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MEMORANDUM

TO: Members of the Minnesota Senate Education Committee, Steve Kelley, Chairman

DATE: January 23, 2004

RE: Proposed Science Education Standards

This memorandum is being submitted in connection with my proposed testimony before the Committee and at the request of parents who have children enrolled in Minnesota schools. It seeks to explain why provisions of the Federal No Child Left Behind Act and Minnesota Rules and Statutes¹ suggest, if not require, acceptance of proposals in the Minority Report² issued by four distinguished members of the Minnesota Science Writing Committee. That Report urges two changes to improve the final State Science Standards. Both seek to inform students about substantive criticisms of current evolutionary theory. Given “the mission of public education in Minnesota to ..ensure an **informed** citizenry,”³ one would ordinarily expect suggestions like this to be accepted without discussion. However, the proposals for critical analysis were summarily rejected.

It is reasonable to expect that the official withholding of substantive scientific criticisms of evolutionary theory will have the effect of promoting evolution and its naturalistic thesis as an ideology rather than as a scientific theory. As explained in more detail below, this appears inconsistent with specific provisions of Federal and Minnesota laws that require educational services and materials to be “secular, neutral and nonideological.”

It would be one thing if the issue was whether the earth was flat or round or if it involved a mundane fact of geography. However, evolution is a scientifically controversial naturalistic or materialistic theory that posits an answer to an ultimate question that is critical to fundamental aspects of a student’s world view about ethics, religion, life and the meaning of life, if any. The impact of evolutionary theory on religion and world views was recently described by Michael Shermer, a regular columnist for *Scientific American*:

“First, **cosmology and evolutionary theory ask the ultimate origin questions that have traditionally been the province of religion and theology.** Scientism is courageously proffering naturalistic answers that supplant supernaturalistic ones and in the process is providing spiritual sustenance for those whose needs are not being met by these ancient cultural traditions.”⁴ (emphasis added)

When any scientific theory that has such far reaching consequences as evolution is shielded from criticism, it loses its theoretical status and becomes a dogma or ideology. The Minority Report appropriately seeks to keep evolution theoretical so that the state will be teaching science rather than a world view.

The suggestion of the Minority Report is not only scientifically and pedagogically appropriate, it also seems necessary to ensure compliance with specific requirements of Minnesota law and the No Child Left Behind Act (“NCLB”). A number of provisions of NCLB preclude states from disseminating education materials and services that fail to be “secular, neutral and nonideological.”⁵ Recent changes to Minnesota statutes and Rules mirror these requirements.⁶ This anti-bias requirement also applies to items contained in the National Assessment of Education Progress. In its definition of that concept, the National Assessment Governing Board states that “neutral and nonideological” means a position that does not “advocate” for a “single perspective on a controversial issue.”⁷

It is clear that Congress deems evolution a “controversial issue.” This is evident from the Report of the House and Senate Conferees in recommending passage of NCLB. In that Report the Conferees recognized that “a quality science education should prepare students to distinguish the data and testable theories of science from religious or philosophical claims that are made in the name of science. Where topics are taught that may generate controversy (such as biological evolution), the curriculum should help students to understand **the full range of scientific views that exist, why such topics may generate controversy, and how scientific discoveries can profoundly affect society.**”⁸ Clearly an official policy that censors or downplays scientific criticisms of “biological evolution” and that does not permit discussion of alternative scientific views is contradictory to this advice and the statutory requirement that materials and services be secular, neutral and nonideological.

The exclusion of criticisms of evolutionary theory does not derive from their inadequacy.⁹ The evolutionary theory at the center of the debate is not simply a claim that life has become more complex over time. That idea is undisputed. The debate is over the naturalistic claims of Chemical and Darwinian evolution that life arose from a purely physical and chemical process, and that its subsequent diversity is due solely to natural “selection” driven by random environmental circumstances acting on random mutations in replicating populations. It is safe to say that there is no scientific consensus over the origin of life itself, and that there is increasing scientific concern about the adequacy of natural selection to explain its diversity. Recently Roland F. Hirsch, a program manager in the Office of Biological and Environmental Research of the US Department of Energy presented a paper at the National Meeting of the American Chemical Society that details a growing number of scientific findings that are contradicting aspects of current evolutionary theory.¹⁰ Simon Conway Morris, a highly regarded paleontologist just published a work that questions orthodox evolutionary explanations as being inconsistent with the observed data.¹¹ In the front flap of the cover, he states:

“Does evolution have a structure, an overall design, perhaps even a purpose? Orthodox opinion recoils from this prospect. Evolution, it is widely believed, is an effectively random process where almost any outcome is possible. Freeze the tape of life, and now we see dolphins and tulips, ants and mushrooms, even humans. Return the tape, and it is claimed, evolution would follow completely different pathways; no tulips or ants, and certainly no humans. We, like all other life, are an extraordinary evolutionary accident. But is this correct? In fact the evidence points in exactly the opposite direction.”

The official withholding of criticisms is a function of “methodological naturalism” or “scientific materialism”¹² rather than inadequacy. As explained by John Rennie, the editor of *Scientific American*, “a **central tenet** of modern science is **methodological naturalism.**”¹³ It provides that in doing science, scientists will presume that naturalism/materialism is true. Naturalism is “the doctrine that cause-and-effect laws (as of physics and chemistry) are adequate to account for all phenomena and that teleological¹⁴ [design] conceptions of nature are invalid” (*Webster's Third New International Dictionary of the English Language, Unabridged*, 1993). In practice methodological naturalism is an ideology¹⁵ and not

just a “method” of science.

Criticisms of Chemical and Darwinian evolution are suppressed because the naturalistic assumption requires a viable natural explanation for life and its diversity. If the foundations of Darwinian and Chemical evolution are found to be inadequate (and criticisms objectively considered might just lead to that conclusion), then the “central tenet” of modern origins science will itself lack support.

However, the naturalistic tenet pertains not only to science, but also to religion. It holds, not as an evidentiary matter, but as a statement of faith, that no supernatural entity or any form of intelligence has intervened in the development of life and its diversity. As articulated by the Supreme Court, “religion” includes not only traditional theistic religions, but also non-theistic religions such as “Buddhism, Taoism, Ethical Culture, Secular Humanism and others.”¹⁶ Naturalism not only “pertains to,” but is the fundamental basis for the religion of Secular Humanism. This is evident from *Smith v. Board of School Commissioners of Mobile County* where Secular Humanism is described as “...a **creed** or world view which holds that we have no reason to believe in a creator, that the world is self existing, that there is no transcendent power at work in the world, that **we should not turn to traditional religion for wisdom; rather that we should develop a new ethics and a new method of moral order founded upon the teachings of modern naturalism and physical science.**”¹⁷

Minnesota Rules requires that “events, facts, and theories that **pertain** to religion or religious doctrine” be presented “in an impartial manner.”¹⁸ Officially proscribing criticism of naturalistic theories of origins is not an impartial approach.

In short, if the state refuses to inform students about valid criticisms of evolution’s naturalistic theory of origins it will be effectively promoting the ideology of naturalism, a philosophy that is not neutral as between theistic and nontheistic religions. A stated purpose of methodological naturalism is to keep the “supernatural” out of not only physical and chemical sciences, but origins, social and psychological sciences. The very purpose of the doctrine is to exclude God as a possible explanation for life. That might be scientifically valid if nature was bereft of signs of design, but that is not the case. In any event, suppressing criticism to keep God out of the discussion of origins is not a “secular” purpose. It is a purpose that clearly “pertains” to religion.

The requirement that state educational services and materials be “secular, neutral and nonideological” merely reflects the holdings of the Supreme Court about the First Amendment rights of parents and students¹⁹ and even the hope of Charles Darwin himself. Consistent with the Minority Report, Darwin urged critical analysis of his theory when he said that he looked “with confidence to the future – to young and rising naturalists, who will be able to view both sides of the question with impartiality.”²⁰ The two key Supreme Court cases on origins, *Edwards v. Aguillard* and *Epperson v. Arkansas*²¹ stand for a similar proposition. They indicate that a comprehensive, rather than a dogmatic approach is the preferred method for teaching origins science. In *Edwards* the Court noted that “If the Louisiana Legislature’s purpose was solely to maximize the comprehensiveness and effectiveness of science instruction, **it would have encouraged the teaching of all scientific theories about the origins of humankind.** But under the Act’s requirements, teachers **who were once free to teach any and all facets of this subject** are now unable to do so.”²²

For the foregoing reasons we believe Minnesota should accept the modest proposals in the Minority Report. The proposals are carefully conceived and are not novel. They urge critical thinking – the development of higher level learning skills – and they mirror recent changes made in Ohio and New Mexico science standards.²³ They will: 1) eliminate bias and promote scientific objectivity in origins science, a science that unavoidably impacts religious beliefs; 2) ensure that students are informed about

both sides of this significant scientific controversy; 3) be consistent with the views of an increasing number of scientists; and 4) respect the wishes of a significant majority of the consumers of public education.²⁴

Thank you for your kind consideration of this matter.

John H. Calvert

NOTES

1. I have been engaged in the practice of law since 1968, primarily with the firm of Lathrop & Gage L.C. in Kansas City, Missouri. I also have a degree in Geology and have managed a number of legal engagements involving issues of geology and science. For the past three years I have focused my legal work on whether it is constitutional for a public school system to suppress scientific disagreements with Darwinian evolution. I am licensed to provide advice as to the laws of the United States, but am not licensed in the state of Minnesota. Hence, you may wish to consult with Minnesota counsel as to the legal effect of Minnesota Statutes and Rules. I am managing director of Intelligent Design network, inc. This organization was formed four years ago to promote objectivity in origins science - i.e. origins science without a religious or philosophic bias.
2. Letter to The Honorable Cheri Pierson Yecke, Ph.D., the Commissioner of Education, dated December 7, 2003, *Subject Minnesota Science Standards Minority Report A Call for Common Ground on Evolution, Not Polarization*, from Duane Quam, Kathryn Duffield, Dave Eaton, and Heather McKinley, members of the Science Writing Committee, posted by the Department of Education at <http://www.education.state.mn.us/content/059704.pdf>
3. Minnesota Statutes 2003, Section 120A.03.
4. Michael Shermer, *The Shamans of Scientism*, Scientific American, p.35 (June 2002). The religious impact of evolution is also described by the author of a prominent college text on evolutionary biology, Douglas Futuyma: "Darwin's immeasurably important contribution to science was to show how mechanistic causes could also explain all biological phenomena, despite their apparent evidence of design and purpose. By coupling undirected, purposeless variation to the blind, uncaring process of natural selection, Darwin made theological or spiritual explanations of the life processes superfluous." Douglas J. Futuyma, *Evolutionary Biology, Third Edition*, p.5 (Sinauer Associates, Inc. 1998). The impact of evolution's naturalistic theory of origins on religion is discussed in more detail in William S. Harris and John Calvert, *Intelligent Design: The Scientific Alternative to Evolution*, p 533-42 (National Catholic Bioethics Quarterly, Vol. 3 No. 3, Autumn 2003) and in the articles at Note 19.
5. A number of provisions in NCLB indicate that it is inappropriate for States to adopt or implement educational standards that fail to be secular, neutral and nonideological. Sections 1116(b) and 1116(e)(5)(D), relating to School Improvement, require schools which have failed to make adequate yearly progress to provide supplemental educational services from outside providers. The instructional content of the services and materials provided must be consistent with state standards and also be "secular, neutral and nonideological." Similarly, services and materials provided by the State to private school students and teachers and certain immigrants under the Act are required to be "secular, neutral and nonideological." (See sections 1120(a)(1), 3245 (a)(7)(A), 9501 (a)(2); Section 5142(a)(1). This would seem to effectively require that State standards themselves be "secular, neutral and nonideological. The Act also requires that all items selected for use in the National Assessment of Educational Progress "are **free from** racial, cultural, gender, or regional **bias and are secular, neutral and nonideological.**" (See amended Section 412 (e)(4) of the National Education Statistics Act of 1994). These requirements merely reflect the holdings of the Supreme Court in a number of cases. See John H. Calvert, *Are we designs or occurrences? Should science and government prejudge the question?* pp 24 -32 (Intelligent Design network, inc. 2003) at www.IntelligentDesignNetwork.org/Designsoroccurrences111003.pdf. The concept of neutrality effectively proscribes government from taking an official position on any form of **orthodoxy** affecting a variety of beliefs. "If there is any fixed star in our constitutional constellation, it is

- that **no official**, high or petty, **can prescribe what shall be orthodox** in politics, nationalism, religion, or other matters of opinion or force citizens to confess by word or act their faith therein." *West Virginia Board of Education v. Barnette*, 319 U.S. 624, 642 (1943); *Board of Education v. Pico*, 457 U.S. 853, 879 (1982); *Keyishian v. Board of Regents*, 385 U.S. 589, 603 (1967)
6. Minnesota textbooks and materials are required to be "secular, neutral and nonideological" [Minnesota Statutes 2003 Section 123B.41.2 and .5 and 123B.43 and Minnesota Rule 3540.0200.4.C. and .8]. Parents who object to the content of instructional materials are entitled to have alternate materials provided (Minnesota Statutes 2003, Section 120B.20). It is true that the Minnesota Statutes and Rules do not expressly state that the anti bias requirement be a part of the State educational standards themselves. However, under NCLB the "nonideological" materials furnished to nonpublic students and teachers must be consistent with the state standards. Hence, it follows that the state standards must also be secular, neutral and nonideological. This conclusion would seem to be dictated by common sense. Why would the State seek to promote biased instruction for some students, but not for others? How would one sort out one from the other?
 7. 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). A copy of the appendix is attached to this memorandum.
 8. No Child Left Behind Act of 2001, *Conference Report to Accompany H.R. 1*, page 703, (December 13, 2001, House Report No. 107-334)
 9. The Minority Report lists a number of valid critical issues. A brief catalog of substantive criticisms are also listed and explained in *Ten Reasons Why Evolution Only is Logically, Scientifically and Legally Controversial* (Intelligent Design network, inc., October 16, 2002) at <http://www.intelligentdesignnetwork.org/tenreas.PDF>.
 10. Roland F. Hirsch, Ph.D., *Impact of forty years of advances in chemistry on evolutionary theory*, Originally presented at the September 2003 American Chemical Society National Meeting (posted at <http://www.iscid.org/hirsch-ac-s-talk-2003.php>). The thesis of the paper is that advances in chemistry have shifted the focus of the life sciences away from seeking explanations of biological function from origins and toward seeking understanding of function from experiment.
 11. Simon Conway Morris, *Life's Solution, Inevitable Humans in a Lonely Universe*, (Cambridge University Press, 2003).
 12. Methodological naturalism and scientific materialism are essentially the same concepts. They require that natural phenomena be explained only by physical and chemical causes. When the assumption is applied to origins science it necessarily eliminates intelligence as a possible cause of intangibles such as the semantic character of biological information, biological information processing systems and consciousness. Acceptance of this assumption requires a considerable leap of faith.
 13. "A central *tenet* of modern science is methodological naturalism." John Rennie, Editor in Chief of Scientific American, *15 Answers to Creationist Nonsense*, p. 84 (Scientific American, July 2002).
 14. Teleology is "the study of the evidences of design or purpose in nature," [Random House Webster's Unabridged Dictionary (1999)].
 15. Ideology is defined as "**1. the body of doctrine**, myth, belief, etc., that guides an individual, social movement, **institution, class, or large group.**" (Random House Webster's Unabridged Dictionary). Although it is typically argued by science educators that methodological naturalism is not a "doctrine" and therefore does not rise to the level of philosophical naturalism, the arguments are hollow. This follows for two reasons. First the "method" is not typically disclosed – in practice it is effectively a hidden assumption like an undisclosed liability that does not show up on a balance sheet. Thus, although it is claimed to be a "central tenet" of modern science, it is not mentioned in the proposed Minnesota

Standards. Secondly, science institutions that advocate its use do not permit its contradiction. It is not merely a presumption that may be rebutted by cogent evidence. It is an absolute commitment. Hence, it requires acceptance. The effort to censor legitimate criticisms of evolution is merely a manifestation of its use. This issue is discussed in more detail in the article at Note 19 at pages 18-24. It is also briefly explained by Geneticist Richard Lewontin: “[W]e have a prior commitment, a commitment to **materialism**. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that **we are forced by our a priori adherence to material causes** to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counterintuitive, no matter how mystifying to the uninitiated. **Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door.**” (emphasis added) [Richard Lewontin, *Billions and Billions of Demons*, (*The New York Review*, January 9, 1997, p. 31)]

16. *Welsh v. United States*, 398 U.S. 333, concurring opinion, note 8 (1970): “This Court has taken notice of the fact that recognized ‘religions’ exist that ‘do not teach what would generally be considered a belief in the existence of God,’ *Torcaso v. Watkins*, 367 U.S. 488, 495 n. 11, e. g., ‘Buddhism, Taoism, Ethical Culture, Secular Humanism and others.’ See also *Washington Ethical Society v. District of Columbia*, 101 U.S. App. D.C. 371, 249 F.2d 127 (1957); 2 *Encyclopedia of the Social Sciences* 293; J. Archer, *Faiths Men Live By* 120-138, 254-313 (2d ed. revised by Puritan 1958); Stokes & Pfeffer, *supra*, n. 3, at 560.” See also *Smith v. Board of School Commissioners of Mobile County*, 655 F. Supp. 939, (SD Ala 1987, holding that Secular Humanism is a religion) *rev’d* on other grounds 827 F2d 684 (11th Cir 1987).
17. *Smith v. Board of School Commissioners of Mobile County*, 655 F. Supp. 939, (SD Ala 1987, holding that Secular Humanism is a religion), *rev’d* on other grounds, 827 F2d 684 (11th Cir 1987). On appeal the 11th Circuit did not disagree with the lower Court’s holding that Secular Humanism was a religion. It merely held that certain textbooks did not promote that religion.
18. Minnesota Rule 3540.0200, Subp. 8. (Current as of 8-29-03)
19. John H. Calvert, “*Are we designs or occurrences? Should science and government prejudge the question?*” (Intelligent Design network, inc. Draft dated Nov 10, 2003). The last 8 pages of this article discuss the First Amendment issues in more depth. A copy may be obtained at www.IntelligentDesignNetwork.org/Designsoroccurrences111003.pdf. See also Francis J. Beckwith, *Law, Darwinism and Public Education: The Establishment Clause and the Challenge of Intelligent Design*, p.94, and 92-106 (Rowman & Littlefield 2003); and John Calvert, J.D., and William S. Harris, Ph.D., *Teaching Origins Science in Public Schools: Memorandum and Opinion*, (Intelligent Design network 2001), at <http://www.intelligentdesignnetwork.org/legalopinion.htm>. A very favorable recent review of the Dr. Beckwith’s book was just published in the Harvard Law Review, 117 Harv. L. Rev. 964 (January, 2004).
20. Charles Darwin, *The origin of the Species by Means of Natural Selection or the Preservation of Favored Races in the Struggle for Life*, p. 639 in the “Conclusion” (The Modern Library 1998)
21. *Epperson v. Arkansas*, 393 U.S. 97 (1968)
22. *Edwards v. Aguillard*, 482 U.S. 578, 588-9 (1987).
23. See *Recent Actions Taken by School Boards and Districts to Foster Objective Origins Science*, (IDnet, January 6, 2004) at <http://www.intelligentdesignnetwork.org/CCacts.PDF>
24. See *Recent Polls, Scientists and Congress Show a Demand for Objectivity in Origins Science* (IDnet, August 1, 2003) at <http://www.intelligentdesignnetwork.org/Polls%208103.pdf>

APPENDIX A

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.