

EXHIBIT 4

1 and in his official capacity as superintendent of)
2 the El Tejon Unified School District; DAN)
3 PENNER, individually and in his official)
4 capacity as principal of Frazier Mountain High)
5 School; and SHARON LEMBURG, individu-)
6 ally and in her official capacity as a teacher at)
7 Frazier Mountain High School,)
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Defendants.)

10 I, Eugenie C. Scott, declare as follows in support of Plaintiffs' Motion for Temporary
11 Restraining Order:

13 **Qualifications**

- 14 1. My name is Eugenie C. Scott.
- 15 2. My curriculum vitae is attached to this Declaration as Attachment A.
- 16 3. I have a Ph.D. in physical anthropology from the University of Missouri and
17 honorary doctorates (D.Sc). from McGill University and Ohio State University.
- 18 4. Physical anthropology is the study of the biological aspects of *Homo sapiens*,
19 including their evolution, adaptation, and distribution.
- 20 5. I am the Executive Director of the National Center for Science Education (NCSE)
21 in Oakland, California. NCSE is a nonprofit membership organization of scientists and others that
22 advocates the objective teaching of the scientific theory of evolution in the public schools. NCSE
23 is affiliated with the American Association for the Advancement of Science.
- 24 6. Before becoming NCSE's executive director in late 1986, I taught science at the
25 university level at the University of Colorado and at the University of Kentucky.
- 26 7. Among other academic work, I have published articles about the
27 creationism/evolution controversy in the scholarly literature, and I have been involved with
28 community controversies involving the introduction of creationism into the classroom.
8. I have taught human and non-human evolution at the university level.

1 9. Since becoming executive director of NCSE, I have continued to publish scholarly
2 work (available upon request) in journals such as *Science*, *The Quarterly Review of Biology*,
3 *Bioscience*, *American Journal of Physical Anthropology*, *Nature*, and elsewhere.

4 10. I am recognized by scientists and other scholars as an expert on the subject of the
5 creationism/evolution controversy and have received recognition for my work in this area from
6 several scientific and educational organizations and institutions, including receiving the
7 aforementioned honorary degrees from McGill University and Ohio State University.¹

8 11. I am the author of a book on the creationism/evolution controversy, *Evolution vs.*
9 *Creationism: An Introduction*, which was published in October 2005 by the University of
10 California Press. The December 29 revised syllabus for the intercession course at issue in this case
11 notes that, on the advice of Dr. Ken Hurst, the course instructor, Mrs. Lemburg, will refer to this
12 treatise.

13 12. Articles of mine have been reprinted in collections of scientific readings and
14 anthologies on the creationism/evolution controversy.

15 13. I consulted and appeared on several PBS documentaries that have dealt with the
16 creationism/evolution controversy, including *In the Beginning* and NOVA's *Evolution* series
17 (which appears on Mrs. Lemburg's revised course syllabus), and have consulted on other videos.
18 I am even featured in one of the creationist videos Mrs. Lemburg lists for possible presentation.
19 In addition, I consult with museums on the presentation of evolution in exhibits, and conduct
20 workshops for interpreters at museums and other informal science institutions (zoos, national
21 parks). I am featured in a video clip in the new American Museum of Natural History exhibit on
22 Darwin, talking about science and religion, and the creationism/evolution controversy.

23 14. I am frequently called upon by the media to provide expert commentary on the
24 creationism/evolution controversy. Among other things, I have appeared on several national

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26 ^{1/} I have also received recognition for my work on the creation/evolution controversy from the
27 following scholarly organizations: the National Science Board (Public Service Award); the American
28 Society for Cell Biology (Bruce Alberts Award); the American Institute of Biological Sciences (Outstanding
Service Award); and the Geological Society of America (Public Service Award). I was selected
Outstanding Alumna of the Arts and Sciences College of the University of Missouri. I also received the
Distinguished Service Award from the California Science Teachers Association, and the highest honor of
the National Association of Biology Teachers, Honorary Member. The American Association for the
Advancement of Science made me a Fellow in 2003.

1 television and radio programs, including *Firing Line*, *Crossfire*, *Geraldo*, *Donohue*, and *Ancient*
2 *Mysteries*. I regularly appear on network news, Fox, CNN, and other cable news programs. More
3 generally, members of the press regularly cite and consult NCSE as the most important source for
4 information on the creationism/evolution controversy.

5 15. I have acted as a consulting expert for the lawyers in *Kitzmiller v. Dover Area*
6 *School Board*,² *Pelozo v. Capistrano Unified School District*,³ and a case in Australia, all of which
7 dealt with issues surrounding the teaching of creationism and evolution.

8 16. In this case, I have been asked to offer my opinions as an expert on the
9 creationism/evolution controversy and on the teaching of creationism and evolution in public
10 schools.

11 17. I believe that I am well-qualified to provide expert testimony on evolution, various
12 forms of creationism (including young-earth creationism, creation science, and intelligent design),
13 efforts to disparage evolution and advance creationism in the public schools, the social history of
14 the religiously motivated anti-evolution movement, and other topics relating to the teaching of both
15 evolution and creationism.

16 18. It is my expert opinion that Mrs. Lemburg's class purports to "teach the
17 controversy" in a balanced way, but that it actually reflects a decided pro-creationism, anti-
18 evolution stance. It does so in two principal ways: First, it treats creationism and evolution as
19 equal "philosophies," thereby undermining the credibility of evolutionary theory; second, as
20 between the two, it plainly favors the creationist perspective.

21 19. To understand why that is the case, one needs to become familiar with definitions
22 of the key concepts and ideas with which the course deals. Most obviously, making sense of the
23 syllabi and course materials requires understanding something about evolution and creationism,
24 as well as the relationship of creationism to intelligent design. Accordingly, I will provide initial
25 definitions of those concepts, then provide a more detailed account of their historical development
26 and content before stating my expert opinions about the nature of the class at issue here.

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28 ^{2/} ___ F. Supp. 2d ___, 2005 WL 3465563 (M.D. Pa. Dec. 20, 2005).

^{3/} 37 F.3d 517 (9th Cir. 1994).

1 **Definitions of Evolution, Creationism, Creation Science, and Intelligent Design**

2 20. “Evolution,” broadly defined, is “a cumulative change through time.” It refers to
3 the fact that the universe has had a history — that if we were able to go back in time, we would
4 find different stars, galaxies, and planets, and different forms of life on Earth. Because stars,
5 galaxies, planets, and living things have all changed through time, there is astronomical evolution,
6 geological evolution, and biological evolution, and the concept of evolution is thus integral to the
7 scientific disciplines of astronomy, geology, and biology. It is also relevant to physics and
8 chemistry. But evolution needs to be defined more narrowly within each of the scientific
9 disciplines because both the phenomena studied and the processes and mechanisms of
10 cosmological, geological, and biological evolution are different. Astronomical evolution deals
11 with cosmology: the origin of elements, stars, galaxies, and planets. Geological evolution is
12 concerned with the evolution of our own planet: its origin and its cumulative changes through time.
13 Mechanisms of astronomical and geological evolution involve the laws and principles of physics
14 and chemistry, including thermodynamics, heat, cold, expansion, contraction, erosion,
15 sedimentation, and the like. In biology, evolution is the claim that living things share common
16 ancestors and have, in Darwin’s words, “descended with modification” from these ancestors. The
17 main — but not the only — mechanism of biological evolution is natural selection. Mrs.
18 Lemburg’s class deals with creationist objections to cosmology (astronomical evolution),
19 geological evolution, and biological evolution.

20 21. “Creationism,” for present purposes, is the theological doctrine of “special
21 creationism,” *i.e.*, that God created biological organisms or systems through a “special” creative
22 act, and that those organisms or systems have not changed appreciably since they were created.
23 Special creationism encompasses both “young-earth creationism” and “progressive creationism.”

24 22. Young-earth creationism arises out of a literalist view of the Bible. It entails the
25 beliefs that the earth is only (roughly) 10,000 years old and that God created all animals and plants
26 as independent “kinds” over six twenty-four-hour days. Within these “kinds” — which are not
27 consistently defined — young-earth creationists may accept that evolution (which they call
28 “microevolution”) can take place. So for example, within the specially created “cat kind,” there
can be evolution of lions, tigers, pumas, house cats, bobcats, and so on. But there can never be

1 common ancestry of two “kinds,” such as cats and dogs. Young-earth creationists reject the
2 possibility of evolution between kinds (which they call “macroevolution”). Young-earth
3 creationists also believe that varied geological forms are the product of a worldwide flood (*i.e.*, the
4 one in the story of Noah). According to Mrs. Lemburg’s revised course syllabus, instruction is
5 planned in many of the “scientific” concepts of young-earth creationism, such as a young earth,
6 the unreliability of radiometric dating as a guide to the age of the earth, and a worldwide flood.

7 23. “Creation science” is an endeavor associated with young-earth creationism. It is
8 largely the descendent of ideas first presented in the 1960s by a hydraulic engineer, Henry M.
9 Morris, who sought to use science to prove the literal truth of Bible stories. Creation science
10 accepts the tenets of young-earth creationism, including that the earth is some 10,000 years old,
11 that the “kinds” of plants and animals were created in six days, and that there was a worldwide
12 flood. The organization that Morris founded, the Institute for Creation Research (“ICR”),
13 continues to promulgate his views to the present day.

14 24. Progressive creationism is another type of special creationism. It entails the view
15 that God creates things in their present form, but serially at different points over a long period of
16 time and not over a six-day period. Progressive creationism might posit, for example, that God
17 first created DNA, then later in time created a single cell, then later still create simple metazoa,
18 then the invertebrate body plans of the Cambrian, and so on. Progressive creationism does not
19 assume that the Earth is only 10,000 years old, but instead generally accepts the scientific evidence
20 that the Earth is billions of years old, with God engaging in multiple acts of special creation
21 throughout the Earth’s history. Progressive creationists, like young-earth creationists, reject
22 common ancestry of created “kinds,” typically accepting that there can be “microevolution” within
23 a kind — however a kind may be defined — but denying that there can be evolution from one such
24 kind to another.

25 25. “Intelligent design” is a form of creationism, and specifically an offshoot of
26 creation science. Its proponents tend to ignore issues such as the age of the Earth, and simply
27 focus on the central claim of special creationism. Intelligent-design proponents believe that God
28 (or, as they put it, “an intelligent agent” with powers greater than any known material agent)
specially creates “irreducibly complex” biological structures or processes. The claim is that such

1 complex structures and processes are unexplainable through natural cause, and therefore, by
2 default, God must have created them specially. The majority of intelligent-design creationists are
3 progressive creationists, though some are young-earth creationists. Some claim to accept
4 evolution, but what they inevitably are referring to is evolution within the “kind,” or
5 “microevolution,” which is a common creationist position.

6 26. To many Christians, Jews, and others, “God created” includes the idea of evolution.
7 Mainstream Christian theology, for example, proposes varieties of “theistic evolution” — the view
8 that evolution occurred, but that it was part of God’s plan.⁴ Theistic evolution is presented in, for
9 example, Catholic high schools, and is expressed in statements on creationism and evolution from
10 officials representing Episcopalians, Methodists, Presbyterians, the United Church of Christ, and
11 other denominations.⁵ Some forms of theistic evolution involve different degrees of God’s
12 intervention, but none are special creationist, for none hold that God creates things in their present
13 forms. Theistic evolution is specifically rejected by intelligent-design creationists; as leading
14 intelligent-design proponent William Dembski has said, “Intelligent design is no friend of theistic
15 evolution.”⁶ That is because theistic evolution accepts common ancestry, while intelligent design’s
16 proponents do not. Nevertheless, both theistic evolution and intelligent design are religious
17 propositions, not scientific ones. So neither should be taught in public schools.

18 **History of the Religiously Motivated Anti-Evolution Movement**
19 **and the Rise of Creation Science and Intelligent Design**

20 27. Religiously motivated hostility toward the teaching of evolution has its roots in the
21 religious tradition of Christian Fundamentalism, which itself arose in the early 20th Century in part
22 as a cultural response to Charles Darwin’s exposition of evolutionary theory as the scientific
23 explanation for the diversity of species.

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26 ^{4/} See Ted Peters and Hewlett, Martinez. 2002. *Evolution From Creation to New Creation*.
Nashville, TN: Abingdon Press.

27 ^{5/} Matsumura, M., Ed. 1995. *Voices for Evolution* . Berkeley CA, National Center for Science
28 Education.

^{6/} Dembski, William 1995. What Every Theologian Should Know About Creation, Evolution, and
Design. Center for Interdisciplinary Studies Transactions 3(2):1-8 (p. 3).

1 28. Initially, anti-evolutionists who for religious reasons objected to the scientific
2 theory of evolution attempted to ban the teaching of that theory altogether. Most famously, in
3 1925 John Scopes was convicted of violating a Tennessee statute prohibiting the teaching of
4 evolution. Following his conviction, many other states and local school boards adopted laws or
5 policies similar to Tennessee’s, with the result that evolution disappeared from the curricula of
6 public schools throughout the country.

7 29. In 1968, however, the Supreme Court ruled in *Epperson v. Arkansas*⁷ that such
8 prohibitions against teaching evolution violated the Establishment Clause of the First Amendment.

9 30. The *Epperson* decision ushered in a second era of the anti-evolution movement, in
10 which religiously motivated opponents of evolution (who could no longer prohibit the teaching of
11 evolution) instead required that, where evolution *was* taught, schools must give “equal time” to
12 teaching creationism. In order to make creationism appear more like a counterpart to evolution,
13 they began developing “creation science,” which, as I will explain more fully below, was intended
14 both to attempt to prove the truth of Bible stories using science, and to clothe the Biblical account
15 of creation in scientific terms.

16 31. In 1982, the district court in *McLean v. Arkansas Board of Education*⁸ found that
17 creation science was a religious concept, not a scientific one, and therefore held that teaching it
18 in the public schools was unconstitutional. The court thus struck down Arkansas’ balanced-
19 treatment law.

20 32. In 1987, the Supreme Court reached a similar conclusion in *Edwards v. Aguillard*,⁹
21 holding that Louisiana’s balanced-treatment law violated the Establishment Clause because it
22 required Louisiana’s public schools to teach a religious concept.

23 33. The *Edwards* decision ushered in the third, current era of the anti-evolution
24 movement, in which more sophisticated anti-evolutionists are trying to find new ways to
25 undermine the teaching of evolution that will survive constitutional scrutiny. Attempts to
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27 ^{7/} 393 U.S. 97 (1968).

28 ^{8/} 529 F. Supp. 1255 (E.D. Ark. 1982).

^{9/} 482 U.S. 578 (1987).

1 incorporate “evidence against evolution” and intelligent design into public-school curricula are the
2 most recent of these.

3 **“Evidence Against Evolution” And Creation Science**

4 34. The attempt to re-cast creationism as “evidence against evolution” (also frequently
5 phrased as the “teach the controversy” approach) primarily is an attempt to reduce the appearance
6 of religious content in creationist views so that they will appear more legally and constitutionally
7 palatable. But all forms of creationism are inherently religious, and so is the “evidence against
8 evolution” approach.

9 35. This approach was first tried during the period between the *Epperson* and *Edwards*
10 decisions, when anti-evolutionists pressed for “equal time” for creation science. Supporters of
11 creation science conceive of the creationism/evolution controversy as a dichotomy, with a literal
12 special creationist reading of the creation story in the Book of Genesis as one alternative and
13 “godless evolution” as the other. The idea is that, with only two choices (evolution and special
14 creation), evidence against one would logically constitute evidence supporting the other. It is
15 therefore not necessary to “prove” (or even support) creationism, merely to disprove evolution.
16 With evolution out of the way, students would default to accepting special creationism.

17 36. So creation-science proponents scoured (and continue to scour) the scientific
18 literature seeking anomalies that they can proclaim “prove” that evolution did not happen, arguing
19 that therefore the account of creation in Genesis must be true.

20 37. The “evidence against evolution” approach has been around for decades:
21 Arguments concerning gaps in the fossil record, the Cambrian explosion, the second law of
22 thermodynamics, the inadequacy of mutation and natural selection to produce major body plans,
23 and so on, are mainstays of the creation-science literature. Arguably, creation science consists
24 almost entirely of “evidence against evolution.”

25 38. The “evidence against evolution equals evidence for creationism” argument has a
26 flawed premise: Evolution and a literal reading of the Book of Genesis are not the only two
27 possible explanations for biological origins. On the contrary, there are many different versions of
28 creationism, and there are many religious views that acknowledge evolution. Thus, evidence
against evolution is not affirmative evidence for creation science, even though that is how creation

1 science’s proponents misleadingly present it. In my experience, many members of the public are
2 persuaded by this poor logic, believing that evolution and special creationism are the only two
3 alternatives; this shows a lack of religious as well as scientific literacy.

4 39. Although there are many different *religious* views, there is only one truly *scientific*
5 explanation for biological origins and the diversity of species: Evolution as understood by
6 scientists — the scientific inference that living things share common ancestors, and the scientific
7 mechanisms that produce evolution’s branching tree of life.

8 40. Lacking any positive evidence to support the sudden appearance of the universe in
9 six twenty-four-hour days less than ten thousand years ago, creation science’s proponents must
10 cling to the position that finding “evidence against evolution” will suffice as scientific support for
11 special creationism, *i.e.*, the belief that God separately created each individual species.

12 41. The lawsuit *McLean v. Arkansas* dealt directly with this argument. *McLean*
13 included a full trial with plaintiffs arguing that an Arkansas law, which required “equal time” for
14 creation science when evolution was taught, was unconstitutional. The issue of creation science
15 as science, and the logic of the “evidence against evolution” strategy, were directly addressed by
16 Judge Overton in deciding for the plaintiffs:

17 The two-model approach of the creationists is simply a contrived dualism which
18 has no scientific factual basis or legitimate educational purpose. It assumes only
19 two explanations for the origins of life and existence of man, plants and animals:
20 it was either the work of a creator or it was not. Application of these two models,
21 according to creationists, and the defendants, dictates that all scientific evidence
22 which fails to support the theory of evolution is necessarily scientific evidence in
23 support of creationism and is, therefore, creation science “evidence” in support of
24 Section 4(a) [of the Arkansas “Balanced Treatment for Creation-Science and
25 Evolution-Science Act”].¹⁰

26 42. After the Supreme Court in *Edwards* put an end to “balancing” evolution with
27 creation science, the attention of creationists shifted even more dramatically to teaching “the
28 evidence against evolution” without overtly pointing to creationism or creation science as the
29 alternative, since the religious motivation would then be less obvious.

^{10/} *McLean v. Arkansas* (1982) 529 F. Supp. 1255.

1 43. Thus, for example, immediately after the decision in *Edwards* made promotion of
2 equal-time laws an unviable strategy, the Institute for Creation Research (the nation’s largest
3 creation-science organization) proposed an “evidence against evolution” strategy:

4 [S]chool boards and teachers should be strongly encouraged at least to stress the
5 scientific evidences and arguments against evolution in their classes (not just
6 arguments against some proposed evolutionary mechanism, but against evolution
7 per se), even if they don’t wish to recognize these as evidences and arguments for
8 creation (not necessarily as arguments for a particular date of creation, but for
9 creation per se).¹¹

10 The ICR clearly regards “the evidences and arguments against evolution” as code for “the
11 arguments for creationism.” Also, as lawyer Jay Topkis explained during oral argument in the
12 *Edwards* case, the term “evidences” (plural) as used by ICR derives from Christian apologetics,
13 and is not used in a scientific context, where the term “evidence” (singular) is used. “Evidence(s)
14 against evolution” thus on many levels is equivalent to “arguments for creationism.” Mrs.
15 Lemburg’s original course syllabus recommends showing videotapes with titles using this same
16 terminology, including “Evidences: The Record and the Flood” and “Geologic Evidences.”

15 **Permutation of Creation Science Into Intelligent Design**

16 44. Because the Supreme Court and lower federal courts declared the teaching of
17 creationism (and creation science) in the public schools to be unconstitutional religious advocacy,¹²
18 many modern creationists, such as proponents of intelligent design, avoid the term “creationism”
19 and other obvious religious identifications. The president of the ICR has, for example, and not
20 approvingly, explained in a mailing to ICR supporters that “[t]he trend among many Christian
21 groups these days is to camouflage their creationism as ‘Intelligent Design’ or ‘Progressive
22 Creationism.’”¹³

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25 ^{11/} Institute for Creation Research, “The Supreme Court decision and its meaning,” *Impact* August
26 1987; 170; available on-line at <http://www.icr.org/pubs/imp/imp-170.htm>. Emphasis in original.

27 ^{12/} *Edwards v. Aguillard*, 482 U.S. 578 (1987); *Pelozo v. Capistrano Unified Sch. Dist.*, 37 F.3d 517
28 (1994); *Webster v. New Lenox School District #122*, 917 F.2d 1004 (7th Cir. 1990); *Freiler v. Tangipahoa
Bd. of Educ.*, 975 F. Supp. 819 (E.D. La. 1997), *aff’d*, 185 F.3d 337 (5th Cir. 1999); *McLean*, 529 F. Supp.
1255.

^{13/} John Morris, open letter included with April 1999 mailing of ICR newsletter, *Acts and Facts*.

1 45. Although intelligent-design creationism arguably began with the 1984 publication
2 of a book criticizing origin-of-life research,¹⁴ it started to become a more serious focus of anti-
3 evolutionists' attention immediately after the *Edwards* decision was issued. At that time, Dean
4 Kenyon, who had supplied an expert affidavit in *Edwards* claiming that creation science was the
5 only alternative to the scientific theory of evolution, took the creationist textbook he was then
6 preparing and substituted the term "intelligent design" for the terms "creationism" and "creation
7 science." (That book, which was published two years later under the title *Of Pandas and People*,
8 was at the center of the recent legal controversy over intelligent design in the *Kitzmiller* case.)

9 46. The intelligent-design movement developed and gained importance among
10 religiously motivated opponents of evolution in the early to mid-1990s; and since the late 1990s,
11 its supporters have actively lobbied to have it taught in public schools. Recently (since roughly
12 2002), the chief think-tank for intelligent-design creationism, the Discovery Institute, has moved
13 away from affirmative efforts to teach intelligent design toward a "teach the controversy" or
14 "evidence against evolution" approach. In my opinion, this was because the Institute recognized
15 the substantial risk of legal liability attendant with teaching a perspective that relies on an
16 "intelligent agent" that everyone (including federal judges) would recognize as God. But, as Mrs.
17 Lenburg's course indicates, events on the ground have not necessarily caught up with this new
18 strategy.

19 47. Proponents of intelligent design contend that intelligent design is a scientific
20 endeavor to detect "design" in nature, with no necessary connections to religion. But, by
21 definition, the perspective posits the existence of a designer.

22 48. Intelligent design's proponents recognize that if the designer is supernatural, then
23 intelligent design is a religious ideology.

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27 ^{14/} Charles B. Thaxton, Walter L. Bradley, and Roger B. Olsen, *The Mystery of Life's Origin*, New
28 York: Philosophical Library, 1984. The book was shopped to 176 secular publishers before Philosophical
Library accepted it; "We were determined the book would not be published by a Christian publisher, and
therefore be ignored," Buell recalls. "It was the first book favorable to creation by a reputable secular
publisher in over five decades" (Larry Witham, *Where Darwin Meets the Bible*, New York: Oxford
University Press, 2002:220).

1 49. Accordingly, they claim to be agnostic as to the identity of the “designer.” The
2 designer, they say, could be supernatural or it could be material.¹⁵ A recent news article regarding
3 a creationism/evolution dispute in Roseville, California, cited the public information officer for
4 the intelligent-design think-tank the Discovery Institute as actually offering three choices: God,
5 extraterrestrials, or a time-traveler from the future. The Discovery Institute’s representative “said
6 most people affiliated with the institute believe that the designer is God. ‘But a person could
7 logically argue that some sort of human has been able to design features of life working through
8 time travel,’ he said. ‘And some people say aliens are the designer.’” Of course, it is doubtful that
9 any of them truly believe that space aliens created life on earth, but this subterfuge is necessary
10 in order to create the appearance that they have avoided Establishment clause proscriptions against
11 promoting a religious view in the public schools.

12 50. Although the intelligent-design movement proclaims itself to be a scientific
13 alternative to evolution, it is actually an effort to promote a sectarian religious ideology. Indeed,
14 prominent intelligent-design supporters such as Phillip Johnson have recognized that intelligent
15 design does not meet the definition of science, and he has therefore contended that scientific
16 practice should be changed and methodological naturalism should be abandoned.

17 51. Intelligent design reduces to an assumption at odds with modern science: that there
18 are some phenomena that by their nature are unexplainable through natural causes. Intelligent
19 design assumes not just that there are some phenomena that are yet *unexplained* by science, but
20 that there are phenomena that are forever outside of the possibility of explanation through science.
21 Intelligent design assumes that such phenomena must be attributed to the direct action of an
22 “intelligence,” and intelligent-design proponents believe that this agent is God. In other words,
23 intelligent design is a dressed-up version of saying “God did it.”

24 52. Although many scientists believe in God, we all restrict ourselves to natural causes
25 *when doing science*. The reason is simple. Natural causes are the only ones that we can test.
26 Science is a way of knowing that involves the testing of explanations against the natural world.
27 A scientific test requires the ability to predict an outcome that is consistent with the explanation
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^{15/} Laurel Rosen, “Darwin Faces a New Rival,” *Sacramento Bee*, June 22, 2003.

1 being proposed. Part of the testability of a scientific explanation is, therefore, that some variables
2 are held constant (“controlled”) in order to test claims of causation. Because it is impossible to
3 hold constant the acts of a supernatural agent, *any* outcome is compatible with the actions of an
4 omnipotent being. Thus, if scientists were permitted, in their capacity as scientists, to consider
5 supernatural causes, they could never draw conclusions about the natural causes for observed
6 phenomena because they could never rule out the possibility that “God did it.” Allowing for
7 supernatural causes would be a science stopper.

8 53. Accordingly, scientists *qua* scientists must reject intelligent design’s proposition
9 that some phenomena cannot be explained except by reference to the supernatural; we must reject
10 the supposition that the as-yet unexplained is *unexplainable*.

11 54. The methodological limitation that restricts science to natural causes does not mean
12 that there cannot in reality be supernatural causes, nor does it say anything about whether a
13 supernatural agent (*e.g.*, God) does or does not exist. It simply means that, as scientists conducting
14 scientific inquiry, we exclude the supernatural and work to develop the best natural explanations
15 that our observations and test-data permit. To do otherwise would be to cease engaging in science.

16 55. The restriction of science to natural cause is sometimes referred to as “naturalism.”
17 That term generates confusion, however, because there is also a philosophical view called
18 “naturalism” that makes claims that the supernatural does not exist and that reality consists only
19 of material (matter and energy) causes. The philosophical view is a claim that exists outside
20 science because science cannot say whether supernatural causes do or do not exist; science is
21 agnostic on this question.¹⁶

22 56. Creationists commonly confuse these two uses of the term naturalism because they
23 view evolution as being an antireligious philosophical view.¹⁷ They oppose evolution because they

25 ^{16/} In the attempt to avoid confusion, philosophers of science often refer to the restriction of science
26 to natural causes as “methodological naturalism,” and the philosophical view as “philosophical (or
27 metaphysical) naturalism.” Pennock, Robert 2003. *Creationism and Intelligent Design*, Annual. Rev.
28 Genomics Hum. Genet. 2003. 4:143–63.

^{17/} Religious conservatives are not the only ones who confuse philosophical with methodological
naturalism and thus misunderstand the nature of science. Some scientists have written that evolution and
faith are incompatible, and creationists love to cite them to support the creationist view. But philosophical
(continued...)

1 believe that acceptance of evolution requires abandonment of faith — a belief that is refuted by
2 the fact that many scientists are also people of faith.¹⁸

3 57. The district court in the *Kitzmiller* case considered testimony from some of
4 intelligent design’s chief proponents, as well as experts in evolutionary science and science
5 education. The court correctly found that, whereas evolution is a scientific theory that respects
6 these necessary methodological limitations, intelligent design is a non-scientific religious view that
7 assumes there are unexplainable supernatural causes.

8 58. Not only is intelligent design’s methodology unscientific, but its specific claims
9 have been examined and rejected by scientists.

10 59. Moreover, there are no known articles¹⁸ in the peer-reviewed scientific literature
11 where the principle of intelligent design is being used in the biological sciences to help gain a
12 better understanding of the natural world.

13 60. Intelligent design is also recognized by its proponents and the public as positing the
14 religious view that God directly designs (and creates) certain natural phenomena that are allegedly
15 incapable of being produced through natural causes.¹⁹

17 ^{17/} (...continued)
18 materialists (such as Richard Dawkins and William Provine) who are also scientists do not speak for the
19 scientific community. Their claims about science have been strongly criticized even by fellow materialists.
20 Scott, Eugenie C. 2004. *Evolution vs Creationism: An Introduction*. Berkeley, CA: University of California
21 Press and references therein.

22 ^{18/} Much of the objection to evolution found among conservative Christians stems from the belief that
23 acceptance of evolution entails the abandonment of faith. That belief depends on a misunderstanding of
24 the nature of science. Science is a limited way of knowing that consists of attempting to explain the natural
25 world in terms of natural causes, but it does not claim to be the only possible way of understanding the
26 world. There are evangelical Christians who accept evolution; they are frequent contributors to the website
27 and annual meetings of an esteemed organization of evangelical Christians called the American Scientific
28 Affiliation (www.asa3.org).

29 ^{19/} A few examples here will suffice to make the point that the public recognizes that intelligent design
30 constitutes a religious perspective. A citizen in Cobb County, Georgia, wrote in a letter to the editor:

31 The complexities of the human body and the incredible way the earth supports the
32 life upon it are just two examples that make it difficult to believe we simply
33 erupted from nothing. These complexities require an intelligent designer, and that
34 intelligent designer is God.

35 Kip Howard, letter to the editor, *Atlanta Journal Constitution*, August 22, 2002. An intelligent-design
36 supporter in Ohio explained the identity of the “intelligent designer” this way:

(continued...)

1 61. Moreover, it is clear both from what intelligent design’s proponents do and from
2 what they say that the intelligent design movement is motivated by a religious purpose.

3 62. A major spokesperson for intelligent design, philosopher and mathematician
4 William Dembski, has written, “Intelligent design is three things: a scientific research program that
5 investigates the effects of intelligent causes; an intellectual movement that challenges Darwinism
6 and its naturalistic legacy; and a way of understanding divine action.”²⁰ Two of Dembski’s three
7 identifying qualities of intelligent design are thus expressly religious in nature: combating
8 naturalism (which Dembski and other ID proponents understand to involve atheism), and
9 understanding divine action. As for the third, intelligent design has not made any contributions
10 to the scientific research literature at all, contrary to Dembski’s claim that intelligent design is a
11 “scientific research program.”

12 63. Although many of its proponents purport to disavow any religious motivations, the
13 religious purpose of intelligent design is found in much of the published and on-line intelligent-
14 design literature.

15 64. The Discovery Institute houses the central think tank of the intelligent-design
16 movement, the Center for Renewal of Science and Culture (now the Center for Science and
17 Culture). The president of the Discovery Institute, in announcing the founding of the CRSC in
18 1996, stated that the CRSC’s goals included: “To defeat scientific materialism and its destructive
19 moral, cultural and political legacies. To replace materialistic explanations with the theistic

21
22 ^{19/} (...continued)
23 “It’s God, sure,” he answers when pressed for his own belief. “But everyone doesn’t have to say
24 that. I suppose it goes back to the status of the legal situation, that if they can pin down [who ID
 proponents think the designer is], it might affect whether the courts view ID as an attempt to
 endorse a religious belief.”

25 John Mangels and Scott Stephens, “Ohio’s Intelligent Design Crusader,” *Cleveland Plain Dealer*, June 13,
26 2002. And as Judge Jones explained in the *Kitzmiller* decision, “numerous letters to the editor and
27 editorials” published in the local newspapers in the Dover, Pennsylvania, area “reveal that the entire
28 community has consistently and unwaveringly understood the controversy [over including intelligent design
in the high-school biology curriculum] to concern whether a religious view should be taught as science,”
and therefore that “the community and hence the objective observer who personifies it, cannot help but see
that the ID policy implicates and thus endorses religion.” 2005 WL 3455563, at *22-*23.

^{20/} William A. Dembski, *Intelligent Design: The Bridge between Science and Theology* (Downers
Grove, IL: InterVarsity Press, 1999).

1 understanding that nature and human beings are created by God.”²¹ A few years later, he again
2 underscored the essentially religious purpose of the CRSC, writing, “our Center for the Renewal
3 of Science and Culture seeks to show that science supports the concept of design and meaning in
4 the universe — and that that design points to a knowable moral order.”²²

5 65. Science does not deal with “theistic understanding[s]” or attempt to make claims
6 about God. Nor is the task of science to “defeat * * * moral, cultural and political legacies.”
7 Those objectives are the province of religion, theology, and perhaps ethics.

8 66. To the extent that it may be useful to the Court, I am prepared to provide many
9 more examples of the religious purpose underlying intelligent design. Those examples come from
10 Discovery Institute literature, the writings of Discovery Institute fellows and other nationally-
11 known supporters of intelligent design (such as Phillip Johnson, William Dembski, Michael Behe,
12 and Stephen Meyer).

13 67. In sum, intelligent design, like creation science, principally involves presenting
14 “evidence against evolution,” positing that there are only two explanations for the origins of
15 biological entities — evolution in accordance with natural processes on the one hand, and “design”
16 (*i.e.*, creation) by a supernatural entity on the other. Like creation science, it posits that any
17 evidence tending to cast doubt on evolution must perforce be evidence in favor of the creationist
18 alternative. And like creation science, it is a religious view, not a scientific theory; neither are
19 testable, and neither are restricted to natural causes.

20 68. When creation scientists and intelligent-design proponents have been defeated in
21 their attempts to have creationism incorporated into a public-school curriculum, they have
22 historically adopted a “fall-back” position of seeking to have the teaching of evolution “balanced”
23 against the presentation of supposed evidence against evolution. But because “evidence against
24 evolution” is the core concept in both creation science and intelligent design, doing so requires
25 them to give up little more than the “creation science” and “intelligent design” labels. And
26 because students are highly likely to share the “contrived dualism” dichotomous view that

27 ^{21/} Bruce Chapman, Discovery Institute web page, October 1999. This page is no longer available on
28 the web site.

^{22/} Bruce Chapman, “Letter from the President,” *Discovery Institute Journal* (Spring 1998), p. 3.

1 evidence against evolution is evidence for creationism, disparaging evolution is likely to promote
2 the default creationist view, even if “God” formally goes unmentioned.

3 **Problems With The Intersession Course**

4 69. In my expert opinion, the purpose and effect of the course at issue in this lawsuit
5 are not to present a comparative treatment of the various philosophical issues surrounding
6 evolution and creationism.

7 70. Rather, the purpose and effect of the class are to disparage the scientific status of
8 evolution and to present as superior to evolution the religious ideas of creation science and
9 intelligent design. In other words, the course advocates on behalf of a particular religious view,
10 and a sectarian one at that; special creationism is a minority view in American Christianity.

11 71. The evidence on which I base that conclusion pervades the course description, the
12 original syllabus, and the revised syllabus — and turns on four general observations.

13 72. First, although the revised syllabus for the class asserts that the course will present
14 the “world views on origins,” the course does not even begin to provide students with the diversity
15 of viewpoints on this matter.²³ Instead, the course presents a single religious viewpoint namely
16 creationism (whether as creation science or intelligent design).

17 73. Despite the original course title “Philosophy of Intelligent Design,” the original
18 version of the syllabus was dominated by creation science — the same view that the Supreme
19 Court in *Edwards* held could not be taught in public schools.

20 74. The course description, which I understand has remained unchanged, emphasizes
21 creation science by, for example, advocating the belief that there is scientific evidence that “the
22 earth is thousands of years old, not billions.” It also states that the course will “take a close look
23 at evolution as a theory and will discuss the scientific, biological, and *Biblical* aspects that suggest
24 why Darwin’s philosophy is not rock solid.” (my emphasis).

25
26
27
28 ^{23/} It is worth noting that among the other intersession classes are a class specifically on “Comparative Religion” and another on “Mythology.” The first is truly comparative, covering five major religions, and the second is on ancient myths and their influence on books movies, *e.g.*, Star Wars. This shows that there is at least an awareness at the school of how to treat religious views in a comparative fashion.

1 75. The revised version of the syllabus emphasizes intelligent design, but traces of
2 creation science still appear, especially in such course materials as the video *Chemicals to Living*
3 *Cells: Fantasy or Science*, which is sold by the creation-science ministry Answers in Genesis.

4 76. The syllabi, course description, and course materials make no mention of any non-
5 Western religious viewpoints on the origins of life and its history. In any class purporting to
6 provide a comparative treatment of cultural phenomena, that omission is remarkable.
7 Anthropologists regard origin myths — stories about the ways in which the world and its
8 inhabitants were formed (usually as the work of supernatural beings or forces) — as a cultural
9 universal. There is certainly no shortage of origin myths available for discussion. Yet the course
10 description and the original syllabus here reflect a narrow focus on a particular sectarian account
11 of origins.

12 77. Similarly, there is no mention in the course materials of any religious viewpoints,
13 Western or non-Western, that accept evolution. An example of these would be any of the many
14 varieties of Christian theology known as theistic evolution: A number of mainline Christian
15 denominations in the United States regard evolution as no threat to their theological views. For
16 example, a number of prominent religious figures, including the late Pope John Paul II, have
17 expressed the view that evolution is compatible with, or even enriches, their faith. A number of
18 prominent scientists, including Francis Collins (the leader of the Human Genome Project), have
19 made similar claims. But students in this course will not learn about any of these views. Instead,
20 they will be told that evolution and religion are involved in (in the words of one of the videos on
21 the original syllabus) a “War of the Worldviews.”

22 78. The absence of the viewpoints of other religious traditions from the course materials
23 belies any claim that the course’s aim is to present a balanced, comparative, or objective treatment.
24 Moreover, since the only religious viewpoint presented is in opposition to evolution, the effect is
25 to present evolution as intrinsically antireligious. The course thus employs the “two-model”
26 approach (beloved of proponents of creation science and intelligent design) that Judge Overton
27 aptly described in the *McLean* case as a “contrived dualism.”

28 79. Second, the course materials make clear that the class is being taught from an anti-
evolution, pro-creationist and pro-intelligent design perspective.

1 80. The course description promises that the course will present evidence that
2 “Darwin’s philosophy is not rock solid” and to present evidence “suggesting the earth is thousands
3 of years old, not billions,” thereby plainly reflecting a manifestly pro-creationist perspective.
4 Furthermore, the course description’s reference to treatment of “the age of the earth, a world wide
5 flood, dinosaurs, pre-human fossils, dating methods, DNA, radioisotopes, and geological evidence”
6 bespeaks a plainly religious agenda, as these are topics repeatedly singled out by proponents of
7 creationism and intelligent design as reflecting areas on which evolutionary theory is flawed.

8 81. Twenty-three of the 24 videos listed on the original syllabus are one-sided
9 presentations, produced by creation-science ministries and advocating a pro-creationism
10 perspective, without any critical treatment of the arguments or other rebuttal. (See Attachment B
11 for a detailed listing.) These videos are not ordinarily regarded as suitable material for the public
12 schools because of their poor scientific quality as well as their religious advocacy. The twenty-
13 fourth video, *The Fire Below Us*, pertains to volcanic activity rather than evolution, and can
14 scarcely bear the weight of holding up the “pro-evolution perspective.”

15 82. The video selections – including *Unlocking the Mystery of Life* – also advocate the
16 view that scientific practice should be changed and methodological naturalism should be
17 abandoned in order to accommodate reference to the supernatural.

18 83. Similarly, the original syllabus devoted two days each to the “Laws of
19 Thermodynamics” and “Fossil Records and Dating Methods.” These are areas of scientific inquiry
20 that proponents of creation science have traditionally attacked, with the scientific community
21 regarding the attacks as lacking any scientific merit.

22 84. On the original syllabus, two of the five prospective speakers (Anderson and
23 Francis) are identifiable proponents of creation science; a third, “David Kopich,” is probably meant
24 to refer to a local proponent of creation science named David Coppedge. Of the two prospective
25 speakers on the original syllabus who were supposed to present the case for evolution, one is a
26 local parent who opposed the class. The other is the Nobel laureate Francis Crick (misspelled
27 “Krich”), *who died in 2004*.

28 85. The revised syllabus appears to have been revised to de-emphasize creation science
in favor of intelligent design, presumably in the hope that the course would better be able to

1 survive constitutional scrutiny. The revision is thus a microcosm of the national debate, in which
2 intelligent design emerged in the wake of *Edwards v. Aguillard* as a form of creationism intended
3 to avoid the Supreme Court’s decision declaring the teaching of creation science in schools to be
4 unconstitutional.

5 86. As explained above, intelligent design was recently recognized in *Kitzmiller v.*
6 *Dover* as unconstitutional for the same reasons as creation science was in *Edwards*. Although the
7 erroneous scientific claims distinctive of creation science, such as those involving the age of the
8 earth and thermodynamics, are no longer explicitly mentioned in the revised syllabus, intelligent
9 design, as the progeny of creation science, retains many of the same erroneous scientific flaws.
10 All but one of the videos listed on the revised syllabus are the products of the intelligent-design
11 movement. (See Attachment B for a detailed listing.) Those videos, like the creation-science ones,
12 are not ordinarily regarded as suitable material for the public schools.

13 87. Both the original and revised syllabi include numerous videos purporting to address
14 the “evidence against evolution,” but not a single video on either list addresses the gaps/problems
15 with creationism or intelligent design.

16 88. Because creation science and intelligent design are religious rather than scientific
17 viewpoints, *advocating* the tenets of these viewpoints — as opposed to addressing them in an
18 appropriate context and in an objective manner — amounts to religious advocacy that cannot have
19 a valid secular purpose.

20 89. Third, the course materials present a distorted view of the scientific standing of
21 evolution.

22 90. Throughout those materials, evolution is presented as a “worldview” or
23 “philosophy.” In the anti-evolution movement, these terms are often used synonymously with
24 “religion,” in order to suggest that evolution is accepted only on faith, thus converting evolution
25 from a scientific theory (which has a particular meaning and special status in the scientific
26 community) to a belief system (which does not).

27 91. In that regard, the very first sentence of the course description reads, “This class . . .
28 will discuss the scientific, biological, and Biblical aspects that suggest why Darwin’s *philosophy*
is not rock solid” (emphasis added).

1 92. Topics in the original syllabus include “Is Evolution a science or a philosophy?,”
2 “Is Evolution based on a religion?,” and “Is evolution based on philosophy?” Although those
3 questions are not explicitly answered in the syllabus, the fact that these questions are raised
4 repeatedly in a course entitled “Philosophy of Intelligent Design” strongly implies that the
5 instructor intends to teach or suggest that evolution is based on a “philosophy.”

6 93. The videos on the syllabi, such as “War of the Worldviews,” further support that
7 conclusion.

8 94. In the revised syllabus, although one topic is “How does the Philosophy of
9 Intelligent Design differ from the Theory of Evolution?” (a formulation that might suggest
10 evolution is no longer going to be presented as based on “philosophy”), the very next topic on that
11 syllabus demonstrates otherwise by referring to “this debate concerning philosophies,” *i.e.*,
12 evolution and “intelligent design.”

13 95. Similarly, the revised syllabus states that “Equal and balanced instructions will be
14 given on all philosophies.” Because the only concepts taught are a religious view and evolution,
15 this statement has the effect of labeling both concepts as “philosophies.”

16 96. Neither the original nor the revised syllabus calls for informing the students that the
17 scientific community overwhelmingly accepts evolution.

18 97. Fourth, and related to the third consideration, is the fact that the course materials
19 do not treat evolution in ways that are either scientifically accurate or pedagogically responsible.

20 98. A genuine comparative treatment of cultural ideas concerning the origin and history
21 of life would not necessarily have to discuss scientific ideas at all. It would be sufficient, for
22 example, to describe the origin myths of a number of different cultures, to compare and contrast
23 them, and to discuss the role that the origin myths play with respect to the rest of their cultures.
24 But if scientific ideas like evolution are to be discussed in such a course, they should be discussed
25 in a scientifically accurate and pedagogically responsible way. That is not the case with the course
26 at issue here.

27 99. As noted, the original syllabus devoted two days to “Laws of Thermodynamics,”
28 which is a topic from physics. It is primarily proponents of creation science, and not physicists
or other scientists, who regard that topic as relevant to the scientific study of evolution, for

1 creationists incorrectly maintain that the Second Law of Thermodynamics renders evolution
2 impossible.

3 100. The revised syllabus describes evolution as a view “on the origin of life.” In the
4 sense most common in modern biology, “evolution” denotes descent with modification — the
5 scientific theory that living things have descended, with modification, from common ancestors.
6 The origin of life is a separate question and a separate area of research.

7 101. Additionally, there is reason to doubt that the course presents evolution in a way
8 appropriate to the students’ ages and level of preparation. In the original syllabus, *no* scientifically
9 credible and pedagogically appropriate instructional materials about evolution are listed.
10 Apparently Mrs. Lemburg was content to have the students learn about evolution almost entirely
11 from creationist sources. Since evolution is typically presented in California only in high-school
12 biology, it is likely that the students in this course would have had, at most, one course in which
13 they were formally exposed to evolution; and some of the students may not have had even that.
14 They therefore would not have the prerequisite knowledge to enable them to evaluate critically the
15 scientific claims contained in the creationist sources.

16 102. In the revised syllabus, non-creationist instructional material about evolution was
17 added: the PBS series *Evolution*, the “Understanding Evolution” website, and *Evolution vs.*
18 *Creationism*. As a consultant to the first two and the author of the third, I can certainly vouch for
19 their scientific credibility. None of these materials was intended to provide a first exposure to
20 evolution, however. The *Evolution* series was intended for a general adult audience, and (like any
21 science documentary) was not intended to provide a complete education to its viewers. The parts
22 of the Understanding Evolution website to which the revised syllabus refers are aimed at teachers
23 who are striving to improve their ability to teach evolution effectively. They are not directed at
24 or geared to students. While there is a section of the website that provides a basic introduction to
25 evolution, it is not mentioned in the syllabus, and it would not in any case be appropriate as the
26 students’ primary source of information about evolution. *Evolution vs. Creationism* is suitable for
27 advanced high-school students and for college students, but certainly not for students who have
28 not yet even taken a biology course at the high-school level. And like the Understanding Evolution

1 website, the book provides only the most rudimentary introduction to the science of evolution; it
2 is no substitute for a real biology class with a competent teacher using a mainstream textbook.

3 103. If there were genuine scientific evidence against evolution, *i.e.*, if scientists had
4 scientific debates over whether evolution actually occurred, there might be a secular pedagogic
5 reason for teaching students “the controversy.” The scientific community, however,
6 overwhelmingly views evolution (the inference of common descent of living things) as a solidly-
7 supported scientific view.²⁴ Indeed, the consensus of the scientific community is that “[t]he
8 contemporary theory of biological evolution is one of the most robust products of scientific
9 inquiry.”²⁵

10 104. Because there is no scientific “evidence against evolution” and there is no
11 pedagogical value in teaching “evidence against evolution,” yet there are conspicuous religious
12 motivations for promoting this practice, it is difficult to avoid the conclusion that the underlying
13 purpose and the intended effect of efforts to require the teaching of “the evidence against
14 evolution,” such as those in the course at issue here, are to protect or advance a particular set of
15 religious beliefs.

16 105. Presenting evolution in a philosophy class as a philosophy or belief system on a par
17 with the religious view of creationism misrepresents the nature of evolution. It confuses students
18 about what evolutionary theory is, interfering with their education when they are presented with
19 the concept of evolution in their science classes. There can be no valid secular purpose for
20 misleading students about the nature of evolutionary theory in a public-school philosophy class
21 any more than there can be in a public-school science class.

22 ^{24/} The National Association of Biology Teachers writes, “Modern biologists constantly study, ponder
23 and deliberate the patterns, mechanisms and pace of evolution, but they do not debate evolution’s
24 occurrence.” National Association of Biology Teachers Statement on Teaching Evolution, in *Teaching
25 About Evolution and the Nature of Science*, Washington DC: National Academy Press, 1998, p. 127.
26 Similarly, the National Science Teachers Association has stated, “There is no longer a debate among
27 scientists over whether evolution has taken place,” and specifically recommends that “[p]olicy-makers and
28 administrators should not mandate policies requiring the teaching of creation science or related concepts
such as ‘intelligent design’, ‘abrupt appearance’, and ‘arguments against evolution.’” NSTA (National
Science Teachers Association) Position Statement on the Teaching of Evolution, in *Teaching About
Evolution and the Nature of Science*, pp. 125, 124.

^{25/} American Association for the Advancement of Science, AAAS Board Resolution on Intelligent
Design Theory, 2002, available on-line at <http://www.aaas.org/news.releases/2002/1106id2.shtml>. The
AAAS is the largest general scientific society in the world.

ATTACHMENT A

Public Service Award, Geological Society of America (2001)
Bruce Alberts Award, American Society for Cell Biology (1999)
James Randi Award (Skeptic of the Year), Skeptics Society (1999)
Hugh H. Hefner First Amendment Award, Playboy Foundation (1999)
Isaac Asimov Science Award, American Humanist Association (1998)
Secretary–Treasurer, American Association of Physical Anthropologists (1993–1997)
Executive Committee, American Association of Physical Anthropologists (1990–1993)
Elected to California Academy of Sciences, 1994
Distinguished Alumna Award, College of Arts and Sciences, University of Missouri (1993)
Who’s Who in Science and Engineering
Public Education in Science Award, Committee for the Scientific Investigation of Claims of the Paranormal (1991)
Fellow, CSICOP (Committee for the Scientific Investigation of Claims of the Paranormal)
University of Missouri Graduate Division Outstanding Teaching Assistant Award (1972)

Advisory Boards (Current and Recent)

Dialogue on Science, Ethics, and Religion (American Association for the Advancement of Science)
Americans for Religious Liberty
Americans United for Separation of Church and State
Biological Sciences Curriculum Study (1993–1999)
CSICOP (Committee for the Scientific Investigation of Claims of the Paranormal) (1997–1999)

Consulting (Current and Recent)

ACLU and AUSCS (*Kitzmiller v. Dover*)
Southwest Consortium for the Improvement of Mathematics and Science Teaching
Fordham Foundation
San Diego Museum of Man
Templeton Foundation
National Geographic Society
WestEd
WGBH/NOVA *Evolution*
Microsoft (Encarta Encyclopedia)
SETI Institute (Voyages Through Time Project)
MW Productions “Voyage to Galapagos”
Education Trust
National Academy of Sciences (Working Group on Teaching Evolution)
National Academy of Sciences (Steering Committee on Science and Creationism)
National Science Foundation
National Opinion Research Center
California State Department of Education
California Science Implementation Network
Orange County Department of Education Schools Legal Service (*Pelozo v. Capistrano*)
California Academy of Sciences
SEPUP (Science Education for Public Understanding Program)
American Association of Publishers
US Civil Liberties Commission

Featured Presentations

Selected list:

National Conference on the Teaching of Evolution

Endowed lectureships: Peter Engel Lecture Series, (St. Johns University); Timothy J. O’Leary, S.J. Distinguished Scientist (Gonzaga University); Jean Buchannan Lecture (Bowling Green State University); Lou Douglas Lecture (Kansas State University); Frontiers of Science (Syracuse University); McGill University Millennium Lecture Series; Miller Institute (University of California-Berkeley); President’s Honors Colloquium (Clemson); H. O. Burdick Memorial Lecture in Biology (Alfred University, NY); Sidore Lecture (Keene State College, NH)

National educators conferences, including: National Association of Biology Teachers; National Science Teachers Association; National Science Education Leadership Association; Council of State Science Supervisors

Sigma Xi (several states)

American Anthropological Association Biological Anthropology Division Distinguished Speaker

American Museum of Natural History

Biological Sciences Curriculum Study

State Academies of Science (Iowa, Ohio, Nebraska, California, New York)

State Science Teacher Associations (California, North Carolina, Michigan, Nebraska, Iowa, Minnesota)

Television and Radio

Selected list (national/international radio):

Hardball (MSNBC); *Religion and Ethics Newsweekly* (PBS); *NBC Nightly News*; *Justice Talking* (PBS); *All Things Considered* (PBS); *Morning Edition* (PBS); *Pat Buchanan Show*; *Native America Calling* (PBS); *Reasons to Believe* (Christian cable); *To the Best of our Knowledge* (PBS); *Talk of the Nation* (PBS); *The Science Show* (Australian Broadcasting Corporation); *Culture Shock*

Selected list (national/international television):

Voice of America; *BBC*; *Evolution (PBS NOVA)*; *Fox News*; *NBC, ABC, and CBS Nightly News*; *Paula Zahn Show (CNN)*; *Lou Dobbs, Geraldo*; *Firing Line*; *Crossfire*; *Issues on Trial (NBC)*; *In the Beginning (PBS NOVA)*; *What About God? (PBS NOVA)*; *Freedom Speaks (PBS)*; *Ancient Mysteries (A&E)*; *Reasons to Believe (Christian cable)*; *Hour Magazine, Donohue*;

GRANTS AND FELLOWSHIPS

List of NCSE funders available upon request.

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Available upon request

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Abstracts in Print, Technical Reports and Studies, Papers Presented at Meetings

Available on request

EXPERIENCE

Nonprofit Management

Director of the National Center for Science Education, Inc., Nov. 1986 – present. Duties include staff supervision, publications supervision, project supervision, media relations, public information and other consulting, and fundraising.

Field Experience

Details available upon request. Includes survey research (US), demographic research (Seminole Indian Reservation), collection of skeletal and dental data (Peru, US), human anthropometrics (Belize)

Academic Experience

Assistant Professor, Department of Anthropology, University of Colorado, Fall 1984–Spring, 1986

Postdoctoral Scholar, Department of Medical Anthropology, University of California, San Francisco, January 1983 – August 1984.

Assistant Professor, Department of Anthropology, University of Kentucky, Fall 1974–December 1982.

Visiting Assistant Professor, Department of Anthropology, Kansas University (on leave from Kentucky) Fall 1976–Spring 1977.

Teaching Assistant, Department of Anthropology, University of Missouri, Fall 1971–Spring 1974.

Assistant Professor, Department of Anthropology, Sonoma State College, California, Fall 1970–Spring 1971.

Instructor, Extension Division, and Department of Geography-Anthropology, California State College at Hayward, Fall 1968–Spring 1970.

Courses taught; University service

Available upon request

ATTACHMENT B

Attachment B: Analysis of Course Videos

This Attachment presents analyses of the lists of videos in the two versions of the course syllabus for the “Philosophy of Intelligent Design”/“Philosophy of Design” course offered during the intersession period at Frazier Mountain High School. Only three videos are common to both lists: *Chemicals to Living Cells: Fantasy* (sic – Fantasy) *or Science*, *Unlocking the Mystery of Life*, and *Icons of Evolution*. A comparison of the two lists shows a deliberate change from an emphasis on creation science to an emphasis on intelligent design.

However, because there are strong historical links between creation science and intelligent design, the changes between syllabus one and two result mostly in a reduction of topics, but not a change in the overall message students would receive upon watching these videos. That overall message is that evolution (as taught in their biology classes and as required in the California Science Standards) is not good science, but a fraud perpetrated by atheists; and that special creation of the earth, life, and specifically the human species, is a well-supported scientific view. In other words, this video collection advocates one specific religious view of origins, and cannot be described as a neutral description of a variety of views on creation.

Several of these videos are on file in NCSE’s archives, and others are available in preview or full video form on the web. In some other cases, there are reviews or content descriptions of these videos, on web sites or elsewhere. There is a fairly limited cast of characters and organizations involved in the production of these videos, and most of the participants are familiar to me, as a long-time student of the creationism/evolution controversy. There is a large amount of redundancy from one film to another. Even though I was not able to view every video listed, based on the videos I am familiar with, and the titles and content descriptions of those videos I was not able to view, I can with confidence conclude that the first group of videos clearly fall into the creation science camp. They are made by, sold by, are “acted in,” and present the views of creation science proponents, a religious view which according to the Supreme Court, does not meet the standards of science and is merely disguised religion, the advocacy of which is unconstitutional.

First Course Syllabus (12/14/05)

The videos listed on the first syllabus – and indeed, the thrust of the first syllabus taken as a whole – present an explicitly creationist version of the course. Twenty-four videos are given as an “incomplete list.” All of the videos are for sale online at creationist websites, usually with a picture and a short description.

The videos can be broken down into these categories:

19 Creation Science¹

3 Intelligent Design

1 video appears to be Christian apologetics with a creationist component (“War of the Worldviews”, for sale on the website of the Institute for Creation Research)

1 video that is not religious (“The Fire Below Us”) but that does not address evolution

The videos listed on the first course syllabus fall squarely in the “creation science” tradition wherein mainstream scientific conclusions (the universe and Earth are ancient, living things share common ancestors) are challenged with a familiar collection of scientific-sounding arguments (radiometric dating is flawed, catastrophic processes explain Earth’s geology, the origin of life is “too complex” to explain through natural cause, etc.) that are completely outside of the scientific consensus.

For example, several videos present a creation science mainstay, the formation of Grand Canyon. Geologists have concluded that the rock layers in Grand Canyon were laid down over billions of years, and that the Canyon was slowly cut over millions of years. But creation science proponents argue that the deposition of Grand Canyon took place during the approximately one year of Noah’s Flood, and the carving of the Canyon took place over a period of weeks. Videos on the catastrophic explosion of Mt. Saint Helens are used to support these bizarre ideas: because a sudden release of lake water catastrophically cut a 30 foot deep canyon in soft ash and mud, so Grand Canyon – composed of 4000 feet of sandstone, limestone, granite and other hard rocks – could also have been cut by a large release of water. Needless to say, students learning this “science” would be woefully miseducated – and receive a dollop of biblical literalist theology to boot.

Geological evolution is not the only subject that these videos distort. Biological evolution comes in for its share of abuse as well. Common are critiques of strawman versions of evolution, such as in the video “From a Frog to a Prince.” Evolution is misstated in this video: evolutionary biologists are said to hold that complex creatures could come about through random processes, and evolution is presented as linear rather than tree-like – but the overwhelming message of this video is religious. It unabashedly presents the sectarian religious view of special creation: God specially creates amphibians and mammals – one cannot evolve into the other. The video “Lucy: She’s no Lady!” about the human Australopithecine fossil “Lucy” similarly promotes a religious view. “You’ll be

¹ I have included “In the Beginning” in this number. This title is shared by both a creationist video and a PBS video about the creationism/evolution controversy. A search of the internet revealed, however, that the latter video is not available for public sale; and the former video is sold by the Institute for Creation Research, which also sells many of the other videos that Ms. Lemburg included in the syllabus. I have also included “The Origin of Life” among the 19 videos. There are two different videos available online with this name, but both advocate a creationist view.

convinced that the origin of humans is best explained by the One who was there at the beginning: the Creator God,” says the web site blurb (<http://www.kidflix.com/Content/Movie.aspx?MovieID=1545>).

Virtually all of these videos present the religious view of God the creator. Two of them even use language from Christian apologetics: “Evidences: the Record and the Flood”, and “Geologic Evidences” utilize the word evidence in the plural form, which is how it is used in Christian apologetics; scientists speak of evidence in the singular.

The video list does not include any videos that correct the flawed presentations in the videos advocating creationism and intelligent design. “The Fire Below Us,” the only non-religious video on the list, pertains to volcanic activity and not to evolution. It is thus unclear why this video is included on the list. The video list thus represents a wholly unbalanced presentation of the issues ostensibly to be covered. One must therefore conclude that Mrs. Lemburg agrees with the content of the religious videos and intended to show them as an accurate presentation of the science of evolution.

Since these videos have no scientific value, there is no valid educational purpose for showing them. One cannot seriously argue that teaching students misinformation that contradicts what they are taught in other science classes and contradicts what teachers are directed to teach in the California Science Framework, the state science education standards, is a *bona fide* reason for presenting the content of these videos to public school students.

With no scientific value to these videos, what remains, then, is a sectarian religious perspective that violates the required neutrality of the public school classroom. Courts have been unequivocal that it is unacceptable to advocate creationism in the public schools; these videos and thus this course do exactly that.

Second version of course – Focus on intelligent design

In the second version of the course syllabus, the suggested videos list has changed from a mostly creation science collection to a mostly intelligent design creationist collection. There are 15 videos and one web site in the second list, and all but two of the videos are in NCSE’s archives or are available online. I have seen the most popular ones at one time or another, and many of the others are just recorded lectures of Phillip Johnson and other intelligent design proponents; I am very familiar with their arguments.

Breaking the 16 items into categories, in the second list we have:

- 12 Intelligent design videos
- 1 Creation science video

- 1 Christian apologetics video
- 1 Evolution video, 1 evolution web site

The change in emphasis in the syllabus from creation science to intelligent design parallels a phenomenon frequently encountered: a policy that explicitly promotes “creationism” or “creation science” in the classroom is put forward, but after it is challenged politically or legally, it is rapidly withdrawn and replaced with the allegedly less religious and more scientific “intelligent design.” This was in fact how “intelligent design” itself originated following the Supreme Court’s *Edwards* decision in 1987, and the pattern has been followed in recent science standards battles in Kansas and Ohio, in the school district in Dover, Pennsylvania, and in the patterns of antievolution legislation put forward in many states. And of course, when intelligent design is questioned, the fallback position has become to argue pure “evidence against evolution” as a back-door creationist strategy.

Since intelligent design was explicitly devised to skirt the legal problems encountered by creation science, it is perhaps worthwhile to document that the content of the intelligent design videos is largely the same as in creation science. Specifically, the arguments are derived from the creationist corpus, the conclusion of special creation is essentially the same, and the fundamental motivations of creation science, namely religious apologetics, remains the same in intelligent design.

We can begin with the one explicitly creation science video left in the list, also found on the first version of the course syllabus, listed with typos as “Chemicals to Living Cells: Fastasy or Science?” The correct title is “Chemicals to Living Cell: Fantasy or Science” with the subtitle “Featuring Dr. Jonathan Sarfati.” Sarfati is a popular spokesperson for the prominent creation science ministry Answers in Genesis. The video is published by Answers in Genesis, advertised on their website, and sold via GospelCom.net (<http://shop5.gospelcom.net/epages/AIGUS.storefront/en/product/30-9-075>).

Familiar creationist arguments are employed to raise doubts about evolution, for example, the claim that evolution cannot produce new genetic information, which is directly contradicted by decades of scientific research.² The video description reads, “‘Goo-to-you’ evolution is impossible and this illustrated lecture shows why,” and the title, “Fantasy or Science,” further emphasizes that the classic

² See Long et al. (2003). “The origin of new genes: glimpses from the young and old.” *Nature Reviews Genetics*, 4, pp. 865-875. The paper cites dozens of research studies where the evolutionary origin of new genes has been reconstructed. The paper is freely available online in various locations, e.g. <http://scholar.google.com/url?sa=U&q=http://www3.uta.edu/faculty/betran/naturereviews.pdf>. The lead author, Manyuan Long of the University of Chicago, has published dozens of scientific papers on the evolutionary origin of new genes, see: http://pondside.uchicago.edu/ecol-evol/faculty/long_m.html.

contrived dualism of creation science – evolution is wrong, therefore special creation by God – is being employed. It is unclear why this particular videotape remained on the list when all the other creation science videos were removed.

Most of the intelligent design videos are lectures from intelligent design proponents presented at meetings of the campus-oriented Christian ministry, Veritas Forum.³ Most of these videos are produced or distributed by the Access Research Network (www.arn.org); a manual search showed that at least 10 of the course videos are listed on ARN (see <http://www.arn.org/arnproducts/vidinfo.htm> for their video list). ARN evolved from a 1980's creationist student group called Students for Origins Research, but now is a center for intelligent design promotion. ARN is also an example of creation science morphing into intelligent design.

These intelligent design videos do not present descriptive or comparative analyses of philosophical and religious views. Instead, they are advocates for one specific religious viewpoint – intelligent design. The video *Unlocking the Mysteries of Life* (sic -- should be Mystery) is subtitled *The scientific case for intelligent design*, and is retained from syllabus list 1. It contends that intelligent design is a revolutionary new science founded in a 1993 meeting of “scientists”⁴ in Pajaro Dunes, California. In fact, the content of intelligent design is derived directly from creation science, and the phrase “intelligent design” originated in 1987 as a replacement label for creationism, after creation science was ruled unconstitutional in *Edwards*. The idea of boiling down creation science into its essential design-by-God and evolution-can't-explain-complexity core concepts began even earlier, in a 1984 book titled *The Mystery of Life's Origin*, which concerned the difficulties scientists have explaining the origin of life through natural causes.

The *Unlocking* video presents biochemist Michael Behe's “irreducible complexity” principle, which is employed to argue that certain structures are unexplainable by natural cause, and therefore must be explained by actions of an “intelligent agent,” who is not specifically identified as God. Historically, this is a variant of the old creationist argument, “what good is half a wing?” which contends that a complex structure could not evolve gradually, because it would not function until all of its parts are in place. Taking the wing as an example, how could a bird fly until all of the parts, such as feathers and modified limbs, come together? Charles Darwin, and every prominent biologist since then, has emphasized that complex structures can evolve gradually by *exaptation*, which means change of function of a structure. For example, feathers first evolved in nonflying

³ The Veritas Forum website describes its work as follows: “Veritas Forums are university events that engage students and faculty in discussions about life's hardest questions and the relevance of Jesus Christ to all of life.” See: http://www.veritas.org/1.0_aboutus/1.1_whatism.html.

⁴ This was a very small meeting held at a beach house, but even so, many of the attendees were not, in fact, scientists. Phillip Johnson is a law professor. Stephen Meyer and Paul Nelson have PhDs, but in philosophy, and work at the Discovery Institute.

dinosaurs, and were used for insulation, only later changing function to provide for locomotion.

But although there is the usual creationist erroneous science, the purpose of the video is evangelical. There are numerous places in the video where creationism and/or sectarian Christianity are promoted, for example when intelligent design spokesman Paul Nelson, a former creation science proponent, introduces the topic of the video as follows:

You look at the incredible diversity and complexity of life and inevitably the question arises, what brought all this into existence? Was it simply chance and necessity, undirected natural forces? Or is there something else going on – is there a purpose, a plan, a design -- a design due to an intelligent cause? I think that is the fundamental question.” (*Unlocking...*, approximately at minute 3:00)

In the conclusion of *Unlocking*, the video asserts that scientists need to invoke “a supreme intelligence.” However, methodological naturalism is seen as a block to this discovery, so the video asserts that we should “redefine the foundations of science.”

In preparing this affidavit, I became aware that the online version of *Unlocking...* differs from the commercially-available version that NCSE has had in its archive for several years. We do not know if current commercial copies resemble the online version or NCSE’s older copy. But we found that there is a more explicit reference to religion in our “old” copy, which is missing in the “newer” online version of the video. It makes one wonder whether the online version was “cleaned up” to better mask the religious message of the product.

In the online, religiously “cleaner” version, philosopher Paul Nelson says of the complexity of life,

But if it in fact is the project of a mind, then you can go out and science becomes this enormous, wonderful puzzle solving project, in which you can expect to find rationality, and beauty, and comprehensibility, right at the foundation of things.

Our more explicitly-religious video copy, purchased a few years ago, says,

But if it in fact is the project of a mind, who meant for his work to be understood by his creatures, then you can go out and science becomes this enormous, wonderful puzzle solving project, in which you can expect to find rationality, and beauty, and comprehensibility, right at the foundation of things.

Although, like most intelligent design works, the video is careful to avoid explicit

language about God and creationism – in the passage above, for instance, the reference is to a mind “who meant for *his work to be understood by his creatures*, this connection is apparent to supporters of intelligent design. One advertisement reads, “This is the most impressive evangelistic tool ever made. Using the latest computer graphics it displays the wisdom of God in the creation of the inner workings of the human cell.”⁵

The intelligent design video, *Icons of Evolution* is also a migrant from the first list. This is one of the most frequently-shown intelligent design videos, and bears discussing. Again, we find erroneous science and religious advocacy.

Two different videos with the *Icons of Evolution* title are available for purchase: one produced by Access Research Network (88 minutes) and one by Coldwater Media (51 minutes). Both videos are based on the 2000 book by Jonathan Wells, *Icons of evolution: science or myth?: Why much of what we teach about evolution is wrong*. Regnery, Washington DC, 338p.

Both of these videos highlight the fact that Wells has a Ph.D. in biology from U.C. Berkeley. Students might naturally think that Wells’ statements about evolution are accurate. However, both videos, along with Wells’ book, give distorted, incorrect, and severely misleading accounts of the science of evolution. The scientific distortions and errors in Wells’s book have been thoroughly exposed by mainstream scientists.⁶ To show either of these videos to students without an informed explanation of the egregious scientific errors they contain would be an act of gross mis-education. If students are told to take seriously the misinformation in these videos, then it becomes almost impossible for a science teacher to educate them in standard science. This of course, is a result sought by creationists who fear that teaching evolution leads to atheism.

Wells’ book and the videos repeat standard creationist arguments against evolution. For example, the videos present a creationist view of the so-called “Cambrian explosion,” the geologic period when animal fossils become abundant in the fossil record. Phrases like “sudden emergence” are used repeatedly along with implications that evolutionary theory is not capable of explaining the evidence. At one point, Wells says, “From nothing, we have almost everything, almost overnight, geologically speaking. This remains mysterious. No one really understands.” (33’13” CW version). “You have the sudden emergence of new biological form and structure. The suddenness defies Darwin’s mechanism.” Evolutionary biologists do not in the slightest consider the Cambrian explosion to be a problem for evolution.

⁵ http://www.cesame-nm.org/announcement/Unlocking_Mystery.pdf

⁶ Pigliucci, Massimo 2001 No Icons of Evolution, *Bioscience*, Vol. 51, No. 5, pp. 411–414; Padian, K. and Alan D. Gishlick, 2002 “The Talented Mr. Wells.” *The Quarterly Review of Biology* **77**(1): 33-37; Scott, Eugenie C., 2001 “Fatally Flawed Iconoclasm.” *Science* **292**(5525, June 22, 2001): 2257-2258.

Other standard creationist arguments found in the book and videos are the supposed lack of transitional fossils, the claim that evolution can work on the “micro”, but not “macro” scale, and the claim that inaccurate 19th century drawings (reproduced in some modern biology textbooks, usually in a historical context) invalidate the theory of evolution. This latter is an especially odd view considering that developmental biology is one of the most vigorous areas of research in evolutionary biology.

The Coldwater Media version of *Icons of Evolution*, which is the commercially more available version, is especially insidious. It features several fellows of the Discovery Institute who are known to be intelligent design proponents, including John West, Jonathan Wells and Scott Minnich, who testified in November 2005 on behalf of the intelligent design policy in Dover, PA. The film does not reveal that these figures are members of a movement dedicated to destroying evolutionary theory, but presents them as mainstream scientists.

Another intelligent design video, *The Theological Roots of Modern Science*, an interview with physicist Henry F. Schaeffer, ends with an explicitly evangelical, sectarian message. At about 53:00 he says, “I hope that I have convinced you that not only is it possible to be a scientist and a Christian, but in fact the founders of modern physical science mostly were. And I would challenge each of you in the light of this to consider the claims of Jesus Christ on your own life.”

In this second list of intelligent design videos, then, we see the same poor science and the same religious advocacy that was present in the list of videos from the first, more explicitly creation science syllabus. In both cases, students are being poorly served both by being presented with bad science – that remains uncorrected by the two evolution references – and by being subjected to religious proselytization.

An evaluation of the materials listed for use in the “Philosophy of Design” class demonstrates that students would be exposed to religious advocacy: there is no effort made in these materials to balance the Christian creationist materials with other religious or nonreligious perspectives. There is no attempt to counter the videos’ erroneous information about evolution with appropriate information. In fact, in the course description, Mrs. Lemburg states her conviction that evolution is weak science – a view well outside the scientific consensus.

The video list confirms that this is not a comparative class talking *about* creationism as a controversial issue: it is a course *advocating* the teaching of creationism as a valid alternative to evolution – a practice that has already been rejected by several courts.