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# The Competing Influence of Secularism and Religion on Science Education in a Secular Society

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# **The Competing Influence of Secularism and Religion on Science Education in a Secular Society**

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## ABSTRACT

We live in a country where by Constitution there can be no religious test for public office. On the other hand, we have a Bill of Rights that guarantees the free exercise of religion. We call this a secular system of government, and sometimes go so far as to use Jefferson's phrase that there is a wall between church and state. For the most part this secular system of government comports well with the teachings of Christianity based on Jesus' remark that one should render unto Caesar that which belongs to Caesar, and unto God that which belongs to God.

John Richard Neuhaus once remarked, our's is a *naked* public square. The reality however, is that the public square abhors a philosophical vacuum; and our so-called secular society has never really been a naked public square. Until the mid 20<sup>th</sup> century, for better or for worse, the philosophy permeating the public square was loosely that of Protestant Christianity. That effectively ended with a Supreme Court decision in the early 1960s banning prayer in schools. I suppose that many thought that we had arrived at where we should have been all along, that is, at a naked public square. But I suggest the public square really does abhor a philosophical vacuum and that today we often find philosophical secularism competing with various religious ideas for prominence in the public square. When it comes to science education in the public schools, I suggest that what we really need is something that might be called *methodological* secularism.

The notion of methodological secularism is an amalgam of ideas from Paul de Vries and Wilfred M. McClay. de Vries' subject is actually naturalism in the sciences, which causes problems for theists given naturalism's disavowal of supernaturalism. de Vries, however, argues that naturalism, can be, and is practiced in science regardless of any position on the supernatural. This form of naturalism he calls methodological naturalism, as opposed to philosophical naturalism. Just as de Vries argues that there are two legitimate ways to look at naturalism, Wilfred McClay argues that there are two legitimate ways to look at secularism. His and Paul de Vries arguments are analogous and so I propose that philosophical secularism be distinguished from methodological secularism. Naturalism and secularism represent philosophies that are deeply antithetical to theism. Methodological naturalism and methodological secularism, in contrast, shed anti supernaturalism presuppositions and promote the instrumental use of naturalism and secularism. As stated by McClay, secularism:

can be understood as an opponent of established belief--including a nonreligious establishment--and a protector of the rights of free exercise and free association. Second, it can be understood as a proponent of established unbelief and a protector of strictly individual expressive rights. The former view, on the one hand, is a minimal, even "negative" understanding of secularism, as a freedom "from" establishmentarian imposition. For it, the secular idiom is merely a provisional lingua franca that serves to facilitate commerce among different kinds of belief, rather than establish some new "absolute" language, an Esperanto of postreligious truth.

The balance of this paper addresses the difference between philosophical and methodological secularism, the problems for science education posed by both religion and philosophical secularism, and what the practical application of methodological secularism in science education might look like.

## The Competing Influence of Secularism and Religion on Science Education in a Secular Society

Give to Caesar what is Caesar's, and to God what is God's.  
Jesus of Nazareth

It is simply no use trying to *see through* first principles... If you see through everything, then everything is transparent. But a wholly transparent world is an invisible world. To *see through* all things is the same as not to see.  
C. S. Lewis

We live in country where by Constitution there can be no religious test for public office. On the other hand, we have a Bill of Rights that guarantees the free exercise of religion. We call this a secular system of government, and sometimes go so far as to use Jefferson's phrase that there is a wall between church and state. For the most part this secular system of government comports well with the teachings of Christianity based on Jesus' remark that one should render unto Caesar that which belongs to Caesar, and unto God that which belongs to God.

John Richard Neuhaus once remarked, our's is a *naked* public square, naked that is with regard to religious ideas or commitments. The reality, however, is that the public square abhors a philosophical vacuum, and thus the public square of our so-called secular society has never really been completely disrobed. Until the mid 20<sup>th</sup> century, for better or for worse, the philosophy permeating the public square was loosely that of Protestant Christianity, especially in the institutions of public education. That effectively ended with a Supreme Court decision in the early 1960s banning prayer in schools. I suppose that many thought that that we had arrived at where we should have been all along, that is, at a truly naked public square. But I suggest the public square really does abhor a philosophical vacuum and that today we often find secularism competing with various religious ideas for prominence. When it comes to science education in the public schools, I suggest that what need is a different understanding of secularism, if we are to avoid one round of conflict after another.

### Part I

Jesus of Nazareth, on whom Christianity is based, commands his followers: Give to Caesar what is Caesar's, and to God what is God's. Separation of church and state would seem a natural outgrowth of such a command. Indeed, Christian churches since the colonial period have strongly embraced the perspective made explicit in the Bill of Rights:

Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof....

Given the diversity of Christian churches, but who also typically agreed that faith is a matter of voluntary acceptance, non-establishment of religion was the key to free exercise of religion, and remains so.

Those who reject any notion of the transcendent have always been happy to join Christians<sup>1</sup> in their embrace of the first amendment to the US Constitution. For non-believers, non-establishment meant that as modernization proceeded, so would the spread of secularism. According to the twin theory of modernization/secularization, secularization is the expected culmination of modernizing forces: urbanization, rationalization, professionalization, functional differentiation, and bureaucratization;<sup>2</sup> coinciding with the asymptotic decay of traditional religion—perhaps never fully disappearing but fully relegated to the private spheres of personal life. Well, perhaps so in Europe<sup>3</sup> but not in the USA where belief in God holds steady, even amongst many scientists.<sup>4</sup> According to The Barna Group in 2006:

- 9% of US adults classify as evangelicals.
- 36% of US adults classify as born again, but not evangelical.
- Atheists and agnostics comprise 10% of adults nationwide.
- 10% of the US population identify with a faith other than Christianity.
- 71% believe in God when described as the all-powerful, all-knowing, perfect creator of the universe who rules the world today.
- 7% believe that God is the total realization of personal human potential.<sup>5</sup>

George Gallup has polled Americans about their belief in God since the 1940s, coming to the conclusion that “so many people<sup>6</sup> in this country say they believe in the basic concept of God, that it almost seems unnecessary to conduct surveys on the question.”<sup>7</sup> Indeed, rather than non-establishment being the key to secularization, it has been key to religious vitality in the USA, most noticeably for Protestant Christianity but also for Catholicism and other religions as well.

Such has been the vitality of Protestant Christianity that non-establishment came to mean a de facto establishment of a vague ethos or philosophy of Protestant Christianity, especially for the institutions of public education.

For most of American history, a Protestant cultural hegemony dominated American public life, especially the cultural climate of the public schools. Evangelical prayers, Bible devotionals, the Common Sense philosophy, conservative admonitions to shun the common vices (justified by Scriptural proof-texts), the evangelical ethos of proselytizing with one's personal witness, the piety of the born-again, traditional gender roles: these features constituted much of the fabric of normative American values. Religious minorities—Catholics, Mormons, Amish, Jews, Jehovah's Witnesses, and others—typically conceded the mainstream culture to Protestants and withdrew into religious subcultures. It is not hard to see why many Protestants sincerely believed that America was an intrinsically Protestant nation.<sup>8</sup>

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<sup>1</sup> As well as followers of other religions, but I focus on Christianity since it is the dominant religion in the USA

<sup>2</sup> See McClay (2003).

<sup>3</sup> It will be interesting to see the effects of Islam, which is spreading Europe.

<sup>4</sup> Two caveats: larger percentages of National Academy Fellows reject belief in God (Larson & Witham, 1998) and the nature of public beliefs about God show change.

<sup>5</sup> For a more complete examination of polling data, see Kosmin & Keysar (2006).

<sup>6</sup> Consistently 95% or more.

<sup>7</sup> Princeton Religious Research Center (1996, p. 20)

<sup>8</sup> Toumey (1993, p.276)

Indeed, Protestant cultural hegemony during the 19th and early 20th centuries meant anti-Catholic bigotry in American politics that led most states to pass “Blaine Amendments,” which are state constitutional provisions prohibiting the use of state revenues for the support of sectarian schools—where “sectarian” was a thinly veiled reference to Catholic schools.<sup>9</sup> The façade of non-establishment that was nonetheless an establishment of Protestant Christianity in the public square could not last forever against its obvious inconsistencies coupled with the forces of social and cultural change. As Bob Dylan sang in the 1960s: the times they are a’changing. In the late 1950s, American views toward sexual morality began moving away from traditional Christian morality. There were The Kinsey Institute reports that made sex a normal part of the public discourse. *Playboy* appeared on newsstands everywhere followed by a host of other such sexually explicit magazines. The impact of the sexual revolution sparked by the birth control pill cannot be understated, making sex education in the public schools a forgone conclusion. Constitutional law was changing; U.S. Supreme Court decisions in the 1930s, 1940s, and 1950s used the Non-Establishment clause of the First Amendment to disestablish Protestant hegemony. *Engel v. Vitale* (1962) and *Abington v. Schempp* (1963) ended legal school sponsorship of prayer and Bible devotionals. And, court ordered busing for school desegregation in the late 1960s severely weakened the local control of schools.<sup>10</sup>

In contrast, issues pertaining to the teaching of science, particularly evolution, remained relatively quiescent during this otherwise turbulent period through the 1970s. The 1925 Scopes Trial created considerable angst over the teaching of evolution in public schools, but in the wake of that trial, evolution largely disappeared from school curricula for the next 25 to 30 years. Renewed interest in science education and evolution finally erupted in the wake of the 1959 Darwin Centennial celebration,<sup>11</sup> where it was declared that 100 years without Darwin are enough. The Biological Sciences Curriculum Study (BSCS) funded by the National Science Foundation soon made evolution a key feature of its innovative high school biology textbook series, which ended the Darwinism curriculum draught. Very quickly came the response: Scientific Creationism. The hyper-conservative Christian response to promote Young Earth Creationism in the public schools was brilliantly documented by Ronald Numbers in *The Creationists*; and of course this creationist response precipitated yet another round of non-establishment litigation during the 1980s.<sup>12</sup>

Is there an end in sight? It did not come in the 1990s when challenges to the teaching of evolution came in the new form of Intelligent Design, challenges that also failed in the courts.<sup>13</sup> Polling, however, suggests that whatever accommodations Christians may have come to regarding morality, culture, politics, and schooling, belief in God and the rejection of evolution remain strong in the USA.<sup>14</sup>

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<sup>9</sup> The Becket Fund for Religious Liberty (2003)

<sup>10</sup> See Toumey (1993) for a brief but excellent account of this revolutionary period.

<sup>11</sup> Guide to the Darwin Centennial Celebration Records 1959 (2006).

<sup>12</sup> For example, McLean v. Arkansas Board of Education (1982).

<sup>13</sup> Kitzmiller v. Dover Area School District (2005).

<sup>14</sup> Pollingreport.com (2007); Pollingreport.com (2004); Religioustolerance.org (2005).

| Table 1. American Beliefs  |  |
|--|--|
| What do you believe about the origins of human beings? <sup>15</sup>   | Do you personally believe in the existence of God? <sup>16</sup> |
| 51% God created humans in present form.  | 92% Believe  |
| 30% Humans evolved, God guided the process   | 5% Don't believe   |
| 15% Humans evolved, God did not guide process  | 3% Not sure  |
| These percentages are quite constant across numerous polls and various ways of asking the these two questions. |  |

Moreover, religious interests in recent years have been asserted in other science related areas such as cloning, embryonic stem cell research, and climate change. That we are in the early years of the 21<sup>st</sup> century with secularism yet to drive religion from the public square (weakened though it may be) has the likes of Richard Dawkins, Daniel Dennett, and Sam Harris in the throes of an apoplectic state.<sup>17</sup> Their recent books — *The God Delusion*, *Breaking the Spell: Religion as a Natural Phenomenon*, and *Letter to a Christian Nation* — all appearing on the New York Times best seller lists, amount to hysterical pleadings for driving out, once and for all, the religious barbarians from the rightful place of secular intellectuals— the “Brights” as Dennett calls them.<sup>18</sup>

So, *is* there an end in sight? Is there a way forward? There is, but it does not lie with a Dawkins/Dennett/Harris call to arms for a final victory in the American cultural wars. In public education, and with specific reference to science education, we need to embrace a differentiated understanding of secularism. Explaining what this might mean requires that we first re-examine what would seem to be a settled issue: the definition of religion.

## Part II

Well of course religion is surely the belief in a deity or deities, whether defined by Christians, Jews, Muslims, Hindus or who ever. Accordingly, those who believe in no deity are not religious. This very popular line of thought is however quite antiquated, taken from a time when virtually everyone had some belief in some form of deity. So has religion simply disappeared for non-believers? Or, has religion taken new forms? For these questions, C. S. Lewis is instructive: “It is simply no use trying to *see through* first principles... If you see through everything, then everything is transparent. But a wholly transparent world is an invisible world. To *see through* all things is the same as not to see.”<sup>19</sup> The common claim of skeptics is to “see through” religious claims, but the error is thinking that there is anything at all beyond fundamental beliefs. We may think of it as a worldview;<sup>20</sup> everyone operates from a set of fundamental beliefs. Those beliefs for some involve a deity or deities whereas for others there is only matter and energy. Dawkins, Dennett and Harris are believers; they are just not theistic believers.

Despite the political advantages that a traditional definition of religion might accrue for some (this way some ideas are automatically excluded without having to argue the merits), we are

<sup>15</sup> CBS poll (2005).

<sup>16</sup> FOX News poll (2004).

<sup>17</sup> No one should be fooled by these self proclaimed warriors for reason. The cognitive processes of reasoning, as powerful and essential as they are, have no natural immunity to intolerance and willful ignorance to which all humanity are susceptible, as so clearly exemplified by these three authors.

<sup>18</sup> Dennett (2003).

<sup>19</sup> Lewis (1947, p. 91)

<sup>20</sup> Cobern (1991 & 2000)

more accurately served by following the lead of Paul Tillich: religion is ultimate concern.<sup>21</sup> We all have ultimate concerns; we all have first principals. These are the ways in which we answer the most fundamental questions of life. It is not that someone like Richard Dawkins is irreligious but that traditional religions are not the source for the way he answers the religious questions of life, which he nevertheless answers. We are all religious, rejection of the transcendent notwithstanding; and for this reason the American public square will never be naked. Attempts to make it so should be seen for what those attempts really are: a grab for cultural hegemony.

As noted at the start of this essay, there is a religious – a Christian – embrace of secularism that can well serve the public. Secularism, however, has different forms that are neither equally acceptable from a Christian perspective<sup>22</sup> nor equally efficacious with respect to peace in the public square. The forms are *methodological* secularism and *philosophical* secularism, where these terms are an amalgam of ideas from Paul de Vries and Wilfred McClay. In a 1986 article on naturalism and natural science from a Christian perspective, Paul de Vries addressed the difficulties that theists have with the “naturalism” of the natural sciences given that naturalism typically requires the disavowal of *supernaturalism*. de Vries’ counter argument is that scientists do not actually practice naturalism in their work in that everyday science is practiced regardless of any position on the supernatural. Theists and atheists coexist in the lab without problem or conflict. It was of no consequence in the physics community that Abdus Salam was a practicing Muslim or in the biology community that Francis Collins is a practicing Christian.<sup>23</sup> de Vries argues that such amiable comportment is possible because scientists implicitly practice *methodological* naturalism rather than *philosophical* naturalism, which indeed does disavow the supernatural. Pragmatism at its finest; after all, the reason we call it the *natural* sciences is that scientists seek explanations *in* nature, not elsewhere. In the apocryphal words of Galileo, science is about how the heavens go, not about how to go to heaven. And although from the time of Darwin to the present, the Huxley’s and the Dawkins’ of the scientific community have tirelessly argued that the *natural* of the natural sciences does indeed imply philosophical naturalism, there is no reason to allow this very shrill and very small minority view to drive public policy, especially given that their claim is so thoroughly rebutted by the factual descriptions of practicing scientists such as Collins and Salam.

Just as Paul de Vries argues that there are two legitimate ways to look at naturalism, Wilfred McClay argues that there are two legitimate ways to look at secularism. His argument is drawn from an analogy to Isaiah Berlin’s “Two Concepts of Liberty.” Berlin distinguished between “negative liberty, which designates a freedom from external interference, a freedom to be left alone, and positive liberty, which means a freedom to be self-governing and self-directed.”<sup>24</sup> Analogously, argues McClay, there is a difference between negative secularism and positive secularism. Secularism,

can be understood as an opponent of established belief--including a nonreligious establishment--and a protector of the rights of free exercise and free association. Second, it can be understood as a proponent of established unbelief and a protector of strictly individual expressive rights. The former view, on the one hand, is a minimal, even “negative” understanding of secularism, as a freedom “from” establishmentarian imposition.

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<sup>21</sup> Tillich (1964)

<sup>22</sup> By no means is this an exclusively Christian perspective, but one shared by many.

<sup>23</sup> Salam (1984); Collins (2006)

<sup>24</sup> McClay (2003).



For it, the secular idiom is merely a provisional lingua franca that serves to facilitate commerce among different kinds of belief, rather than establish some new “absolute” language, an Esperanto of postreligious truth.

The meaning, however, of “positive” and “negative” as adjectives modifying secularism is not readily grasped without explanation. Paul de Vries’ use of “philosophical” and “methodological” is far more transparent. Bringing the two lines of argument together, it is sensible to distinguish between philosophical secularism and methodological secularism. Philosophical naturalism and philosophical secularism represent philosophies that are deeply antithetical to theism. In American culture, they are not going to be the “new ‘absolute’ language, an Esperanto of postreligious truth.”

In contrast, methodological naturalism and methodological secularism are shorn of the presuppositions of anti-supernaturalism and promote the instrumental use of these concepts. This methodological, pragmatic, instrumental use of secularism as a public policy invites all parties to the public square. This is “a provisional lingua franca that serves to facilitate commerce among different kinds of belief.” Such facilitation of people’s differences strikes me as just what secular values are about, or my preferred term, democratic values, including: fairness, tolerance, respect for others, good citizenship, independent thought, and so forth. But I don’t see these as the values of philosophical secularism.

In constitutional terms, non-establishment means there can be no religious test for public office or policy. Constitutional free exercise within a policy of methodological secularism, however, means neither can a person’s ideas be excluded from the public square on the grounds that they are religiously motivated. A person should not be excluded from say the public policy debates on funding embryonic stem cell research merely because that person’s position was derived from Christian doctrine anymore than one should bar an atheist from the debate because of views derived from philosophical naturalism. In other words, methodological secularism refers to the terms of engagement or the rules of play by which people in a civil manner confront each other with their opposing ideas. What is required is that people incorporate the rules of play into whatever position, philosophy, or worldview they hold. Philosophical secularism is partisan; it is *one* team claiming to own the rules.

### **Part III**

Policy debate is one thing, however; school curricula are another matter. Can the openness of methodological secularism work as a policy for the public schools? Won’t methodological secularism be interpreted as an open classroom door for creationism, intelligent design, and whatever comes next? The answers are yes methodological secularism can work effectively as policy for the public schools and yes there is a risk. The most worrisome, troublesome, persistent case of conflict is the scientific teaching of origins, but there are other areas of potential conflict, for example:

- Embryonic stem cell research
- Cloning
- Sustainability and environmentalism
- Animal rights
- Traditional knowledge (e.g., First Nations, Aboriginal, Native American)
- Climate change
- Dissection

But the teaching of origins clearly precipitates the most conflict in science education.<sup>25</sup>

Evolutionary theory is the scientifically accepted account for the natural development and speciation of life on earth. It also cannot be denied that the development and implementation of school curricula is a political process, subject to individual interpretation, and dependent on the good faith of those involved. The day-to-day decisions of each science teacher are enormously influential. America simply does not have a strong central curriculum with central testing to enforce the uniform implementation of a common policy. The public polices curricula implementation of curricula the public has chosen via elected school boards. The formal efforts to either dilute the teaching of evolution or implement sectarian topics such as creationism and intelligent design precipitate public challenges, all of which have been effective to date. But there is still the individual teacher who is still quite autonomous; and there are still the students with questions that originate from many more places than just the prescribed curriculum.

The subject of origins is inherently metaphysical, and teachers and students have an implicit understanding of this. Once the topic of origins is broached, most students cannot help asking themselves: Why is there *anything* rather than nothing? Why is what *is here*, here the way it is and not some other way? That is, questions in this fashion or something similar. Ask an uninhibited group of students these questions and the range of discussion will stretch from material causes to spiritual causes. My point is that the topic of evolution almost always prompts people to think about “cosmic questions,” which is a vernacular reference to metaphysics and religion. Consider the late Carl Sagan and his *Cosmos* TV series. Sagan’s intention was for “cosmos” to be understood scientifically since the program is about scientific cosmology. Picture if you can the opening scene. Picture what the viewing audience sees on TV: a pontificating Carl Sagan standing before an ethereal backdrop, “The cosmos, all there is, all there ever was, all there ever will be.” Sagan undoubtedly thought he was speaking scientifically, but from these very first words, amplified by the mystery-laden backdrop from which he spoke these words, his program has deep metaphysical implications. It could hardly be otherwise, even without the visual theatrics.

Why? Because evolution offers a mechanism for how things have come to be as they are, and we – metaphysically – quite naturally wonder: Is evolution a *sufficient* mechanism for what we believe about our world? We wonder – metaphysically – if there isn’t something *more* that is needed. We wonder – metaphysically – if what we otherwise believe about the world is *amenable* with ideas from evolution. The historian of science, David Hull, asks: “What kind of God can one infer from the sort of phenomena epitomized by the species on Darwin’s Galapagos Islands?”<sup>26</sup> He had in mind the answer Sagan would give and also physicist Steven Weinberg: no one with a reasonable understanding of biological science could believe in God – or at least in any God having anything to do with our natural world.<sup>27</sup> Then there is biologist Julian Huxley who promoted himself as a kind of high priest for a “religion without revelation” based on a global evolutionary humanism.<sup>28</sup> A surprisingly different answer comes from David Lack. Textbook accounts of evolution typically refer to “Darwin’s finches” as an important source of evidence for evolution. Actually, David Lack did the study of finches in support of evolutionary theory. In contrast to

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<sup>25</sup> See Cobern (2007a & b)

<sup>26</sup> Quoted in Larson (2001)

<sup>27</sup> Weinberg (1988)

<sup>28</sup> Larson (2001)

Sagan, Hull, Huxley and Weinberg – and I think it is fair to say that Lack met Weinberg’s criteria of having “a reasonable understanding of biological science” – Lack tells us something very different:

The true significance of the first chapter of Genesis is to assert that God made the universe and all in it, that He saw that it was good, and that He placed man in a special relationship to Himself.<sup>29</sup>

Clearly, David Lack had no difficulties with David Hull’s question about God and evolution, nor would Francis Collins and many others. The issue of interest here is not one view or another, whether it is the view of a Sagan or a Collins, but that evolution sparks different metaphysical reflections, musings, and conclusions. Science teachers should not ignore such thinking and we certainly should not pretend that such thinking is unimportant to students. Rather, this situation makes the teaching of origins a very good place for the implementation of methodological secularism.

By this, however, I do not mean some sort of “balanced treatment approach” as creationists advocated for in the 1980s or the “teach the controversy” approach of more recent years. But I do mean that classrooms need to allow for the inevitable metaphysical diversity among students. To accomplish this within the bounds of law, I have four rules for implementing methodological secularism in the science classroom. These are all elaborated with respect to evolution but the rules apply in principal to all science topics.

**RULE 1: Teach science, not scientism.** Students and teachers need to understand the difference between science and scientism, between evolution and evolutionism. A science popularizer like Michael Shermer, columnist for *Scientific America*, is not someone to follow. He proudly announces that we are now in the Age of Science and it is “scientism’s shamans who command our veneration” and that scientists today are our “premier mythmakers.” It makes no sense to brag about scientism and it certainly does no harm to the enterprise of science that we carefully observe its limitations. Indeed, one of the great historical strengths of the natural sciences is that limitations *are* observed; science only addresses questions of a certain kind.

**RULE 2: Teach for sound *understanding not belief*.** Don’t teach for belief. Don’t preach. Understanding is critical but belief is not. People do not find all evidence equally compelling. People are not always as convinced, as are scientists by the same evidence. They may have other evidence that is more compelling to them, or authorities that are more trusted. Ignoring these realities is simply counterproductive because it leads students to feel that they are being indoctrinated rather than taught. To disbelieve, moreover, does not bar understanding. Indeed, students are much more open to learning when they are confident that the teacher is not trying to “convert” them. Teachers need also recognize that student rejection of evolution does not mean that those same students reject all of science. There are keen science students who reject the validity of evolutionary theory.<sup>30</sup> Moreover, it should be of some encouragement to teachers that although belief is up to the students, what one believes changes and develops. What a student believes today will not necessarily be what he or she believes next year. Give students evidence to think about (Rule 3) and space to sort out the issues important to them (see Rule 4), and belief will change and develop.

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<sup>29</sup> Larson (2001)

<sup>30</sup> Cobern & Loving (2005)

**RULE 3: Teach the *evidence*.** This rule is simply good science teaching but too often the science curriculum is what Joseph Schwab called a “rhetoric of conclusions.” The conclusions are needed (i.e., the outlines of the general theory of evolution); but without some introduction to the evidence that scientists adduce in support of evolution, student understanding of evolution will be weak. Worse, some students will conclude that evolution is more an ideological stance than an evidenced based scientific theory, which is exactly the message of young earth creationists. If we want skeptical students to develop confidence in the scientific soundness of evolution, Rule 2 requires Rule 3.

**RULE 4: Give students time to explore their own ideas.** We do not need lessons on intelligent design and we do not need to examine facts that some think are facts against evolution. But from metaphysical theory to epistemological theories of coherence to cognitive theories of conceptual change to democracy and the free exercise of ideas, it makes no sense to ignore ideas that students bring to the classroom that the students deem relevant regardless of what their science teachers think. Science teachers need to acknowledge that this diversity of thought is very likely to exist and to ask the students if they would like the opportunity to explore their own metaphysical questions of interest. To do so creates an hospitable environment that will open possibilities for learning rather than closing them off. There are simple guidelines to follow. If a student wants to report on the “young age” of the earth, fine—but require that student to also study the standard evidences used by scientists to date the earth. In other words, insist that students consider all evidence, not a selected set. If a student wants to present a case for atheism based on science, that also is acceptable. But so is a case for theism. To put the guidelines another way, let students who wish to present science-based philosophical and metaphysical positions do so, which includes religious positions. If they want to present some position regarding physical nature (e.g., there are no true transition fossils), they must show that they have read the *standard* scientific accounts. I would advise against oral presentations because of the excessive classroom time it would consume, and instead use paper reports or poster sessions.

Rule 4 does open the classroom door to creationism or other highly sectarian ideas, but the approach is legal since students initiate whatever is brought to class and there is no hint of coercion or collusion. Openness has a price and it is that ideas running counter to standard science will circulate. But the “closed” classroom does not stop this circulation; it only bars it from the classroom, which then has the side effect that some students will not seriously consider standard scientific evidences. The closed-door approach, the philosophical secularism approach, gives us the stalemate and conflict we have today.

## **Conclusion**

Bringing the idea of methodological secularism to the science classroom makes the teaching of controversial subjects such as evolution considerably more complicated than teaching say the kinetic theory of gases or about respiration. One simply cannot take a rather unsophisticated internalist scientific perspective, as if nothing mattered but the science of the subject. On the other hand, adopting the stance of philosophical naturalism and philosophical secularism is philosophically unsound. Science is turned into scientism; secular values are perverted. Moreover, philosophical secularism is unworkable in the vast majority of American public schools. Openness to student initiated ideas, in contrast, defuses potential conflicts and leaves avenues open for student learning and growth that otherwise would be shut off. Openness promotes democracy.

The Lincoln biographer, Allen Guelzo, wrote that Lincoln “struggled to be true to the two souls of American culture”: one theistically religious and the other secular, commercial and enlightened. Guelzo wrote that these two souls of America “have often been locked in combat, only to withdraw after a brief battering reminds them that in America they have no choice but to co-exist.” We too in recent decades have been battering ourselves through litigation over what can and cannot be taught at school. It is past time to cease these hostilities and realize that there will not be any clear-cut victory for either side. The optimism of methodological secularism is that we learn to peacefully co-exist.

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