entirely unwarranted association, by labeling it as “ID creationism,” I wish to use the “creationism” label to emphasize that so-called “theistic evolution” and “evolutionary theism” are also creationist in the technical sense.

³ See “Truth Cannot Contradict Truth,” *L'Osservatore Romano* (English edition), October 30, 1996.

⁴ See in particular *Science, Faith and Society* (1946) and *Personal Knowledge: Towards a Post-Critical Philosophy* (1958).

⁵ See Kuhn’s *The Structure of Scientific Revolutions* (1962). While Kuhn’s historical model of scientific change has been rightly criticized in terms of its details, it nevertheless has a first order heuristic value in describing science in broad stroke as an historical and cultural process.

⁶ See for example Jaroslav Pelikan’s five volumes, *The Christian Tradition* (1975-1991), which cover Christian doctrinal development from 100 CE through the modern period.

⁷ Helge Kragh provides an insightful discussion of these motivational issues in his *Cosmology and Controversy: The Historical Development of two Theories of the Universe* (1996). Interestingly, it was Hoyle that derisively labeled Lemaitre’s cosmology the “big bang.”

⁸ In 1997 the AAAS Program of Dialogue on Science, Ethics, and Religion organized a conference at the Field Museum in Chicago on the “Epic of Evolution” that specifically demonstrated that it was possible to have a construction discussion about the various evolutionary sciences and religion. When the *Chicago Tribune* reported on the event, although the body of the article provided a reasonable account of the conference, the headline and sub-headline read: “Roll over, Darwin, those theologians are at it again: It’s science vs. religion, but today’s battle is far less heated.”

⁹ See, for example, *When Science and Christianity Meet*, David Lindberg and Roland Numbers, eds. (2004)

¹⁰ Gould’s article was in response to the press excitement over Pope John Paul II’s positive statement on evolution that he made to the Pontifical Academy of Sciences in October 1996. Gould expanded his paper into the volume, *Rocks of Ages: Science and Religion in the Fullness of Life* (1999).

¹¹ Although Edwards is probably best known for his sermon, “Sinners in the Hands of an Angry God,” which is included in many college anthologies on American literature, he also wrote important theological works which show the influences of Locke and Newton, for example *Religious Affections* (1747) and *The Nature of True Virtue* (1765).

¹² From a letter written by Teilhard in 1947 and published in the collection, *Science and Christ* (1968), p. 221.

¹³ I should note that the abandonment of all religion, because one particular tradition is compromised by science, is a kind of odd compliment to that tradition, suggesting that it is normative for all religious alternatives. Such a universal abandonment is also some evidence of a lack of knowledge about religions, a failure of religious imagination and, I would argue, simply suppresses ones actual religious commitments. It is important to remember that one does not need to identify with an historic religious tradition to be religious.