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PRESENTATION HELD BEFORE THE SCIENCE COMMITTEE
OF THE
KANSAS STATE BOARD OF EDUCATION

T R A N S C R I P T
O F
P R O C E E D I N G S

Held on the 7th day of May, 2005, AM
session, beginning at 8:30 a.m., at Memorial
Hall, 120 West 10th Street, in the City of
Topeka, County of Shawnee, State of Kansas,
before Dr. Steve Abrams, Chairman of the Kansas
State Board of Education; Ms. Connie Morris,
member; and Mrs. Kathy Martin, member.

A P P E A R A N C E S

The Minority appeared by and through its
counsel, Lathrop & Gage, 2345 Grand Boulevard,
Suite 2800, Kansas City, Missouri 64108, by Mr.
John H. Calvert and by Arnold & Porter, 555
Twelfth Street, NW, Washington, D.C. 20004, by
Mr. Edward Sisson.

The Majority appeared by and through its
counsel, Irigonegaray & Associates, 1535
Southwest 29th Street, Topeka, Kansas 66611, by
Mr. Pedro L. Irigonegaray.

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1 CHAIRMAN ABRAMS: My apologies to you
2 that have heard this twice before, but there
3 are some that haven't been here. On behalf of
4 the State Board of Education I welcome you to
5 these hearings. My name is Steve Abrams. I'm
6 chair of the State Board of Education and also
7 chair of the science subcommittee. My fellow
8 board members on the subcommittee are Mrs.
9 Connie Morris and Mrs. Kathy Martin. The
10 purpose of the hearings that will be held today
11 are to assist us as State Board members in
12 understanding the complex and oftentimes
13 confusing issues regarding science education.
14 A brief history of how we arrived at these
15 hearings may be helpful. In June of last year
16 a statewide committee appointed by the
17 Commission of Education and comprised of
18 twenty-six public and private educators
19 spanning elementary, primary, secondary and
20 post secondary levels, retired educators,
21 curriculum coordinators and private practice
22 physicians began the process of reviewing and
23 revising the State science standards. The
24 writing committee met several times between
25 June and November and presented a draft of the

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1 standards to the State Board in December of
2 2004. At the same time, eight members of the
3 writing committee submitted what is now
4 referred to as the minority report asking the
5 State Board to consider some changes to the
6 draft. Through much discussion at the State
7 Board, and subcommittee, the three of us was
8 formed to further examine the issues contained
9 in the minority report. Also after much
10 discussion it was decided the best forum to
11 address the issues was via hearings such as
12 these we'll have today.

13 In order to conduct the hearings in a
14 reasonable time frame and in a civil manner
15 there are a few house rules and procedures that
16 you, the audience, and indeed all of us should
17 be aware of. First, we're on a tight schedule.
18 We have many witnesses today and it is critical
19 that we stay on schedule. In order to do this,
20 I request that no comments come from the
21 audience. The expert witnesses have come from
22 quite a distance to present their information
23 and we should allow them every courtesy. We
24 should not have display of support or
25 opposition by yelling, applause and so forth.

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1 In addition, we would also ask that each of
2 you, every one of you, turn off your cell
3 phones. Each expert's testimony has been given
4 an allotted amount of time as determined by the
5 presenters. Following the expert's
6 presentation, the legal counsel for the
7 opposing viewpoint will be given half that

8 amount of time to ask questions. Following
9 that, we, the subcommittee, will be given half
10 of that time to ask questions. For example, if
11 an expert testifies for twenty minutes, the
12 opposing counsel will be given ten minutes for
13 questioning and the subcommittee members will
14 be given five minutes for questioning. The
15 time for questions will be adhered to.
16 Therefore, the questions should be succinct and
17 not sound like a speech. We will take one
18 fifteen-minute break this morning, break for
19 lunch at 12:00, resume at one o'clock, with
20 another fifteen-minute break this afternoon.
21 We'll try to end by-- on or about 5:30.
22 Additionally, please note that Memorial Hall
23 does not have-- allow food or drink in the
24 auditorium. We would greatly appreciate it if
25 you would abide by this policy.

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1 I'd like to introduce some people. Mr.
2 Pedro Irigonegaray is over here for majority,
3 and Mr. John Calvert is on the other side for
4 the minority. Additionally, a court reporter
5 is recording all of the proceedings and a
6 transcript will be made available to the public
7 at a later date. Thus, to those that are
8 speaking, please announce clearly and don't
9 talk on top of each other. As an aside,
10 particularly for the media, the witness
11 testimony presented immediately after the break
12 will be by phone. The phone will be right here
13 on the stage. I thank you for your interest in
14 Kansas education. Mr. Calvert.

15 MR. CALVERT: Thank you. Dr. Abrams,
16 Chairman, and members of the committee, Mr.
17 Irigonegaray, members of the committee, the
18 public and media, I'd like to introduce you to
19 my first witness today, who is Dr. Nancy
20 Bryson. Dr. Bryson did her undergraduate work
21 in biology at Mississippi University for Women
22 and earned a Ph.D. in physical chemistry from
23 the University of South Carolina.

24
25 NANCY BRYSON, Ph.D.,

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1 called as a witness on behalf of the Minority,
2 testified as follows:

3
4 DIRECT EXAMINATION

5 BY MR. CALVERT:

6 Q. Good morning.

7 A. Good morning.

8 Q. Dr. Bryson, as an introduction, would you
9 please amplify a bit on your background and
10 what you plan to talk about today?

11 A. Yes, sir. I have a Ph.D. in physical
12 chemistry, 1982, from the University of South
13 Carolina. And I spent the last twenty years in
14 higher education. I've been teaching chemistry
15 at the college level for all of that time.
16 I've taught at a variety of public and private
17 institutions. And the reason that I'm here is
18 that in February of 2003 I was working at

19 Mississippi University for Women and I gave a
20 presentation to our honors forum entitled
21 Critical Thinking on Evolution. And the honors
22 forum is a set of the most academically
23 talented students at MUW. And in my talk I
24 presented some criticisms of evolution that I
25 felt that the students might not have heard.

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1 And I also spoke about an alternate theory of
2 origin called intelligent design. And the talk
3 was very warmly received by the students.
4 Q. Could I interrupt you for just a second?
5 A. Yes, sir.
6 Q. The forum that you were speaking at, was this a
7 part of the ordinary curriculum or was this an
8 extra-- essentially an extracurricular
9 activity?
10 A. It was extracurricular. It was not part of the
11 class presentation.
12 Q. And you were-- how long had you been at
13 Mississippi University?
14 A. I had been there one and a half years at that
15 time.
16 Q. And you previously had been teaching for some
17 seventeen or eighteen years?
18 A. Yes, sir.
19 Q. And what was your position at Mississippi
20 University then?
21 A. I was the head of the Division of Science and
22 Mathematics.
23 Q. So that was a reasonably responsible position
24 that you held?
25 A. Yes, sir.

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1 Q. And again, could you give me a bit of the
2 background on why you were teaching this
3 particular extracurricular course?
4 A. In the fall of 2002 there was a call for
5 professors to speak at the honors forum. There
6 was an open invitation for people to submit
7 topics on which to speak. And I sort of wanted
8 to introduce myself to the university and some
9 of my interests to the university, and so I
10 submitted my topic as-- Critical Thinking on
11 Evolution as a topic that they might want to
12 accept for presentation at the honors forum.
13 Q. Had you been teaching that particular subject
14 in your physical chemistry courses or
15 otherwise?
16 A. No.
17 Q. What triggered your interest in that particular
18 area?
19 A. In the early nineties I became-- I was-- had an
20 undergraduate degree in biology and had really
21 come along probably believing that evolution
22 was more or less true. But in the early
23 nineties I started doing some independent
24 study, reading some things, and by the time
25 that I had given this talk, I was pretty well

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1 convinced that there were a lot of significant
2 criticisms of evolution. And I just thought
3 that I would like to present them to the

4 students.

5 Q. Did you-- I think you mentioned that-- let me
6 ask you this. Had you done any other
7 presentations on the same subject matter or was
8 this a totally original presentation?

9 A. It was totally-- it was certainly the first
10 time I had given such a presentation.

11 Q. So you had-- as I gathered, you had a
12 background in biology, you didn't really
13 critically analyze evolution, you sort of
14 accepted it, and then you decided at some
15 point-- something triggered your curiosity and
16 you began to look at it and then read about it,
17 and this opportunity came up and you thought
18 this was an opportunity to express your views
19 as to what you found?

20 A. That's correct.

21 Q. Okay. Now, had you vetted your proposed talk
22 with anybody before you presented it?

23 A. No, I had not. I had just proposed the topic
24 to the director of the honors forum and I had
25 not discussed the presentation with anyone

0011 1 else.

2 Q. Was there any reaction to that?

3 A. To the talk?

4 Q. Yes.

5 A. Yes.

6 Q. To the title?

7 A. Well, apparently the director of the honors
8 forum had talked to the biologists and informed
9 them about the nature of this talk. And at
10 the-- as I gave the talk, most of the biology
11 faculty were present for the talk.

12 Q. If I could just interrupt a bit, I think you
13 said that your honors-- the guy that was
14 running the honors program received the title
15 of your talk and then he discussed that with
16 members of the biology department?

17 A. Apparently he informed them.

18 Q. And did you get-- have any prior feedback from
19 the biologists?

20 A. Yes. The evolution professor e-mailed me twice
21 and asked if I would give him the specific
22 thrust of the talk. And I was hustling to get
23 this prepared anyway and didn't fully know, you
24 know, exactly what I was going to be saying, so
25 I just said, "Well, why don't you come to the

0012 1 talk?"

2 Q. So what did you-- so you didn't really respond,
3 but you did get an inquiry about a talk that
4 would critically analyze evolution?

5 A. Exactly.

6 MR. IRIGONEGARAY: Excuse me a
7 second, Mr. Calvert. Pursuant to the rules, I
8 have an objection. This has nothing to do with
9 science standards in Kansas. This has been a
10 litany about complaints about something that
11 happened when this witness was trying to give a
12 speech--

13 MR. CALVERT: This is totally--

14 MR. IRIGONEGARAY: Let me finish.

15 This record is being paid by Kansas taxpayers.
16 And I believe that to have this record on this
17 issue is irrelevant to the issues present.
18 There has been absolutely no connection to the
19 Kansas standards and I would object to a
20 continuance of simply a litany of complaints
21 that occurred in other states and in a
22 different situation. For that, I ask that they
23 get to the point.

24 CHAIRMAN ABRAMS: Mr. Calvert?

25 MR. CALVERT: This objection is

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1 totally inconsistent with the rules. The rules
2 said I would be able to do my presentation
3 uninterrupted. This objection is simply one
4 regarding relevance and that is an
5 inappropriate objection, and there is a huge
6 amount of relevance between what this witness
7 has to say and the issues in this proceeding.
8 And--

9 CHAIRMAN ABRAMS: You're suggesting
10 that there is relevance between what the
11 witness is saying and what the Kansas science
12 curriculum standards are?

13 MR. CALVERT: Very definitely.

14 MR. IRIGONEGARAY: May I have a
15 proffer?

16 MR. CALVERT: I don't think a proffer
17 is called for by the rules. Because I think
18 that the rules do not allow for this objection.
19 Now, I think if the Chair wants to change the
20 rules, that's something else, but consistent
21 with the rules, this objection is totally out
22 of-- is not consistent with the rules.

23 MR. IRIGONEGARAY: I disagree.

24 MR. CALVERT: I mean, right now we
25 have spent--

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1 CHAIRMAN ABRAMS: Mr. Calvert, Mr.
2 Irigonegaray has made an objection. You have
3 stated that it is going to be tied to the
4 Kansas science curriculum standards.

5 MR. CALVERT: Yes.

6 CHAIRMAN ABRAMS: I would say
7 proceed.

8 MR. CALVERT: Okay.

9 Q. (BY MR. CALVERT) Ms. Bryson, I believe where
10 we left off-- and I would ask that the-- a
11 couple of minutes be added to my time here.

12 CHAIRMAN ABRAMS: So noted.

13 Q. (BY MR. CALVERT) That simply the title of the
14 topic that evolution was going to be critically
15 analyzed generated significant interest by the
16 biology department?

17 A. Yes.

18 Q. Then on the evening and occasion you presented
19 your talk, could you further amplify on that?

20 A. The nature of the talk or the response to the
21 talk?

22 Q. Well, just tell us about the talk and the
23 response, too.

24 A. Well, in the talk I brought up some of the
25 criticisms of evolution that I had been reading

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1 about. For example, the Cambrian Explosion is
2 often not mentioned in general biology
3 textbooks at college level. And I think that
4 presents a big problem for evolution. I also
5 talked about the origin of life scenarios and
6 the unlikelihood that any of those scenarios,
7 for example, the Miller/Urey experiments, that
8 have very little relevance to anything that I
9 know about. I basically talked-- those were my
10 two basic points in my talk, I guess, origin of
11 life scenarios and the Cambrian Explosion.

12 Q. And then what was the reaction?

13 A. At the end of the talk the evolution professor
14 stood and read a prepared statement. He
15 brought in a prepared statement and the-- he
16 talked for about five minutes, and the gist of
17 his statement was that-- what he said - this is
18 a quote - "This is just religion masquerading
19 as science."

20 Q. And then what was the reaction of the students?

21 A. The students very warmly had received the talk
22 and they were appalled at his diatribe against
23 me and the talk. And that was about it.

24 Q. Did you have a lot of students come up to you
25 afterward?

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1 A. I had probably fifteen to twenty students come
2 and tell me they'd never heard any of that.

3 Q. What happened the next day?

4 A. The next day was a Friday, and about five
5 o'clock that afternoon I was in my office and
6 my boss, the vice president of Academic Affairs
7 came in and told me that I would not be serving
8 as division head the next year. And he
9 suggested that - he did not say directly - that
10 I might not be on the campus at all the next
11 year.

12 Q. Did he explain why?

13 A. He did not. And I asked repeatedly why he made
14 this decision at this time. I never heard
15 anything like that. And he just simply didn't
16 answer. He said, "Well, I'm not required to
17 give you any sort of an answer."

18 Q. What did you do subsequently?

19 A. Well, one of the things that happened
20 subsequently was I found out that several
21 professors had been up to see him the morning
22 after the talk and complained about the talk.
23 And I-- my story was picked up by the American
24 Family Association and there was a big outcry
25 in the State of Mississippi about the whole

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1 issue. But ultimately, I was dismissed from my
2 division head position.

3 Q. But the decision that was made the day after
4 your talk was temporarily reversed?

5 A. After about three weeks of public outcry, it
6 was temporarily reversed, but for about three
7 weeks the president and the BPA stood by that
8 decision.

9 Q. And then I think you said that subsequently
10 that decision was reversed again, and could you

11 explain the basis for the the second reversal?
12 A. Yes. When my faculty evaluations came out in
13 the late spring of 2003, they were indeed very
14 negative. The previous year, which was the
15 only year I had a faculty evaluation there,
16 they had been overall positive and nothing had
17 ever been said to me about any problem with my
18 evaluations. So the president of the
19 university said that on the basis of those
20 negative evaluations that I would not be
21 division head anymore.
22 Q. Obviously you have a bias in the matter, but in
23 your opinion, were the evaluations in any way
24 soundly based or were they based upon what you
25 perceived to be misinformation or--

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1 A. Certainly I don't think they were soundly
2 based. In my time there I got the only grant
3 that anyone had gotten. I had worked hard. I
4 had done everything. I had written all the
5 reports, managed the budget, kept it in the
6 black. You know, I think I was doing a good
7 job with my position.
8 Q. I think you mentioned that at some university
9 you had received the Bear Hug Award?
10 A. Yes.
11 Q. What-- tell me about that.
12 A. That's just a name-- that was just a name for
13 the award given to the faculty staff member of
14 the year, and this is at Shawnee State
15 University. That was about a 3200-student
16 university. It was just a-- basically a
17 teaching-- an award for being a good teacher,
18 good division head.
19 Q. And when was this award granted in relation to
20 the time you were terminated?
21 A. I got that award in the year 1999, I think.
22 Q. So that was two or three years before your
23 termination--
24 A. Yes, sir.
25 Q. -- at Mississippi University?

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1 A. Yes.
2 Q. Mississippi University was your alma mater, is
3 that right?
4 A. Mississippi University for Women, yes.
5 Q. And that's where you got your first degree?
6 A. Yes.
7 Q. What is-- how has this incident impacted your
8 career?
9 A. Well, I was allowed to stay at MUW as a faculty
10 member. I stayed on one additional year as--
11 at the division head position. I certainly
12 felt in that year-- and I anticipated staying
13 on at MUW. It was my alma mater, I loved the
14 school. I certainly feel that I was harassed
15 in that next year by the new division head. I
16 knew that I could never get tenure there. And
17 so I moved on to Kennesaw State University
18 where I'm now teaching as a one-year temporary.
19 Q. Have you had an opportunity-- have you had an
20 opportunity to review the proposals contained
21 in the minority report?

22 A. I have.
23 Q. And could you comment on-- well, let me back up
24 a bit. The incident that you were involved in
25 would appear-- in which you were simply trying

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1 to inform students about criticisms of
2 evolution - many of which I assume that we've
3 heard during the last two days - resulted in a
4 significant personal sanction, is that correct?

5 A. Yes.

6 Q. And do you think your circumstance is unique?

7 A. No.

8 Q. What do you base that on?

9 A. Well, I don't really know the details of all of
10 this, but I think that other people have gone
11 through the same thing, Roger DeHart and
12 others.

13 Q. Do you feel like within the biology classroom
14 there is academic freedom where teachers and
15 students can candidly discuss these theories?

16 A. There is absolutely not academic freedom. And
17 I-- subsequent to my talk, students would come
18 by and talk to me about that. And when they
19 saw the battering I took, actually they were a
20 little bit afraid to talk to me, so they would
21 come by after hours, and they told me directly
22 that you just-- you couldn't challenge-- you
23 couldn't put up any-- you couldn't ask any
24 questions in the evolution. That's the truth.
25 So on that campus, the whole incident had a

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1 very chilling effect. And, you know, I guess
2 chilling effect was already there, but my
3 incident just brought it out.

4 Q. I think I asked you if you've read the minority
5 report.

6 A. I have looked at the minority report, yes.

7 Q. And I take it-- what is your assessment of the
8 proposals relative to Kansas standards for
9 providing guidelines to teachers on how to
10 conduct this discussion of evolution?

11 A. Well, the things in the minority report that
12 revised-- the proposed revisions, the things
13 that struck me as being very good were, one
14 thing, that there should be additional
15 information presented on evolution. For
16 example, the Cambrian Explosion. I think
17 that's great. I think-- you know, why wouldn't
18 we present all of the information to students?
19 I also think-- one of the things that I noticed
20 was that you're redefining the definition of
21 science, so we're not-- we're not necessarily
22 excluding science to be-- we're not necessarily
23 getting into naturalistic definition. So as I
24 recall, you reposition that word naturalism.
25 So in other words, you would allow more than

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1 methodological naturalism into the discussion.

2 Q. Would you say that the-- what happened to you
3 at Mississippi University for Women was
4 essentially an implementation of methodological
5 naturalism?

6 A. Yes.

7 Q. It was essentially a way to enforce the rules?

8 A. Absolutely.

9 Q. And you believe that the minority report would
10 essentially remove that bias or rule from the
11 discussions, and would that give the teachers
12 academic freedom?

13 A. I think it would. Of course, just having the
14 rule doesn't really necessarily ensure academic
15 freedom because there are all of these subtle
16 fractures in academia. There are these subtle
17 fractures where even if-- even if you follow
18 the rules, you can be denied tenure for any
19 reason that need not necessarily be the true
20 reason.

21 Q. Do you believe that the issue of evolution and
22 origins impact religion?

23 A. Yes.

24 Q. And what is the effect in your mind-- in your
25 view of methodological naturalism as applied to

0023 1 the issue of origin, the origin of life?

2 A. Well, if we insist on methodological
3 naturalism, then that is inconsistent and
4 excludes any theistic ideas.

5 Q. So it excludes evidence that would support
6 theistic views?

7 A. Yes.

8 Q. And it permits only showing evidence that
9 supports the other view?

10 A. Yes.

11 MR. CALVERT: I don't have any
12 further questions. Thank you so much.

13 CHAIRMAN ABRAMS: Mr. Irigonegaray,
14 ten minutes.

15 CROSS-EXAMINATION

16 BY MR. IRIGONEGARAY:

17 Q. I have a few questions for you that I'd like to
18 place on the record first, please. The first
19 thing I'd like to ask you is what is your
20 personal opinion as to what the age of the
21 world is?

22 A. I'm undecided.

23 Q. What is your best guess?

24 A. I'm totally undecided.

25 Q. Give me your best range.

0024 1 A. Anywhere from 4.5 billion years to ten thousand
2 years.

3 Q. And, of course, you have reached that
4 conclusion based on the best scientific
5 evidence available?

6 A. Yes.

7 Q. Do you accept the general principle of common
8 descent, that all of life was biologically
9 related to the beginning of life, yes or no?

10 A. No.

11 Q. Do you accept that human beings are related by
12 common descent to prehominiid ancestors, yes or
13 no?

14 A. No.

15 Q. What is your alternative explanation for how
16 the human species came into being if not from a
17 common descent from prehominiids?

- 18 A. From science, I have no alternative
19 explanation.
20 Q. In your personal opinion?
21 A. In my personal opinion, I believe there was an
22 intelligent designer.
23 Q. And when did that intelligent designer create
24 the human species?
25 A. I'm not sure.
- 0025
1 Q. Now, that opinion that you have about
2 intelligent design, that's not based on
3 science, correct?
4 A. Correct.
5 Q. That's based upon your theistic views?
6 A. Correct.
7 Q. And you would agree with me that religion has
8 no place in science?
9 A. Yes.
10 Q. And you would agree with me that in a science
11 curriculum religion should not be included,
12 correct?
13 A. Correct.
14 Q. Have you read the majority report?
15 A. No, sir.
16 Q. Have you read the minority report in toto?
17 A. No, sir. I've read a summary of the proposed
18 revisions.
19 Q. You've indicated that evolution has an impact
20 on religion, is that correct?
21 A. Yes.
22 Q. You would also agree with me that at one point
23 in the history of humanity the argument as to
24 whether or not the earth was the center of the
25 universe also had religious implications?
- 0026
1 A. Yes.
2 Q. And you would agree with me that there was a
3 time when scientists who argued differently
4 were, in fact, shunned, correct?
5 A. Yes.
6 Q. And you would agree with me that it is
7 dangerous to mix science and religion, correct?
8 A. Yes.
- 9 MR. IRIGONEGARAY: I have no further
10 questions.
11 EXAMINATION BY CHAIRMAN ABRAMS:
12 Q. Dr. Bryson, what were the two items that you
13 discussed in your presentation that got you
14 reprimanded?
15 A. I don't know what got me reprimanded, but the
16 items I discussed in my presentation were-- I
17 spent most of my time on the origin of life
18 scenarios, like the Miller/Urey Experiment, and
19 I feel very qualified to comment on that since
20 my training is in thermodynamics. The other
21 issue I discussed was the Cambrian Explosion.
22 Q. That with which you talked, is that generally
23 classified or characterized as neo-Darwinian
24 evolution?
25 A. Yes, sir.
- 0027
1 Q. Is the method that neo-Darwinian evolution-- is
2 how it is taught normally taught in a

methodological naturalistic method?

A. Yes.

Q. Is methodological naturalism another way of stating a philosophical claim? Is methodological naturalism another method of stating a philosophical claim?

A. Yes, absolutely. My-- sorry.

Q. Go right ahead.

A. My thrust-- my big point in my talk was you couldn't have ever got the whole thing started. From my understanding of thermodynamics there's no origin of life scenario, no prebiotic evolution scenario, no chemical evolution scenario that would have ever allowed for self-organization of matter.

Q. And so what do you base that on? I mean, what method of science or how do you come to that decision?

A. Of my reading-- in my reading it all made good sense to me thermodynamically. You just don't have that kind of self-organization occur. And there would be so many processes that would be occurring on the early earth that would have

prevented any self-organization; dissolution of amino acids in the ocean, the fact that amino acids combine in different ways, the fact that non proteinaceous amino acids combine with proteinaceous amino acids. It-- the whole scenario is utterly impossible in my opinion.

Q. Are you basing that conclusion upon empirical science?

A. I think so, yes. Yes.

Q. How would you define empirical science?

A. That which we observe. So I looked at the observations of others and the writings of others and it made-- and filtering that through my chemical training it made perfectly good sense.

CHAIRMAN ABRAMS: Thank you very much.

EXAMINATION BY MRS. MARTIN:

Q. I don't know, how do you feel your students' education benefit or did not benefit from being allowed to discuss such things in any of your classes?

A. Well, I just think it's incumbent upon any teacher to present the pros and cons of any theory. For example, in chemistry-- in general

chemistry we always present two theories of chemical binding when we say, "Here's the pros of this one and cons of this one, here's the pros and cons of this one." It's just amazing to me that we can't do the same thing in origin science. And the students-- if you want to have a bunch of robots as your students, then you feed them just only the data that you want them to have, but if you want them to be critical thinkers, you give them all the data and let them decide.

Q. So regardless if the data has not been accepted widely in the community of science, it still--

14 you think it's very beneficial for the students
15 to hear critical data?

16 A. Very beneficial, yes.

17 MRS. MARTIN: Thank you.

18 CHAIRMAN ABRAMS: Mr. Calvert.

19 MR. CALVERT: Thank you. Thank you
20 very much, Mrs. Bryson.

21 MR. IRIGONEGARAY: Mr. Chairman, as a
22 point of order, throughout these hearings the
23 minority has relied on Power Point
24 presentations that have been made part of this
25 record. I respectfully request that you order

0030 1 the minority to provide us with the full disk
2 or cassette or CD, whatever fashion they
3 employed for these presentations. Those are
4 important for us to have for the record. And I
5 would also ask that those Power Point
6 presentations be formally made part of the
7 record in addition to the presentation that was
8 made here about them.

9 MR. CALVERT: The slides that we
10 presented will be provided to the committee.

11 MR. IRIGONEGARAY: No, not just the
12 slides, the Power presentation in toto for each
13 witness that was used.

14 MR. CALVERT: The slides that were
15 presented will be presented to the committee.

16 MR. IRIGONEGARAY: No, they have a
17 Power presentation that they use for each
18 witness. In order to have a complete and
19 accurate record of what they have done and what
20 they have relied on, it is only appropriate
21 that the record include all of the those Power
22 Point presentations, and I respectfully ask
23 that you order so.

24 CHAIRMAN ABRAMS: I would suggest
25 that the Power Point-- the Power Point that has

0031 1 been used be presented. For instance, Mr.
2 Irigonegaray, there was one of the witnesses
3 yesterday that had two or three Power Points on
4 his CD that we never even got to. He kept
5 saying, "No, no, that's not the one, that's not
6 the one." So not all the Power Points--

7 MR. CALVERT: That's right, and I--

8 CHAIRMAN ABRAMS: Just the ones that
9 have been referenced.

10 MR. CALVERT: That's exactly correct.

11 MR. IRIGONEGARAY: There were Power
12 Point presentations from which certain
13 particular slides were taken. We want the
14 Power Point presentation because it was what
15 was used for the witness's testimony. Maybe
16 not all the slides were shown, but the Power
17 Point was used as the basis for the questions
18 and answers. And I believe it is important
19 that we have those. I've just stated my
20 request.

21 MR. CALVERT: Dr. Abrams, the rules--
22 this is not a legal proceeding. And the rules
23 don't provide for any discovery. And what
24 Pedro is asking for is something that you might

find, you know, in a legal proceeding. What we

are doing is providing to the committee what we are presenting to the committee, and we don't believe that there is any requirement within the rules or otherwise for us to do anything more.

CHAIRMAN ABRAMS: What the committee would like to see and what ought to be in the record are those slides that were presented that were discussed from.

MR. CALVERT: We would be pleased to do that. Our next witness is Dr. James-- no, Mr. James Barham.

JAMES BARHAM, MA,
called as a witness on behalf of the Minority,
testified as follows:

DIRECT EXAMINATION

BY MR. CALVERT:

Q. Dr. Barham, I notice-- or Mr. Barham, I notice on-- our bio perhaps needs to be corrected because it has a Ph.D. after your name--

A. That's a mistake.

Q. And I believe you're working towards that, but you haven't gotten there yet?

A. That is correct.

Q. Would you please tell us a bit about your background and, you know, the work that you've done and the articles you've written and so forth?

A. Okay. I'm not quite sure where to begin. I was for many years a committed Darwinist. My-- you know, my understanding of-- I had graduate training in the history of science. I was in graduate school before when I was young but never finished my Ph.D.

Q. Where did you get your bachelor's degree?

A. University of Texas at Austin.

Q. And what was that in?

A. Classics.

Q. Classics? And then your master's degree was in what?

A. History of science.

Q. The history of science.

A. I was working on ancient astronomy.

Q. Okay, and you're now working towards your doctorate?

A. That's correct.

Q. And when do you expect to complete that?

A. Two or three more years.

Q. And what is your interest there?

A. History and philosophy. So my emphasis has switched from history to philosophy over the years.

Q. Now, is it fair to say that you are an independent scholar?

A. Yes, I've been working as an independent scholar for the last fifteen, twenty years.

Q. Could you explain what that means?

10 A. Well, it just basically means I'm following my
11 own interests, reading things that I'm
12 interested in, drawing my own conclusions. I
13 have published about a dozen papers over the
14 years. And I gather that one of my recent
15 publications came to your attention. I got a
16 call from you out of the blue, and that's why
17 I'm here.

18 Q. And the paper that drew my attention, is that
19 contained in a book?

20 A. The Debating of Design book?

21 Q. Yeah.

22 A. I assume that's what--

23 Q. Could you tell us about that book?

24 A. About the book?

25 Q. And your article, just briefly.

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1 A. Well, the book grew out of a conference that I
2 attended at Concordia University in Wisconsin.
3 And I was simply asked to contribute, you know,
4 to the ideas that I had been developing over a
5 period of time, over a period of about fifteen
6 years, which basically consists of two parts.
7 A is a critique of the idea that natural
8 selection is a complete and convincing account
9 of evolution; and B, some-- trying to integrate
10 some newer ideas to the sciences such as
11 discipline as to the condensed matter physics
12 and other methods as perhaps an alternative way
13 of understanding the functional coordination of
14 humanology that I believe is real and
15 objectively there.

16 Q. Now, as an independent scholar, how does that
17 distinguish you from other scholars? I mean--

18 A. Well, I was not being paid by anybody to do
19 this research. I was just doing it because I
20 felt compelled to do it.

21 Q. And you're not tied to any academic environment
22 or university?

23 A. I was until very recently. I reentered
24 graduate school two years ago.

25 Q. Did you feel like you had ultimate academic

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1 freedom in that as an independent scholar?

2 A. Nobody could tell me what I couldn't read,
3 exactly, what I couldn't think.

4 Q. Okay. And is it-- I think when we talked you
5 said that you had-- you have experienced two
6 convergences in your life. Would you explain
7 those?

8 A. Well, I prefer to say a loss of faith than a
9 convergence, but I was raised-- I was born in
10 Dallas, Texas, raised as a Southern Baptist,
11 but I lost my Christian faith very young,
12 many-- doing reading, Why I'm Not a Christian
13 and other similar things, around the age of
14 twelve. And I was a convinced materialist,
15 atheist, Darwinist for some twenty years, but I
16 was extremely interested in science. I was
17 always interested in both the humanities and
18 the sciences, hence my degree in classics and
19 working on my Ph.D. in the history of science.
20 And later, it just slowly over the years began

to dawn on me that I couldn't reconcile these two sides of my life, my interests. On the one hand, I'm a human being interested in the arts and literature. I'm interested in the whole spiritual side of humanity. On the other side,

I'm interested in the scientific account of how the human being fits into the universe, which is in complete conflict with the first account. So, you know, my curiosity led me to try to think things through more deeply and to see how I could reconcile these, and I came to doubt that natural selection was a complete explanation for the existence and function of organisms.

Q. In your book or the article that's in the Debating Design book, what caught my attention was this quote. You say, quote, "The mechanistic consensus holds that the known laws of physics and chemistry together with special disciplines such as molecular biology fully explain how living things work and the theory of natural selection explains how these laws have come to cooperate with one another to produce the appearance of design in organisms. According to the mechanistic consensus, design is not objectively real but merely an optical illusion like the rising and setting of the sun. On this view, living matter is nothing special. It is just chemistry shaped by natural selection." And that's what you

describe as the mechanistic consensus.

A. Right.

Q. Is that a fairly apt description of evolutionary biology as it is taught at the higher academic levels?

A. I think that's fair to say. It's the consensus mainstream opinion. There are, however, scientists who would dispute that.

Q. Okay. Is it fair to say that a core claim of evolution is that the apparent design of nature is just an illusion?

A. Well, it's kind of a sociological question. I haven't done-- I'm not a sociologist, but my impression is that, yes, that's the case.

Q. And would you-- okay. I'd like to turn your attention to a definition-- and by the way, have you read the minority report?

A. Yes, I've read it a couple of times. I don't know everything in it, but I've read it.

Q. I want to turn your attention to the evolution benchmark, which is on page-- page 15.

A. This is James Watson?

Q. Beg pardon?

A. My page 15 has the quotation by James D. Watson.

Q. Well, the page 15, if you'll look on the screen--

A. Oh, I see. All right.

Q. Okay. On the left-hand side is a general description of biological evolution, and then

on the right-hand side the minority report has added some additional descriptive information. And the first sentence says, "Biological evolution postulates an unpredictable and unguided natural process that has no discernible direction or goal." Do you agree with that statement?

A. Well, I agree that the mainstream opinion is that. So when you say, "biological evolution postulates," if you interpret that to mean what most biologists believe, then, yes, that's what we believe.

Q. And the mechanism itself that you describe, is that mechanism itself that is postulated, does that mechanism produce a goal or a purpose?

A. I'm not quite sure I understand your question.

Q. Natural selection, random mutation.

A. Are you interested in my own opinion or the opinion of the majority of scientists?

Q. Yes. Well, an opinion of the majority of

science.

A. Then, no, certainly. Because the claim is that there is no such thing as purpose. The very concept of purpose, value, meaning, all these concepts are simply illusions.

Q. And-- okay. I think you-- I believe you-- my question is-- for you is what is it that caused you to change your mind about the Darwin story?

A. Well, there are a couple of things. First of all, as I mentioned, it just seemed to be inconsistent. On the one hand, the essence of human life is purpose and meaning and value. And yet, the supposed scientific explanation for how we got here doesn't recognize any of these categories, so that in itself is a problem. But beyond that, it seems to me that the theory of natural selection simply presupposes the function and coordination of organisms at many points so that as an explanatory structure it was incoherent. You can't at the same time say there isn't such a thing as purpose and then presuppose purpose throughout.

Q. You have, I believe, written testimony, prepared remarks?

A. Yes.

Q. Did you bring extra copies with you?

A. I have them. Unfortunately, they're in the trunk of someone's car. I don't have them with me, but I can get them.

MR. CALVERT: We will provide those to the committee.

Q. (BY MR. CALVERT) Could you go into a bit more detail about why you doubt the Darwinian method?

A. Well, in the prepared remarks I made a couple of basic points. First of all, I want to draw the simple distinction which frequently gets overlooked between the fact of whether or not evolution has occurred on the one hand and our theory, our explanation of how that's happened

on the other hand. I believe in evolution. I believe that we are here due to a process of common descent. What I'm questioning is whether the theory of natural selection as it's usually presented is a convincing and complete explanation of that. And the reason that I tend to doubt that it is, is because it seems to me if you examine the structure very carefully, you see that it's actually

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presupposing a function and coordination as it's alleged to have explained at many points. The basic problem is all selection can do is winnow. It can't produce anything. So the question is where does the coordination come from in the first place? An organism has to already exist, has to already be successful, has to already be a viable organism before it can be selected. So you're back to the question of the origin of coordination.

Q. So you think chemical evolution is a problem for--

A. That's a separate issue. I haven't studied that as deeply. It's a big problem. I agree with the previous presenter's remarks that we basically have no idea at the present how it happened. I, as a naturalist, believe that there will be an answer found, but that's a kind of faith that I have. I can't give you--

Q. That is a matter of faith?

A. Yes, naturalistic faith.

Q. I take it that-- from your article that you don't particularly embrace the idea of intelligent design?

A. You know, when you were reading my remarks, I

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was wondering if you slipped, because I usually eschew the word design. I usually prefer the word theology because it seems to me that design is building in an answer to the question. I just want to pose the question. The apparent purpose of this is the question if Darwin as a complete explanation of the metaphysical system claims that it's able to solve the problems of-- that's what I'm denying. But I don't want to say that there's-- necessarily we must therefore conclude that there was a mind external to the universe. It seems to me there could be other ways to explain the origin or the purpose in the universe and the value in the universe and origin from some kind of internal mechanism that we simply haven't discovered.

Q. So I take it your position is that-- and where you disagree with the Darwinian concept, the Darwinian concept poses the purpose of concept.

A. That's correct.

Q. And you're-- you think that there is real purpose there.

A. That's correct.

Q. And the question is what caused it.

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A. That's correct.

2 Q. And you don't have an answer to that question?
3 A. Well, I have some ideas.
4 Q. You have some ideas.
5 A. They're tentative. I point to them in my
6 argument. As I said, there's some very
7 interesting-- there's interesting work being
8 done in physics, in condensed matter physics in
9 particular. How to get coherence from internal
10 law-like processes, but not random processes.
11 But it's-- you know, it's a frontier field and
12 it's certainly premature to say that any
13 particular theories are going to pan out.
14 Q. There is a provision in the minority report on
15 page 4 where it says, "According to many
16 scientists, the core claim of evolutionary
17 theory is that the apparent design of living
18 systems is an illusion." And I take it you
19 agree with that?
20 A. Sure.
21 Q. And that other scientists disagree. And would
22 you agree with that?
23 A. Yes, there are scientists who disagree with
24 that.
25 Q. Now, do you think it's legitimate for science
0045 to explore the history?
1 A. Certainly.
2 Q. Would you also-- what is your comment about the
3 second-- the third sentence, "These standards
4 neither mandate nor prohibit teaching about
5 this scientific disagreement." Do you think
6 that that's a reasonable posture given the
7 present state of science on intelligent design?
8 A. Yes, I do.
9 Q. You have looked at the other provisions in the
10 minority report regarding the teaching of
11 evolution, the issue of historical sciences and
12 so forth. Do you believe that those are
13 appropriate provisions, that they call for
14 student understanding that would actually
15 enhance their understanding of biological
16 evolution?
17 A. Yes. By and large I was in agreement with
18 nearly all of the-- the main quarrel I would
19 have is again the failure to properly make the
20 distinction between the fact of evolution
21 versus the explanation for it. I wish that--
22 that would be my chief criticism.
23 Q. Well, how would you do that?
24 A. Just say what I just said. I don't think
0046 that-- I mean, it seems to me that there's a
1 conflation of issues. You know, one can argue
2 that we can infer common descent directly from
3 the body of evidence even in the absence of the
4 theory of natural selection, and then it's a
5 further question of whether the theory of
6 natural selection is a complete and convincing
7 explanation of these factors.
8 Q. Do you have-- and it would be helpful to me if
9 you could articulate your idea in writing.
10 A. Oh, well, I have these.
11 Q. Do you have a particular suggestion, then? Do

13 you have it with you or--
14 A. Well, again, I don't have them here.
15 Unfortunately I left them in the car, but, you
16 know, I can go get them and bring them in.
17 Q. Well, I have a copy of your report here. Would
18 that be of any help?
19 A. Is that the most recent version?
20 Q. Well, I'm not really sure. It's called Test
21 Prepared Remarks, Topeka Hearings, May 7th.
22 A. I was still working on those up until
23 yesterday, so I'm not quite sure. But anyway,
24 yeah, more or less, that's it.
25 Q. We have two minutes. We probably don't have

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1 time for that, but it will show up in your
2 written testimony?
3 A. That's correct. I have them.
4 Q. Do you think-- could you briefly explain your
5 views on methodological naturalism and whether
6 that is an appropriate concept and use in
7 origin science?
8 A. Thanks for reminding me. I should have said
9 that before when you asked me my opinion of the
10 standards. There are two-- there's a
11 distinction that would be helpful to make, it
12 seems to me. On the one hand, we use the word
13 naturalism to mean that the natural world, the
14 universe as a whole is complete and that we
15 should not look outside of it to some
16 transcendent realm for a causal explanation in
17 short. Naturalism is opposed contrastably with
18 the supernatural, theism. On the other hand,
19 sometimes we use it to mean avoiding any
20 normative language, avoiding discussing things
21 in terms of purpose, design, intelligence,
22 avoiding these categories which we felt not to
23 be properly part of science. I myself am a
24 naturalist in the first sense, but I am denying
25 that the second sense of naturalism need be the

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1 case. It seems to me that there's no good
2 reason why we can't eventually expand our
3 notion of what science-- empirical science is,
4 and there are people who have some ideas about
5 how to do this already. Whether they pan out
6 is another question. But there are people,
7 Robert Loughlin, in condensed matter physics,
8 has a new book out in which he's trying to
9 explain the concept of-- Stuart Kaufman is
10 perhaps a better name. Who would-- there are
11 certainly naturalists like I am in the first
12 sense, but they're not naturalists in the
13 second sense. They're saying these categories
14 are not illusions, they're real, they're
15 objectively there and we must find a new way of
16 understanding that goes beyond Darwin.
17 Q. So you would find fault with particularly
18 origin science as opposed to using
19 methodological naturalism that essentially
20 denies purpose?
21 A. Yes, I would deny that.

22 MR. CALVERT: Thank you very much,
23 Dr. Barham. I believe-- Mr. Irigonegaray, your

witness.

CROSS-EXAMINATION

24
25
0049

1 BY MR. IRIGONEGARAY:

2 Q. Sir, I have some initial questions for the
3 record. How old, in your opinion, is the
4 earth?

5 A. Four and a half billion is the accepted view.
6 I would accept that. I have no reason to doubt
7 that.

8 Q. Do you accept that general principle of common
9 descent, that all life is biologically related
10 back to the beginning of life?

11 A. I do.

12 Q. Do you accept that human beings are related by
13 common descent to prehomimid ancestors?

14 A. Yes, I do.

15 MR. IRIGONEGARAY: Counsel, would you
16 please put up page 15 for me, please?

17 MR. CALVERT: Sure.

18 Q. (BY MR. IRIGONEGARAY) And by the way, sir,
19 while he's doing that, did you take the
20 opportunity to read the majority report in
21 toto?

22 A. No, I've only read the summary of proposed
23 revisions.

24 Q. And who sent you those?

25 A. Mr. Calvert.

0050

1 Q. Did Mr. Calvert, in order to give you a fair
2 and complete evaluation-- opportunity of Kansas
3 standards for children, send you the majority
4 report as well?

5 A. I was given to understand that all of the
6 relevant--

7 Q. No, sir, listen to my question. Listen to my
8 question, please. In order for you to have a
9 fair and complete understanding of what the
10 Kansas standards are all about for Kansas
11 children, did Mr. Calvert include for your
12 review the majority opinion commonly referred
13 to as Draft 2, yes or no?

14 A. I can't give a yes or no answer to that because
15 of the way you phrased it. In order--

16 Q. Let me rephrase the question. Did you receive
17 Draft 2 for your review?

18 A. If it's distinct from this, which is entitled
19 Summary of Proposed Revisions, then the answer
20 is no.

21 Q. Do you see on page 15 where it says, "grades 8
22 to 12 indicators"?

23 A. On the left?

24 Q. Yes. Would you please read that statement
25 marked No. 1 for me?

0051

1 A. "Biological evolution descendent modification
2 is a scientific explanation throughout history
3 of diversification of organisms from common
4 ancestors."

5 Q. And do you know whether or not that's the
6 majority opinion?

7 A. That is the majority opinion, isn't it?

8 Q. All right. And then take a look to the right,

No. 1a. And would you read that for the record?

A. "Biological evolution postulates an unpredictable and unguided natural process that has no discernible direction or goal. It also assumes that life arose from unguided natural process."

Q. Now, I want to ask you something. Do you see on the majority position anywhere the terms unpredictable and unguided?

A. Obviously what's on the right is not on the left.

Q. And would you further agree with me that you would oppose for the teaching of simply unpredictable and unguided natural processes?

A. Well, I don't think that that's being taught. I think what it's saying is that mainstream--

0052 the mainstream interpretation, biological evolution postulates that.

Q. Sir, in all fairness, that's nowhere in the majority opinion.

A. Well, this is an expansion explanation of the too-succinct version on the left.

Q. The fact is that nowhere-- in order to be fair to the majority in Draft 2, nowhere does it state unpredictable and unguided, and that is simply a straw man argument that has been created by the minority to create controversy where there is none, correct?

MR. CALVERT: I think the rules do not permit questions that actually have embedded in them arguments for a particular position or not. I think they are limited to just questions.

A. It's not a straw man argument.

MR. IRIGONEGARAY: Hang on a second, sir. There's been an objection made by Mr. Calvert on the record. I respectfully disagree. Throughout this entire process the minority has insisted that it is inappropriate to have unguided and unpredictable in the teaching of Kansas children's scientific

0053 curriculum. The fact is, those two words appear nowhere in the majority report. The fact is that is nowhere in-- on the majority report the intent of the majority, and that the minority has placed these two words in its report simply as a straw man argument to come in here and argue on supposition that those two issues exist when they do not. And my purpose in questioning the witness is to ascertain whether or not he agrees with that proposition.

A. I disagree. It is not a straw man argument because that is a correct assessment of the majority opinion of the scientific community in this country.

Q. (BY MR. IRIGONEGARAY) So in your opinion, the majority of the scientific community in America follows 1a?

A. Yes.

Q. Although it's nowhere in the Kansas standards,

20 correct?
21 MR. IRIGONEGARAY: Counsel, I would
22 urge you not to do that.
23 Q. (BY MR. IRIGONEGARAY) Correct, sir?
24 A. Yes, sir.
25 Q. Where in the standards do you find the term
0054 Darwinism in the majority opinion? Oh, you
1 haven't read the majority opinion, have you?
2 Would it surprise you to learn that the term
3 Darwinism is not in the majority opinion?
4 A. Would it surprise me? No, it wouldn't surprise
5 me.
6 Q. In your opinion, would teaching according to
7 the majority opinion, which is Draft 2, equate
8 to teaching materialism and atheism?
9 A. Can you repeat the question?
10 Q. I'd be happy to. Is it your opinion that to
11 teach children in Kansas pursuant to the
12 position of Draft 2 equates to materialistic
13 and an atheistic perspective?
14 A. Pursuant to the position of Draft 2? You mean
15 everything contained in the summary of--
16 Q. As it relates, yes.
17 A. That's hard to say. That's speculating about
18 how it's going to be interpreted by the
19 children. I think that it's fair to say that
20 that is the framework within which the doctrine
21 is being taught to the children. And therefore
22 I would like to see it made possible for
23 teachers who question that metaphysical
24 framework to be allowed to present challenges
25
0055 to the mainstream view. But what the children
1 get out of it, I can't speculate.
2 Q. Would you agree that the document marked as
3 Draft 2, irrespective of what the authors may
4 think about their religious beliefs, in your
5 opinion, then, supports materialism and
6 atheism? Is that what I understand you to say?
7 A. Implicitly I think it's-- it's not explicit,
8 though, I'll grant you that.
9 Q. So it is perhaps your suggestion or opinion,
10 although it is not what it says?
11 A. Based on my understanding of the larger context
12 within which these ideas, which, after all, are
13 simplified for presentation to children.
14 Q. Does draft-- it's kind of hard to question you
15 about Draft 2 if you haven't heard it, but
16 would-- did you-- have you been told by anyone
17 that in Draft 2 that the only opportunity or
18 the only decision presented is that natural
19 selection is the only mechanism involved in the
20 history of life?
21 A. That's my understanding.
22 Q. And your understanding based on what?
23 A. Well, why are we here today if that's not the
24 case? If it were possible to question that, we
25
0056 wouldn't, any of us, be here.
1 Q. And it's your understanding that the Kansas
2 standards do not allow for questioning?
3 A. Yes.

5 Q. Have you had an opportunity to have Mr. Calvert
6 or anyone involved on the minority side read
7 this sentence to you, "There are many issues
8 which involve morals, ethics, values or
9 spiritual beliefs that go beyond what science
10 can explain but for which solid scientific
11 literacy is useful." Would that resolve your
12 concern about what Kansas should do as far as
13 opening the door for a full and complete
14 discussion?

15 A. I certainly approve of the statement, but--

16 Q. Would it be a surprise to learn, to you, that
17 that is precisely what the majority opinion
18 says?

19 A. It still does not address the issue
20 specifically about the origin of life, the
21 adequacy of natural selection as the theory of
22 evolution, however.

23 Q. You would agree with me, then, that if, in
24 fact, Kansas standards do state that there are
25 many issues which involve material -- which

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1 involve morals, ethics, values, or spiritual
2 beliefs that go beyond what science can explain
3 but for which solid scientific literacy is
4 useful, that is the appropriate way to proceed,
5 correct?

6 A. Yes.

7 Q. Does that sentence seem to reflect naturalism,
8 the philosophy that matter and energy is all
9 there is, or does it seem to reflect the
10 philosophy that there's more to the world than
11 what science can investigate?

12 A. That particular sentence appropriately does
13 indicate the limitation of our current
14 scientific understanding.

15 Q. And that does, in fact, make it clear, does it
16 not, that the majority in the committee
17 understands that there's more to human
18 knowledge than what science can provide and
19 that Draft 2 does not imply, enforce or support
20 naturalism over any theological view, correct?

21 A. Not quite, because there's still the question
22 about evolution itself.

23 MR. IRIGONEGARAY: Thank you, nothing
24 further.

25 EXAMINATION BY CHAIRMAN ABRAMS:

0058

1 Q. Sir, how would you-- do you teach class now in
2 high school or college?

3 A. I'm a teaching assistant in an undergraduate
4 program.

5 Q. How is the best way to prepare students to
6 distinguish data and testable theories of
7 science?

8 A. Well, I don't teach science. I teach
9 philosophy, so it would be-- I'm not a
10 scientist, I'm in philosophy of science. So I
11 would simply talk in general terms about
12 knowledge and about scientific knowledge in
13 particular and about the difference between,
14 you know, what's observable and what's an
15 inference, just talk in general philosophical

16 terms.
17 Q. Then let's go to a different question, then.
18 With a background in philosophy of science, are
19 there philosophical claims about science that
20 are made in the name of science?
21 A. Oh, yes, there certainly are. Are you asking
22 what are they?
23 Q. Yes, what are they?
24 A. Well, we've just been discussing them at some
25 length, the idea that natural selection
0059
1 provides a complete explanation for not only
2 living organisms but human beings and all of
3 our characteristics, I think, is simply false.
4 I think it's a philosophical framework. It's a
5 world view, it's metaphysics, but it's not an
6 empirical claim that can be shown or
7 demonstrated.
8 Q. So the difference between a philosophical claim
9 of science and an empirical -- and a testable
10 theory of science would be the empirical
11 analysis of that, the evidence-- the empirical
12 evidence?
13 A. Sure. If you go to the laboratory and do
14 repeatable experiments, that's one thing. And
15 if you're making inferences and making, you
16 know, extremely general claims about the way
17 the world works, that has a different--
18 Q. Do philosophical claims of science have any
19 ability of evidence behind them or are they
20 inferences from other pieces of evidence?
21 A. I mean, I'm not saying that's bad, I just want
22 to make a distinction, that's all. Naturally
23 we-- most all of us want to arrive at a
24 coherent and comprehensive world view. There's
25 nothing wrong in that. It's just that you
0060
1 can't then claim the same authority for that
2 world view that you claim for in the laboratory
3 as a scientist what you can actually show me in
4 a repeatable experiment. When the scientist
5 steps out of the laboratory and makes these
6 much more general claims, we're wearing a
7 different hat, wearing a philosophical hat.
8 Q. Do you have any background in talking about the
9 religious claims of science?
10 A. I'm not sure what you mean, the religious
11 claims of science.
12 Q. That's what I'm asking, if you had any
13 background, and the answer is no apparently.
14 A. I guess not.
15 Q. That's what I was asking. Is it possible to
16 take evidence and to develop two different sets
17 of philosophical claims from it?
18 A. Sure.
19 Q. As a philosopher of science, what is proof?
20 What constitutes proof?
21 A. Well, there are all kinds of different kinds of
22 proof. There's deductive proof, but that's
23 really not relevant to empirical science. In
24 science we have inference to the best
25 explanation. We construct theories, we take
0061

1 all of the evidence at our disposal and we
2 weigh, we judge, we make a determination as to
3 what makes sense to us. Human beings weigh
4 these decisions in different ways, therefore
5 they come to different overall opinions about
6 what makes sense.

7 Q. Is-- do scientists in general, bench scientists
8 as well as scientists that are interested in
9 the philosophy of science, are they interested
10 in what is the truth?

11 A. Sure. Now, even among bench scientists,
12 obviously you're going to have disputes.
13 You're going to be weighing evidence in
14 different ways, but there the connection
15 between what we can observe and the theoretical
16 aspect is much closer, much narrower, and
17 eventually enough evidence is accumulated where
18 there is-- everybody becomes persuaded and
19 there a consensus forms, but these much more
20 general questions about purpose and value, I
21 don't think we can arrive at a consensus in the
22 same way on those. Not yet, anyway.

23 Q. But at the same time, even though there is more
24 argument among the philosophers of science as
25 opposed to the bench scientists, that's still a

0062
1 correct statement to say they are interested in
2 what is the truth?

3 A. Oh, absolutely, we're interested in the truth.
4 And I think most scientists and most
5 philosophers are.

6 CHAIRMAN ABRAMS: Thank you very
7 much. We're going to take a break.

8 MR. CALVERT: Mr. Chairman, I'd like
9 to ask Mr. Barham to look at the second page of
10 his document that he was referring to that he
11 had read and then read the title to that, the
12 second page. I just want to make a point that
13 you were referring to the fact that you'd read
14 the summary of the proposals, and I believe the
15 document you have contains not only--

16 A. Oh, I see. I'm sorry, yeah, I read the--

17 MR. IRIGONEGARAY: What is going on
18 here? They're out of time.

19 CHAIRMAN ABRAMS: We're going to take
20 a break. It is 9:45. We're going to reconvene
21 promptly at ten o'clock.

22 (THEREUPON, a short recess was
23 taken.)

24 CHAIRMAN ABRAMS: Mr. Calvert, please
25 proceed.

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1 MR. CALVERT: Thank you, Dr. Abrams.
2 I'd like to present as my next witness Dr.
3 Stephen C. Meyer, nationally recognized for his
4 work on the scientific, philosophical,
5 educational and legal aspects of the biological
6 origins controversy. Dr. Meyer is currently
7 director and senior fellow of the Center For
8 Science and Culture at the Discovery Institute
9 in Seattle.

10 STEPHEN MEYER, Ph.D.,

called as a witness on behalf of the Minority,
testified telephonically as follows:

DIRECT EXAMINATION

BY MR. CALVERT:

Q. Dr. Meyer, I really appreciate your joining us
this morning. And we have in the room here the
science committee of the Kansas State Board of
Education consisting of Dr. Abrams, Ms. Morris,
Mrs. Martin, and then counsel for the majority,
Mr. Pedro Irigonegaray. And we have lots of
media and the public and so forth. So I
appreciate your joining us this morning. To
get our conversation started, I wonder if you

could amplify a bit on your background.

A. Sure. Can you all hear me? I apologize for
appearing by phone.

Q. I believe so. People are nodding their heads.

A. I will continue, then. My educational
background begins with a bachelor's of science
in physics and geology. I practiced as a
professional geophysicist with the Atlantic
Richfield Company for four years. After that I
went and I had a Rotary Fellowship to study the
history and philosophy of science at Cambridge
University where I ended up doing both my
master's and my doctorate. My doctorate
dissertation was on the origin of life issue,
in particular, the methodology of historical
sciences and the history of origin of life
biology, sometimes called origin of life
research. Since completing my doctorate, I
taught for twelve years at college in the
philosophy department focusing on the
philosophy of science, and I am published in
both the scientific and the philosophical
aspects of the issue of the origin of life on
(unintelligible) theory. I focused on the
question of the origin of first life and the

origin of the Cambrian phylum, sometimes called
the Cambrian Explosion. In the philosophical
area, I have written on the question of the
definition of science, the-- and the-- what are
called demarcation arguments that purport to
define science that-- arguments that are used
to define science normatively and to justify
what's called methodological naturalism. My
expertise in that area was acknowledged by an
invitation to contribute to a book by-- that
was published by Garland called The History of
Science and Religion in the Western Tradition.
It's an encyclopedia and I was asked to
contribute to the article on the demarcation of
science and religion, which I think will be
relevant. I also co-authored an article with
David DeWolf of Gonzaga Law School and
Professor Mark DeForrest also of Gonzaga Law
School. It was published in the Utah Law
Review, which examined the constitutionality of
discussing theories, in particular the theory
of intelligent design as an alternative to

23 neo-Darwinism and chemical evolution theory in
24 the public schools.

25 Q. Dr. Meyer, I believe you've also written on
0066

1 your recommendations regarding science
2 education policy, is that correct?

3 A. That's right. I forgot to mention that. In
4 2003 I co-edited and contributed several
5 chapters to a book called Darwinism, Design,
6 and Public Education which was published by
7 Michigan State University Press. My co-editor
8 and contributor to that volume was John
9 Campbell of the University of Memphis, one of
10 the leading rhetoricians of science in the
11 country and the leading expert on the
12 rhetorical argument and structure of Darwin's
13 Origin of the Species. In the book we advance
14 a model of scientific education which will be
15 called Teaching the Controversy, and true to
16 our pedagogical recommendations we included
17 critiques of both the scientific articles and
18 the policy proposals that we have made in the
19 past from leading Darwinian figures, Michael
20 Ruse and William Dembski.

21 Q. Would you perhaps summarize briefly, Dr. Meyer,
22 your recommendations for a science-- an
23 appropriate science education policy for a
24 public school?

25 A. Well, I know that the focus of your discussion
0067

1 is the question of biological origin and the
2 question of evolution, and so I'll focus my
3 remarks on that, although our recommendation
4 that the controversy and disagreement among
5 scientists be incorporated into the curriculum,
6 I think, can apply to other disciplines as
7 well. But very simply, we recommend that the
8 neo-Darwinian evolution and the standards
9 called biological evolution, that the standard
10 received theory of biological evolution today
11 is still neo-Darwinism, although there are many
12 competitors among scientists, but the standard
13 proven theory called neo-Darwinism is something
14 that we think students should learn about.
15 They should learn about the main-- the two main
16 parts of the theory, the theory of universal
17 common descent and also the idea that natural
18 selection acting on random variation and
19 mutation has the power to generate new
20 biological forms. And further, students should
21 also learn the current scientific criticisms of
22 the theory as they assist in the scientific
23 literature. So we think that students should
24 learn the theory, they should learn the
25 strengths, they should also learn the

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1 scientific weaknesses, and that the mode of
2 instruction should be based on evidential
3 concurrence. That is to say the starting
4 points should be the evidence that scientists
5 are using to support or challenge the theory.
6 And we in the book also discuss the existence
7 of alternatives; in particular, the

8 controversial alternative of the theory of
9 intelligent design. And our recommendation--
10 my recommendation at the Discovery Institute,
11 we are recommending the same thing, and that is
12 that the students be required to learn the
13 perceived theory of neo-Darwinism and should be
14 required also to learn the current criticisms
15 of the theory. They should be permitted to--
16 actually, teachers should be permitted on a
17 voluntary basis to discuss alternative
18 theories, whether that's self-organization,
19 structuralism, intelligent design or punctuated
20 equilibrium. So that's our recommendation. I
21 understand that you-- that in the minority
22 report there are criticisms of the standard
23 textbook theory of biological evolution
24 introduced, and that's entirely in line with
25 the recommendations that we have made. I think

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1 it's important, however, to make sure that as
2 you proceed in developing a-- the science
3 education policy, that you make sure that the
4 policy is based very much on the scientific
5 evidence on both sides of the question. I
6 understand from media reports and also some of
7 the reports from colleagues submitted for the
8 hearing that there has been quite-- there has
9 been some discussion among some of your
10 witnesses about their religious beliefs. I
11 understand that some of that has been coaxed
12 out of them. I think the-- as you evaluate the
13 value of the testimony you get - I am now
14 speaking mainly to your board members - it will
15 be important to realize that not all the
16 testimony you have received these last two days
17 or receive today has the same value. I think
18 that your hearing, to me, was to be properly
19 framed around the question of whether or not
20 there is significant scientific criticism of
21 neo-Darwinism in the scientific literature. I
22 think that's the correct question to be asking.
23 It's unfortunate that the Darwinian biologists
24 didn't appear to defend their side of the
25 argument, but in the sense that's not really

0070

1 that important because you're on a fact finding
2 mission to find out whether or not there is a
3 significant criticism in the literature and in
4 the wider scientific community. And I think
5 some of the distinguished biologists you had
6 this week have no doubt made a good case for
7 that. I certainly think there is a tremendous
8 amount of criticism of the theory that students
9 should be permitted to know about. By the same
10 token, I think it's important as people have
11 had religious-- their religious views coaxed
12 out of them to realize that that is possibly
13 irrelevant. And whether it's irrelevant is
14 that everyone who is thinking about this issue
15 has to think about the issue in a larger
16 philosophical and world view context. And
17 people on both sides of the question have ideas
18 about how their scientific theory might fit in

19 with the larger religious world view or
20 philosophical perspective. From our
21 standpoint, my standpoint as a scholar that's
22 worked on the-- not only the philosophical end,
23 but also the questions of what is an
24 appropriate public policy, I would strongly
25 recommend that you base your policy on your--

0071

1 the scientific evidence and the things that you
2 have found in your hearings this week that
3 establish there is a scientific basis for
4 criticism of the theory and therefore something
5 that students should know about that they are
6 probably not being told about in existing
7 textbooks and that you properly disregard
8 testimony about the various religious views or
9 non religious views of your witnesses and
10 participants.

11 Q. Dr. Meyer, I would like to go to-- in
12 particular, go to the provisions-- by the way,
13 I take it you have reviewed the minority
14 report?

15 A. I have reviewed the minority report and the
16 majority report as it applies to the topic at
17 hand, your standards for evolution.

18 Q. Great. And in particular, have you reviewed
19 the provisions that appear on page 9 relating
20 to--

21 A. I have, and I will turn to it now, if that will
22 be helpful.

23 Q. What I would like to do is direct your
24 attention to discuss the proposed changes in
25 the minority report that relate to the

0072

1 historical -- the issue of student understanding
2 of a distinction between historical sciences
3 and a more experimental based science. And
4 when I'm talking about the historical sciences,
5 I'm talking about the sciences that deal with
6 remote historical events where it's difficult
7 by experiment and direct observation to confirm
8 or validate, you know, a particular hypothesis.
9 And the provisions in particular appear on page
10 9. And the 12th grade-- grade 8 through 12
11 standard for Benchmark 2. That's an earth
12 science benchmark. And, in particular,
13 indicator 2, and the additional specificity,
14 and then also on page 10, there is a paragraph
15 that provides a teacher's note that explains
16 the issues to help the teacher understand the
17 implementation and the indicators. Then on
18 page 13 under the Standard 1, 12th grade
19 Benchmark 1, this deals with the issue of
20 science as an inquiry. And it deals with the
21 way in which essentially students are to
22 understand how scientific hypotheses are
23 tested. And the minority has added an
24 additional indicator which again focuses on
25 methodology for testing these kinds of

0073

1 historical hypotheses. And in particular, I'm
2 referring to Indicator 6.

3 A. I see the-- yes.

4 Q. And what I would like you to do-- and I believe
5 that the reason-- one of the reasons we're
6 calling you as a witness is because of your
7 work in the historical sciences. And so I
8 would like you to do a couple things. At some
9 point comment on the propriety of the proposed
10 changes, but also comment on why you believe
11 these changes are scientifically appropriate
12 for the education of students within the
13 science framework.

14 A. Sure. Their scientific appropriateness, the
15 methodological appropriateness, the distinction
16 between the historical and the experimental or
17 what I call the (unintelligible) oriented
18 sciences is really a matter of differences in
19 method. And I think that your indicator in
20 Indicator 2 is a national statement of
21 precisely how historical science hypotheses are
22 tested and by-- precisely by formulating
23 competing hypotheses. In my Cambridge
24 dissertation on this I actually argued that
25 there was a clear methodological distinction

0074
1 between the historical sciences and what I call
2 the non-logical sciences, sciences that are
3 concerned with formulating laws and describing
4 repeating patterns in nature. And I argued for
5 that on three grounds, namely that the
6 historical scientists ask different types of
7 questions than non historical scientists.
8 They're asking what happened in the past or
9 what happened in the past to cause a particular
10 event to arise, whereas an experimental or
11 non-logical scientist will be wanting to know
12 what ordinarily happens in nature and what
13 might be responsible for those regular
14 repeating patterns that can be-- or that might
15 describe those patterns with mathematical laws
16 or equations. Historical scientists are also
17 concerned to make different types of inferences
18 and make different types of explanations. The
19 explanations in particular tend to focus on
20 some kind of past causal event or event
21 concerning cause and effect or causes in
22 sequence, whereas in the non historical
23 sciences, either there is an attempt to
24 describe phenomena mathematically or the
25 explanations that are offered are in terms of

0075
1 some structure or pattern. So there's a clear,
2 I think, sensible distinction between the
3 historical sciences in those three areas. And
4 further, in the area of testing, it is often
5 alleged that historical sciences-- historical
6 theories cannot be tested because the events
7 cannot be replicated in the laboratory under
8 controlled conditions. And that's true. In
9 the historical sciences you cannot often
10 replicate the event you're interested in under
11 controlled laboratory conditions, but that does
12 not mean that hypotheses in the historical
13 sciences cannot be and are not tested. In
14 fact, they are tested by comparing the

15 explanatory power of the hypothesis against its
16 competitors, and you have captured that very
17 nicely in your Indicator 2 and-- as well as the
18 part that has additional specificity. I would
19 also respond to one criticism that I read of
20 your discussion of the historical sciences from
21 Professor Ken Nord, a Brown biologist. He
22 points out correctly that sometimes in the non
23 historical sciences there is-- there are
24 competing hypotheses that are proposed, but I
25 don't think that in any way detracts from the

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1 accuracy of your description about historical
2 sciences are tested. Historical sciences are
3 always tested in that manner. There is debate
4 among philosophers and scientists as to whether
5 or not the prediction under controlled
6 experiment ideas, for example, Carl Hopper, is
7 sufficient to test theories or whether there is
8 a-- to test non historical theories, or whether
9 there is indeed an element of comparative
10 explanatory evaluation in those types of
11 sciences as well. I think Miller may be on to
12 something, but it's really irrelevant as to
13 whether or not you have captured the
14 methodological practices of the historical
15 sciences correctly. I think you have. Whether
16 or not non historical sciences have an element
17 of comparative evaluation - I think they
18 probably do - is still completely irrelevant to
19 whether you guys (unintelligible).

20 Q. Would you also-- you've been speaking
21 specifically about Indicator 2. Would you also
22 turn to page 13?

23 A. And I also would point out that I have-- having
24 done this dissertation on this whole topic,
25 Carol Cleveland's article appeared in theology

0077

1 in 2001 and I was extremely interested in this
2 and I thought it was an excellent discussion
3 and I think that's a very good source to cite.
4 Another good source on the nature of the
5 historical sciences is actually the famous
6 evolutionary biologist, Stephen Jay Gould, who
7 has written a number of excellent essays on it
8 and whose conclusions support the-- your
9 Indicator 2 as well.

10 Q. Dr. Meyer, I appreciate those remarks, but
11 would you also comment briefly on Indicator 6
12 over on page 13? And would you-- are your
13 remarks with respect to that indicator similar
14 as your remarks as to Indicator 2?

15 A. This is the indicator that reads "understand
16 methods used to test those historical
17 hypotheses cannot be confirmed by experiment
18 and/or direct observation"?

19 Q. Exactly.

20 A. It goes on from there. Yeah, I think that's--
21 you're saying that that-- is it something that
22 applies to the historical sciences, the
23 hypotheses cannot be confirmed by experiment or
24 direct observation. They cannot be confirmed
25 by direct observation of the cause involved,

0078

1 but they-- the historical hypotheses are tested
2 by-- it doesn't mean that they don't have
3 evidence that's relevant.

4 Q. Exactly.

5 A. My Cambridge dissertation was entitled "Of
6 Clues and Causes" and a subtitle that no one
7 wants to hear, but the point is that when
8 you're reasoning in historical sciences, you
9 reason from the clues back to the causes. You
10 can't observe the cause itself directly, but
11 you try to infer what it was from the evidence
12 left behind. Stephen Jay Gould said it very
13 well when he said that in the historical
14 sciences you must infer history from its
15 results. The results are actually pieces of
16 evidence that you may have in front of you, but
17 you have to infer what happened in the past to
18 have caused those pieces of evidence to come
19 into existence, and the cause is the part that
20 is not directly observable. And I think the
21 way your indicator has worded that is-- it
22 looks to me to be accurate because you're
23 saying that historical hypothesis cannot be
24 confirmed by direct observation. The
25 hypothesis would refer to the cause, and that

0079

1 is the thing that can't be directly observed.
2 There are plenty of things that can be
3 observed, that's the evidence that's left
4 behind.

5 Q. Yes, and would you also comment on additional
6 specificity on A, B, C and D on the right hand
7 side of the page under Indicator 6? That
8 begins--

9 A. I'm just briefly rereading it here. Actually,
10 I think that's excellent. Even your
11 indicator-- well, yeah, A, B, C, D, I think,
12 all support my understanding of the
13 methodological practice of the historical
14 sciences. There's a subtlety that you captured
15 in Indicator 6b where you say, "Historical
16 sciences may predict the kind of circumstantial
17 evidence that one would observe under each
18 hypothesis." Typically historical sciences are
19 not tested by prediction under controlled
20 laboratory experiments, they're-- under
21 controlled laboratory conditions rather, but
22 they do make weak sort of predictions about the
23 kind of evidence that you would expect to find
24 if a particular hypothesis were to be true, and
25 there is some confusion about that. The way

0080

1 you put that is really very precise and
2 consistent with the practices of historical
3 sciences.

4 Q. Well, thank you very much. I would now like to
5 move to-- by the way, do you believe that these
6 indicators are designed for student learning in
7 the high school level up through grades 12, do
8 you believe these are age appropriate?

9 A. Are you saying that you would actually-- the
10 indicators would be something the students

would learn in the process of learning the content of their textbooks or are they-- I'm unclear as to how these will be used. Are they things that will guide the teachers in forming the lesson and therefore probably be reflected in the lesson in some way?

Q. Guide a teacher in forming a lesson.

A. I think they're perfectly appropriate for that purpose.

Q. I'd like to turn to page 15, and in particular, the indicator benchmark-- or the benchmarks dealing with evolution. And this is in the high school, grade 8 through 12, Standard 3, Benchmark 3, where students are to understand-- and we've added major concepts of the theory of

biological evolution. And I would appreciate your commenting on the proposed revisions there and their appropriateness, and is this consistent with your view of how educational policies should implement--

A. In this case you're talking specifically about the definition of biological evolution and the proposed changes that your minority report has included in that definition?

Q. Yes. And that includes-- in addition to an expansion of the definition of biological origins, we would also add additional requirements that students understand those aspects of biological origins that are particularly scientifically controversial.

A. Yes. I would first start by pointing out-- well, a little background that I maybe didn't mention. I co-authored an article called The Meanings of Evolution in the book Darwinism, Design, and Public Education, and that book was peer reviewed by a biologist and a philosopher of science and a rhetorician of science. And I think that the contents of that article, the meanings of evolution, is important for understanding what should be specified as to

the definition of evolution. If you're going to teach students about the contemporary theory of biological evolution, it should be defined clearly. I would be extremely critical of the definition in your majority report. I think it's a very inadequate definition, the one that reads biological evolution descendent modification is an explanation for the history of the diversification of organisms from common ancestors. It's inadequate for a number of reasons. First of all, it only addresses one of the two main strands. There are two main parts, separable but related parts, in both Darwinian and contemporary neo-Darwinian biological evolutionary theory. And one part is the idea not just of descendent modification, but actually of universal descendent modification. And the definition did not capture that because descendent modification could have occurred in very limited groups within the biological

classification scene. So there's an ambivalence, rather an equivocation in that definition from the get-go. But secondly, the theory-- the contemporary theory of biological

evolution also has a mechanism involved. It's perhaps the most important part. And that mechanism is natural selection acting on random mutations and variations, and there is no discussion about-- in the-- the definition in the column on the left which comes from your majority report. So there's a huge missing element, a separate meaning element, a separate aspect of the theory of biological evolution that is not addressed. I can't imagine anyone on either side of this controversy accepting that definition as adequate. The neo-Darwinian and contemporary biological professors and evolutionary biology experts would find that an extremely inadequate definition. I think your additional specificity remedies that to a large degree, but I would recommend a couple of other things be added. I think the natural selection should be named.

Q. Dr. Meyer, turn to page 16.

A. Yes.

Q. And look at the Indicator 2. One of the problems with this is that a lot of the definition is incorporated in five or six different--

A. Yes, I see that. I would just add one recommendation to your column of additional specificity. I think you should say that biological-- when you talk about the idea that biological evolution possibly is an unpredictable and unguided natural process that has no discernible direction or goal, that is a correct understanding of the neo-Darwinian mechanism. The neo-Darwinists (unintelligible) like George Gaylord Simpson, have made that very clear from the beginning, that it was purely an unguided process. But I think you should name it right up front there. That would be my recommendation, the name of that unguided process is natural selection acting on random mutation. And, of course, there are other mechanisms that neo-Darwinist evolutionary biologists would want to mention in addition to that, but they are also unguided. But the main one is natural selection acting on random variation and mutation. And I think in your Indicator 1a there with your additional specificity, that when you say, "Biological evolution postulates unpredictable and unguided natural process," I

would put in a-- amend that to say, "Namely, natural selection acting on random variation" - and then continue - "that has no discernible direction or goal." I think the glaring absence in your majority report definition could be more fully remedied, but I think that

the way in which you have attached the definition with the additional specificity I think is on the whole excellent and altogether needed. I just think there's a little bit more that you could add.

Q. Okay. We have about seven more minutes, and so what I would like you to do is very briefly conclude your comments on the additional -- the additions to this evolution benchmark, and then I would like to move to the definition of science.

A. That's fine. We can move there now. I think -- well, I would make one more comment, and that is I think your Indicator 3d, which makes a clear distinction between micro and macroevolutionary changes is excellent and altogether needed, and I understand that it's criticized in the media and with -- I believe it was in the criticism -- the critical report I

read of this from Ken Miller, the distinction between micro and macroevolutionary is kind of a fiction created by anti-evolutionists. I have -- I published a peer review paper last fall with the proceedings of the Biological Society in Washington published out of the Smithsonian Institute, and in the opening section of that article I cited a number of papers in the evolutionary biology literature that make precisely the distinction that you're making. This is not some kind of creationists fiction or construction, nor is it something that only critics of Darwinian evolution discuss. This is a well established distinction within the literature of evolutionary biology, and the problem is well noted that the (unintelligible) and effect of microevolutionary processes does not seem to be sufficient to explain the macroevolutionary changes and innovations that appear in the history of life. So processes of speciation are not sufficient to generate the new organism, body (unintelligible) and to correspond to the (unintelligible) level of changes and other level changes that appear in

the history of life. So I would commend you for that particular additional piece of specificity and I would also add my voice of -- in response to your critics on that, I don't think it stands up to the literature. When we testified -- that is, when Dr. John Wells and I testified before the Ohio State Board of Education, we provided them with a bibliography of supplemental resources. This was a list of some 40 to 45 peer review scientific articles, and these were not written by advocates of design or even people who would define themselves as anything other than evolutionary biologists, but they were -- there was several articles in that group that were making precisely the point that this indicator makes, that there is clear distinction between micro

and macroevolution, and that it is at the present an important problem and needs to be solved. It is an unsolved problem as to whether microevolutionary processes can be extrapolated to account for macroevolutionary innovation.

Q. Thank you. Dr. Meyer, could you turn your attention to page 4? And in particular, would

you please comment on the proposed minority proposal to substitute the definition of science that essentially was adopted by Ohio in place of the definition in Draft 2 which is science as a human activity seeking natural explanations for what we observe?

A. I just-- I know time is short. I think that the definition of your minority report is much preferable, and I'll tell you why. You have made clear that you are neither mandating nor prohibiting the discussion of intelligent design in your science standards. You take a neutral stance on that. There is, of course, however, a debate about the theory of intelligent design going on within the larger scientific community. Michael Behe has famously advanced a paper designed in his book Darwin's Black Box that was critiqued by scientists such as Ken Miller, Brown University, and I-- they design arguments in peer review publications, William Dembski has, and others. One of the attempts to answer our argument is not an empirically based argument or an argument that there is a better explanation of design based on certain analysis

of evidence, but instead it is a response that is in essence philosophical in character which says that the design hypothesis cannot be considered as part of science. It is unscientific by definition. And so the-- and the nature-- this was-- when I published this article last fall with the Biological Society in Washington, one of the-- or the council that oversaw the journal there tried to distance themselves from the article and criticized it not on the basis of any scientific evidence or inaccuracy but by citing a definition of science that would make the design hypothesis lie outside the domain of science. And so what you have here in the definition of science within your majority report is actually something that is not innocuous, it's not neutral. It's actually taking sides in a debate that you have properly remained neutral about. And so it is actually part of the debate about the design, to say that the design can't be considered within science. And I think you should-- you are much better served to go with the definition in the minority report which remains neutral about the argument

between those who favor the design hypothesis and those who oppose it. Secondly, the

definition that claims that all explanations of natural phenomena must be tendered by reference to natural causes-- or must be explained by reference to natural causes is not consistent with the history of science. The-- for example, by that definition, Sir Isaac Newton could not be considered a scientist. For instance, the general (unintelligible) in the introduction to the Principia, arguably one of the greatest works of physics ever written, Newton makes a very elegant design argument from the fine tuning of the planetary system. He does the same thing in the Opticks. Moreover, when Darwin develops his case for-- his theory in the Origin of the Species, he argues specifically against various ideas of design and he does so in a manner that concedes that these are scientific. That is, he tries to show that they're inconsistent with the scientific evidence, and you can't critique a theory by scientific evidence that is at least presumptively scientific. So by the definition that you're adopting in Kansas, students would

not be able to read Darwin's criticism of either the design hypothesis in the Origin of the Species, and therefore they would have to read the book in the classroom. So it's not consistent with the history of science. And then thirdly, this idea that these-- to be scientific you must limit yourself to a naturalistic explanation, the so-called principle of methodological naturalism cannot be justified by any non circular criteria of scientific method. The so-called demarcation criteria and-- that were first proposed, for example, in the (unintelligible) trial of 1981 by Michael Ruse. Professor Ruse famously distanced himself from those criteria and the-- the philosophical literature, I think, is-- and that is to say, the literature of the philosophy of science that is the discipline that has the-- sort of appropriate jurisdiction over this question, philosophers of science study methods of science in the same way that scientists study nature. And when Michael Ruse proposed demarcation criteria in the (unintelligible) trial in the eighties, he was criticized very severely by other philosophers

of science showing the demarcation criteria could not do the work that he was trying to get them to do; namely, the demarcation criteria to be scientific-- a theory must be-- must involve prediction or it must explain by reference to natural law or must exclude non observable elements. These criteria invariably-- what I've learned in my own studies, in my own writing, is that demarcation criteria if applied consistently either excludes both Darwinism and design or they allow design to be included under the definition of science. They do not effectively discriminate between those

14 two competing hypotheses. And that makes sense
15 because Darwinism and design are not two
16 different types of things; they're two
17 different answers to the same question, namely,
18 how does life arise on earth.

19 MR. CALVERT: Dr. Meyer, thank you so
20 much for your testimony. Our time is up. And
21 so now it's the turn of Mr. Irigonegaray to ask
22 you some questions for about twenty minutes.

23 MR. IRIGONEGARAY: The Chair will
24 decide that.

25 DR. MEYER: I met Pedro before.

0093
1 Pedro, you were the moderator of the debate at
2 Washburn University in 1999 that I participated
3 in. I don't know if you remember that.

4 MR. IRIGONEGARAY: Oh, of course I
5 do. I'm here in a little bit of a different
6 role.

7 DR. MEYER: Well, actually it was--
8 you were a moderator--

9 MR. IRIGONEGARAY: Steve, hang on a
10 second. Whoa, you're taking up my time. Hang
11 on a second.

12 DR. MEYER: It's not that different
13 of a role for you.

14 CHAIRMAN ABRAMS: Dr. Meyer, please
15 proceed.

16 DR. MEYER: I can't hear you very
17 well. I don't know if you--

18 CHAIRMAN ABRAMS: Dr. Meyer, can you
19 hear me?

20 DR. MEYER: I can hear you, but it's
21 very muffled.

22 CHAIRMAN ABRAMS: Mr. Irigonegaray,
23 would you move down to the chair, please? And
24 you have twenty minutes. John, he can't hear
25 us very well, so will you tell him that Mr.

0094
1 Irigonegaray is moving down to the chair?

2 MR. CALVERT: Dr. Meyer, Mr.
3 Irigonegaray is moving down to my chair, so
4 he'll be-- so you guys can talk a little bit
5 better and hear each other better.

6 CROSS-EXAMINATION

7 BY MR. IRIGONEGARAY:

8 Q. Can you hear me now?

9 A. I can indeed.

10 Q. I have a few questions for you first that I
11 want to establish for the record. In your
12 opinion, your personal opinion, what is the age
13 of the earth?

14 A. Do you want my personal -- why are you asking me
15 about my personal --

16 Q. You're here to answer my questions. First of
17 all, what is your personal opinion as to what
18 the age of the earth is?

19 A. I understood I was being called as an expert
20 witness.

21 Q. What is your personal opinion as to what the
22 age of the earth is?

23 A. I'm unclear. I understand--

24 Q. The question is simple. What is, in your

25 opinion, the age of the earth?

0095

1 A. Well, I'm just wanting to clarify the ground
2 rules here. I thought I was being called as an
3 expert witness, so why are you asking me about
4 my personal --

5 Q. That's not the issue. Now, please answer my
6 question. What is your personal --

7 A. I would like to understand the ground rules
8 first. Why am I being asked about --

9 MR. IRIGONEGARAY: Mr. Chairman, if
10 he's not going to answer my questions, I'd ask
11 that his testimony be stricken from the record.

12 A. I'm happy to answer your question. I'd like to
13 know why you're asking about --

14 Q. (BY MR. IRIGONEGARAY) The "why" is not for you
15 to determine.

16 MR. Sisson: Mr. Chairman, I
17 understand Mr. Meyer's request to reflect some
18 confusion about the ground rules, and it is
19 quite appropriate for him to ask that the chair
20 of the committee, namely yourself, speak to him
21 concerning the appropriate ground rules. Thank
22 you.

23 CHAIRMAN ABRAMS: Dr. Meyer, can you
24 hear me now?

25 A. Yes, sir.

0096

1 CHAIRMAN ABRAMS: My name is Steve
2 Abrams, chairman of the science subcommittee.
3 And even though these hearings have been called
4 about the Kansas science curriculum standards
5 and particularly how they relate to the
6 minority report and particularly to the
7 question of the philosophical claims and the
8 religious claims of science and how to teach
9 science in Kansas, we are allowing the counsel
10 for the majority and the counsel of the
11 minority great latitude in trying to establish
12 their case. And Mr. Irigonegaray has elected
13 to ask virtually every question -- every witness
14 questions about their personal opinions about
15 certain things. And so we have granted him
16 that latitude, and so I would say that's where
17 we're going.

18 A. You would like me to cooperate with that?

19 CHAIRMAN ABRAMS: You can either
20 answer "yes," "no," or "I don't know," or
21 whatever you want to do, but that -- yes, I'd
22 like you to cooperate.

23 A. It's a transparently obvious strategy to
24 impeach the credibility of your witnesses, but
25 I will cooperate. So my answer to your

0097

1 question, Pedro, is that I -- my personal
2 opinions and my professional opinions are the
3 same. I think the earth is 4.6 billion years
4 old. I think the universe is --

5 Q. (BY MR. IRIGONEGARAY) No, just the earth. I
6 didn't ask you about the universe.

7 A. My opinion of --

8 Q. Mr. Meyer, please just answer my question. I'm
9 not asking you other opinions.

10 MR. SISSON: I'd simply request to
11 make a point here, ask the Chairman if I may
12 make a point. Mr. Chairman, would you instruct
13 the witness that there is no subpoena power
14 here and that he is under no compulsion to
15 answer and he would suffer no penalty if he
16 chose to decline to answer.

17 CHAIRMAN ABRAMS: He can answer the
18 questions to his extent. However, we would
19 like you to answer them.

20 A. Does that mean I can say something else about
21 the age of the earth?

22 CHAIRMAN ABRAMS: Mr. Irigonegaray is
23 going to ask the questions that he thinks
24 important and he may repeat the question. And
25 he will ask-- my guess is it will be a yes or a

0098

1 no answer or some side of an answer like that.
2 If you feel comfortable answering that, say
3 "yes," or if you don't know, say you don't
4 know, whatever it is. I mean, be truthful and
5 answer however you feel comfortable answering.

6 A. Right. But may I say anything more about the
7 age of the earth, then?

8 Q. (BY MR. IRIGONEGARAY) I'm the one asking
9 questions here, Mr. Meyer, and all you need to
10 do is to answer my question.

11 A. Okay. I think the age of the earth is 4.6
12 billion years old. That's both my personal and
13 my professional opinion. I speak as someone
14 who is trained as a geophysicist--

15 Q. I'm not asking you about that. I just asked
16 you for a number, and you have given it to me.

17 A. Okay. That's all you want is the number?

18 Q. My questions are pretty clear, Mr. Meyer.

19 A. You're not interested in the answer, you're
20 interested in the--

21 Q. Do you accept the general principle of common
22 descent that all life is biologically related
23 back to the beginning of life, yes or no?

24 A. I won't answer that question as a yes or no. I
25 accept the idea of limited common descent. I

0099

1 am skeptical about universal common descent. I
2 do not take it as a principle; it is a theory.
3 And I think the evidence supporting the theory
4 of universal common descent is weak.

5 Q. Do you accept that human beings are related by
6 common descent to prehominiid ancestors, yes or
7 no?

8 A. I'm not sure. I'm skeptical of it because I
9 think the evidence for the proposition is weak,
10 but it would not affect my conviction that life
11 is designed if it turns out that there was a
12 genealogical continuity.

13 Q. Based upon your understanding, do you have an
14 alternative explanation for the human species
15 if not common descent from prehominiid
16 ancestors?

17 A. That is not my area of expertise. I work at
18 the other end of the history of life, namely
19 the origin of the first life in the Cambrian
20 phylum.

21 Q. Do you have a personal opinion as to the
22 question I have just proposed to you, which is
23 if you do not believe that human beings have a
24 common descent with prehomimid ancestors, what
25 is your personal alternative explanation for
0100
1 how human beings came into existence?
2 A. I am skeptical about the evidence for universal
3 common descent and I'm skeptical about some of
4 the evidence that has been marshaled for the
5 idea that humans and prehomimids are connected.
6 But as I said, it wouldn't bother me
7 (unintelligible) stronger than I presently
8 think.
9 Q. What is your personal opinion at this time?
10 A. That I'm skeptical about the Darwinian accounts
11 of such things, but that it wouldn't bother me
12 if it turned out to be different. I think my--
13 I also would tell you that humans and the rest
14 of the non human living world, that humans have
15 qualitatively different features that I think
16 are very mysterious and hard to explain on any
17 materialistic account of the origin of human
18 life.
19 Q. You think it's wise for science without a
20 supernatural model to attempt to answer those
21 questions that we still don't understand?
22 A. You know, I don't really work in that area, so
23 I'm not going to venture any more opinions
24 about the topic.
25 Q. Were you provided the minority report for your
0101
1 testimony here today?
2 A. Yes, I have it in my lap.
3 Q. Were you also provided with Draft 2, the
4 majority opinion?
5 A. I have the majority opinion insofar as it
6 applies to your evolution standards.
7 Q. My question was, were you provided Draft 2 of
8 the majority opinion in total, yes or no?
9 A. I do not-- I don't understand your question,
10 sir. I have something in my lap call Proposed
11 Revisions to Kansas Science Standards, Draft 2.
12 Is that what you're referring to?
13 Q. Is that the only document that was sent to you,
14 proposed revisions?
15 A. I also received Ken Miller's critique of it.
16 Is that helpful?
17 Q. Are those the only two documents that Mr.
18 Calvert sent you?
19 A. Yes, I suppose it is.
20 Q. Did you read the grade 8 through 12 standards
21 in Draft 2?
22 A. Yes.
23 Q. Did you review the standard of inquiry which is
24 part on how science should be taught?
25 A. Yes.
0102
1 Q. Where does Draft 2 say in any place that
2 teachers should not or cannot discuss critiques
3 of evolution and alternative perspectives?
4 A. It doesn't. What I like about the minority
5 report--

6 Q. No, just-- no, Mr. Wells (sic), all you need to
7 do is--
8 A. -- criticisms--
9 MR. IRIGONEGARAY: This is just
10 inappropriate.
11 A. No, you're inappropriate, sir.
12 Q. (BY MR. IRIGONEGARAY) Listen, all you have to
13 do is answer my question.
14 MR. IRIGONEGARAY: Would you please
15 put up page 1-- would you please put up on the
16 screen page 1 and 2 of the standards for 8 and
17 12 education, please, Mr. Calvert? Mr. Wells
18 (sic), we'll get along better if you just
19 answer my questions.
20 CHAIRMAN ABRAMS: Dr. Meyer.
21 MR. IRIGONEGARAY: Dr. Meyer.
22 A. I'm really not interested in getting along.
23 I'm interested in the truth. And your mode of
24 questioning doesn't seem to be directed in that
25 vein. You're trying to impeach my credibility
0103
1 with yes and no answers, and I'm not going to
2 allow you to do that.
3 MR. IRIGONEGARAY: Just answer the
4 question. That's all you need to do.
5 MR. CALVERT: Which one do you want?
6 MR. IRIGONEGARAY: Standards for 8
7 through 12, please. Page 1 and 2 of the
8 standards.
9 MR. CALVERT: Page 1 and 2 of what?
10 MR. IRIGONEGARAY: Of the standards.
11 Since they're apparently having difficulties
12 with that--
13 MR. CALVERT: Why don't you go to
14 another question?
15 MR. IRIGONEGARAY: I'll stay on this
16 subject, Mr. Calvert.
17 Q. (BY MR. IRIGONEGARAY) Let me read to you, sir,
18 from Draft 2 relevant parts of the high school
19 standards. And the reason I want to do this is
20 I want to make it perfectly clear that our
21 standards do encourage critical thinking, open
22 discussion and the entertainment of alternative
23 hypotheses.
24 A. Super. More power to you. The additional
25 changes that make clear some of the criticisms
0104
1 that should be presented to students are then
2 building on that already sound foundation.
3 Q. From the standards, number one, "actively
4 engages in asking and evaluating research
5 questions." You would agree that that is
6 important, do you not?
7 A. Oh, I do.
8 Q. Number two, "actively engages in
9 investigations, including developing questions,
10 gathering and analyzing data, and designing and
11 conducting research." You would agree with
12 that, would you not?
13 A. I do, and that's one of the reasons that I
14 think the specificity of the minority report is
15 very desirable because it lays out some of the
16 criticisms of Darwinian theory that students

17 should know about.
18 Q. Do you see anywhere in the standards the use of
19 the term Darwinian theory?
20 A. Well, I see your term biological evolution
21 which, to anyone who knows the current
22 literature, means neo-Darwinism.
23 Q. So your testimony to this committee and to the
24 nation that's listening to your testimony is
25 that biological evolution equals Darwinian

0105

1 theory?
2 A. My testimony is that the current orthodox
3 theory of biological evolution is still
4 neo-Darwinism. It is-- my testimony is also
5 that there are-- there are amendments and
6 alternative versions of evolutionary theory
7 that are also in the scientific literature, and
8 they are in the scientific literature precisely
9 because of inadequacies in neo-Darwinism that
10 students need to learn about. But their
11 textbook version of the theory is still
12 neo-Darwinian evolution.
13 Q. Number three, "actively engages in conducting
14 an inquiry formulating and revising his or her
15 scientific explanation or model (physical,
16 conceptual or mathematical) using logic and
17 evidence and recognizing that potential
18 alternative explanations and models should be
19 considered." You have no problem with that, do
20 you?
21 A. No, I think that's good.
22 Q. Four, "actively engages in communicating and
23 defending the design results and conclusion of
24 his or her investigation." You have no problem
25 with that, do you?

0106

1 A. No.
2 Q. Do you see anywhere in the standards the word
3 "unguided"?
4 A. In your original standards, no.
5 Q. It is a fact, however, that in the suggested
6 modifications, the minority has interjected the
7 word "unguided," correct?
8 A. Correct.
9 Q. And the word unguided is interjected in the
10 minority report by the minority writers,
11 correct?
12 A. Correct.
13 Q. And that is a word that you disagree with?
14 A. No. I think that is a correct description of
15 neo-Darwinian evolutionary theory.
16 Q. Do you see neo--
17 A. Let me tell you why, sir.
18 Q. No, just answer my question, please.
19 A. No, I'm going to tell you why.
20 Q. No, listen, Mr.-- you're not listening to me.
21 You're not here to direct the questioning. I
22 am. Do you see anywhere on the standards
23 written by the majority of the writing
24 committee for the State of Kansas Board of
25 Education on behalf of Kansas children the

0107

1 words "neo-Darwinism" written anywhere?

2 A. No, but if your standards are accurate, then
3 that is the presumed context for understanding
4 biological evolution.
5 Q. Presumed by you, right, sir?
6 A. No, by George Gaylord Simpson and the entire
7 evolutionary biology community from the 1940s
8 onward that has set the perceived theory of
9 biological evolution. It is now being
10 challenged, but that's one of the reasons that
11 you need the criticisms that are in the
12 minority report to give the-- your curriculum a
13 more complete balance.
14 Q. You say that religious-- it is important in
15 your opinion that religious views should be
16 kept separate from science?
17 A. I think the basis of your curriculum should be
18 the scientific evidence.
19 Q. My question was, do you agree that religious
20 views should be kept separate from science?
21 A. I think the basis of the curriculum that is--
22 you're not going to allow me to give a full
23 explanation of my views on that. I think there
24 are some scientific topics that are
25 incorrigibly philosophical and origin is one of
0108 them, and that's one of the reasons that almost
1 everyone in this discussion has a take on what
2 the science-- the implications of the sciences
3 are.
4 Q. Is it your opinion--
5 A. May I continue, sir? If you're going to badger
6 me, you're not going to get any understanding
7 of what I really think.
8 Q. I just want you to answer my question, and you
9 did. Is it your understanding and your
10 position that science--
11 A. Your question, sir--
12 Q. -- that as evolution--
13 A. I'm not going to allow that to stand. I have
14 expertise in this area. You need to hear a
15 full answer.
16 Q. I don't need to hear what you think is your
17 expertise, sir. That's not the issue here.
18 A. But it is the issue.
19 Q. You're here to answer my questions. Is it your
20 opinion that the way evolution is taught in
21 mainstream science classes across America
22 today, that it is based on a theistic view?
23 A. It is based on a theistic view?
24 Q. Yes.
0109 1 A. I didn't hear your--
2 Q. Yes. Is it your opinion that as mainstream
3 science today teaches across America evolution
4 theory, that it is based on a theistic view?
5 A. I am not understanding whether you are saying
6 the word "theistic" or whether you are saying
7 the word atheistic, sir.
8 Q. Theistic.
9 A. Say it again.
10 Q. With a "T".
11 A. Do I think it is based on a theistic view,
12 evolution?

13 Q. The way it is taught in mainstream science
14 classes across America today.
15 A. No, I don't think it's based on a theistic
16 view.
17 Q. Do you believe that it should be free of
18 supernatural implications?
19 A. What is "it"?
20 Q. Evolution teaching in mainstream science
21 curriculums across this country.
22 A. I think your question is ill formed, sir.
23 Q. Well, it may be to you, but my question-- and
24 I'll repeat it. Should the teaching of
25 science-- and let's say with Kansas. Should
0110 the teaching of science curriculum in Kansas as
1 it relates to evolution be free-- completely
2 free of supernatural causes?
3 A. I don't think anyone is proposing a
4 supernatural cause.
5 Q. So your answer is yes?
6 A. Well, I think you should teach the scientific
7 evidence for the two parts of neo-Darwinian
8 theories that I mentioned before. That's what
9 the-- and I think you should teach the
10 scientific evidence that critiques it. That's
11 what I think you should do.
12 Q. What is your definition of neo-Darwinism?
13 A. It's the idea that-- of universal common
14 descent plus the idea that the change that
15 occurs during the history of life is produced
16 by natural selection acting on random
17 variations and mutations of various sorts.
18 Q. And you would disagree with that?
19 A. I disagree with that, but I would also insist
20 that that is the canonical received standard
21 version of evolutionary theory that is taught
22 in the textbooks in this country and which is
23 advanced by most evolutionary biologists.
24 Q. Is it your opinion that Draft 2 represents a
0111 materialistic and atheistic perspective?
1 A. No, it's my opinion that your majority report
2 does not adequately inform students about the
3 scientific criticisms of biological evolution
4 that exist in the scientific literature. And
5 that your minority report partially remedies
6 that deficiency.
7 Q. And you would agree, would you not, sir, that
8 those views that you are suggesting compose a
9 very tiny minority in today's scientific
10 community?
11 A. I don't concede that. I don't have data on the
12 number of scientists who are skeptical of
13 Darwinism. No one has ever surveyed that, but
14 we know that 400 scientists at least have
15 signed a statement of dissent from the idea
16 that natural selection is sufficient to produce
17 the complexity of life. Of the 400 scientists
18 who signed yesterday as members of the Russian
19 National Academy of Embryologists, there is
20 significant scientific dissent from Darwinism.
21 The proposition before this Kansas State Board
22 is whether or not students should be permitted
23

24 to know about that, and I think that is-- the
25 answer to that should be an obvious yes. You

0112

1 talked a minute ago about whether or not--

2 Q. There is no question--

3 CHAIRMAN ABRAMS: Would you please
4 tell the witness that there is no question?

5 MR. IRIGONEGARAY: There's no
6 question on the floor, sir. Just hang on a
7 moment. I have no further questions of you.

8 EXAMINATION BY CHAIRMAN ABRAMS:

9 Q. Dr. Meyer, this is Steve Abrams.

10 A. Hello, sir.

11 Q. I have a couple of questions. I heard you say
12 earlier that-- I understood you to say that
13 there are some different methods of testing
14 historical science other than that which has
15 been posited by Dr. Popper. Did I understand
16 correctly and, if so, would you comment on
17 those other methods?

18 A. Certainly. The Popperian idea of falsification
19 by conviction under controlling drug has been
20 criticized in-- by other philosophers of
21 sciences as being inadequate, and whether or
22 not it is universally inadequate for all of
23 science, it is, in my opinion, clearly
24 inadequate for capturing the methods that are
25 used by historical scientists. And what

0113

1 historical scientists do is precisely what your
2 amplification in the minority report amplifies.
3 They test theories by (unintelligible)
4 explanatory power of their predictive capacity,
5 but mainly their explanatory power against
6 their-- against competing hypotheses.

7 Q. So that's the reason that you feel it is
8 inadequate, is because of the explanatory
9 power?

10 A. That what is inadequate, sir?

11 Q. That you were saying that the idea of
12 falsification is inadequate? Is that what
13 you're saying?

14 A. Yes, that-- there's a wealth of literature in
15 the philosophy of science now showing that
16 scientific theories-- that explanation of
17 already known facts is as important or more
18 important to testing of scientific theory as
19 predictions. Prediction plays an important
20 role in some sciences. In the historical
21 sciences, explanation of already known facts
22 and comparing the explanatory power-- competing
23 explanatory power with their hypothesis is the
24 main way of testing, although as your minority
25 standard-- was it 6? I don't-- let me get the

0114

1 exact page-- I think correctly captured the
2 idea that historical theories do make
3 predictions about the kind of circumstantial
4 evidence that should be present or that might
5 be found. And so there is a kind of weak sense
6 in which prediction still plays a role
7 historical-- in the testing of historical
8 hypotheses, but the most important mode of

testing in historical scientific hypotheses is by assessment of comparative explanatory power.

Q. Earlier you talked about the demarcation between science and religion. You have some work in that area, I take it?

A. Yes, I've published several articles on that. I mentioned The History of Science and Religion in the Western Tradition as edited by a panel of distinguished figures of historical science, and my article titled the Demarcation of Science and Religion with the encyclopedia entry on that topic.

Q. So is it important in your mind that we should be able to prepare students to distinguish the data and testable theories of science from those of religious and philosophical claims that are made in the name of science?

A. You're referring to the-- some of the language in the (unintelligible)?

Q. Yes, and the question to which we are addressing at the science committee here.

A. Yes, I think that it's important to the extent that that is possible, but there are some scientific theories, as I mentioned, that have incorrigibly philosophical elements. And that is-- you know, that's where demarcation gets difficult.

Q. So the line is rather blurred, is what you're saying?

A. Well, what I would say-- was unable to say in response to your previous question there was that I think that Darwinian evolution is a scientific theory. It's an historical scientific theory by my study of the methodological patterns of the (unintelligible), but it also is a scientific theory that raises larger philosophical issues. The theory of intelligent design, as I understand, you're not inquiring, but we endorse that decision as a policy decision. Also, is an historical scientific theory that raises larger philosophical implications, so

the two are equivalent in that respect, and they are, in fact, with respect to their attempts to explain the appearance of design in biological systems, they are competitor hypotheses.

Q. How would you differentiate between the idea of what might be considered testable theories of science versus those that are not testable theories of science?

A. Well, I think any proposition where-- well, let me back up. Where you have evidence that bears on the truth or falsity of a proposition, there is usually a way to test the proposition. If the proposition cannot be adjudicated by evidence, it becomes untestable.

Q. So if it's untestable, is that-- what is that?

A. That would be an untestable proposition.

Q. Okay. Do you think that it's important, therefore, to make certain that our students

understand the range of the controversy and why the controversy is generated?

- A. I definitely think it's important for them to do that, although our specific recommendation for how to do that is that students should be taught the evidence for the biological

evolution and they should be taught the current scientific evidences and arguments against them as they-- as those arguments appear in the scientific literature and as they are promulgated by scientific critics of the theory. And they should be permitted to know about alternative theories if a student or a teacher raises a discussion point about alternatives in the classroom. But those alternatives at this point should not be mandated.

CHAIRMAN ABRAMS: I have no further questions. Just a moment. Mrs. Martin has a question for you.

EXAMINATION BY MRS. MARTIN:

- Q. Dr. Meyer, my background is as a teacher, and I have not taught high school biology, but I have had several high school teachers give me this concern that the current textbooks now are seeming to present historical science as a fact, especially where this evolutionary issue is concerned.

- A. Can you rephrase your question? I'm not quite sure I understand what you're asking me.

- Q. Are you aware that any of the textbooks in high school science are presenting this historical science of evolution as a fact rather than as a historical science?

- A. Well, I think they are presenting it as an uncontested theory. And I don't accept that-- and most people believe that Darwinian theory is theory, but the problem is they don't present the scientific-- they only present the scientific evidence to support. They systematically exclude by omission the scientific evidence that challenges it. Very few textbooks do have anything, for example, about the Cambrian Explosion until very recent scientific literature includes Cambrian Explosion as a significant challenge to the neo-Darwinian consensus, and that is to say the (unintelligible) textbook theory of biological evolution. And the one or two sections that mention it do not explain that the Cambrian Explosion creates significant evidential challenge to the theory. So the-- I think the way some textbooks frame it as theory versus fact, I think that's the wrong way to frame it. I think everyone understands that biological evolution is a theory. The question is, is it

a well supported theory and are there criticisms of the theory that students should know about. I think there are sufficient criticisms and I think your hearings have been

probably structured to decide whether or not such criticisms exist.

Q. So if a student does receive only one side, he might infer himself that this is a fact rather than just a theory?

A. He might infer that it is an contested truth in science. And I understand that many students would possibly phrase it that way, that it was a fact. But the structure of the theory itself is such that I'm reluctant to call it-- to say that anyone claiming that it's a fact, that they claim it's so well supported that no one doubts it, that sort of thing. When I say someone, I mean people within the scientific community.

Q. And that's been making it hard for a lot of teachers to understand what their position should be on this. So thank you.

A. Exactly. I think-- and what you're getting at and what I-- if I may interrupt your questioning, is a theory that's presented in an

uncritical and dogmatic way in most textbooks-- and I think that is absolutely correct, it's presented that way. There's vibrant scientific discussion of the theory that includes some very significant criticisms of the theory, I know you've heard about from other witnesses this week. Really the only proposition before you, I think, is whether or not the students should be required to learn about some of those criticisms if they're also going to be required to learn about the theory. And I think the answer is clearly yes.

MRS. MARTIN: Dr. Meyer, that's the end of the questions. Thank you very much.

CHAIRMAN ABRAMS: Mr. Calvert?

MR. CALVERT: Mr. Chairman, our next witness is Dr. Angus Menuge, a professor of philosophy at Concordia University.

ANGUS MENUGE, Ph.D.,
called as a witness on behalf of the Minority,
testified as follows:

DIRECT EXAMINATION

BY MR. CALVERT:

Q. Dr. Menuge, would you please educate us on your background and qualifications to speak to the philosophical issues relating to the minority report and the Kansas science standards?

A. Yes. I have a bachelor of arts from Warwick University in England and I did my master's and Ph.D. degree at the University of Wisconsin-Madison. And the focus of my research was on intelligence action agency in the case of human beings. And since then I've done research on action theory, agency, philosophy of science and science and religion issues. In 2000, Concordia University, where I have worked for the last fourteen years, posted the design and critics conference which matched

up the leading proponents of intelligent design and their best critics on the defense of Darwinism. And out of that conference there then emerged the Cambridge University Press book *Debating Design: From Darwin to DNA*, which is a peer review book and it shows the different views on origins, including standard Darwinian evolution, self-organization, theistic evolution and intelligent design as one piece of evidence, but, of course, there is

an ongoing controversy. And all of this really relates to the topic of methodological naturalism, which I'm going to explain about.

Q. As sort of a preliminary question, I believe-- would you agree that at some point I sent you an e-mail that had attached to it the minority report?

A. You sent an e-mail which had the website for the Kansas science standards, and I was able to access the minority report and the majority report. I did look at it. In fact, I have read the whole majority report, but most of it is completely irrelevant to the questions that we are discussing today because it's only in the higher grades that issues of evolution are really being discussed.

Q. Do you know of any instance where any information was withheld from you regarding the Kansas science standards?

A. No information whatsoever was withheld, and I imagine that with people's business schedules, some people just stayed on task and looked to the information that was within their expertise.

Q. Would you please-- I believe you have prepared

written testimony, and if that has not been distributed--

A. It has.

Q. It has been distributed, okay. What I'd like you to do-- and I believe we have a Power Point that we will bring up. Do you want me to bring that up now?

A. Not yet. I'll tell you when to bring it up.

Q. What I might do is get it started anyway, but what I would like you to comment on is the extent to which the standards-- the extent to which Draft 2 standards incorporate implicitly or explicitly the idea of methodological naturalism--

A. All right--

Q. -- and-- let me finish. And I would like you to comment on the distinction between methodological naturalism and philosophical naturalism, whether in practice there is any real distinction. In other words, in terms of the objective observer, the person who is receiving information, would the effect of methodological naturalism be less than, equal to, or greater than the effect of the observer being, you know, educated in a philosophical

1 naturalistic world view, and then the effect
2 that it has on religion.
3 A. Okay. First of all, philosophical naturalism,
4 that is a metaphysical thesis. One definition,
5 the one used by the Supreme Court in the
6 Webster Dictionary, "doctrine of cause and
7 effect laws as of physics and chemistry are
8 adequate to account for all phenomena and
9 theological concepts of nature are invalid."
10 Theology basically means design. So that's
11 saying that the undirected cause and effect
12 laws of physics and chemistry suffice to
13 account for anything in reality.
14 Methodological naturalism is a role of
15 scientific matter that says that scientists
16 should proceed as if philosophical naturalism
17 is true. Now, if that's assumed, what that
18 means is that students will only be provided
19 with the evidence that supports the idea that
20 there are no causal designs in nature. So in
21 its effect on students, methodological
22 naturalism is not significantly different than
23 philosophical naturalism because they will only
24 be presented with that evidence that supports a
25 naturalistic position. This is-- the first

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1 slide here is the power of methodological
2 naturalism depends on the fact that teachers
3 are dealing with a student, a student who
4 thinks he's doing a science and has no notion
5 that theology and politics are all at stake.
6 It is a theory they put in the student's mind,
7 an assumption that ten years hence is already
8 forgotten. Its presence is unconscious and
9 will condition the student to take one side in
10 a controversy which the student has never
11 recognized as a controversy at all. That's
12 adapted from a quote that C. S. Lewis made about
13 the teaching of English. But the same point
14 applies that we have here a philosophical
15 assumption that will bias the presentation of
16 evidence without the student realizing that
17 that assumption is operative. And to go to the
18 question of is it in the standards, in the full
19 report on Roman Numeral page 10 of the Kansas
20 science standards, there is discussion of the
21 nature of science, and the first sentence--
22 this is also cross-referenced on page 4 of the
23 minority report. "Science is human activity of
24 systematically seeking natural explanations."
25 Okay, so it's saying that you can only look for

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1 naturalistic explanations, which is what
2 methodological naturalism says you should do.
3 The words methodological naturalism are indeed
4 not in these standards, but the concept is.
5 It's also repeated at the end of the paragraph
6 saying, "As it's practiced in the late 20th and
7 early 21st century, science is restricted to
8 explaining only the natural world using only
9 natural cause," okay, which is simply a
10 statement of methodological naturalism. It
11 comes up again as well in page-- on page 99 of

the Kansas standards, discussing knowledge, Standard 7, history and nature of science, Benchmark 2, understanding scientific knowledge described to explain the physical world in terms of matter, energy and forces. Well, that basically means in the terms of naturalism as defined by philosophical naturalism. In other words, scientists must proceed as if philosophical naturalism is true. Now, by not disclosing that assumption it may, in fact, be even worse than if the assumption was used but it was disclosed because then it could be discussed, and then all those who, for example, have a theistic world view could at least see

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that this view was, in fact, biased against their view because it means that they can never consider any evidence that could possibly support a theistic world view. They can only see the evidence that would tend to support secular religion such as secular humanism or ideologies such as naturalism. They can never see any evidence that might possibly even indirectly support a theistic religion. Now, what I'd like to do-- can I continue with the various problems that methodological naturalism--

Q. Yes.

A. If you go to the next slide, okay, I want to deal with three sets of problems, okay. First of all, there is a problem because methodological naturalism is being used in the context of a controversy. Cut down to its absolutely most basic central claim, Darwinian evolution claims that all apparent design in nature is an illusion, it's something to be explained away. Things look designed, as author Richard Dawkins admits, but he feels his job is to explain away that as an illusion that's caused by undirected causes. On the

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other hand, for example, intelligent design, it's not the only opponent, by the way, of Darwinian evolution. Intelligent design provides empirical scientific criteria for detecting design in nature. Detecting design but not detecting the designer. It's quite true that science doesn't have to be in the business of saying who the designer is. But even in the human case, we can frequently identify-- for example, here's an artifact. Even though we don't know who the human designers of that artifact were, or we can have a murder case and we never do actually find who the murderer is, we can still distinguish between murder, accidental death and natural death. Now, whether, in fact, that designer is supernatural is certainly another question. But scientists don't need to answer that question in order to detect design in the first place. They're separate questions. So anyway, that is the scientific controversy, and what I'll be arguing is that methodological

naturalism is a bad thing because it basically denies the controversy and therefore prevents students from being informed about both sides

of the evidence. Students above all should be informed. So what does it take to be informed? Full disclosure of the evidence is one of the most important things. I'm going to look at the effect of methodological naturalism in science education.

If you'd like to go to Slide 3, please. Basically methodological naturalism says scientists should proceed as if there is no design in nature. So that prevents the Darwinian claim that design is an illusion from being tested. If you make the claim that design is an illusion, the only thing that could prove that you are mistaken is some evidence that would show that at least some of the design is real. If there can be by definition no such evidence, then there is no way to ever refute the claim that design in nature is an illusion. It's not, by the way, that the Darwinian claim itself is unscientific. It's perfectly scientific and it's perfectly testable. It is rather joining the Darwinian claim to methodological naturalism that insulates it from being tested because it means that only the evidence that

supports the theory can be presented, not the evidence that would count against it. So-- and by the way, I am appealing here in some standards of education to the standards that come from the National Assessment Governing Board under the auspices of the No Child Left Behind Act. They argue that education should be secular, neutral and nonideological, and they define all of those terms. Secular means that they don't favor or oppose any religious perspective. They stay neutral as between religions, so that would mean neutral between theistic and atheistic religions. And neutral and nonideological means, among other things, that they will not advocate a single perspective on a matter of controversy. That's what it means to be neutral and nonideological. So the argument I'm going to make here is that methodological naturalism does not properly inform students. The only way you can properly inform students on a matter of controversy is to inform them of both sides of the controversy, but, in fact, you have a single perspective. This would be analogous to what-- some companies like Enron where you provide

only positive financial indicators about the company and allow people to conclude that your company is, in fact, healthy, or notorious tobacco company scientists who presented only that evidence bringing out the beneficial results of tobacco. This is a failure of full disclosure, okay. It's what's known in logic

8 as a fallacy of suppressed evidence where you
9 make a conclusion seem much more certain than
10 it actually is by only presenting that evidence
11 which supports the conclusion while suppressing
12 the evidence which points in a contrary
13 direction. So that's how it relates to
14 education. I think students should be informed
15 of both sides and then be allowed to make a
16 decision on the basis of the evidence.

17 And I'd like to, as well, comment on two
18 other features. How does methodological
19 naturalism adversely impact scientific
20 explanations of origins? Well, as we just
21 heard from the previous speaker, Stephen Meyer,
22 the origin science, what we're looking for is
23 inference to the best current explanation.
24 That is, there's a variety of data available
25 and there are a variety of competing

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1 explanations, and what the scientist does is
2 select that explanation which gives the best
3 account tested against its competitors. Now,
4 the crucial thing here is this inference is
5 only as good as the range of competition that
6 you allow. It's not good saying, "Yes,
7 yesterday I again won my footrace which I run
8 by myself." Oh, because there weren't any
9 other competitors. This inference is only as
10 good as the range of competitors that you have.
11 The rival explanations, we should look at
12 those, compare them, and then select the best.
13 Well, there are indeed more-- there is indeed a
14 variety of possible naturalistic explanations.
15 There can be more than one naturalistic
16 explanation; however, all the same,
17 methodological naturalism does reduce, it
18 artificially restricts the pull of competing
19 explanations. And as a result, it weakens the
20 conclusions that you draw. Students aren't
21 being asked to do an inference to the best
22 explanation but rather an inference to the best
23 naturalistic explanation with naturalistic
24 defined in the way that we have discussed.
25 It's very important here to see that when

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1 abduction or inference to the best explanation
2 is used explanations are tested against each
3 other, not just against the data, so it's no
4 good saying we have overwhelming evidence for
5 this view if no other views are being compared.
6 They're tested against each other, not just
7 against the data. And also, we have to realize
8 that inference to the best explanation is
9 unstable. New evidence can overturn it, and
10 there's some very good stuff in the Kansas
11 science standards about that, which I
12 appreciate. But also, it can be overturned by
13 new explanations. And the important thing is
14 to keep that pool of explanations open.

15 Now, the third thing I want to comment on
16 is the issue-- you asked me at the beginning
17 about the issue of the impact upon religion.
18 Basically here it's very, very important to

19 emphasize that it's not the case that being
20 religious means being theistic. That's simply
21 a fallacy. According to the consensus,
22 philosophers of religion such as you have, for
23 example, the work of people like Tillich who
24 talked about the ultimate concern that people
25 have, a great theologian and philosopher of

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1 religion, but also according to the United
2 States law, there are certainly humanistic
3 religions. You can certainly be religious
4 without believing in God. Atheism is just as
5 religious a position as theism, and certainly
6 secular humanism is being recognized as being
7 religious for First Amendment purposes. The
8 Smith case in 1987 is particularly important
9 there. So in that environment, what does it
10 mean for science to be taught in a secular way
11 as defined by the National Assessment Governing
12 Board? It seems to be a pluralistic context.
13 You can no longer be neutral by saying, "Here's
14 a neutral position." Neutrality, rather, is
15 obtained by not taking sides with respect to
16 those various religious perspectives. You
17 can't side with any one one of them. That
18 isn't neutral. Well, I would argue that
19 methodological naturalism, in fact, does side
20 with non-theistic religions. There isn't any
21 direct logical implication between scientific
22 evidence and religious view; however, if
23 science is taught in such a way that you can
24 only be presented with that evidence which is
25 consistent with naturalism, it's natural for

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1 students to conclude that all the evidence
2 points there and that no evidence points or
3 could even gently suggest that the theistic
4 religious claims about the world could be true.
5 Those views are not allowed to be provided with
6 any evidence. Now, it's quite true, of course,
7 that science needs to generate its evidence and
8 not worry about the fallout. It might be that
9 some evidence of science that is generated
10 makes theists uncomfortable because it looks
11 like the world is undirected. It might be that
12 some evidence that is generated by science
13 makes secular humanists uncomfortable because
14 it looks like the world is in some respects
15 designed. Neutrality here is achieved by not
16 prejudging the outcome of that evidence. The
17 evidence needs to be allowed to speak for
18 itself. And if it happens to sometimes favor
19 one religion or another, that's what it does,
20 but the important thing is that education and
21 the State should not by its assumption-- by a
22 philosophical assumption from the get-go favor
23 certain religions. Even if it's not
24 intentional, it should be avoided. There
25 shouldn't be any favoring of secular humanism

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1 from the assumption, and I believe that is what
2 is occurring if you use methodological
3 naturalism.

4 Let me-- let's see. I could now move to
5 a-- the summary slide. I want to go through
6 that. Or do you have some other questions that
7 you want?

8 Q. Well, at some point, Dr. Menuge, would you
9 comment on the propriety on-- you know, the way
10 in which the minority report deals with this
11 and is that an appropriate way to deal with it
12 and an appropriate way to solve the problem?

13 A. Right.

14 Q. Do you want to go to the next slide now or do
15 you want to cover that first?

16 A. No, that's the last summarizing slide. Let me
17 just talk about this. The proposed changes to
18 the nature of science paragraph that you've
19 made on page 4 of the summary in the minority
20 report I think are very good because they are
21 neutral. The sentence saying that science is
22 the human activity of seeking natural
23 explanations observable around us struck-- and
24 we have a neutral account of science in terms
25 of its methodology. Empirical methods,

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1 hypotheses testing, measurements, all those
2 kind of things which good scientists do, but
3 with no reference to a methodology that tends
4 to screen the evidence so that it will favor
5 certain metaphysical and religious
6 explanations. I think it's an excellent
7 revision.

8 Q. Would you also comment on the provision on page
9 22?

10 A. Yes.

11 Q. Here it is. I have it on the screen.

12 A. Yeah, that's very good. No one objects to the
13 fact that science is about the natural world.
14 It's just that we may-- in studying the natural
15 world, we don't necessarily end up there, at
16 least if nature is being defined in those
17 terms. As we heard from Mr. Barham earlier,
18 some people have a wider picture of what nature
19 is. But even so, it's important to say that
20 plenty of scientists don't think matter, energy
21 and forces exhaust reality because they believe
22 in information, the obvious fact that human
23 beings intentionally design things, and that in
24 my area, philosophy of agency, most
25 philosophers do not believe that the human

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1 ability to design things can be reduced to
2 those kind of naturalistic causes. I think
3 that becomes quite astute because no one
4 denies, for example, that there is a science of
5 forensics that can determine whether or not
6 somebody was intentionally murdered. There's a
7 design inference that's being used all of the
8 time. And it can be done, notice, without
9 settling the metaphysical question of whether
10 people have souls or not. It's a complete red
11 herring to suggest that the only way that you
12 can make design exist is by loading in lots of
13 metaphysical conclusions about which obviously
14 scientists will disagree for their personal and

religious reasons. So I think that that's an excellent simple correction to the standards. Q. I'd like to take you back just briefly to page 4 and-- actually the bottom of page 4 and the top of page 5 and the sentence "According to many scientists the core claim of evolutionary theory is that apparent design of living systems is an illusion." I believe you testified to that already. Other scientists testified to that. Do you generally agree with those proposed changes?

0139 A. Yeah, they are very good changes and it's important to understand, you know, what they mean. The reason that Darwinian evolution implies the apparent design of living systems is an illusion is because it doesn't have the resources to produce anything that is actually designed. So obviously there are going to be people who disagree with that conclusion. If something appears designed, one view is it only appears so, and the other view is it really is. The same issue arising all the time with human action, depending on whether it's accidental or intentional, which is an area of my expertise. So I agree with that and also very much with the fact that you need a mandate in order to prohibit teaching about the scientific disagreements. People need just simply the freedom to present the information that they believe is relevant on both sides of the controversy, and the goal is to properly inform students. You cannot have properly informed students on a controversy unless they know both sides of the controversy. And that's what it means to be neutral and nonideological.

Q. Did you want to conclude with this slide or--

0140 A. Yes. I will argue that methodology naturalism, though those words do not occur there, the concept does. And the strikeouts that have been proposed by the minority report do remove that. They are correct to remove that because methodological naturalism prevents students from being properly informed on matters of scientific philosophy, a failure of full disclosure. It's not neutral and nonideological because it advocates a single perspective on a controversial issue, and it fails to be secular because it will favor-- even if that's not its intention, it will favor secular humanism and other naturalistic religions of theistic and other non naturalistic religions by only allowing the evidence that favors the former religion to be presented.

MR. CALVERT: Thank you very much, Dr. Menuge. Mr. Irigonegaray, your witness.

CHAIRMAN ABRAMS: Mr. Irigonegaray, you have fifteen minutes.

MR. IRIGONEGARAY: Thank you.

CROSS-EXAMINATION

BY MR. IRIGONEGARAY:

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- 1 Q. Sir, I have a few questions that I'd like to
2 ask you for the record, please. What is your
3 personal opinion as to what the age of the
4 earth is?
5 A. I don't know. And that's my final answer.
6 Q. Do you have an opinion as to what the age of
7 the earth is?
8 A. I'm not giving an opinion.
9 Q. I didn't hear you.
10 A. I am not giving an opinion.
11 Q. You don't have any personal opinion as to what
12 the age of the earth is?
13 A. I have no opinion.
14 Q. Do you find that to be rather an oddity since
15 you consider yourself an expert on all of these
16 areas?
17 A. Absolutely not, because my understanding of
18 historical sciences has led me to-- studying
19 them from the perspective of philosophy of
20 science has led me to believe that inference to
21 the best explanation is much less certain than
22 other areas of science. And so the conclusions
23 are much more tentative and there are other
24 competing explanations that can be provided.
25 Q. Do you accept the general principle of common

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- 1 descent that all life is biologically related
2 back to the beginning of life?
3 A. Not as defined by neo-Darwinism, no.
4 Q. Do you accept that human beings are related by
5 common descent to prehominiid ancestors?
6 A. I doubt it.
7 Q. What is the alternative explanation?
8 A. Well, there are a number of alternative
9 explanations. Right now, as this book shows,
10 there are views looking at self-organization,
11 which don't necessarily agree with that
12 viewpoint. They may or they may not. But
13 there is also the idea of design.
14 Q. And your opinion as to when that design
15 occurred?
16 A. I don't know.
17 Q. It is true, is it not, that nowhere in Draft 2
18 is the term naturalism mentioned?
19 A. That is absolutely correct. That term doesn't
20 occur, but the concept does.
21 Q. Where in Draft 2 does it say or imply that a
22 student cannot hold a theistic view about the
23 results and process of science?
24 A. It doesn't say that, but methodological
25 naturalism will only give them the evidence

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- 1 that supports non-theistic religions. I'm not
2 accusing the State of Kansas in any way of
3 trying to establish religion. I'm simply
4 saying the standards as written now will tend
5 to favor those who have certain religious
6 persuasions by allowing only their evidence
7 congenial to those views to be presented.
8 Q. Where in the standards does it mention
9 methodological naturalism?
10 A. It does not use those words. As I mentioned

before, the concept does appear on Roman Numeral page 10 and on page 98 of the Kansas science standards.

Q. Would you agree with the following: "There are many issues which involve morals, ethics, values or spiritual beliefs that go beyond what science can explain but for which solid scientific literacy is useful." Would you agree with that?

A. Yeah, I think that's a perfectly fine statement, but it does not deal with the issue which is deletion of something in the standards. This is a good addition, I'm glad you have it, but what we're discussing is deletion of statements that imply

methodological naturalism.

Q. Draft 2 clearly states what science is and what science isn't. Draft 2 does not mention either guided or unguided, leading the student to have a theistic view. It's the minority report that adds an atheistic definition of science and drafts that addition.

A. I don't think the minority report does that. It simply explains to the student how the term biological evolution is understood by the majority of scientists.

Q. Then let me ask you this. How do you explain the large number of theists, including evangelical Christians who are scientists that do not see the methodological naturalism as a conflict with their faith?

A. Well, there's a couple of issues here. One is that the mere fact that you have somebody who holds two beliefs, A and B, does not show that they are logically consistent, so it might be some of these people are confused. The other issue is, as this debate shows, this area is extremely controversial. So I expect they've worked it out because they've adjusted other of their assumptions in various areas, and some of

my friends hold exactly the view that you hold. I don't think they're bad or stupid people.

Q. Are you familiar with Mr. Michael Denton?

A. Yes, sir, I am.

Q. I'm going to read you something and I want you to tell me whether or not you agree with this. "In his advocacy of special creation, I believe Johnson-- and you know who Phillip Johnson is, don't you?

A. Yes.

Q. "-- is merely the latest in a succession of vigorous creation advocates who have been very influential within Christian conservative circles, particularly in the United States during the 20th century. None of these advocates, however, has had any lasting influence among academic biologists. This is not because science is biased in favor of philosophical naturalism, but because the special creationist model is not supported by the facts and it is incapable of providing a

more plausible explanation for the pattern of life's diversity in time and space than its evolutionary competitors. The reason why no current member of the United States National

Academy of Science is a special creationist is because of the facts-- the same facts that in the 19th century convinced Wallace, Darwin and all leading Christian biologists, including Georges Cuvier, Asa Gray and Charles Lyell of the reality of descent with modification." Do you disagree with that statement?

A. I think it mischaracterizes Johnson's position.

Q. You cited in your discussion the Smith case.

Were you referring to the Smith case out of Louisiana?

A. No. The Board of Commissioners of Alabama.

Q. Of Alabama?

A. Let me refer to that. I have to recall where I referenced that in my report. Smith vs. Board of Commissioners of-- is that correct, of Alabama? You're a lawyer. I saw that and numerous other sources when I was researching the legal side of it. Yeah, here it is. It's Board of Commissioners of Mobile County, 655 F. Sup 939 SD Alabama, 1987.

Q. Would you read that cite again, 6 what?

A. 655 F. Sup 939, and this was Alabama, 1987.

MR. IRIGONEGARAY: All right, thank you very much. Thank you. Nothing further.

EXAMINATION BY CHAIRMAN ABRAMS:

Q. Dr. Menuge, I heard you state that methodological naturalism is basically equivalent to philosophical naturalism. Did I understand that correctly?

A. Yeah. In fact, they are not equivalent as philosophical theses, but in its educational effect, methodological naturalism is going to present only the evidence which supports philosophical naturalism. So its effect on education, it is going to be the same.

Q. Do most philosophers-- you're a philosopher of science?

A. Well, that's one of my areas. Really my main focus is agency.

Q. Then still, since we're dealing with science, do most philosophers of science agree with you that they are basically the same in their effect, how they interact at the education level?

A. Well, I haven't surveyed them all sociologically, but it seems to me it's just a logical inference. If you only present the evidence in favor of something, you are advocating it, even if you then say, "Oh, but

you're free to believe otherwise." In other words, you're free to believe otherwise but with no evidence.

Q. So is neo-Darwinian evolution as most evolutionists understand it, does it have religious connotations?

7 A. Yes, it has religious implications because if
8 it's taken to be a full account of everything
9 that we observe, it implies that nothing is
10 designed or has a purpose, that human beings in
11 particular are just occurrences, we're products
12 of this random process and that we have no
13 preordained value, meaning, or significance.

14 Q. Therefore, would you say that by adding
15 elements of the minority report that would more
16 adequately prepare students to distinguish
17 between those religious and philosophical
18 claims?

19 A. Yeah, I think that's very important. The
20 important thing is to disclose where an
21 assumption is made, what its consequences are,
22 and then allow discussion of the arguments for
23 and against. The worst thing is not to
24 disclose it, have everybody assume it's a fact
25 when, in fact, it's a controversial

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1 philosophical thesis. Get it out in the open
2 and then people can discuss both sides of it.

3 Q. So as many-- perhaps that's the wrong word. As
4 some evolutionists propose neo-Darwinian
5 evolution and as they would present it, would
6 you classify that as a dogma?

7 A. Well, the dogma is really methodological
8 naturalism because it's meaning that they can
9 only present one-sided evidence. So it
10 converts what is inherently a perfectly
11 scientific theory into a dogma.

12 CHAIRMAN ABRAMS: Dr. Menuge, I thank
13 you very much for your time. We're going to
14 break for lunch. Mr. Calvert and Mr.
15 Irigonegaray, do you have a problem coming back
16 at one o'clock instead of 1:05?

17 MR. IRIGONEGARAY: That works.

18 CHAIRMAN ABRAMS: We're going to
19 break and be back promptly at one o'clock.
20 (THEREUPON, a recess for lunch was
21 taken.)
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0150
1 C E R T I F I C A T E
2 STATE OF KANSAS)
3 COUNTY OF SHAWNEE) ss:

4 I, Amy L. Simons, a Certified Shorthand
5 Reporter in and for the State of Kansas, duly
6 commissioned as such by the Supreme Court of
7 the State of Kansas, do hereby certify that I
8 was present at and reported in shorthand the
9 foregoing proceedings had at the aforementioned
10 time and place; further that the foregoing 149
11 pages is a true and correct transcript of my
12 notes requested transcribed.

13 IN WITNESS WHEREOF, I have hereunto
14 affixed my Official Seal this _____ day of
15 _____, 2005.
16

17
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Amy L. Simons
CERTIFIED SHORTHAND REPORTER

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