

Citizens for Objective Public Education, Inc.

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June 1, 2012

Achieve, Inc.
1400 16th Street NW, Suite 510
Washington, DC 20036

RE: Response of Citizens For Objective Public Education, Inc. (COPE)
To 2012 Draft of National Science Education Standards (the “Standards”)
and the Framework for K-12 Science Education (the Framework) upon
which the Standards are based

Ladies and Gentlemen,

We sought to provide general comments with respect to the above on the web site developed for public comment. However, the field permits a comment of only a couple of pages. Accordingly, we provided in that field a very brief comment and explained that this more lengthy comment would be mailed to your address as provided on your “Contact Us” web page.

Please provide any response to Anne Lassey at the above Kansas address.

The following are our more detailed comments regarding the Framework and Standards:

1. The “stakeholders” COPE represents are children, parents and taxpayers who share our views regarding the need for objectivity in public education that addresses religious issues. COPE is a nonprofit organization that seeks to ensure neutrality in the teaching of subjects in public schools that touch on religious issues. Curricula that address religious questions should objectively inform students in a manner that produces a religiously neutral effect, given the age and maturity of the expected audience. This approach not only seeks to preserve the religious rights of children, parents and taxpayers, but it also promotes critical thinking and logical analysis important to good education.

Subject to the rights of parents to direct their religious education, children have the right to choose what to believe about important religious issues, whether theistic, pantheistic or atheistic. If the curriculum promotes only one of competing religious viewpoints then it will indoctrinate in the preferred view rather than objectively teach about it. This will effectively deprive the child of the right to make an informed decision about the religious issue. Religious indoctrination will also take away the right of parents to direct the religious education of their children. Similarly, it will offend the rights of taxpayers who do not support the particular

religious position being presented to students and classify them as outsiders within the community.

The State may satisfy its First Amendment obligations by excluding religious subject matter from the curriculum. It can also include the subject matter if it does so objectively and in a neutral manner that respects the Constitutional rights of children, parents and taxpayers. This may be accomplished with some subjects through carefully designed programs that inform students of the competing or alternative viewpoints that lead to differing religious implications and inferences. Neutrality may also be achieved through an objective consideration of the strengths and weaknesses of explanations that support a particular religious viewpoint. Objectivity opens rather than closes the minds of students. It encourages critical thinking about answers to ultimate questions that may profoundly affect the way they choose to lead their lives. Objectivity and neutrality will also enhance science education by encouraging critical and independent thinking and analysis.

We are furnishing this comment because the Framework and Standards address religious questions and then provide Atheistic/materialistic explanations in a manner that is not likely to produce a religiously neutral effect.

2. Religion under the First Amendment includes non-theistic beliefs. Religion has been defined by the courts very broadly to include theistic and non-theistic religions: Atheism, Religious (“Secular”) Humanism, Buddhism, Ethical Culture, *et al.* In *McGowan v. Maryland*, 366 US 420, 461 (1961), the Supreme Court described religion as an “activity that profoundly relates the life of man to the world in which he lives.” This is an explicit goal of the Framework – to relate the lives of the children to the world in which they live. The courts indicate religion is an organized set of beliefs about “matters of ultimate concern,” such as ultimate questions about the cause, nature and purpose of life and how it should be lived. Religions provide answers to questions like “Where do we come from?” “What is the nature of life – is it just an occurrence or is it a creation made for a purpose?” “What happens when we die?” “How should life be led from an ethical and moral standpoint or from a standpoint that logically denies the idea of absolute ethical and moral standards?”

3. It appears that the Framework and Standards promote Religious (“Secular”) Humanism. The particular religious view that appears to be promoted by the Framework and Standards is an Atheism referred to as Religious (“Secular”) Humanism. The Humanist Manifestos define “Religious Humanism” (now called “Secular Humanism”) as an organized set of atheistic beliefs that (1) deny the supernatural, (2) claim that life arises via unguided evolutionary processes rather than as a creation made for a purpose, and (3) claim that life should be guided by naturalistic/materialistic science and reason rather than traditional theistic religious beliefs. These tenets imply that life has no inherent purpose and that it ends on death. The manifestos also explain that this religion is evangelistic as it seeks to replace all traditional theistic beliefs in all public and private institutions. The word “Religious” in the 1933 Manifesto was replaced with the word “secular” after the Supreme Court held that the First amendment was applicable to the states in the 1940s.

In a court proceeding in 1987 where the belief system was held to be a religion, Paul Kurtz, a co-author of Manifesto II (who had previously acknowledged it to be a religion), was asked what the belief system was if, as he then argued, it was not a religion. Kurtz replied that “Secular Humanism is science.” This is interesting because the science Framework and proposed Standards certainly promote all of the tenets of Religious (“Secular”) Humanism. However the courts have found it to be a religion and not science. Judge Hand clearly articulated his reasons as follows:

“Dr. Paul Kurtz testified that secular humanism is a scientific methodology, not a religious movement. . . . Dr. Kurtz’s attempt to revise history to comply with his personal beliefs is of no concern to this Court. For first amendment purposes, the commitment of humanists to a non-supernatural and non-transcendent analysis, even to the point of hostility towards and outright attacks on all theistic religions, prevents them from maintaining the fiction that this is a non-religious discipline. This Court is concerned with the logic and consistency, the rationality, one might say, of Dr. Kurtz’s contention that secular humanism is not a religious system, but science. Secular humanism is religious for first amendment purposes because it makes statements based on faith-assumptions.” [Smith v. Bd. of Sch. Comm’rs of Mobile County, 655 F. Supp. 939, 982 (S.D. Ala. 1987), rev’d on other grounds, 827 F.2d 684 (11th Cir. 1987).]

Since the Framework and the Standards address all of the issues important to all religions, they should be revised to ensure that the subject matter is objectively presented in a way that has a religiously neutral effect. Some of our key concerns are very briefly listed below.

4. The use, purpose and effect of Methodological Naturalism are not explained.

“Materialism” or “naturalism” is “a doctrine, theory, or principle according to which physical matter is the only reality and the reality through which all being and processes and phenomena can be explained.”¹ “Methodological Naturalism” (MN) is the idea that science is not permitted to explain the cause of events within the natural world with anything other than a materialistic explanation through the use of “material” or “natural” causes (that is a cause resulting from the unguided interactions of matter, energy and the forces). Thus MN effectively requires materialistic explanations. Accordingly, when applied to the ultimate questions of life, only atheistic or unintelligent cause explanations are permitted. MN requires that all evidence of an intelligent cause be ignored or somehow attributed to a natural cause. MN is a logical assumption when dealing with experimental physical science in the present-day world. However, it is problematic when applied to historical life sciences that address questions that are both religious and scientific.

Children should be informed that MN is being used in the historical and life sciences and that there is a significant body of evidence that conflicts with its materialistic assumption. Many recognized scientists believe it should be abandoned in certain areas of historical science, where it impedes rather than aids open-minded inquiry.

¹ Webster’s Third New International Dictionary of the English Language, Unabridged (2003).

The assumption of materialism (MN) is incompatible with science education that must respect the religious rights of children, parents and taxpayers. The effect of MN is to lead children to accept atheistic explanations of the origin and nature of life, rather than to question them. Not only must use of this assumption be explained, students must also be informed of the evidence and alternative explanations that are excluded by the assumption so that they acquire a genuine appreciation and understanding of its overall effect. The Framework and Standards do none of this. Instead, while using the assumption, they effectively hide its use.

5. No distinction is made between experimental and historical science. Most science takes place via experimentation and observation in the present-day world. This may be called “experimental” (or empirical) science. However, some branches of science use a form of abductive reasoning in an attempt to reach a “best explanation” for the cause of past events. This type of “historical” science is practiced in such disciplines as cosmology, astronomy, historical geology, paleontology, archaeology, and origins science (studies of the origin and development of life on earth). Biologist Ernst Mayr put it this way:

“[Charles] Darwin introduced historicity into science. Evolutionary biology, in contrast with physics and chemistry, is a historical science – the evolutionist attempts to explain events and processes that have already taken place. *Laws and experiments are inappropriate techniques for the explication of such events and processes. Instead one constructs a historical narrative, consisting of a tentative reconstruction of the particular scenario that led to the events one is trying to explain.*” [Ernst Mayr, *Scientific American*, 283 (2000) 78.]

Philosopher of science Carol Cleland explains that “there are fundamental differences in methodology between experimental scientists and historical scientists....” She goes on to say that “good historical scientists focus on formulating multiple competing (versus single) hypotheses.... Their main research efforts are directed at searching for a smoking gun, a trace that sets apart one hypothesis as providing a better causal explanation (for the observed traces) than the others.” [Carol E. Cleland, *Geology*, 29 (2001) 987.]

Abductive reasoning requires one to show that evidence offered in support of a historical hypothesis also rules out alternative or competing explanations. Evolutionary explanations regarding the origin and development of life on earth depend to a large extent on imagination and speculation about past events rather than experimental testing and direct observation. It is crucial to note that the Framework and Standards do not inform students that alternatives to unguided evolutionary explanations exist.

The historical versus experimental distinction is extremely important in the context of modern evolutionary theory. This is because it is grounded in the incontrovertible assumption of Methodological Naturalism (MN). MN, as explained above, rules out the primary competing historical hypothesis that life arises via a guided or designed process. Thus, MN allows only one of the competing ideas – the materialistic explanation that all of the diversity of life arises via the unguided evolutionary mechanism of random mutation and natural sorting (“selection”). The excluded teleological hypothesis arises not from a religious text, but from direct observations, experiment and statistical analysis of biological systems, and other aspects of the natural world

which appear exquisitely designed, including human consciousness. The appearance of design is evidenced by the adjectives and metaphors found both in the Framework and all of the scientific literature. Although MN has application in many areas of physical science, it is counterproductive in the context of historical evolutionary science. This is because its materialistic/Atheistic assumption has the effect of ruling out the competing hypothesis, not on the evidence but by enforcement of its dogma. This causes so-called “scientific” explanations to be functionally Atheistic when it addresses religious questions like the origin of life and its diversity. The Atheistic effect arises because the dogma requires one to ignore evidence inconsistent with materialism and consistent with teleological inferences.

Accordingly, we believe the Framework and Standards must (1) describe methods of testing historical hypotheses in historical sciences by seeking the best of competing explanations, (2) state the fact that this method is not generally used in the development of unguided evolutionary explanations about the origin of life and its diversity, as MN rules out the competition by assumption rather than by the evidence, and (3) include a showing of the evidence that would be considered but for the use of MN, and (4) describe how that evidence would affect the plausibility of the evolutionary explanations. Unless this kind of objectivity is required, then the effect of the NGSS will not be religiously neutral as it will inexorably lead children over their thirteen years of education to accept the atheistic view of how life is related to the world in which it is lived.

6. Evidence which is inconsistent with the unguided materialistic assumption of MN and which supports the idea that the apparent design of many aspects of the natural world may be real is not included. Some of this evidence (none of which appears in the Framework or Standards) is summarized below:

- (a) The characteristics of the matter, energy and forces that comprise the physical universe have discrete values, which if changed by any small amount, would not permit the existence of human life. This phenomenon suggests that the universe itself and its matter, energy and forces have been “fine-tuned” or “designed” for life. If any one of these constants were changed by a small amount, human life would not be possible within the universe. This *evidence* supports the view that the universe itself is a design rather than a mere random occurrence.
- (b) The *intangible* genetic code and other codes in living organisms have no known natural or material cause. Furthermore, these *intangible* codes are far more sophisticated than any designed by man, suggesting an intelligent cause for their origin. The genetic code was found in 1998 to exhibit “*Eerie Perfection.*”²
- (c) Natural cause explanations are inconsistent with the *intangible* messages of life that are carried in sequences of four bases in DNA. Investigation has shown that the sequences are not ordered by any physical or chemical necessity. The lack of such necessity caused renowned geneticist Jacques Monod to describe this as the “ultimate

² In *Life's Solution: Inevitable Humans in a Lonely Universe* (2003, p. 13), paleontologist Simon Conway Morris devotes a sub-chapter to the extraordinary efficiency of the Genetic Code, which he calls “Eerie Perfection.” See also Stephen J. Freeland and Laurence D. Hurst, *Journal of Molecular Evolution*, 47 (1998) 238.

mystery of life.”³

- (d) There are no known coherent materialistic explanations for the origin of life itself. Even the Framework describes the initial cellular information processors needed to get life started as “programmed.” In particular we believe the Framework and Standards should include an objective presentation of the state of our existing scientific knowledge relative to the origin of life.
- (e) Major increases in organized biocomplexity require numerous additions to the information content of DNA before selectable function can arise, thereby casting doubt on the plausibility of stochastic processes to explain all of those increases. The inherent problem of trying to explain large pre-function increases by a random gradual process is that the probability of the occurrence of the new beneficial function decreases exponentially as the number of necessary steps or mutations increase only incrementally. This statistically increases “waiting times” for the occurrence of new function far beyond available probabilistic resources. Examples of increases which are challenges to the gradual Darwinian process are the ubiquity of orphan genes which have no detectable homolog in other organisms, the ubiquity of biological convergence, and the sudden appearance of novel body parts and body plans without adequate evidence of a series of gradual transitions.
- (f) Many scientists now believe that the neo-Darwinian mechanism for macroevolution (random DNA mutation and natural selection) is inadequate to explain major rapid increases in organized biocomplexity. An example is James A. Shapiro’s *Evolution: A View from the 21st Century* (2011) in which he “explains how conventional evolutionary theory (as elaborated from the Darwinian synthesis) has become outdated...”
- (g) A number of statistical analyses and experiments show that random mutation and natural selection are implausible explanations for increases in organized biocomplexity that require multiple integrated steps before function arises. The issue is also intuitive as probability decreases exponentially as the number of integrated steps necessary for function increase only incrementally.
- (h) Although the Framework and Standards describe mutations as “beneficial ... harmful, and some neutral to the organism,” much of the data indicate that mutations that are beneficial are extremely rare and that mutations generally result in a loss of functional or prescriptive information rather than a gain of information. This evidence casts doubt on the plausibility of random mutations accounting for major increases in biocomplexity within plausible “waiting times.”

7. Definitions of key terms are omitted. The Framework and Standards contain no glossary of key terms and phrases. In particular important concepts such as “science,” “scientific

³ Jacques Monod, *Chance and Necessity* (Austryn Wainhouse trans.), 1971, pp. 95-96. “[I]f one were able not only to describe these sequences but to pronounce the law by which they assemble, one could declare the secret penetrated, the *ultima ratio discovered*.”

knowledge,” “evolution,” “natural cause,” “mechanism,” “materialism,” “methodological naturalism,” “intelligent design,” and the like need to be carefully defined. Without clear definitions the Framework and Standards are ambiguous, open to interpretation, confusion and conflicting messages. Definitions are needed to enable clear communication of concepts and core ideas of science. This is particularly the case when the boundaries between science and religion are so closely intertwined.

A particularly egregious omission is the failure of the Framework and Standards to explain the various definitions of evolution. One common definition is simply “change over time,” which means that different species lived during different time periods on earth. This is not controversial. “Microevolution” is small-scale change within a species (adaptation, change in gene frequency). This is also generally not controversial. However, “Macroevolution” is a controversial historical hypothesis. It seeks to explain all major increases in organized biocomplexity via unguided descent with modification from a common ancestry. The Framework and Standards ignore the distinction and controversy and therefore *assume by extrapolation* and the use of MN that microevolution leads to macroevolution over long periods of time. This supposition is the subject of much scientific debate. Students should be informed of the debate and not be given the impression that all forms of “evolution” are the same, and that if one form is true then all are true.

8. There appears to have been no vetting for First Amendment compliance. We note that the Framework and Standards have apparently not been analyzed for First Amendment compliance. A word search of both the Framework and the Standards for the word “religion” results in a “not found” response. This is odd given the clear recognition that the Standards are designed to influence the worldviews of “all children” and “all citizens.” They explicitly have as their goal to cause children to relate their lives to the world around them. Thus, the Framework and Standards studiously ignore the religious rights of parents, children and taxpayers. Instead, the document explicitly and implicitly promotes an atheistic worldview.

9. Religious groups are not included within the concepts of “Equity and Diversity.” The emphasis of the Framework and Standards on “Equity and Diversity” omits any mention of equity and non-discrimination among diverse religious groups and beliefs. Although the Framework and Standards discriminate in favor of a religious worldview that is atheistic, they mask that discriminatory effect by omitting any explicit mention of “religion” at all. This leads the student and patrons of science to believe that atheism is not religious and that the Standards are not religious, when in fact atheism is a profoundly religious viewpoint that actively seeks to change the religious views of traditional theists.

10. The religious beliefs of the Committee are not disclosed. Given the religious nature of the Framework and Standards it would be helpful to children, parents and taxpayers to know more about the religious beliefs of the Framework Committee and those who assisted with its development. The Framework is copyrighted by the National Academy of Sciences, and a number of the members of the committee are members of the Academy. A study published in the journal *Nature* shows that ninety-three percent of Academy respondents disbelieved (72.2%)

or doubted (20.8%) the existence of a “personal god.”⁴ Thus, nearly 92% of the Academy might be classified as sympathetic to the tenets of Religious (“Secular”) Humanism. Indeed, one of the major contributors to the Framework, Eugenie Scott, who is the CEO of the National Center for Science Education, is a signatory to Manifesto III and has been listed among the top 50 Atheists in the country.

11. The Framework and Standards are not age appropriate. Since the Standards and Framework address religious issues, then they must ensure that the children have the knowledge and intellectual maturity needed to allow them to make informed judgments about the religiously sensitive material before it is presented. In this respect we find the Framework and Standards inappropriate as they begin teaching these religious concepts in Kindergarten. We believe teachings about religious issues relating to the origin and nature of life should not be introduced before the ninth grade. The complex issues relating to the origin of life and its diversity require a good understanding of a number of scientific concepts dealing with physics, chemistry, geology and biology. Because the origins issue unavoidably addresses religious questions, objective teachings about it will necessarily involve high intellectual capacities but also a substantial grounding in many scientific disciplines. If the teaching of unguided materialistic evolution begins in Kindergarten, one may reasonably conclude that the children will lack the knowledge and maturity necessary to reach informed decisions about what to believe about that “dangerous idea.”⁵

12. Coherence and progression can become tools of indoctrination and evangelism. The Framework and Standards are designed to cause all children to accept the core ideas presented. To achieve this result they utilize a method of progressively increasing knowledge about a “core idea” over the 13-year educational experience so that by the end of the 12th grade the child will be proficient in understanding and accepting the core idea. In addition the idea is used in connection with other ideas so that all of the ideas “cohere” into a single organized belief system or world view. This method has significant merits if one is trying to train a child to play baseball or learn how to read or do math. However, when applied to an idea about religion, it becomes a tool of indoctrination and evangelism. Thus, beginning to teach children uncritically the tenets of unguided materialistic evolution, a “dangerous idea,” in Kindergarten and continuing that teaching for the next thirteen years will have the likely effect of causing the child to come to believe in that religious idea and to eventually become one who embraces an atheistic view regarding the origin and nature of life.

Accordingly, we believe that subjects that deal with religious issues be taken out of the coherence and progressions and treated separately in upper grade classes (if covered at all) where the curriculum has been carefully designed to present the subject matter objectively to a mature and knowledgeable audience so that the effect of the curriculum is religiously neutral.

⁴ Edward J. Larson & Larry Witham, *Nature*, 394 (1998) 313. The article closes with these remarks: “As we compiled our findings, the NAS issued a booklet encouraging the teaching of evolution in public schools. . . . The booklet assures readers, ‘Whether God exists or not is a question about which science is neutral.’ NAS president Bruce Alberts said: ‘There are many very outstanding members of this academy who are very religious people, people who believe in evolution, many of them biologists.’ *Our survey suggests otherwise.*”

⁵ “Darwin’s Dangerous Idea” is the title of a book by Atheist Daniel Dennett (1995) that is also the title of a PBS video that features Dennett and his views about evolution. Dennett explains that the idea is “dangerous,” because it has the effect of destroying the idea of a creator God that is the foundation of traditional theistic beliefs.

13. The Framework and Standards cause science to be an enterprise promoted by consensus. The Framework abandons the scientific method and converts science into an enterprise that rules by consensus. This so-called “consensus” then purports to speak for all scientists. This would seem to convert it from an enterprise that investigates into one that seeks to make social policy. We know that many scientists disagree with this move. This is important as the scientific method holds the definition of scientific knowledge to a high standard. In *Daubert v. Merrill Dow Pharmaceuticals* [509 U.S. 579, 590 (1993)], the Supreme Court found, based on the testimony of scientists, that scientific knowledge is knowledge gained by the scientific method. The scientific method limits scientific knowledge to intersubjectively accessible knowledge that has been tested by observation and experiment, where possible. However, the ambiguous Framework description of scientific knowledge appears to cast it in terms of knowledge that has been agreed to by a “consensus” of an unspecified group of scientists based on assumptions, models and speculations that may or may not be intersubjectively accessible. This puts the classification of what is and what is not scientific knowledge in the hands of those who control the “consensus.” Rather than having knowledge defined by tested evidence, it appears to be defined by what some group of scientists say it is. Often funding for scientific endeavors depends on a particular form of “consensus,” which renders the entire notion of scientific objectivity questionable. This formula for science undermines the trust of patrons of science and tends to make science an advocacy enterprise that favors particular religious beliefs and political ends.

14. Politically correct, big government solutions are promoted. The Framework and Standards appear to set societal goals to be achieved by increased governmental involvement and regulation. This is inconsistent with the role of science as an unbiased and objective investigator. It puts science in the role of a public policy advocate that promotes a pro-government, atheistic bias. Government regulations can sometimes be helpful, but they also reduce individual rights and individual freedom. It appears that the Standards and Framework are being used to promote increased government and reduced human freedom.

15. The mechanisms used for obtaining public feedback are biased. It appears from the report on public feedback that most of the feedback came from institutions of science already committed to a functionally atheistic view of life. The only evidence of any contrary response came from those who “wanted evolution excluded.” A number of focus groups were conducted, but were any held that involved scientists not committed to the use of methodological naturalism or to groups of open-minded parents or groups of scientists that might be classified as unconvinced with standard atheistic explanations of origins? Given the lack of objectivity in the Framework with respect to the question of origins, it is understandable that parents and students would want evolution omitted. We believe it can be included in the Standards, but only in a manner that is truly objective so that the presentations are both scientifically valid and religiously neutral. This can be accomplished without discussing origins narratives found in religious texts such as the Bible.

In conclusion we do not believe the Standards and Framework produce a religiously neutral effect required by law and should be revised to achieve that effect and render science truly objective.

Very truly yours

s/Anne Lassey
Anne Lassey, VP
For the Board of Directors