Expert Witness Report:
The Problem of Methodological Naturalism

By Dr. Angus J. L. Menuge

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"The very power of [**methodological naturalism**] depends on the fact that [teachers] are dealing with a [student]: a [student] who thinks he is 'doing' his ['Science'] and has no notion that ethics, theology and politics are all at stake. It **is** not a theory they put into [the student's] mind, but **an assumption, which** ten years hence, its origin forgotten and its presence unconscious, **will condition [the student] to take one side in a controversy which [the student] has never recognized as a controversy at all**."[1]

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1. Introduction.

The **specific topic** addressed by this testimony consists of three clauses:

> **[1] The effect of methodological naturalism (MN) in science education; [2] how MN adversely impacts scientific explanations of origins; and [3] why MN causes the state to take sides with respect to particular kinds of religion.**

Since any resolution of the issues raised requires accurate and unbiased understanding of the key terms employed in the three clauses, I will begin with a series of definitions of these terms. Then I will address each of the three clauses in turn, and finally summarize my main conclusions.

2. Definition of key terms.

2.1 "Methodological naturalism."

Methodological naturalism should be carefully distinguished from philosophical naturalism. **Philosophical naturalism is a metaphysical thesis**, the view that nature, the spatiotemporal realm of undirected causes, is all there is, or more specifically, "the doctrine that cause-and-effect laws (as of physics and chemistry) are adequate to account for all phenomena and that teleological [design] conceptions of nature are invalid."[2] **Methodological naturalism**, by contrast, **is a practical rule of scientific method**, which says that **scientists should proceed as if philosophical naturalism is true**.

Methodological naturalism "requires that scientists limit themselves to materialistic explanations when they seek to explain the nature and/or origin of natural phenomenon, objects, or processes. On this understanding… explanations that invoke intelligent causes or the actions of intelligent agents do not qualify as scientific."[3] **Since only intelligent entities, those with goals, intentions and purposes, can literally design anything, methodological naturalism assumes that any appearance of design in nature is an illusion.** In this vein, the noted Darwinist Richard Dawkins writes:

> "Biology is the study of complicated things that give the appearance of having been designed for a purpose…. Natural Selection, the blind, unconscious, automatic process that Darwin discovered… has no purpose in mind. If it can be said to play the role of watchmaker in nature, it is the *blind* watchmaker."[4]

Since methodological naturalism asserts that scientists may only consider undirected causes, and since these causes cannot literally design anything, **methodological naturalism implies that there can be no such thing as scientific evidence for design, or for a higher purpose or meaning for human life**. Thus even if there is the most powerful empirical evidence for design, methodological naturalism rejects it as inadmissible when doing science.

Methodological naturalism is not to be confused with "empirical natural science." Empirical natural science seeks to provide the best theoretical account of observable natural phenomena, but it does not follow that this account must only include undirected natural causes. Viewed objectively, natural science does not imply methodological naturalism, since the best scientific account of at least some natural events might invoke intelligent causes. **If scientists are allowed to follow the evidence wherever it leads, they may conclude that some of the apparent design in nature is actual design, rather than merely an illusion to be explained away**. This is the claim of "Intelligent Design," defined below.

2.2 "Education."

For purposes of this document, the most important characteristics of education are that, **unlike indoctrination, education is "secular," "neutral" and "non-ideological" as these terms are defined by the National Assessment Governing Board (NAGB) under the auspices of the No Child Left Behind Act of 2001** (See APPENDIX A).[5]

As defined by NAGB, **"secular" education "will not contain language that advocates or opposes any particular religious views or beliefs."**

And, according to NAGB, **to say that education is "neutral and non-ideological" means that it "will not advocate** for a particular political party…or for **a single perspective on a controversial issue."**

In addition, **education aims to make students well informed**. Should a controversy exist, it is clear that **education that is secular, neutral and non-ideological can only inform students properly by providing information about both (or all) sides of the controversy**.

To do otherwise encourages what logicians call the fallacy of suppressed evidence, in which a controversial claim is made to seem better supported by the evidence than it really is by only presenting that evidence that favors the claim, while suppressing evidence that counts against the claim or that better supports an opposing claim. This will inevitably involve the illicit advocacy "for a single perspective on a controversial issue," and may also oppose certain religious views and advocate others. In this way, education will fail to be "neutral and non-ideological" and may also fail to be "secular."

2.3 "Science education."

Science education that is secular, neutral and non-ideological should not aim at making students agree with the non-scientific (metaphysical, religious, professional) biases that predominate amongst contemporary scientists. Rather, it should help students to find the probable truth about how and why the natural world behaves as it does, by allowing them to follow the evidence wherever it leads. Probable truth can only be accurately estimated if all the relevant evidence is presented. **In the**

case of a scientific controversy, such as the controversy over Darwinism, it is essential that the evidence both for and against Darwinism be presented, so that the student can make a proper assessment of the theory's probability. To do otherwise advocates "a single perspective on a controversial issue" and favors those religious views, such as Secular Humanism (defined below under Religion) that deny design, while opposing those (such as theistic religions) that affirm it. **Failure to show the evidence on both sides of the controversy over Darwinism therefore results in education that is not secular, neutral or non-ideological**.

Here it is important to note that the theoretical results of science are based on the currently available evidence (which does not exhaust all possible, relevant evidence) and the currently proposed theories (which does not exhaust all possible, reasonable theories). As a result, the theoretical findings of science are necessarily fallible because they may be refuted by new evidence or displaced by more powerful theories. Therefore, science education should foster an openness to alternative possible explanations and a willingness to subject even established ideas to severe testing, as recommended by the eminent philosopher of science Sir Karl Popper. **In the context of a controversial theory, students should be familiarized with the evidence on both sides, for no matter how well established the theory may seem, it may be false**. Refusing to present the evidence against a theory because it happens to be incompatible with "methodological naturalism" runs the risk of indefinitely enshrining a false theory as a scientific "fact."

2.4 "Scientific explanations of origins."

Logic distinguishes three different methods of inference. **Deduction** allows proof of the sort found in mathematics. In a valid deductive argument, if the premises are true, the conclusion must be true. Natural science is unable to give such proofs because its theories and explanations say more than the evidence strictly entails. No matter how strong the evidence, the theoretical conclusion could still be false, because the theory goes beyond that evidence in its claims. When developing laws, such as Kepler's three laws of planetary motion, **induction** is used to extrapolate from observed data to a more general regularity that also covers unobserved (and perhaps unobservable) cases. The proposed laws can then be subjected to further testing because the phenomena they describe are repeatable (either they recur naturally, or they can be made to recur experimentally). **Induction, however, is unsuitable for scientific explanations of origins since these explanations focus on unique, historical events that are by nature not exactly repeatable, partly because so many variables were simultaneously operative, and partly because the evidence is generally not sufficient to identify all of these variables with any great confidence**. As a result, historical or origins sciences typically use **abduction**, an inference to the best explanation of a historical event. **Given the available data and competing pool of explanations, abduction selects the best current explanation** (the one that is most comprehensive in accounting for a variety of data, that is most causally adequate, and which is both internally coherent and compatible with other well-established results of science).[6]

2.5 "Religion."

It is often supposed that a belief-system qualifies as a religion only if it involves belief in god, belief in the supernatural, or subscription to revealed texts. In fact, this is not the finding of authorities in philosophy of religion or of the U. S. judicial system. For example, no lesser an authority than Paul Tillich emphasized that religion involves a person's "being grasped" by something of ultimate significance for that person, which he called the person's "ultimate concern."

> "If religion is defined as a state of 'being grasped by an ultimate concern' — which is also my definition of faith — then we must distinguish this as a universal or large concept from our usual smaller concept of religion which supposes an organized group with its clergy, scriptures, and dogma, by which a set of symbols for the ultimate concern is accepted and cultivated in life and thought. This is religion in the narrower sense of the word, while **religion defined as "ultimate concern" is religion in the larger sense of the word…. [I]n the light of the larger concept we can understand that ultimate concern is also present in what we usually call the secular or profane.**"[7]

Tillich's insight clarifies that a person's view qualifies as religious if it takes a position on the source of ultimate value and meaning in life. Arguably, all persons are religious in this sense (even nihilists, who claim that there is no source of ultimate value or meaning). But certainly, it is a mistake to claim that only theists, those who believe in a god or gods, are religious. Ethical egoists like Ayn Rand, who hold individual self-realization to be the highest good, or secular humanists, who identify the highest good in terms of "human values," and the ideals of "reason and scientific inquiry" are equally religious by the above definition.

> According to the Council for Secular Humanism, Secular Humanism
>
> "is a way of thinking and living that aims to bring out the best in people so that all people can have the best in life. **Secular humanists reject supernatural and authoritarian beliefs.** They affirm that we must take responsibility for our own lives and the communities and world in which we live. **Secular humanism emphasizes reason and scientific inquiry, individual freedom and responsibility, human values and compassion, and the need for tolerance and cooperation**." [8]

Likewise, the Humanist Manifesto III defines a clearly secular version of humanism as

> "**a progressive philosophy of life that, without supernaturalism, affirms our ability and responsibility to lead ethical lives of personal fulfillment that aspire to the greater good of humanity**."

There is an explicit commitment to a naturalistic, evolutionary understanding of all life including every aspect of human beings:

> **"Humans are an integral part of nature, the result of unguided evolutionary change."**

More generally, secular humanists are committed to philosophical naturalism:

> **"Humanists recognize nature as self-existing."** [9]

As the term is used by Secular Humanism, **"secular" is the opposite of "theistic" and of "sacred," but not of "religious." In this sense, a person can be utterly secular, rejecting any god and all sacred texts and institutions, and still hold the religious view that some secular entity, e.g. human reason or "natural" human aspirations, is the source of ultimate value and meaning**. **"Secular" as used by Secular Humanism is not the same as "secular" as used by the National Assessment Governing Board** (defined above) since in the former, but not the latter case, a secular view does advocate an identifiably religious worldview.

Likewise, United States law recognizes that there can be religions that are non-theistic and secular. As noted at the website "Is Secular Humanism a Religion?" in the 1961 U.S. Supreme Court case *Torcaso v. Watkins* (367 U.S. 488), the Court stated (footnote 11):

> **"Among religions in this country which do not teach what would generally be considered a belief in the existence of God are Buddhism, Taoism, Ethical Culture, Secular Humanism, and others."**[10]

As noted on the same website, "It is important to note that this citation of Secular Humanism as a religion is not merely dictum. The Supreme Court refers to the important 1957 case of ***Washington Ethical Society v. District of Columbia*** **(101 U.S. App. D.C. 371) in its holding that Secular Humanism is a non-theistic religion within the meaning of the First Amendment."**

In an even clearer ruling, *Smith v. Board of Commisioners of Mobile County*, 655 F.Supp. 939 (S. D. Ala. 1987), one of the conclusions of law was that Secular Humanism is a religion:

> **For purposes of the first amendment, secular humanism is a religious belief system, entitled to the protections of, and subject to the prohibitions of, the religion clauses. It is not a mere scientific methodology that may be promoted and advanced in the public schools.**[11]

The ruling concluded that in their portrayal of matters pertaining to religion, numerous textbooks in fact advocated for Secular Humanism as against theistic religions and

thereby violated the First amendment Establishment Clause. **There is, therefore, legal precedence for saying that educational materials and methodologies violate the First Amendment by advocating for Secular Humanism**.

Since Secular Humanism is logically incompatible with the view that some transcendent being is the source of ultimate value, a "secular" worldview in this sense is also not "neutral" as between competing religious perspectives, but is itself one of those competing perspectives. It follows that the constitutional ban on the establishment of religion is violated just as surely by favoring Secular Humanism, by allowing it to pose as a religiously neutral position, as it is by permitting state sponsored proselytization by theistic faiths.

2.6. Intelligent Design.

Intelligent Design (ID) is a scientific research program that recognizes the importance of undirected causes (necessity and chance), but which **seeks to rehabilitate design as a legitimate causal and explanatory category in science**. In fact, there are various special sciences (archaeology, cryptography, criminal investigation, the Search for Extra Terrestrial Intelligence) that already recognize that intelligent agents have the capacity to redirect the normal course of nature, leaving behind empirically detectable signs of intelligence. **In the case of origins research, ID argues that the same criteria that can be used to distinguish the result of human agency from that of undirected causes, reveal evidence of a non-human intelligence operating in nature.**[12]

As it is, **even scientists who are not proponents of ID frequently use "methodological design,"** the view that we should treat some natural entities *as if* they are designed, because it has turned out that biochemical structures are often best understood as machines with specific functions. The empirical evidence for design includes the complex specified information in the most basic self-replicating molecules, the "irreducible complexity" of some biological structures, and the fine-tuning of the universe for life. Whether the designing intelligence need be thought of as supernatural is somewhat debatable and depends both on the specific case, and also on the prior philosophical question of what counts as "natural."[13] Indeed, **William Dembski, a leading proponent of design theory, argues that for science, "the contrast between natural and supernatural causes is the wrong contrast. The proper contrast is between *undirected natural causes* on the one hand and *intelligent causes* on the other."**[14] This is helpful because we can, in the human case, clearly distinguish the results of intelligent causes (intentional behavior) from undirected behavior, such as a reflex response, without deciding on the question of whether or not human beings are entirely a part of "nature." By extension, **we can investigate whether nature manifests signs of intelligence without settling the question of whether the designer is supernatural**, although there may be independent evidence for or against this further conclusion.

Further, **one can have evidence of an intelligent designer without being able to identify the designer**. One can know that someone was murdered without knowing who

the murderer is (or how he did it). Likewise, evidence of intelligent design in nature that does not trace to human beings is likely to be insufficient to determine the identity of the designer. **Claiming to discern evidence of design in nature is not inherently a religious claim. In the human case, there are reliable tests for distinguishing the intentional actions of agents from their accidental or unintended behavior, and no one supposes these are religious claims. When the same tests are applied to natural phenomena not produced by humans, they may also indicate design.**

The fact that such evidence happens to support the claims of (some) theistic religions over non-theistic religions in no way diminishes their scientific legitimacy. If it did, then we should have to say that the evidence supporting the view that the appearance of design in nature is an illusion is scientifically illegitimate, because it supports the claims of non-theistic religions like Secular Humanism over those of theistic religions.

2.7 Religion and design.

Some religions (e.g. theistic religions like Christianity) are committed to there being detectable design in nature, while others (e.g. non-theistic religions like Secular Humanism) are committed to any such appearance of design being an illusion. For example, many Biblical Christians agree with St. Paul that God's "invisible attributes, namely his eternal power and divine nature, have been clearly perceived, ever since the creation of the world, in the things that have been made" (Rom. 1: 20, ESV) and, along with followers of Judaism, affirm that "The heavens declare the glory of God, and the sky above proclaims his handiwork" (Psalm 19: 1, ESV). **For these theists, there is objective evidence of design in nature, and in particular, human beings are themselves designed objects with an ordained purpose in life.** On the other hand, as we saw, secular humanists claim that nature is self-existing, and that human beings are simply a part of that nature. They see all living things, including human beings, as the result of "unguided evolutionary change." **For secular humanists, any appearance of design in nature must be an illusion, and even human beings must be mere occurrences (things that happen to be because of unguided natural processes), whose existence was not intended, and who have no ordained purpose in life**.

As a result, evidence that suggests that design in nature is real will tend to support theistic religions, while evidence that suggests that the design is an illusion, the result of undirected causes, will tend to support non-theistic religions, like Secular Humanism.

Of course, if science is objective, the evidence must be allowed to speak for itself. Only presenting evidence for design would be biased, favoring theistic religions against non-theistic religions. But by the same token, only presenting evidence that the design is an illusion is also biased, favoring non-theistic religions. The only fair and neutral way to proceed is to put the truth claims of both theistic and non-theistic religions at risk, by allowing scientists to impartially explore all of the evidence on both sides of the question.

3. Discussion of the topic.

I will now address in turn the 3 sections of the topic numbered [1], [2] and [3] at the beginning of this document. All of them concern methodological naturalism (definition 1, above). This concept is of crucial importance because provisions of **Draft 2 of the Kansas Standards** on the nature of science insert methodological naturalism into those standards:

> **"Science is a human activity of systematically seeking natural explanations for what we observe in the world around us…. As it is practiced in the late 20th and early 21st century, science is restricted to explaining only the natural world, using only natural causes."**

These provisions require that scientists proceed as if nature is all there is, and as if undirected natural causes are the only causes that operate in nature. That is, according to these standards, scientists must adopt methodological naturalism. As a result, science is committed to treating any appearance of design as an illusion, and nothing can count as evidence of an intelligent cause that actually produces a designed entity.

3.1 [1] What is the effect of methodological naturalism in science education?

Methodological naturalism is often a good rule of thumb for scientists to follow, because it encourages them to search for tractable, material mechanisms to explain observable phenomena. Certainly, it is unwarranted to infer the action of an intelligent cause while there are still plausible, undirected alternatives. However, **when methodological naturalism is presented as an *a priori* necessary commitment of "the scientific method," it means that even the strongest evidence against the adequacy of undirected causes could never amount even to a tentative case for intelligent design**.

There is, in fact, a controversy over whether the design in nature is only an appearance or is in fact real.[15] The controversy is almost inevitable given the fact agreed on all sides that many phenomena in nature do appear to be designed, and some hold a worldview that allows real design and others hold a worldview that does not allow this. **Only allowing the presentation of evidence that favors the idea that design is an illusion fails to properly inform the student of both sides of a controversial issue**. This has the effect of advocating Darwinism (which argues that design is only apparent) as against those views, such as Intelligent Design, which argue that at least some of the design in nature is real. **In this way, education fails to be neutral and non-ideological, by advocating "a single perspective on a controversial issue."**

The effect of methodological naturalism in science education **is** to teach students an artificially constricted or abridged view of science. This is what business lawyers would term **a "failure of full disclosure."** A company can be made to seem much more financially healthy than it really is by only disclosing its assets and successes and not its deficits or failures. **Likewise a scientific program, such as Darwinism, can be made to seem more certain than it is, by only disclosing the evidence in favor of**

the view and not disclosing problems the theory does not or cannot account for, according to qualified, dissenting experts. **Methodological naturalism, by allowing only evidence for undirected causes to be presented, allows Darwinism to be taught without full disclosure, since the evidence in favor of actual design cannot be presented**. As noted above, in logic this is called the fallacy of suppressed evidence, which makes a conclusion seem more certain than it actually is by only presenting the evidence in favor of the conclusion, while suppressing the evidence that points in a contrary direction. **Methodological naturalism fails to properly inform students by suppressing the evidence in favor of actual design in nature. In this way, science education fails to be "neutral and non-ideological," inflating the case for one perspective by exclusively advocating that perspective.**

Socrates' call was to follow the evidence (or argument) wherever it leads, and the world-famous (former) atheist philosopher, Antony Flew employed this approach when concluding that the information found in even the most primitive life most probably did not arise from undirected natural causes, but derived instead from an intelligent source.[16] This was the same conclusion drawn earlier by the scientists Bradley, Olsen and Thaxton.[17] Under methodological naturalism, however, no matter what the evidence is, explanations that are non-naturalistic (those invoking intelligent causes) can never be considered. The students are not told to follow Socrates' advice, but instead "Follow the evidence wherever the best naturalistic account is to be found." Logically, it is possible that the best naturalistic account may not be the best account of all. **If the goal of science is finding the truth about the natural world, requiring methodological naturalism runs the risk of undermining this goal by ignoring important truths and settling for inadequate alternatives indefinitely merely because they are "naturalistic."**

In modern western societies, science is regarded as the highest arbiter when it comes to adjudicating questions of fact about the natural world. In this cultural context, claiming that only naturalistic answers are acceptable in science runs the risk of indoctrinating students with the idea that only naturalistic causes can be factual. Thus the student is subtly encouraged to think that any claims made about intelligent (or supernatural) causes cannot be factual, leading him or her to go beyond methodological naturalism to philosophical naturalism (the view that undirected causes exhaust reality). Although methodological naturalism does not logically imply philosophical naturalism or secular humanism, inculcating methodological naturalism has the effect of trivializing non-naturalistic claims and thereby encouraging philosophical naturalism and naturalistic religions like Secular Humanism.

3.2 [2] How does methodological naturalism adversely impact scientific explanations of origins?

The above concerns are most pressing when scientific investigation focuses on the origin and diversity of life, since here metaphysical and religious questions of the ultimate nature and meaning of reality necessarily overlap with purely scientific problems.

As can be seen from definition 4 above, scientific explanations of origins employ abductive logic because life originates and diversifies at particular times and places in history. Given the available data and a range of competing explanatory narratives that attempt to account for the data, the scientist aims to infer the **best current explanation**.[18] However, methodological naturalism runs the risk of compromising the meaning of the qualifiers "best" and "current."

The "best" explanation is not best in any absolute sense. It is best relative not only to the currently available data, but also relative to the pool of competitor explanations. **Without open and vigorous competition, the "best" explanation considered need not even be a good one. If the range of admissible explanations is artificially restricted, it is possible that the truly good explanations are all excluded, making the best competitor explanation simply the "best of a bad lot."** Consider an analogy between explanations and runners in a race. The "best" runner in a race where only one can compete need not be a good runner. Likewise if the objectively best runners are all barred from competition, then even if there are multiple competitors, even the best one of these will not need to be a very good runner. Methodological naturalism artificially restricts the pool of competing explanations to those that are "naturalistic." It is logically possible that in some cases, all of the naturalistic explanations are inadequate and that one invoking an intelligent and/or supernatural cause is superior. Even though the latter explanation deserves to be called the best current explanation, it never will be since it is arbitrarily excluded from the process of comparative evaluation. As Stephen Meyer writes in the context of origins research, "If competing hypotheses are eliminated before they are evaluated, remaining theories may acquire an undeserved dominance."[19] This is particularly problematic in the case of origins research, because, "only a limited number of basic research programs are logically possible." Either life arose by chance, natural necessity (self-organization), a combination of chance and necessity, or via the agency of an intelligent being. **"The exclusion of one of the logically possible programs of origins research by assumption, therefore, seriously diminishes the significance of any claim to theoretical superiority by advocates of a remaining program."**[20]

Here it is crucial to notice that when abduction is used, explanations are not merely tested against the data, but against each other. As Thomas Kuhn, Hilary Putnam and other historians and philosophers of science have pointed out, scientists will not abandon an explanation, even if it has considerable unresolved problems, if it is the only available, remotely plausible candidate ("the only game in town"). For an explanation to be abandoned or considered refuted, there must be at least one other plausible, well-articulated alternative explanation with which it can be compared. **Methodological naturalism has the effect that a view substantially like Darwinism must be true, regardless of the evidence, since Darwinism is precisely the attempt to explain away the appearance of design in nature in terms of the interplay of undirected causes:** chance mutations and natural selection. While the details of Darwinism can be debated and modified internally, methodological naturalism excludes the possibility of a substantially different paradigm, such as Intelligent Design. **The consequence is that methodological naturalism prevents Darwinism's claim, that the**

apparent design in living systems is an illusion, from being tested against the contrary claim that the design is real. This, however, means that the Darwinian claim is no longer being treated as a testable, scientific theory, but merely as an ideology, which could never, even in principle be refuted, because nothing is allowed to count as scientific evidence that design in nature is real.

Logically, the Darwinian claim that every appearance of design in nature is an illusion is not being treated as a testable, scientific claim if nothing is allowed to count as evidence against it. In fact, the Darwinian claim by itself is scientific, because one can test it by providing evidence that some biological structures could not arise from undirected causes, as has been proposed by Michael Behe.[21] But, in the presence of methodological naturalism, Darwinism is converted into a non-scientific ideology, because nothing is allowed to count as scientific evidence of actual design, and hence nothing can count as evidence that Darwinism is false in its central claim.

When science is pursued objectively, the best "current" explanation may be displaced either because new data turns out to be better explained by its current competitors or because new and superior explanations are proposed. This shows that **abductive inference is unstable and fallible in the sense that the best explanation today may not be the best tomorrow.**[22] However, **methodological naturalism compromises the fallibility of science, since the only way the current best naturalistic explanation can be unseated is by another, substantially similar naturalistic explanation**. Unless that happens, no matter how bad the naturalistic explanation may be, and no matter how strong the case for a non-naturalistic competitor, the naturalistic explanation will continue to reign supreme.

To this, it is often retorted that it can never be proven that there is no possible, naturalistic explanation that is adequate. By the standards of deductive logic, this is quite true, but it is irrelevant because the actual logic employed by all parties in origins research is not deductive, but abductive. Whereas in a valid deductive argument it is not possible that the conclusion is false if all the premises are true, it is always possible that an abductive inference is mistaken, even if all the supporting evidence is correct. For this reason, it is trivially true that there always might be another naturalistic explanation (and for that matter another non-naturalistic explanation), but since abduction is competitive and considers only the evidence and candidate explanations available at the time, possible future explanations cannot be considered until they are actually proposed. A promissory note for an explanation is not an explanation, and the ability to issue promissory notes provides no advantage to naturalists since their critics have the same ability.

Alternatively, it is argued that there is something especially problematic about supernatural causes, that it is a "God-of-the-gaps fallacy," or that supernatural beings must be excluded from science because their behavior is capricious, unpredictable and uncontrollable. But as we have seen, the real issue is not "supernatural causes," but whether there are intelligent causes as well as undirected natural causes. However, even in terms of supernatural causes, Del Ratzsch has shown that there is no good reason in

principle to exclude inferences to a supernatural agent from science. The fact is that in historical science, we frequently have good evidence for "gaps" where we identify something that unaided nature would not (or could not) do, and infer the activity of an agent. **This is not an argument from ignorance, but an inference from knowledge of what unaided nature does not or cannot do.** Thus in archaeology, scientists look for characteristic signs of intelligent activity that point to an item being an artifact rather than the result of natural processes. The same method can be extended beyond the human, as it is in the Search for Extraterrestrial Intelligence (SETI). And it may finally point beyond nature altogether, if nature has marks that nothing in nature itself would or could produce. Del Ratzsch has outlined the scientific logic of detecting agents.

> If unaided nature cannot generate some phenomenon, and there that phenomenon is in front of us, then obviously some other agency was involved. If we add the premise that humans couldn't or didn't produce the phenomenon, whereas aliens could have, we get the alien-of-the-gaps arguments, which is precisely what underlies SETI. If we add the further premise that aliens couldn't or didn't… then supernatural agency follows.[23]

The fact that a supernatural being would not be "controllable" or "tractable" is also a red herring. Having good evidence for the existence of a cause has nothing to do with the controllability or tractability of that cause. To take a naturalistic case, the evidence for the random behavior of subatomic particles is not diminished by the fact that we cannot predict and control the behavior of individual particles. Likewise, the evidence implicating an insane person as a murderer is not undermined by the unpredictability and uncontrollability of the murderer.[24] Historians gathering evidence for Caesar's crossing the Rubicon have no ability to make him repeat the performance. Criminal investigators of murder do not base their conclusions on the ability to make the murder happen again in controlled conditions. And finally, evidence that a particular event is a miracle is no less strong because we cannot say when, if ever, the miracle will recur. **As we noted before, abductive inference does not require evidence of repeatability, in the sense that either nature or ingenuity can recreate the conditions that produced a historical event.** That something originated in a certain way need not imply that either unaided nature or clever experimental design can recreate the conditions to make it happen again.

3.3. [3] Why does methodological naturalism cause the state to take sides with respect to particular kinds of religion?

Methodological naturalism assumes that the only legitimate factual accounts of origins that can be considered by science are naturalistic. **By assuming methodological naturalism in its science standards, a state** cannot be accused of mandating belief in Secular Humanism (or more broadly, philosophical naturalism). But it **may be charged with favoring Secular Humanism and other naturalistic religions over theistic and other non-naturalistic ones by encouraging the view that questions of fact can only have naturalistic answers** (that is, these questions can only be answered by appeal to

undirected, natural causes). In this way the state will fail to be "secular" in the sense defined by NAGB and is liable to violate the Establishment Clause of the First Amendment.

As we saw above (definition 5), by any reasonable philosophical and legal standards, Secular Humanism is a religion, since it takes a position on matters of ultimate value and significance in life, and has been legally ruled as a religion for First Amendment purposes. Furthermore, Secular Humanism is not a neutral standpoint, since the view that there are no higher beings nor any higher purpose than that which humans discover by their own reason is logically incompatible with (among others) theistic religions, which hold both that there is a higher being and that this being defines the ultimate value, meaning and purpose of human life. **Secular Humanism is, therefore, not a neutral foundation for discussing science or any other topic, but one of many competing religious perspectives, none of which can claim neutrality in any absolute sense**.

In this pluralistic context, the neutrality required by education cannot be achieved by siding with any one of the particular, competing religions. Rather, **neutrality is best achieved at an institutional level by promoting education that does not favor any of the competing religions in its assumptions**. In the case of science and science education, the best way to support this neutrality is to keep science open to the logical possibilities (which may be suggested by the competing religions), and also by allowing the empirical, public, objective evidence to decide which perspective is best supported in any given case. **This means not assuming methodological naturalism, a principle that favors Secular Humanism and artificially constricts the evidence that may be considered.**

To be sure, science must be allowed to conclude that the evidence supports undirected causes, even in cases where this makes theists uncomfortable, for otherwise it would be favoring theistic religions. But, by the same token, science must be allowed to conclude that some evidence favors intelligent causes, however unsettling that may be for secular humanists, for otherwise it is favoring Secular Humanism. **By assuming methodological naturalism, science education discriminates a priori against theistic religions, never allowing any evidence that may indirectly support them to be heard, while giving a full and uncritical hearing to the evidence that favors Secular Humanism and other non-theistic religions.**

At the moment, the gratuitous assumption that methodological naturalism defines the scientific method clearly favors naturalistic, non-theistic religions like Secular Humanism over theistic religions (and even religions that subscribe to an impersonal rational principle or *logos* that transcends undirected causes). This is because, **as an *a priori* doctrine, methodological naturalism implies that, no matter what the evidence, science cannot even tentatively infer intelligent causes and cannot even suggest that some of the apparent design in nature is real. Science, so construed, cannot therefore even gesture toward a god or any other higher power, regardless of the evidence, but it can be used to build a case against the existence of a god or other**

higher power. Given science's cultural dominance as the arbiter of the objective, this means that science education that is bound by methodological naturalism will, however unintentionally, inevitably encourage and promulgate the view that "secular perspectives" are objective, whereas (other) religious perspectives have the status of private interpretation and conviction only.

Since science presents itself in modern culture as the prime means of discovering objective truth, this is tantamount to the claim that science has discovered that certain religions are lacking in objective evidence. That this should happen is entirely possible of course, given the independence of scientific evidence from any particular religion. **However, naturalistic science has not discovered this, because it has not allowed a fully open examination of where the evidence leads**. The appearance that science has undermined the evidential credentials of some religions is an illusion created by ruling as inadmissible any evidence, no matter how strong, that points beyond undirected natural causes.

This is a pernicious illusion because science presents itself as being objective yet here upholds a mere assumption (methodological naturalism) as if it were a disinterested conclusion of empirical scientific evidence and theorizing. Because methodological naturalism is simply assumed without any discussion of the arguments for or against it and without its consequences being fully disclosed, methodological naturalism is indistinguishable in its effect on students from philosophical naturalism. **In fact, a methodological naturalism that is assumed but not disclosed or discussed is more pernicious than a philosophical naturalism that is openly presented and debated, since in the latter but not the former case, those of theistic persuasion can readily discern the inconsistency of the ideology with their own beliefs.** It is not the presentation of controversial ideas that subverts education and fails to properly inform citizens: it is the background assumption of a controversial idea that is never brought into the foreground for evaluation, and which thereby colors students' worldviews without the consent or co-operation of their conscious reason.

Methodological naturalism "**is** not a theory they put into [the student's] mind, but **an assumption, which** ten years hence, its origin forgotten and its presence unconscious, **will condition [the student] to take one side in a controversy which [the student] has never recognized as a controversy at all**."[25]

4. CONCLUSION.

Removing methodological naturalism from the science standards will not inject religion into the science curriculum. Dispensing with methodological naturalism in no way favors theistic religions, since the empirical evidence is allowed to count against, as well as for, their truth claims about nature.

Rather, **it will make science education more objective, because there will no longer be a background assumption that:**

> **(1) prevents students from being properly informed on matters of scientific controversy;**
>
> **(2) fails to be "neutral and ideological" by advocating "a single perspective on a controversial issue";**
>
> **and**
>
> **(3) fails to be "secular"(in the sense defined by NAGB) by favoring Secular Humanism and other naturalistic religions over theistic and other non-naturalistic religions**.

Removing methodological naturalism does not favor theistic religions, but it will prevent them from being discriminated against by the favoring of non-theistic religions.

Dr. Angus Menuge
Professor of Philosophy
Concordia University Wisconsin
Mequon, WI 53097.

APPENDIX A[1]
Definitions of Secular, Neutral, and Non-ideological Item Review Criteria

From Governing Board Policy on NAEP Item Development and Review—5/18/02

Items shall be secular, neutral, and non-ideological. Neither NAEP nor its questions shall advocate a particular religious belief or political stance. Where appropriate, NAEP questions may deal with religious and political issues in a fair and objective way. The following definitions shall apply to the review of all NAEP test questions, reading passages, and supplementary materials used in the assessment:

> **Secular** — NAEP questions will not contain language that advocates or opposes any particular religious views or beliefs, nor will items compare one religion unfavorably to another. However, items may contain references to religions, religious symbolism, or members of religious groups where appropriate.
>
> **Examples:** The following phrases would be acceptable: "shaped like a Christmas tree," "religious tolerance is one of the key aspects of a free society," "Dr. Martin Luther King, Jr. was a Baptist minister," or "Hinduism is the predominant religion in India."
>
> **Neutral and Non-ideological — Items will not advocate for** a particular political party or partisan issue, for any specific legislative or electoral result, or for **a single perspective on a controversial issue. An item may ask students to explain both sides of a debate, or it may ask them to analyze an issue, or to explain the arguments of proponents or opponents, without requiring students to endorse personally the position they are describing.** Item writers should have the flexibility to develop questions that measure important knowledge and skills without requiring both pro and con responses to every item. (Emphasis not contained in Appendix issued by NAGB)
>
> **Examples:** Students may be asked to compare and contrast positions on states rights, based on excerpts from speeches by X and Y; to analyze the themes of Franklin D. Roosevelt's first and second inaugural addresses; to identify the purpose of the Monroe Doctrine; or to select a position on the issue of suburban growth and cite evidence to support this position. Or, students may be asked to provide arguments either for or against Woodrow Wilson's decision to enter World War I. A NAEP question could ask students to summarize the dissenting opinion in a landmark Supreme Court case.

The criteria of neutral and non-ideological also pertain to decisions about the pool of test questions in a subject area, taken as a whole. **The Board shall review the entire item pool for a subject area to ensure that it is balanced in terms of the perspectives and issues presented.** (emphasis added)

[1] National Assessment Governing Board, *Collection and Reporting of Background Data by the National Assessment of Educational Progress Policy Statement, Appendix A, Definitions of Secular, Neutral, and Non-ideological: Item Review Criteria* (NAGB, May 18, 2003).

APPENDIX B

Bibliographical Evidence of the Controversy:
Select Bibliography to Show
There is a Scientific Controversy over Whether Apparent Design in Nature is Real.

The following works include scientific and philosophical defense and critique of both Darwinian evolution and Intelligent Design. The two works marked in bold are especially important because they involve a direct engagement between those who maintain that some design in nature is real and those who maintain that it is an illusion.

Behe, M. 1996. *Darwin's Black Box: The Biochemical Challenge to Evolution*. New York: Free Press.

---------. 2000a. Correspondence with Science Journals: Response to Critics Concerning Peer-review. Available at "http://www.discovery.org/viewDB/index.php3?program=CRSC%20Responses&command=view&id=450".

---------. 2000b. Self-Organization and Irreducibly Complex Systems: A Reply to Shanks and Joplin. *Philosophy of Science* 67: 1, 155-162.

---------. 2001. The Modern Intelligent Design Hypothesis. *Philosophia Christi* 3:1, 165-179.

Behe, M., Dembski, W. and Meyer, S., editors. 2000. *Science and Evidence for Design in the Universe*. San Francisco, CA: Ignatius Press.

Bradley, W., Olsen, R. and Thaxton, C. 1984. *The Mystery of Life's Origin: Reassessing Current Theories*. New York: Philosophical Library.

Brooke, J. and Osler, M., editors. 2001. Science in Theistic Contexts: Cognitive Dimensions. *Osiris* 16. Chicago, IL: The University of Chicago Press.

Darwin, C. 1859. *On the Origin of Species*. London: John Murray.

Dawkins, R. 1996. *The Blind Watchmaker: Why the Evidence of Evolution Reveals a Universe Without Design*. Second Edition. New York: W.W. Norton & Company.

Dembski, W. 1998a. *The Design Inference: Eliminating Chance through Small Probabilities*. Cambridge: Cambridge University Press.

---------, editor. 1998b. *Mere Creation: Science, Faith and Intelligent Design*. Downers Grove, IL: InterVarsity Press.

---------. 1999. *Intelligent Design: The Bridge Between Science and Theology*. Downers Grove, IL: InterVarsity Press.

---------. 2002. *No Free Lunch: Why Specified Complexity Cannot Be Purchased without Intelligence*. Lanham, MD: Rowman and Littlefield.

---------. 2004. *The Design Revolution: Answering the Toughest Questions About Intelligent Design* (Downers Grove, IL: IVP, 2004).

Dembski, W. and Ruse. M, editors. *Debating Design: From Darwin to DNA* (Cambridge: Cambridge University Press, 2004).

Dennett, D. 1995. *Darwin's Dangerous Idea*. New York: Simon and Schuster.

Denton, M. 1986. *Evolution: A Theory in Crisis*. Chevy Chase, MD: Adler & Adler.
---------. 1998. *Nature's Destiny: How the Laws of Physics Reveal Purpose in the Universe*. New York: The Free Press.

Easterbrook, G. 1997. Science and God: A Warming Trend? *Science* 277: 890-893.

Forrest, B. 2001. The Wedge at Work: How Intelligent Design Creationism is Wedging Its Way into the Cultural and Academic Mainstream. *Intelligent Design Creationism and its Critics*. Editor R. Pennock, 5-53. Cambridge, MA: MIT Press.

Forrest, B. and Gross, P. 2002. *Evolution and the Wedge of Intelligent Design: The Trojan Horse Strategy*. New York: Oxford University Press.

Harrison, P. 1998. *The Bible, Protestantism, and the Rise of Natural Science*. Cambridge: Cambridge University Press.

Jaki, S. 2000. *The Savior of Science*. Grand Rapids, MI: Eerdmans.

Johnson, Phillip. 1991, 1993 (second edition). *Darwin on Trial*. Downers Grove, IL: InterVarsity Press.

--------. 1995. *Reason in the Balance*. Downers Grove, IL: InterVarsity Press.

--------. 2000. *The Wedge of Truth: Splitting the Foundations of Naturalism*. Downers Grove, IL: InterVarsity Press.

Kenyon, D. and Steinman, G. 1969. *Biochemical Predestination*. New York: McGraw Hill.

Koons, R. 2000. The Incompatibility of Naturalism and Scientific Realism. *Naturalism: A Critical Analysis*. Editors W. L. Craig and J. P. Moreland, 49-63. New York: Routledge.

McDonald, J. 2002. A Reducibly Complex Mousetrap. Available at: "http://udel.edu/~mcdonald/mousetrap.html".

Menuge, A. 2001. Few Signs of Intelligence: The Saga of Bill Dembski at Baylor. *Touchstone*. May: 54-55.

---------. 2002. Reductionism, Bane of Christianity and Science. *Philosophia Christi* Vol 4. Number 1, 173-183.

---------. 2003a. Dennett Denied: A Critique of Dennett's Evolutionary Account of Intentionality. *Progress in Complexity, Information and Design*, Volume 2.3.6, October.

---------. 2003b. Interpreting the Book of Nature. *Perspectives on Science and Christian Faith*, volume 55, Number 2, June 2003, 88-98.

---------. 2003c. Indirectness and the Displacement Problem: A Reply to Walter Thorson. *Perspectives on Science and Christian Faith*, volume 55, Number 2, June 2003, 102-103.

---------. 2003d. Beyond Skinnerian Creatures: A Defense of the Lewis/Plantinga Critique of Evolutionary Naturalism," *Philosophia Christi*, Vol 5, No. 1, 2003, 143-165.

---------. 2004a. *Agents Under Fire: Materialism and the Rationality of Science* (Lanham, MD: Rowman and Littlefield, 2004).

---------. 2004b. Who's Afraid of ID? A Survey of the Intelligent Design Movement." in eds. William Dembski and Michael Ruse, *Debating Design: From Darwin to DNA* (New York: Cambridge University Press, 2004).

---------. 2004c. *Reading God's World: The Vocation of Scientist* (St. Louis, MO: CPH, 2004).

Meyer, S. 1993. Danger: Indoctrination. A Scopes Trial for the '90s. *The Wall Street Journal*. Op. Ed (December 6th): A14. Available on-line from the Article Database at "www.discovery.org".

---------. 2000. Evidence for Design in Physics and Biology: From the Origin of the Universe to the Origin of Life. *Science and Evidence for Design in the Universe*. Editors M. Behe, W. Dembski and S. Meyer, 53-111. San Francisco, CA: Ignatius Press.

--------. 2001. Darwin in the Dock. *Touchstone* (April): 57-59. Available on-line from the articles database at "www.touchstonemag.com".

--------. 2004. The origin of biological information and the higher taxonomic categories. *Proceedings of the Biological Society of Washington* 117(2): 213-239.

Miller, K. 1999. *Finding Darwin's God: A Scientist's Search for Common Ground Between God and Evolution*. New York: HarperCollins.

Nelson, P. 1996. The Role of Theology in Current Evolutionary Reasoning. *Biology and Philosophy* 11: 4, 493-517, reprinted in Pennock 2001, 677-704.

Orr, H. A. 1996/1997. Darwin v. Intelligent Design (Again). *Boston Review* December/January.

Osler, M, editor. *Rethinking the Scientific Revolution*. New York: Cambridge University Press, 2000.

Pearcey, N. and Thaxton, C. 1994. *The Soul of Science: Christian Faith and Natural Philosophy*. Wheaton, IL: Crossway Books.

Pennock, R. 1999. *Tower of Babel: The Evidence Against the New Creationism*. Cambridge, MA: MIT Press.

---------, editor. 2001. *Intelligent Design Creationism and its Critics: Philosophical, Theological, and Scientific Perspectives*. Cambridge, MA: MIT Press.

Plantinga, A. 1993. *Warrant and Proper Function*. New York: Oxford University Press.

---------. 2000. *Warranted Christian Belief*. New York: Oxford University Press.

Ratzsch, D. 2001. *Nature, Design, and Science: The Status of Design in Natural Science*. Albany, NY: State University of New York Press.

Rea, M. 2000. Naturalism and Material Objects. *Naturalism: A Critical Analysis*. Editors W. L. Craig and J. P. Moreland, 110-132. New York: Routledge.

Scott, E. 2001. Fatally Flawed Iconoclasm. *Science* 292 (June 22): 2257-2258.

Shanks, N. and Joplin, K. 1999. Redundant Complexity: A Critical Analysis of Intelligent Design in Biochemistry. *Philosophy of Science* 66: 268-282.

Stanley, S. 1979. *Macroevolution*. San Francisco, CA: W.H. Freeman and Co.

Wells, J. 2000. *Icons of Evolution: Science or Myth? Why much of what we teach about evolution is wrong*. Washington, DC: Regnery.

Notes:

[1]With changes noted in square brackets, C. S. Lewis, *The Abolition of Man* (New York: Macmillan, 1955), 16-17.
[2]This definition is from the dictionary used by the Supreme Court, *Webster's Third New International Dictionary of the English Language, Unabridged*, 1993.
[3]"Glossary," in Angus John Campbell and Stephen C. Meyer (eds.), *Darwinism, Design, and Public Education* (East Lansing, MI: Michigan State University Press, 203), 619.
[4]Richard Dawkins, *The Blind Watchmaker*, 2nd ed. (New York: Norton, 1996), 1, 5.
[5]National Assessment Governing Board*, Collection and Reporting of Background Data by the National Assessment of Educational Progress Policy Statement, Appendix A, Definitions of Secular Neutral, and Non-ideological: Item Review Criteria* (NAGB, May 18, 2003).
[6]See Peter Lipton, *Inference to the Best Explanation*. Second Edition (London: Routledge, 2004).
[7]*Ultimate Concern - Tillich in Dialogue by D. Mackenzie Brown*, available at: http://www.religion-online.org/showchapter.asp?title=538&C=598, p. 2, 3.
[8]See: http://www.secularhumanism.org/.
[9]The three preceding quotations are all from *Humanism and its Aspirations: Humanist Manifesto III, a successor to the Humanist Manifesto of 1933*, available at: http://www.AmericanHumanist.org/3/HumandItsAspirations.htm.
[10]http://members.aol.com/Patriarchy/definitions/humanism_religion.htm. The full text of the Supreme Court Decision is available at: http://members.aol.com/TestOath/Torcaso.htm.
[11]*Smith v. Board of Commisioners of Mobile County*, 655 F.Supp. 939 (S. D. Ala. 1987), quotation available at: http://www.belcherfoundation.org/smith_v_board.htm.
[12]See for example William Dembski's *The Design Inference: Eliminating Chance through Small Probabilities* (Cambridge: Cambridge University Press, 1998).
[13]This is a notoriously difficult question because, for example, theists include in nature spiritual dimensions that are denied by non-theists.
[14]William Dembski, *The Design Revolution: Answering the Toughest Questions about Intelligent Design* (Downers Grove, IL: IVP, 2004), ch. 25, 189.
[15]There is a voluminous literature to support this. See Appendix B ("Bibliographical Evidence of the Controversy") for a representative sampling of that literature.
[16]See, for example, "Exclusive Interview with Antony Flew," *Philosophia Christi* Volume 6, Number 2, 2004, 197-211.
[17]Bradley, W., Olsen, R. and Thaxton, C. *The Mystery of Life's Origin: Reassessing Current Theories* (New York: Philosophical Library, 1984).
[18]See "Proposed Revisions to Kansas Science Standards Draft 2," March 29, 2005, p.9, indicator 2, in bold.
[19]Stephen C. Meyer, "The Scientific Status of Intelligent Design," in eds. Michael Behe, William Dembski and Stephen Meyer, *Science and Evidence for Design in the Universe* (San Francisco, CA: Ignatius Press, 2000), 195.
[20]Ibid, 197.
[21]Michael Behe, *Darwin's Black Box: The Biochemical Challenge to Evolution* (New York: The Free Press, 1996).
[22]See "Proposed Revisions to Kansas Science Standards Draft 2," March 29, 2005, p.10, TEACHER NOTES in bold.
[23]Del Ratzsch, *Nature, Design and Science: The Status of Design in Natural Science* (Albany, NY: State University of New York Press, 2001), 119.
[24]As Kenneth Miller has noted, the work of detectives is an apt analogy for those trying to explain the biological past. See "Proposed Revisions to Kansas Science Standards Draft 2," March 29, 2005, p.11, Explanation, bold passage.
[25]With changes noted in square brackets, C. S. Lewis, *The Abolition of Man* (New York: Macmillan, 1955), 16-17.