IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA
HARRISBURG DIVISION

TAMMY KITZMILLER, et al.,	:	CASE NO.
Plaintiffs	:	4:04-CV-02688
vs.	:	
DOVER SCHOOL DISTRICT,	:	Harrisburg, PA
Defendant	:	27 September 2005
.....	:	9:00 a.m.

TRANSCRIPT OF CIVIL BENCH TRIAL PROCEEDINGS
DAY 2, MORNING SESSION
BEFORE THE HONORABLE JOHN E. JONES, III
UNITED STATES DISTRICT JUDGE

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I N D E X
Kitzmiller vs. Dover Schools
4:04-CV-2688
Trial Day 2, Morning session
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PROCEEDINGS

P R O C E E D I N G S

THE COURT: Be seated, please. Good morning to all. We welcome you to Day 2, and we're going to continue with cross examination. Mr. Muise, you're prepared I assume?

MR. MUISE: Thank you, Your Honor.

THE COURT: You may proceed.

CONTINUED CROSS EXAMINATION BY MR. MUISE:

Q. Good morning, Dr. Miller.

A. Good morning, Mr. Muise.

Q. Sir, is evolution random and undirected?

A. I don't think that that is an appropriate scientific question. First of all, evolution most definitely is not random. There are elements of evolutionary change that are unpredictable, but the principal force driving evolution, which is natural selection is most definitely a non-random force, and then the second part of your question, undirected, that requires a conclusion about meaning and purpose that I think is beyond the realm of science. So my answer for different reasons to both parts of your question is no. Or excuse me, perhaps more aptly put, science cannot answer the second part of the question. I think that's a more

accurate way to put it.

Q. Is a student believes that this was a scientific complaint -- let me strike that. If a student believes that this was a scientific claim, would that be a misconception?

A. If a student believed that it was a scientific claim that evolution was random and undirected, would that be a misconception? And I think my answer to that is yes, that would be a misconception of what science can state about evolution.

Q. Sir, in your 1995 edition of Biology, I believe it's the Elephant Book?

A. That's correct. It's generally known by that name.

Q. Did it not state in that book, "It is important to keep this concept in mind. Evolution is random and undirected," and the part "evolution is random and undirected" was in bold print?

A. To be perfectly honest, which of course I swore to be, I don't remember if it was in bold print or ordinary print, but I'm sure you have a copy of that book, and I'm sure that you'll show it to me and refresh my memory.

Q. You're very perceptive. May I approach the witness, Your Honor?

THE COURT: You may.

Q. I hand you what's been previously marked as Defendant's Exhibit 210.

A. And in response to your question, sir, I note under Section 30-2 on the second page of the document you gave me, the complete sentence reads, "As we do so it's important to keep this concept in mind," and it is indeed in boldface, "Evolution is random and undirected," that's correct. So yes, sir, it does say that.

Q. Now, isn't it true when you write your textbook, a boldfaced sentence is a way of telling the students that this is a key idea?

A. Yes, sir, it is.

Q. Now, you testified previously that that's not a scientific concept, correct?

A. I did indeed, sir.

Q. Why was it in your book?

A. It was in my book because as I'm sure you've also looked at, that statement was not in the first edition of the book, it was not in the second edition, it was not in the fourth edition, it was not in the fifth edition. It

was not --

Q. My question is why is it in this edition?

A. I'm trying to set the context so I can give a full and complete answer to your question. So the interesting thing is that this is the only edition of any of the books that we have published, and probably eleven different editions, that contains that statement, and the reason for that quite simply is that I work with a co-author whose name is Joseph Levine, and Joe and I work together on many of the chapters in the book, but many of them we write separately and individually, and this was a statement that Joe inserted when we did a rewrite of many sections of this book for the third edition.

I have to say that I missed the statement as I was going through Joe's chapters, and I feel very badly about that. When this was first pointed out to me, the third edition of this book was in print, I immediately went to Joe, I said Joe, I think this is a bad idea, I said I think this is a non-scientific statement, I think it will mislead students. Joe agreed. We immediately took it out of the book, and

that's why I emphasized that it did not appear in subsequent editions. So what you're looking at, sir, is a mistake.

Q. Isn't it true that he put that in there because he was influenced by the writings of Steven J. Gould?

A. We had a conversation about that, and among the reasons that Joe cited was that he had read one of Steve Gould's books called "Wonderful Life" in which Gould emphasized what Gould regarded as the indeterminate character of evolution, and from that I think Joe made what I still think is a misinterpretation of Gould's central idea in "Wonderful Life," which is to say the indeterminate or the unpredictable nature of evolution Joe misinterpreted to say random and undirected, and I think Joe agreed that he had made a mistake, and that's one of the reasons why we changed it in the next edition, sir.

Q. Now, I believe you testified that about 35 percent of high schools in the United States use your textbook, one variation or version or another?

A. Yes, sir, I did.

Q. Is the 1995 elephant book still being used by high schools?

A. I'm sure you can find a few, but because the average book is used by a high school in the United States for about six to seven years, I think it's fair to say that very few school districts use the third edition of this book.

Q. Do you know if Prentice Hall is still selling this version as a science textbook?

A. I wouldn't be at all -- I wouldn't know that for a fact, sir. I wouldn't be at all surprised it's on what is called the back list so that people can buy additional copies of older editions. So I wouldn't be at all surprised that they are still selling.

Q. Do you receive royalties still for the old editions?

A. Yes, sir.

Q. I believe on direct you made a reference to Richard Dawkins in a statement that he made in The Blind Watchmaker, "Darwin made it possible to become an intellectually fulfilled atheist." Are you familiar with that quote?

A. I'm certainly familiar with that quote.

Q. And who is Richard Dawkins?

A. Richard Dawkins is an evolutionary biologist and a professor at Oxford University in England.

Q. He's considered a prominent scientist?

A. Yes, sir.

Q. Is that claim that he made, the quote that I just read to you, is that a scientific claim?

A. No, sir, it's not.

Q. I understand that you were good friends with the late Steven J. Gould?

A. Yes, sir. Steve and I were personal friends. We were both, I was briefly on the faculty at Harvard and I got to know Steve there.

Q. And he was a paleontologist from Harvard?

A. Yes. Steven was actually a professor of geology, and his specialty was paleontology.

Q. Now, you have no difficulty believing that he would have made a comment such as, "Before Darwin we thought that a benevolent god had created us"?

A. You're giving me a statement and asking would I have trouble believing he said that. It would help me to know if in fact I'm being given a hypothetical quote or if this is an

actual quote from an actual article or book of Dr. Gould.

Q. Well, I can represent to you it was from "Ever Since Darwin," but if you have a question you may want to refer to your deposition testimony at page 174.

A. Okay. I noticed that my answer in the deposition was pretty much identical to the answer I gave you now, which is you asked me if I was familiar with it, and I read, and I'm reading from my deposition, "Answer: No, I'm not. Do you know where that quote comes from?" And then you said, "I don't know if it was quoted out of The Blind Watchman, I may have been incorrect. Are you aware that he's made any statements similar to that?" So again I'm still asking where that quote might have come from.

Q. Okay, read the next answer.

A. Sure. "I'm perfectly willing to believe that Gould might have said that, but I don't know the context."

Q. Today are you perfectly willing to believe that Gould would have made that statement?

A. Would have and might have are actually

different constructions, and what I will tell you is that I'm willing to believe that Gould might have made that statement, but I reiterate my quest to know the context for it.

27 Q. Is that statement a scientific statement?

A. No, I don't think so. I think it's an observation of -- it's an observation about history, and it's really a comment about society and popular imagination. It's certainly not a scientific statement.

28 Q. Do you know who the late George Gaylord Simpson was?

A. Yes, sir, I do.

29 Q. And who was he?

A. George Gaylord Simpson was a very well known paleontologist and evolutionary biologist and evolutionary theorist.

30 Q. Now, I'll ask you do you think this quote that I'm about to state is something that you believe G.G. Simpson would have said, "Man is the result of a purposeless and materialistic process that did not have in mind he was not planned."

A. Now, I will once again ask you for the context of that statement, and that would help

me to understand if G.G. Simpson might have said that.

31 Q. And again I represent to you it was from a book written called "The Meaning of Evolution." Again if you have a question I refer you to your deposition transcript at page 175.

A. Okay. Thank you for telling where the quote comes from. I certainly am willing to believe the George Gaylord Simpson might have said that. You asked me would I prefer to say he certainly might have said that.

32 Q. Is that a scientific claim?

A. No, sir, it is not.

33 Q. These three scientists that I just mentioned, Richard Dawkins, Steven J. Gould, and George Gaylord Simpson, are they considered prominent scientists?

A. Two of them certainly were when they were alive, and Richard Dawkins certainly is.

34 Q. In your direct testimony you gave a definition of intelligent design, and I want to make sure I'm clear on what your definition is, and I don't have exact recall from your direct testimony at this point.

A. Neither do I, counselor.

Q. But I can refer you to your answer in your deposition transcript, and I want to state what that answer is here and you can compare it on page 93 if you'd like to, and I want to see if that is the working definition that you are using for the purposes of this case.

A. The page was 93?

Q. 93.

A. Okay.

Q. Here's the definition, "Intelligent design is the proposition that the basic mechanism of evolution does not work and that the complexity of life, the changes that appear in living things and natural history, and the organization of living things are all best explained by the actions of an intelligent, creative force, acting outside, and you might say above, acting outside of the natural world, and that by definition that creative force lies outside of scientific explanation."

A. I believe that you've certainly read properly from the deposition. I believe that in my direct testimony yesterday, having thought a few months more about how to summarize things briefly so as not to tax the patience of the

court, I used a more succinct definition, and I think the definition I used is intelligent design is the proposition that some aspects of living things are too complex to have been evolved and therefore must have been produced by an outside creative intelligence force acting outside the laws of nature, and I would suspect, sir, that both definitions are in agreement with each other, even one is a little more verbose.

38 Q. Isn't it true that you believe that there's a danger with attributing natural phenomena to supernatural causes, and that danger is that science will stop seeking natural explanations?

A. I'm not sure if I would put it in exactly those terms. I do think that the proposition that every unsolved problem in the natural world should be attributed to causes and forces which layout side the purview of science, outside the natural world, into what I would call the supernatural world, is a science stopper, and what I mean by that is that once one says the only way we can explain this or that or the other is by the actions of a creator or a designer working outside of nature there's no point to do any more research on these problems,

and that's why I would characterize it as a science stopper.

Q. And to make this point in your deposition you used the example of the force that powers the sun which, according to your testimony, at one time was considered a supernatural phenomena. Is that accurate?

A. It may be an accurate reflection of the deposition, which I have not reread on that point, but the way I would phrase it if you asked me a similar question today is simply to point out --

Q. Sir, I asked you a question.

A. Yes.

Q. And if you want to refer to your deposition testimony at 229, that might help you answer that question.

A. Sure, I appreciate that. Oh, well, now that I see the deposition my answer is no, I did not say that.

Q. Look at page 228 sir.

A. Uh-huh.

Q. You'll read from line 4 where it begins with "in other words"?

A. Yes.

Q. Do you see that on line 4?

A. Yes, I do.

Q. Then read until line 3 of page 229.

A. Sure. I'd be glad to. "In other words, they are advocating supernatural progressive creation as the default explanation for anything that cannot currently be explained by science, and I'll give you an example, because I think this is an important to make. If we were having a discussion in 1880 and we were talking about what is the force that powers the sun, where does sunlight, heat, warmth, and so forth from the sun come from, we can take the science at the time and we could rule out the notion that the sun was a big ball of flame made up of burning oil or burning wood or burning wax or any other known chemical reaction in 1880, and we could do that, because we could calculate the amount of energy the sun puts out, we could calculate over many years the fact that the sun's diameter, if it's decreasing it's decreasing only very slightly, and if the sun was made of any fuel that powered a known chemical reaction, it's diameter should be increasing much more quickly.

"Therefore in 1880 we could rule out the possibility," okay, I think I may have said a few things in this deposition that make no sense, "Therefore in 1880," oh, sorry, no, I didn't. "Therefore, in 1880 could we rule out the possibility that the sun's actions were due to some sort of divine intervention, the answer is absolutely no, we could not rule that out." Now, I'm sure the court reporter can correct my recollection of your question, but I think your question was did you state that in the 19th century the actions of the sun were attributed to divine intervention, and of course what I just read to you didn't say that. It said we couldn't rule out the possibility. That's not the same thing as saying they were attributed, and that's why I said no, sir, I did not say that in my deposition.

46 Q. Read on from page 229, from lines 4 through 16.

A. Gladly. "As you know, 25 years later there was a scientific explanation put forward for the power of the sun, and that turns out to be thermonuclear fusion, a force unsuspected by nature," and a strange way to put it. "So if

at the time in 1880 science had simply thrown up its hands and said the explanation lies outside of nature, science would have stopped and we never would have done the investigatory work that was actually necessary to understand where the sun's power actually came from."

47 Q. Keep reading, sir.

A. Oh, sorry. "That's the danger of attributing natural phenomena to supernatural causes, or for that matter to design, which is essentially a call to say let's stop seeking natural explanations." Go on or --

48 Q. I believe that covers the point.

A. Okay.

49 Q. You make that point in your deposition that by attributing something that you might not have an explanation for at the time to a supernatural cause, then we just may throw up our hands and then science will never have an explanation for these natural phenomena, is that correct?

A. That's exactly the point that I made there, yes, sir.

50 Q. And you used the example of the force that powers the sun to demonstrate that if science had just thrown up their hands, then we would

have never come up with this notion of thermonuclear fusion.

A. Yes, that's correct, sir.

51 Q. But you also said thermonuclear fusion was a force that was unsuspected at the time by nature.

A. And as I read that I also said that's a very strange way to put it. I'm sure the court will understand the deposition went on for nine and one half hours, and I may once or twice have said something that doesn't quite make sense, and what I should have said in that exact context was a force that was unsuspected in nature, not by nature.

52 Q. So there could be a force that was unsuspected in nature at a time, through further scientific development may actually be a natural explanation such as thermonuclear fusion?

A. That's correct.

53 Q. And the fact back in 1880 that we didn't know about thermonuclear fusion didn't mean that science stopped?

A. It certainly did not mean that science stopped precisely because physicists around the world sought a natural explanation for the

phenomenon rather than attributing to it a force outside of nature and beyond scientific investigation.

54 Q. So, sir, is your testimony and your opinions regarding intelligent design, is it based on your understanding that intelligent design does require the ruling out of all natural causes for design?

A. I'm sorry, not to parse these questions, because they're very carefully worded, and so I want to think about them carefully -- I'm sorry, could you repeat the question?

55 Q. Is your testimony and your opinions based on your understanding of intelligent design is that intelligent design rules out all natural explanations for design?

A. The question you just asked is does intelligent design rule out all natural explanations? Well, the answer is of course not. What intelligent design presupposes, and I'll repeat the definition is that intelligent design argues that some aspects of living things are too complex to have been produced by evolution and therefore they must be the product of creative action by a designer acting outside

of nature.

56 Q. So the design would have to be, in your understanding of intelligent design the design would have to be caused by a supernatural causation and no natural cause can be an explanation for design?

A. No, sir, I would disagree with that. You say no natural cause can be an explanation for design. I would point out that the snow flake, one of the most beautiful and intricately designed if you wish to say objects in the world, that any person who didn't know snow or understand snow would say it had a beautiful design to it, but I think any chemist, any physical chemist will tell you that the structure of a snow flake is due entirely to natural causes such as the interactions of water molecules through laws of chemistry and physics.

So I think you're lumping together certain propositions in what you're asking me to stay, and again I think I have clearly stated that my testimony is based on the definition that I understand of intelligent design as given in "Pandas and People," as explained by Dr. Behe, as explained by William Dembski, as explained by

"The Discovery Institute, which is that some feature of living things are too complex to have been produced by evolution, and that means that they must have been the product of creative work by a natural, by an intelligent designer acting outside the laws of nature and beyond investigation. Snow flakes have what most of us would call a design, and they are the products of natural law.

57 Q. With regard to the theory of intelligent design, sir, not snow flakes, the theory of intelligent design, is it your testimony that it requires a supernatural intervention?

A. My testimony is that --

58 Q. Sir, I'm asking you a question.

A. And I'm trying to answer that question fully and completely, sir.

59 Q. It's a yes or no question. Is it your understanding of the theory of intelligent design that it requires the action of a supernatural power?

A. Okay. Again, intelligent design as I understand it presupposes that some features of living things are too complex to have been produced by evolution and therefore, and here's

the answer to your question, they must be the product of an intelligent designer acting outside of nature, exercising a creative force to create the design.

60 Q. And in that answer then your view of intelligent design means that it requires the action of a super, it requires supernatural action?

A. Perhaps it would be useful in giving a direct answer to your question, which I'm trying very hard to do, to define what supernatural means. The word super means above. The word natural of course means natural. The actions of an intelligent designer, as they have been explained to me by the advocate of intelligent design, is the identity, the means of action, and even the time of action of that designer lies outside of scientific investigation. That means to me that it lies above, super, natural law, supernatural, and therefore that designer is supernatural in the ordinary understanding that actions that occur on nature, that occur from a force which is not natural, from a place which is outside of nature, and are not subject to investigation, must be supernatural. To help

me frame my questions, because obviously you don't think I'm being entirely responsive to your questions, and I want very much to be responsive to them, perhaps you could explain to me how an intelligence designer could act undetectably, outside of nature, to create order that evolution and natural law cannot, and not be supernatural.

61 Q. That's your definition and your straw that you're creating on this definition. Here's my question for you with regards to what is considered supernatural. Do you know who Francis Crick is?

A. Yes, sir, I do know who Francis Crick is.

62 Q. And who is he?

A. Francis Crick is a British physicist and crystallographer who, together with James Watson and Rosalyn Franklin, is the co-discoverer of the double helical structure of DNA.

63 Q. And he received the Nobel prize?

A. Yes, I believe that he and Watson and Wilkins received the Nobel prize for biology or medicine in 1963.

64 Q. Now, he advanced a theory called directed panspermia, correct?

A. He wrote a book in which he suggested that the first appearance on life on earth might have been the result of the actions of beings from another planet, scattering life into our world, that's correct.

65 Q. And that was a hypothesis put forward by a Nobel laureate?

A. That's correct, sir.

66 Q. Is that a scientific claim?

A. Well, the specifics that Dr. Crick made is a scientific claim, because although it's not immediately a testable claim, it is a potentially testable claim in terms of if we are able to explore larger and larger fractions of the known universe, we may eventually find out if there is life in other places that could have been directed towards us. So it's a scientific claim in the sense that it's potentially testable.

67 Q. Is it a supernatural claim?

A. That's an interesting point, and in this particular case no, I would not regard that as a supernatural claim.

68 Q. So the fact that life forms may have come from an intelligent being from another planet

to this earth as I believe you have described, directed panspermia, that is not a supernatural explanation for a natural phenomenon?

A. It certainly is a farfetched claim in that many scientists would point out that there's no evidence for it, but as Crick framed it, it certainly would be a claim as I said that is potentially testable and therefore would accord to natural law.

69 Q. Are you familiar with a program that NASA has for, and I believe its acronym is SETI, Search for Extra Terrestrial Intelligence?

A. I'm familiar with it only as a lay observer who reads the papers and has heard about it.

70 Q. From what you have heard about it, is that a scientific exploration?

A. Certainly my understanding of how the work in SETI is being conducted is that it follows the scientific methods of explanation.

71 Q. Are they seeking a supernatural explanation?

A. No, sir, I don't think they are. I think that SETI is seeking evidence of life on other planets, other places in the universe.

(Brief pause.)

72 Q. Would you agree with this proposition that because presently we may not have a plausible natural explanation is not the same thing as saying that we've ruled out all natural explanations?

A. Yes.

73 Q. And the example of the power, the forces that power the sun would potentially be an example that fit that claim?

A. Yes, sir, I believe it would.

74 Q. Sir, intelligent design doesn't require adherence to the six day creation event described in the Book of Genesis, correct?

A. I certainly think that there are formulations of intelligent design that don't require adherence to a six-day creation event described in Genesis, that is correct.

75 Q. Intelligent design is not sectarian?

A. Can you help me, sir, by explaining what you mean by non-sectarian?

76 Q. Doesn't adhere to any particular religious dogma.

A. I believe that intelligent design does adhere to one particular religious dogma, and that is that life on earth can be attributed to

the outside actions a designer whose actions are outside and above nature.

77 Q. Well, you need not be a fundamentalist Christian to be a proponent of intelligent design, correct?

A. I certainly think that one need not adhere to a particular religious point of view, but as intelligent design has been explained to me as it's described in "Pandas and People" and in the writings of the members of The Discovery Institute whom I've read and whom I regard as authoritative spokesmen for intelligent design, the common thread of intelligent design is attribution of the complex features of living organisms to the creative force of a being acting outside of nature, and that is definitely a theistic point of view.

78 Q. Again, sir, my question is you need not be a fundamentalist Christian to be a proponent of intelligent design?

A. That certainly is true.

79 Q. Dr. Behe for example has the same religion as you, correct?

A. That's my understanding.

80 Q. And Dr. Behe, an intelligent design

proponent, does not adhere to the literal reading of Genesis? Is that your understanding?

A. Actually I have never discussed Dr. Behe's view of Genesis with him, so I'm not sure.

81 Q. Dr. Behe doesn't dispute the information from geology that the earth is very old, correct?

A. If I remember what -- and if I get this slightly wrong I'm sure you'll refresh my memory, I believe that Dr. Behe wrote in "Darwin's Black Box" that he has no particular reason to quarrel with the standard geological interpretation of the earth's history. Is that a fair phrasing, sir?

82 Q. Well, my question is to you, sir.

A. Well, my understanding then is the indirect quotation which I believe comes from "Darwin's Black Box" that he says he has no reason to argue or to quarrel with it. Now, to my standard of endorsement that's not a ringing endorsement, and it certainly, it certainly doesn't amount to an affirmative answer to your question.

83 Q. Sir, young earth creationists are completely unequivocal that the earth has

to be between six to ten thousand years old, correct?

A. Most of the young earth creationists I have encountered have argued that the earth is less than ten thousand years old, that's correct, sir.

84 Q. And that's one of tenets of young earth creationism, correct?

A. As I understand them, sir, yes, that's correct.

85 Q. Dr. Behe, again an intelligent design proponent, does not adhere to the flood geology point of view advanced by creationists, is that correct?

A. I'm not sure whether Dr. Behe adheres to that or not. I haven't heard him state definitively. I have only read in "Darwin's Black Box" that he has no problem with the standard geological chronology.

86 Q. And from that statement would you infer that he then has no problem with the flood geology, or he has a problem with the flood geology based on that statement?

A. You know, I suppose you could infer that, but you could also infer that like most

biochemists he doesn't care too much about geology.

87 Q. So that doesn't play into his scientific theories or arguments regarding intelligent design?

A. I have not seen Dr. Behe make an argument based on the geological ages in any of his writings or books, one way or another. And therefore I do not wish to presume what his view is of the young earth chronology, and I'm sure that if you bring him to the stand he'll be able to tell you himself.

88 Q. In terms of the arguments he's advancing he does not refer to the geological record?

A. That is correct, he does not refer to it, and as I said perhaps that's because like most biochemists he just doesn't read geology.

89 Q. And so for his arguments it's not necessary that the earth be six to ten thousand years old?

A. The arguments that Dr. Behe makes based on the actions of an intelligent designer, to assemble the complex structures within a cell would be consistent with young earth creationism or with special creationism spread over the billions of years of the geological ages. It

would be consistent with either one.

90 Q. Again, sir, my question was does he rely on the age of the earth being six to ten thousand years old to make a scientific argument?

A. No, sir, he does not rely on it, and that's why it would be consistent with either one.

91 Q. So it's not a necessary component of his scientific arguments?

A. That's right, and that's why it would be consistent with either one.

92 Q. Do you know what Barry Palovitz is?

A. Yes, I think Barry is a plant geneticist or a plant physiologist at the University of Georgia.

93 Q. And he wrote an article which made reference to your book "Finding Darwin's God" that we discussed during your deposition? Do you remember that?

A. I do remember he wrote a review, and I will tell you that I try not to take reviews of a book too seriously.

94 Q. But do you recall that in the review he claims that one of ideas that you entertained in your book "Finding Darwin's God," which is the notion that the universe may have purpose, was

also an idea that was embraced by what he called neocreationism?

A. I actually don't specifically remember Dr. Palovitz's review except to note that he didn't like my book much, and I believe he may have made comments like that. So I'm perfectly willing to believe that that's exactly what he said.

95 Q. If your look at your deposition, sir, on page 128?

A. Got it.

96 Q. If you could read, if you look at line 15, and after the sentence, "He calls it a pet rock," and it begins with "saying," could you read that sentence?

A. Sure. This I believe is a quotation from the Palovitz review.

97 Q. No, this is your answer, sir.

A. I'm sorry, which page and which line again?

98 Q. Page 128, line 15, starting with the word "saying"?

A. Okay, yes. This is my answer. I'm sorry, I was on the wrong page. "Saying the two schools of thought embrace a single idea does not mean that those two schools of thought are

exactly the same thing."

99 Q. Is that a truthful statement that you made?

A. Yes, sir, of course.

100 Q. Sir, now, it's fair to say that one of the central arguments of intelligent design is that the evolutionary mechanisms are not sufficient to explain the origin of complex biological structures like the flagellum?

A. That's correct, sir.

101 Q. Now, you have already testified that you wrote a book called "Finding Darwin's God."

A. Several times.

102 Q. And in that book you said, "If Darwinism cannot explain the interlocking complexity of biochemistry, then it is doomed." Do you recall making that statement?

A. I probably wrote something like that in the book, yes, sir.

103 Q. And you also quoted from Darwin in that book, who acknowledged, "If it could be demonstrated that any complex organ existed which could not possibly have been formed by numerous successive slight modifications, my theory would absolutely break down." Correct?

A. That is correct, although it's a partial

quotation, because the next sentence is, "But I can find no such case."

104 Q. Correct. And he wrote, and that was from "On the Origins," correct?

A. Yes, sir, that's a quotation, I gave a more complete quotation, but that's from "The Origin of the Species."

105 Q. And that was written in 18 when?

A. I believe, sir, 1859.

106 Q. I believe you already previously testified that the claim that the bacterial flagellum is irreducibly complex is a scientific claim?

A. It is a, that is a scientific claim if irreducible complexity is precisely defined, and because Dr. Behe in "Darwin's Black Box" gave a very precise definition that made the claim of irreducible complexity a scientific claim, yes, sir.

107 Q. And if irreducible complexity could be demonstrated, that would present an argument against Darwin's theory of evolution, correct?

A. If irreducible complexity could be demonstrated in the exact way that Dr. Behe describes, it would present an argument, not a disproof, but an argument, because other

scientists have argued that even if one finds truly irreducible complex structures, that does not rule out in principle an evolutionary pathway to them.

108 Q. Does it open a question?

A. Of course. It is phrased in the form of a question, and yep, it's a question.

109 Q. Now, we're referring to Richard Dawkins, and he made a statement, "Biology is the study of complicated things that give the appearance of having been designed for a purpose." Are you familiar with that quote?

A. Yes, I am familiar with that quote.

110 Q. Do you agree with it?

A. I wouldn't put it the same way that Dawkins did. I think biology is the study of a great deal more. I think Dawkins was using hyperbole, a figure of speech, exaggeration for the purpose of emphasis to make a very good point, and that is a first glance at many living organ systems, organisms, compounds, makes it look as though they have such a strong correlation of structure with function that in the human world we would say that they were designed, and that's the metaphorical point that I think Dawkins made,

and I agree with that metaphorical point.

111 Q. And is that similar to the points which you described as a metaphor in your cross examination testimony yesterday about the cell being a collection of protein machines?

A. Yes. In that case it was a different metaphor by Dr. Bruce Albertson, and I think it's essentially the same point.

112 Q. Is part of the nature of the controversy that we're discussing in the course of this case is whether the design referred to by Dawkins is the apparent design that he describes or real design that intelligent design proponents advocate?

A. Well, to answer that question, sir, we're going to have to break down what we mean by the word design, and the word design is often used in biochemisty and protein structure to simply refer to in shorthand the correlation of structure and function. So for example if you remember I put a slide up on the screen yesterday showing the hemoglobin molecule, the oxygen carrying protein, the inner pocket of that hemoglobin is what physical chemists call hydrophobic, or water hating. It's kind of oily

in ordinary terms.

That makes it an ideal binding site for an oxygen atom to slip in. The outside of the molecule is strongly hydrophilic. That means it's got a lot of charges on it, and if you will it makes it easy for it to dissolve in water. So a physical biochemist might look at the structure of the molecule and say let's talk about the design of the molecule, it is designed to be soluble in the solution of the blood, and it is designed to have four pockets in which you can tuck an oxygen atom to carry them to the tissue. What he really means by design is the exquisite correlation of the structure of that protein with its oxygen carrying function. So in that respect that design is similar.

113 Q. I'm going to give you a definition of irreducible complexity, which I believe is slightly different than the one that you used in "Darwin's Black Box" and I want to ask you if you will accept this definition, "A single system which is necessarily composed of several well matched interacting parts that contribute to the basic function, and where the removal of any one of the parts causes the system to

effectively cease functioning."

A. I wouldn't agree with that, because that's actually not a complete definition of irreducible complexity. If I remember, the quote that I showed was pretty similar to that, except it went on basically to refine the definition, make it more precise, make it scientifically testable, and that was that one cannot produce an irreducibly complex machine by numerous successive slight modifications of a precursor system because any precursor to an irreducibly complex system that is missing a part is by definition nonfunctional, and I regard that as an essential element of the argument, of the term irreducible complexity, because without it irreducible complexity does not make a strong argument against evolution.

114 Q. In your explanation, or I guess reputation of the concept of irreducible complexity, is it true that you argue or you define it so that if a component were removed, the question is whether or not that component itself could still have an independent function?

A. I believe what I said was a little more complete than that, and that is rather than a

component could be removed, a set of parts or components could be identified within the larger structure which had an independent function of its own, because the central argument that comes from the concept of irreducible complexity is that there are no stepping stones on the way to the evolution of a complex structure. In other words, they have to be fully assembled to have any function, and therefore if one can demonstrate that partial assemblies of the components in fact do have a selectable function, then the argument falls apart. And it does in every case that we examined, in every case we talked about yesterday I should say.

115 Q. So is it that a component of the part can have an independent function as opposed to the essential function, that it ceases function, the essential function of the main organism?

A. I'm going to ask you to repeat the question, because the question began "is it," and I'm not sure what "it" is.

116 Q. Let's break it apart then.

A. Okay.

117 Q. Is your argument against irreducible complexity because if you remove a component

from a system, that that component or a series of components may itself have an independent function, and therefore the system itself is not irreducibly complex, is that your understanding?

A. That certainly is my understanding, and again I would try to put it more completely, and that is that once a collection of parts is claimed to be irreducibly complex, the way in which one analyzes that claim is to see if there's any subset within this larger collection of parts that could have an independent function, and once you identify that you suddenly discover that structure is no longer irreducibly complex.

118 Q. And that can be any of the components of the system?

A. I would certainly think so, sir. In fact, I think a direct prediction of the argument made from irreducible complexity is that no components of the system should have independent functions. So once you find one, the argument is finished.

119 Q. Sir, is it not a standard scientific practice for scientists, and I'll use an example of Dr. Behe, and perhaps you might fit into this

example as well, to point to the scientific literature, to point to observations and experiments that have been done by other people and other laboratories, have been peer reviewed, have been published, and to cite to that evidence, cite to those data, and cite to those experiments in their arguments?

A. Of course it is.

120 Q. And so the question then is not whether Dr. Behe or any other scientist has done experiments in their own laboratory that have produced evidence for a particular claim. The question is whether or not the inferences that they draw in their analysis from that data are supported. Is that true?

A. Yes, sir, I certainly think that that is true, and I agree with it, and the point that I would wish to make is that in my testimony yesterday I said that as far as I knew Dr. Behe had never done any work that directly implicated intelligent design. He certainly has written a number of papers ane made a number of arguments designed to support the inference of irreducible complexity.

121 Q. So there are natural phenomena that cannot

be fully explained by materialistic observations, correct?

A. There are natural phenomena --

Q. I can give you some examples.

A. Please do. That would help a great deal.

Q. The origin of life.

A. Oh, okay. The answer to your question, sir, is no. And the reason for that is that the question was phrased is there are natural phenomena that cannot be explained, and the reason I said no to your question, I do not agree with that, is I would agree to a question that says there are natural phenomena that have not yet been explained by material or natural causes, and if you then said the origin of life is such a question which has not yet been explained, I would have said yes, sir, that is correct.

Q. I believe my question, sir, was there are natural phenomena that cannot be fully explained by materialistic observation.

A. And again I would still say no, because I hear "cannot be explained" or "cannot fully be explained" to be a claim that they will never be explained, that it's a problem that will never

be solved because of some reason and principle, and all that I'm trying to do is to make sure that my answer is phrased in such a way in which it is clear that I, like most scientists, realize that science is filled with unsolved problems. The origin of life I'm quick to say is one of those problems. We do not yet have a complete natural explanation of that particular question.

125 Q. Sir, if you'd turn to your deposition, page 210?

A. Sure.

126 Q. And reading from line 7, and to complete the answer for completeness read through to line 19?

A. Sure. "Are there natural phenomena that cannot be fully explained by materialistic observations? The answer is yes. You chose the origin of life. I would choose gravity, I would choose dark matter in the universe, and I would use the way in which the vertebrate body is constructed during the development of an embryo, because all of these are questions which cannot be completely answered by science, and to paraphrase an answer I gave earlier in the day,

when we have complete explanations for all natural phenomena, people like me, research scientists, will be out of business, because science will be finished. We will have explained everything."

127 Q. Is that a correct answer?

A. It is a correct answer, but in order to complete the record for the court, may I read from my deposition a few lines further down, just a sentence or two? It's on page 211, and I'd like to start on line 4 if I may, sir.

128 Q. Was that a complete answer that you gave to the question that I had asked you during the deposition?

A. Sir, I just asked you. May I complete --

129 Q. Was that a complete --

A. Okay, fair enough. That was the complete answer I gave then.

130 Q. Thank you.

A. And I note for the record that in my deposition I clarified that --

131 Q. Thank you, sir.

A. -- the same way I've been doing here.

THE COURT: Wait, wait. Let him finish his answer. Finish your answer.

THE WITNESS: Thank you, Your Honor.

THE COURT: But that is not necessarily a license to go further than what the question was, but if you want to finish that particular answer that you gave, you may do so.

THE WITNESS: Okay, at the bottom of page 210 I was then asked, and this is the question, "And just to clarify, there has not been, at least I'll put it in terms of your satisfaction, a successful materialistic explanation for the origin of life? Answer: I would expand on that a little bit if you'll allow me to, and the answer, I'm sorry, the answer to that is yes. I regard the origin of life, as I think most scientists do, as an unsolved biological problem.

"Now, to say that the problem is unsolved does not say it's a problem about which we know nothing. In fact, we know a great deal, and we know for example that conditions similar to those might have existed on the primitive earth to allow the formation of, the undirected formation of very, very simple building blocks of compounds such as proteins and nucleic acids." That's all I wanted to read. Thank

you, Your Honor.

132 Q. Are those still scientific questions?

A. By "those" you mean what is the origin of life, what's the nature of gravity, how is the vertebrate body put together? Yes, sir, those are all scientific questions.

133 Q. Sir, critical thinking is a legitimate pedagogical goal, correct?

A. It's a legitimate and I would argue an essential pedagogical goal.

134 Q. And an important component of teaching science?

A. I think it's a very important component of teaching science.

135 Q. Do you agree that the purpose of high school science courses should not be to train scientists but to contribute to the liberal education of students?

A. I think that -- I agree with you, because I think contributing to the liberal education of students is a great way to train scientists.

136 Q. If a student believes that Darwin's theory of evolution was a fact, would that be a misconception?

A. It would certainly be a serious

misconception as to the nature of the theory, because theories never become facts. If a student believed that atomic theory was atomic fact, that would be a misconception. Atomic theory is based on factual observations in the same way that evolutionary theory is based on factual observations.

137 Q. Is your answer to my question yes, sir?

A. The answer to the question is most definitely yes.

138 Q. If a student believed that science has answered all questions regarding evolution, would that be a misconception?

A. It would be a terrible misconception, sir.

139 Q. If a student believed that science has solved the origin of life question, would that be a misconception?

A. It would be a terrible misconception.

140 Q. You teach a biology course at Brown University, Biology 20, correct?

A. I believe I do, that's correct.

141 Q. And that's an introductory course?

A. Yes, sir.

142 Q. And I believe it's for concentrators and non-concentrators? Is that the term you use at

Brown?

A. Yes, that is the term we use, and for the benefit of the court that means that students who are going to major in science, students who might be pre-med in their studies, or students who are thinking of going into some other field entirely will still take that course.

143 Q. Now, your description of the course, and I believe it's in the 2005 syllabus, you state, "In the same way that students of the sciences could not consider themselves fully educated without a knowledge of art, social theory, and literature, students in the humanities and social sciences should approach courses in the sciences as part of their overall educational experience." Is that an accurate statement?

A. Yes, sir, it is.

144 Q. And in the syllabus you also state, "The intention of this course," meaning the Biology 20 course, "is to establish links between biology and other disciplines and to briefly explore some of the ways in which science is related to popular culture." Is that true of your course?

A. Yes, sir, it is true of my course, one of

my goals.

Q. Now, in your biology course you provide supplemental materials for when you give lectures on evolution, is that correct?

A. When I teach the course I provide internet links of all sorts that will help students research questions in a variety of ways.

Q. And some of those internet links are to your web site with some of those articles, "The Flagellum Unspun," the biochemical, I believe there's one about the biochemical challenge to evolution?

A. I actually don't think that I, and I'm sure you'll refresh my memory if I'm wrong, I don't think I provided a direct link to those particular essays. I did provide a direct link to a web page that I have, "On Matters Evolution," and on that page there was then links to some articles that I had written about evolution, including the two that you mentioned.

Q. And those were articles regarding intelligent design?

A. Yes, sir, I believe they are articles critical of intelligent design, that's correct.

Q. And there was also a PBS film clip called

"Why is Evolution Controversial?" that you list as supplemental material?

A. Yes. That one I think I did link directly from the web page in my course.

149 Q. And these supplemental materials allow students to explore supplemental information related to the lecture topic?

A. That's certainly my intent.

150 Q. And in this case it would be the lecture topic of evolution?

A. That's right. Students of course always want to know is it going to be on the test, and supplemental materials are not on the test. They're out there in case they get interested in something.

151 Q. And is it true you believe that these materials promote the goal of giving students an opportunity to explore other aspects of evolution and evolutionary theory?

A. The best way to answer your question is that I started doing this simply because so many students would say, I talk about RNA, could you give us some links to some other things in case we get interested here and there, and the links I put up on evolution fall into that general

category of anticipating student questions.

Q. Does it also give them a better understanding of the way in which evolution is regarded in the larger society?

A. I hope so.

Q. If you look in your deposition, page 78, please?

A. Okay.

Q. And the question I asked you beginning on line 22 was, "What goal does that promote?" And that's referring to your previous answer, "The way in which evolution is regarded in the larger society" for example was your answer, and then my question was, "What goal does that promote?" And then could you read us your answer starting at line 23 on page 78, continuing through line 7 on page 79?

A. Sure. Gladly. "I think I've already answered the question, which is to give students an opportunity to explore the implications of some of the material that we cover in lecture and, you know, the generalization that I would apply to any education is, the goal is not to define a set of material to be mastered, but to open a door. And this is one way to open the

door and say if you want to walk through that door, take a look, there it is."

Q. Is that a truthful answer?

A. Oh, of course, it's a truthful answer, sir.

Q. I just want to be accurate that that web page on evolution you had at Brown University included the article "The Flagellum Unspun," correct?

A. Yes, sir, I believe it did.

Q. And the other article, I believe I misspoke, I believe the title of it is "Answering the Biochemical Argument from Design," is that correct?

A. Sounds right, yep.

Q. Now, your biology course consists of approximately 38 to 40 lectures, is that correct?

A. In some years a couple here, but that's in the neighborhood. We have a few exams as well.

Q. I believe you testified in your deposition approximately three out of those 38 to 40 lectures are specifically dedicated to evolution?

A. I think that's about right, yes. About 10 percent.

160 Q. I think we already established you're the co-author of "Biology" by Prentice Hall, and your co-other is Joseph Levine, is that correct?
A. That's correct, sir.
161 Q. And it's your understanding that the Dover Area School District selected and purchased your 2004 edition of "biology" to be used as their textbook for the ninth grade biology crass?
A. That's my understanding, too.
162 Q. And you consider that to be a ringing endorsement of your book I believe is the term you used in your deposition, correct?
A. Did I?
163 Q. If you'd like to look, page 21 and 22.
A. Sure.
164 Q. Line 24, starting on page --
A. Sorry, the clip is in the way. Yes, okay. I'll just rephrase it so I can explain the context to the court. "Question: I'm assuming you don't have any objections with the school board making that decision," which was to pick out book. Answer, my answer, "No, I was quite pleased. I considered it to be a ringing endorsement of our book," and I have to say that when I said that I was engaging in a bit of flip

hyperbole, exaggeration for just the purpose of emphasis. I was very pleased.

165 Q. You think that was a good choice?

A. A good choice by to engage in flip hyperbole or for the Dover board of education?

166 Q. Probably the latter.

A. Okay. Yes, I think it was a good choice. Joe and I worked very hard on this book. We think we've written the best possible book. We regard our mission as to turn students on to science, and we think our book does that and we're very happy that the Dover board selected it for the students.

167 Q. Does your textbook provide comprehensive coverage of the theory of evolution?

A. Yes, sir, I believe it does.

168 Q. And you write your textbooks to comport with the academic standards for each of the states, correct?

A. Yes, sir, we do. The textbook used in Dover is a national edition, but we routinely consult the science education standards in the various states, including Pennsylvania, to make sure they fit those standards.

169 Q. Is it your understanding that your biology

book, the 2004 version, comports with the Pennsylvania state academic standards?

A. Yes, sir, I believe it does.

170 Q. In your opinion does your textbook represent science in a manner that comports with good science pedagogue?

A. Yes, sir, I believe it does.

171 Q. And it presents science in a way that is proper for a ninth grade biology student?

A. Yes, I think that.

172 Q. Now, this book, the biology book, includes a section entitled "Strengths and Weaknesses of the Evolutionary Theory," correct?

A. Yes, it does include such a section.

173 Q. And this section has not appeared in your prior versions of the biology book, is that correct?

A. You know, the answer to that is -- not appeared in previous version. Not exactly. It's not exactly a yes or no. That particular heading is new, but some of the statements made under it do appear in earlier printings of the book. But certainly the section exactly as it appears in 2004 I do agree did not appear in the 2003 or the 2002 copyright.

174 Q. Did you have prior sections that were set out strengths and weaknesses that were under the section on evolution?

A. We certainly did describe the strengths and weaknesses of evolutionary theory, but we had not placed them under a heading so they couldn't be missed.

175 Q. So this was the first time it was placed under that sort of a heading?

A. That is correct, sir.

176 Q. If you can turn to page 386 in the biology book, and that's Exhibit 214, defendant's exhibit, could you read the paragraph that begins with "like," the second full paragraph?

A. Sure, I'd be glad to. "Like any scientific theory, evolutionary theory continues to change as new data are gathered and new ways of thinking arise. As we shall see shortly, researchers still debate such important questions as precisely how new species arise and why species become extinct. There is also uncertainty about how life began."

177 Q. And the caption of that where that section falls is Strengths and Weaknesses of Evolutionary Theory," correct?

A. It's actually a heading, but yeah, that's correct.

178 Q. And that statement, that paragraph that you just read, is that an accurate statement?

A. I certainly hope so. I believed it when Joe and I wrote it.

179 Q. Now, that section, that heading, "Strengths and Weaknesses of Evolutionary Theory" was added to your book because of the state requirements of the state of Texas, correct?

A. Yes, sir, it was.

180 Q. And those standards required students to analyze and critique specific scientific theories?

A. The curriculum guidelines in the state of Texas, which are known as the TEKS, which stands for Texas Essential Knowledge and Skills, have very specific wording in fifteen or twenty different curricular areas, and when we prepared our book for the Texas adoption we thought it best to use the exact wording that was used in the Texas standard in a variety of places so it couldn't be missed that we were conforming to Texas standard, and this is one of those places, that is correct.

Q. Now, is it true when you submitted your textbook to the state of Texas it was clear that there was only one scientific theory that any member of the state board of education was interested in, and that was the theory of evolution?

A. No, sir, it was not clear. Would you like me to explain why I gave --

Q. I want you to go to your deposition, sir, page 285 and 286.

A. Okay.

Q. And if you start, the question begins on line 24 of page 285. If you could read that through your answer of page 286, line 19.

A. Sorry, you want me to start on 285?

Q. 285, line 24 is where the question begins.

A. Sure. "Question: What was the purpose for putting that in the 2004 version?" Answer --

Q. I'm sorry, let me -- I'm sorry to interrupt you, but that is that heading, that section that we were just --

A. Yes, correct.

Q. Continue with your answer, I'm sorry.

A. "The purpose for putting that in the 2004 version was the state requirements for the state

of Texas specifically required students to analyze and critique the strengths of scientific theories and hypotheses. Now, that standard, which is known as TEKS 3-A in Texas, applied to scientific theories in general, but as we submitted our textbook to the state of Texas it was clear that there was only one scientific theory or hypothesis that any member of the state board of education was interested in, that was interested in seeing strengths and weaknesses for, and that one theory was the theory of evolution."

Now, the reason, sir, I said no to your question was, and I'm sure the court reporter can correct me if I got this wrong is because your question was, was that the only theory that any member of the state board was interested in, and the reason I said no is because many members of the state board were interested in many other aspect of the book. The deposition statement was it was the only theory that anyone was interested in seeing strengths and weaknesses for, and that's what I said in my deposition.

So my no answer is based on very carefully listening to your question and trying to say

that no, I don't want to slur the entire board of education of the great state of Texas by saying that's the only theory they were interested in. It is true that that's the only theory that they wanted to hear strengths and weaknesses for. I hope that clarifies my answer in the court vis-a-vis the deposition.

187 Q. And so in that regard your deposition answer that you read is a correct answer?

A. My answer in court was correct, sir, based on your question, and my answer in the deposition was correct based on the question, which was different, that you asked me at the deposition.

188 Q. Sir, when you write your textbooks, and this is I guess a general post to textbook writing, is it true that when you use qualifying language such as "some biologists propose" that that is a way of conveying sort of a sense in the community that there might be a tentative nature or disagreement about the proposition?

A. I'd want to see the particular context you have in mind, but in general I think that's a fair statement.

189 Q. Sir, in the ordinary meaning of the word a

creationist is simply any person who believes in an act of creation, correct?

A. Yes, I think I would also regard that as the ordinary meaning of the word creationist.

190 Q. And you believe that the universe was created by God?

A. I believe that God is the author of all things seen and unseen. So the answer to that, sir, is yes.

191 Q. In a sense that would make you a creationist using the definition --

A. In the, as I think you and I discussed during the deposition, in that sense any person who is a theist, any person who accepts a supreme being, is a creationist in the ordinary meaning of the word because they believe in some sort of a creation event.

192 Q. And that would include yourself?

A. That would certainly include me.

193 Q. And you believe that God coined the laws of physics and chemistry?

A. Well, I have to say that I'm not on the stand as you pointed out yourself, sir, as an expert witness in theology. I can certainly tell you what I believe. And that is as I said

before, God is the author of all things seen and unseen, and that would certainly include the laws of physics and chemistry.

194 Q. And you believe that evolution is a way in which God can bring about His divine plan in this universe?

A. I certainly believe that evolution is a natural process that occurs in our universe, and as such it and all other natural processes fall in -- again I don't want to pretend to be a theologian, but I think it would fall under the purview of what a theologian would call divine providence.

195 Q. But in terms of your personal beliefs you believe that that is consistent with God's overall plan the way evolution operates?

A. I believe that God is the author of nature, and therefore I believe that things that happen in nature are consistent with God's overall plan, and evolution is a natural process.

196 Q. And you see evolution as being consistent with your religious beliefs?

A. Yes, sir, I do.

197 Q. Sir, you believe that faith and reason are compatible?

A. I believe not only that they are compatible, but they are complementary.

198 Q. You agree that if we apply faith and reason correctly as objective and reliable tools for the nature of the world around us, ultimately the conclusions of both should be compatible?

A. One would certainly hope is. If God exists, and both faith and reason are gifts from God, they should complement each other.

199 Q. You agree then that the rational world of science can be included in faith world of religion, that the two are entirely compatible?

A. Well, actually you phrased that question in sort of a contradictory way. You said, I think you said can one be included within the other, and then you said are they compatible. I'm not sure that neither faith or reason are included within each other. I do very much agree they are compatible.

200 Q. If you look at your deposition, page 201?

A. Yes, sir.

201 Q. Beginning at the end you make reference to a document written by John Paul II, and I believe that was the encyclical Fides et Ratio, "Faith and Reason?

A. Sir, this is on page 201?

202 Q. If you read on to page 202, beginning of page 202.

A. Okay. No wonder I couldn't find it. Yes. Oh, okay. In the deposition, I'm not sure if you want me to read it, but I can paraphrase it --

203 Q. I'd like you to read it --

A. Sure. I'll simply begin on page 202 if that's all right with you.

204 Q. Yes.

A. "Guiding the relationships between these is pretty well exemplified in that document written by John Paul II that I mentioned earlier called Fides et Ratio, which is to say that the rational world of science can be included in faith world of religion, and that the two are entirely compatible," and I have to say that I don't quite like with the way that I put it in the deposition, which is one of the reasons that I rephrased it, and, you know, in terms of including when one world is included in another it carries the implication that one is subordinate to the other, and I regard as I said in the second part of that is the two as

compatible, consistent, and complementary. I don't regard one as included with the other, and therefore I don't actually quite agree with what I said in the deposition. I hope I haven't caused you any trouble.

205 Q. So you don't ascribe to philosophical naturalism, correct?

A. As I understand philosophical naturalism, it is a doctrine that says that the physical world is all there is, and the only way we have of learning anything about the nature of existence is the scientific way, and if that is what philosophical naturalism means, no, sir, I am not a philosophical naturalist.

206 Q. Now, when you read the Book of Genesis, you take that to be a spiritually correct account of the origins of our species, correct?

A. I take all of the Bible, including the Book of Job, the Book of Psalms, New Testament, and Genesis to be spiritually correct.

207 Q. And you find repeatedly verses that say that God commanded the waters of the earth and the soil of the earth to bring forth life, and from an evolutionary point of view you believe that's exactly what happened?

A. Well, I just don't find them. They're there. And the way in which I look at Genesis is that Genesis as I read it, and unfortunately I don't read Hebrew, my co-author does, and he's frequently discussed Genesis with me, but as I read English translations of Genesis I see a series of commands of the Creator to the earth and its waters to bring forth life and, you know, without requiring, my church certainly doesn't, without requiring Genesis to be a literal history, you know, that's pretty much what happens, which is that the earth and its waters and so forth brought forth life.

208 Q. And that's consistent with evolutionary theory?

A. In the broad figurative poetic sense it is consistent with natural history, which underlies evolutionary theory.

(Brief pause.)

209 Q. I believe you indicated in your direct testimony that you gave testimony down in Georgia in the Sellman vs. De Kalb County case?

A. Yes, sir, I did.

210 Q. May I approach the witness, Your Honor?

THE COURT: Yes you may.

211 Q. I'm handing you what's been marked as Defense Exhibit 211.

A. Thank you, sir.

212 Q. And you'll note from the label on the front cover it appears to be Exhibit 11 from your deposition. Do you recall seeing this in your deposition?

A. Yes, I do recall seeing it in my deposition.

213 Q. If you turn to page 138, please?

A. Okay.

214 Q. And starting at line 3 the question was asked, "When you were writing material on evolution, did you add any information on creationism? And then you answer begins at line 5. Would you please read your answer from line 5 down to line 24, please?

A. Okay. "Answer: No, we did not, and the reason that once again is that there is no scientific evidence that supports the idea of creationism. Now, it's very important to define what one means by creationism. I'm a Roman Catholic for example, so I believe the universe was created, and you could always say that means you're a creationist. But in the modern usage

of that language in the United States the word creationist means something quite different, other than a person who simply believes in a supreme being and thinks that there is meaning and order and purpose to the universe.

"In the current usage in the United States creationist is taken to mean someone who thinks that the earth is six to ten thousand years old, that all living organisms were simultaneously created during a very brief period of time, perhaps six days, and that the entire geologic record is an illusion, a column of flood deposition from the single forty day flood that has been misinterpreted for 250 years by the geological sciences as a series, a system of geological ages."

215 Q. When you gave that answer you were testifying under oath, sir?

A. Yes, sir, I was testifying under oath.

MR. MUISE: Your Honor, this might be a good time to take a break, I don't know, if the court is inclined to do so. I'm going to be moving into some new material, so it's sort of a natural break from my perspective.

THE COURT: All right. Why don't we take

our morning break at this time, and we'll as yesterday break for at least twenty minutes to give everybody an opportunity to do what they need to do. We'll return in twenty minutes. We'll be in recess.

(Recess taken at 10:16 a.m. Trial proceedings resumed at 10:47 a.m.)

THE COURT: Be seated, please. All right, we're back on the record, and Mr. Muise, we are continuing with cross examination.

CONTINUED CROSS EXAMINATION BY MR. MUISE:

216 Q. Thank you, Your Honor. Dr. Miller, the concept of complex specified information, that's a component of intelligent design theory?

A. I suppose it is. I don't normally hear it when intelligent design theory is explained. I didn't see that exact term in "Pandas and People," I may have missed it, perhaps you pointed out to me, but I do know that there is a person who is generally regarded as part of the intelligent design community named William Dembski who has written about complex specified information, and I can't think of anyone else who has written about it other than Dr. Dembski.

217 Q. When you testified on direct and you

referred to the section on "Pandas" with the writing in the sand, John loves Mary?

A. Yes, sir, I did.

218 Q. Is it your understanding that that's the sort of concept that Dr. Dembski is trying to convey with the notion of complex specified information?

A. Well, you know, I'm not entirely sure, and we could always ask Dr. Dembski, but it's entirely possible that that's what he refers to.

219 Q. And you said this is a concept argued by Dr. William Dembski, is that correct?

A. That's my understanding.

220 Q. And he has a Ph.D. in mathematics?

A. That's what I've been told.

221 Q. And his ideas and concepts were published in a book called "The Design Inference," are you familiar with that?

A. I've heard of the book.

222 Q. Do you know that the book was published by Cambridge University Press?

A. I have heard that, too.

223 Q. Is Cambridge University Press an academic press?

A. It is a press that I understand is owned by

Cambridge University in England.

Q. A prestigious university would you agree?

A. Oh, absolutely, no question about that.

Q. I may want to forewarn the court reporter I have some phyla questions coming up here. Dr. Miller, the octopus belongs to the phylum mollusca, M-O-L-L-U-S-C-A, is that correct?

A. Yes, sir, I believe that's correct. Is this going to be a little bit of a biology quiz here, sir?

Q. I think you'll be prepared for it.

A. Okay, I'm ready to go.

Q. It's not a pop quiz, put it that way.

A. Okay.

Q. The starfish belongs to the phylum --

A. Echinodermata. I can help you with these.

Q. E-C-H-I-N-O-D-E-R-M-A-T-A?

A. Right, and that is pronounced echinodermata.

Q. And an insect belongs to the phylum anthropoda?

A. No, sir, arthropoda. That's an R.

Q. Sorry. A-R-T-H-R-O-P-O-D-A?

A. That's correct.

Q. And a fish, in the example we used a

minnow, belongs to the phylum chordata?

A. Chordata, that is correct.

233 Q. C-H-O-R-D-A-T-A?

A. That is correct.

234 Q. It's true that there's no fossil evidence that show that these phyla share a common ancestor?

A. Let me think about that just for a second.

(Brief pause.)

A. Within the last year a number of small bilateran fossils have indeed been discovered in fossil formations in China, and these -- by bilateran, B-I-L-A-T-E-R-A-N, we mean an organism has an axis of symmetry that goes right down the middle just like we do, and has parts of the body on both sides, hands on both sides, these small bilateran fossils exist in a time period preceding the Cambrian, and they may well turn out to be the ancestors of several of the phyla that you mentioned, and these would include arthropoda and chordata. It's a little more difficult to see how they could be the ancestors of echinodermata, which display radial, or five-fold symmetry.

235 Q. If you could go to your deposition at page

267?

A. Yes, sir.

236 Q. In the question beginning on line 12, "Is there fossil evidence that shows that each share a common ancestor," and we're referring to those four phyla that I just asked you about, could you please read your answer?

A. Sure, I'd be glad to. The question you asked, is there a fossil evidence that shows these share a common ancestor, the answer is that, "No, we don't have evidence yet of a common ancestor for these four different," I said phylum, but it should be phyla, "we do, however, have molecular evidence from organisms living today, As I mentioned several times, that all these organisms share a common molecular tool kit which is strong evidence on a molecular evidence, and many people would argue that molecular evidence is more important than fossil evidence, that they do share a common ancestor in molecular terms."

Now, I would point out, because I'm sure you're about to ask me about the difference between my statement in the deposition, which was taken in May, and my testimony here today,

which is in the month of September, and the difference is I've read the paper on these small fossils. This is a new development in science, and that's why my answer today is somewhat different.

237 Q. Is the point you make about many people would argue that molecular evidence is more important than fossil evidence, when you say the many people, are you referring to scientists?

A. Yes, sir, I am.

238 Q. Sir, you testified about the Dover statement in your direct, correct?

A. Yes, that's right. I do believe I did testify about the Dover statement.

239 Q. And you never spoke to a board member from Dover, is that correct?

A. Let me think hard about this.

240 Q. Let me rephrase the question. You never spoke to a board member about the statement?

A. I don't believe I have spoken to any members of the Dover board of education about any matter. I was just trying to make sure that was correct.

241 Q. And you never spoke to any administrator

at the Dover area school district about the statement?

A. Sir, I believe that's correct, and I also believe that when I became aware that Dover was a community that was discussing this contentious matter of how to teach evolution --

242 Q. Sir, did you speak to an administrator from Dover?

A. Well, I'm trying to give you an answer. I can't give you yes or no because I did e-mail a number of people in Dover, and I suspect, these are people whose names I got off of the Dover area school district web site, and I don't want to answer yes or no because, you know, one of those people might have been like an assistant superintendent, I can't remember if it was a principal or a department chair, I did send e-mails to a couple of people.

243 Q. Were they --

A. Sorry, and I'm not being evasive, it's just the question is not being able to recollect who they were, but I want to make sure that the record and the court does reflect that I did indeed send a couple of e-mails to people in Dover saying I would support them, I would be

happy to answer their questions about evolution, and you know, one of them might have been an administrator. So that's why I'm being a little fuzzy on this.

244 Q. My question was did you speak to any administrator about that statement, the Dover statement that you testified about on direct.

A. Under the qualifications that I've just given you, which is, you know, I might have sent an e-mail to somebody who happened to be an administrator, I believe the answer to that is no to the best of my recollection.

245 Q. Do you recall if that e-mail discussed this statement in any fashion?

A. I don't believe it did, but I can't, I don't have a copy of it and I can't be positive.

246 Q. If you turn to your deposition at page 321?

A. Okay.

247 Q. Starting with the question at line 4, can you read the question and read your answer down through line 12?

A. Well, the question is, it presupposes something before it, it says, "Whereas the theory of evolution is not a fact."

248 Q. Your answer?

A. No. Sorry, my answer is, "No scientific theory is a fact, and the Dover statement is very clear that it uses the theory of evolution in the second sense, because when the statement says Darwin's theory is a theory, and when you talk about Darwin's theory, you are specifically talking about the descent with modification and natural selection." I think it's very difficult to make sense of that answer without the context of the question that precedes it.

249 Q. Did you correctly read your answer in the deposition?

A. Yes, sir, I did.

250 Q. Now, in this statement it says, the Dover statement, "a theory defined as a well tested explanation that unifies a broad range of observations," do you recall this statement has that definition of theory in it?

A. Yes.

251 Q. And that is a correct and proper definition of theory?

A. Yes, and I believe that in my direct testimony I testified that yes, that was I thought a pretty good definition of the word theory.

252 Q. And it properly defined the theory of evolution?

A. It properly defines a scientific theory, and because the theory of evolution is a scientific theory, yes, it fits the theory of evolution.

253 Q. I just want to revisit that question from page 321. Within the context of the preceding question that was addressing the different meanings of evolution that I believe you testified to on direct and that I had asked you on cross whereas evolution can mean change over time or it can also mean evolution as a theory, the processes of how that evolution may have occurred, the first may, is more akin to a historical fact, the second sense is a theory which not a fact, is that the correct context of your answer?

A. The correct context of the area, the first part is perfectly fine, you said a theory which is not a fact, and again theories are a higher order of explanation than fact, and in that sense that was correct, right.

254 Q. And that's the context for the answer that you gave on page 321 of your deposition?

A. Yes, yes, that is right. The reason I wanted to point that out is because my answer begins the second sense, and of course if I just read that into the court record, one has no idea as to what is meant by the second sense without the preceding question.

255 Q. And that second sense is the theory sense of the meaning of evolution that we just discussed?

A. That's right, which is a coherent testable scientific explanation as to how the process of change over time has taken place.

256 Q. If you go to your deposition page 329?

A. Sure.

257 Q. Again these are more questions I've asked you about that, the Dover statement. If you look at, read the question beginning at line 15, and then your answer that follows?

A. Okay. Question, the next sentence, "The reference book 'Of Pandas and People' is available for students who might be interested in gaining an understanding of what intelligent design actually involves. Do you have any problems with that statement? Answer: No, I think the fact that the board has provided that

book, made it available to students, and that they have characterized it as a book on intelligent design, that's all a fair statement. So I think that particular statement is something that effectively communicates the reality of the situation to students, which is why we got this book, it's available for you and this book describes intelligent design."

258 Q. And just a correction, I believe which is "we got this book," not "which is why we got this book," correct?

A. I'm sorry. If I read it wrong I apologize. "Which is we got this book, it's available for you, and the book describes intelligent design."

259 Q. Is that a truthful answer?

A. Of course it's a truthful answer.

260 Q. Sir, would you open up your textbook, Exhibit 214?

A. Sure.

261 Q. Turn to page 15 for me, please. If you read the paragraph that begins with the words "A useful"?

A. Sure. "A useful theory may become the dominant view among the majority of scientists, but no theory is considered absolute truth.

Scientists analyze, review, and critique the strengths and weaknesses of theories. As new evidence is uncovered a theory may be revised or replaced by a more useful explanation. Sometimes scientists resist a new way of looking at nature, but over time new evidence determines which ideas survive and which are replaced. Thus, science is characterized by both continuity and change."

262 Q. Is that correct with regard to all scientific theories?

A. Yes, I believe it was. This is a chapter on the nature of science, and Joe and I wanted to emphasize to the students to scientific views may change over time in light of evidence.

263 Q. And that includes the Darwin theory of evolution?

A. Darwin's theory is a scientific theory. All theories are characterized by continuity and change, yes.

MR. MUISE: No further questions, Your Honor.

THE COURT: Thank you, Mr. Muise. Mr. Walczak, do you have any redirect?

MR. WALCZAK: Yes, Your Honor.

(Brief pause.)

REDIRECT BY MR. WALCZAK:

264 Q. Good morning, Dr. Miller?

A. Good morning.

265 Q. I want to cover six or seven points that were raised by Mr. Muise. First of all, if we could put Exhibit 124 on the screen? Is this the four paragraph statement that I asked you to comment on in your direct exam?

A. Yes, sir, it is.

266 Q. And as Mr. Muise pointed out, this statement was read in January. What I'd like to do now is put up I believe it's Exhibit 131, which is a statement that was read to the students in May or June that was revised slightly. Are you able to highlight, Matt, the four paragraphs? Let me represent to you, and if I'm in error I please would invite an objection, but I believe the only paragraph that is changed in any way is the third one. If you could please read that to yourself?

(Brief pause.)

A. I have read it, thank you.

267 Q. Can you identify what the change would be?

A. You're not playing fair. You should have

told me to pay attention to the other one and read this one, but I have to tell you I don't see the change right there, I'm sorry.

268 Q. Let me see if we can put both --

A. I thought Mr. Muise's phylum quiz was going to be tough.

269 Q. Just wait until you get my grades. So the one on top is the one from May or June.

A. Oh, okay. Now, sir, I see the difference.

270 Q. And so what is the difference?

A. Well, they left out an apostrophe in the possessive on Darwin's in the June one, and --

THE COURT: We've lapsed into English there.

A. Your Honor, I'm sorry. It's the teacher in me, I can't help it, and I noticed that as far as I can tell the only other thing is that is the phrase "along with other resources," I think that's correct. Am I missing anything else, Mr. Walczak?

271 Q. That's what I can see as well.

A. Okay. I don't see any other grammatical mistakes either.

272 Q. Besides "Pandas" do they mention what those specific resources are?

A. No. The only book I see mentioned in

"Pandas," the only book I see mentioned is "Pandas," and other resources unnamed.

273 Q. Does this change in the May or June reading of the statement, does this in any way change the opinion which you gave to the court about whether the statement promotes student understanding of science and evolution? Does this change your opinion in any way?

A. No, sir, it does not. It's still very clear that in contrast to the second paragraph, which is designed to specifically undermine Darwin's theory of evolution, or the theory of evolution in general, the third paragraph has no such undermining language with respect to "Pandas and People," and that's the only book that it specifically mentions. I think the effect is pretty much the same.

274 Q. There's a term that has been used throughout the testimony thus far, and it is "origin of life," and is that term used in a scientific way? Is there a way that scientists use the term origin of life?

A. Yes, sir. That term is used in a scientific way.

275 Q. And how is that term defined?

A. Well, I think the definition is reasonably straightforward, and that is origins of life research is research on, research concerning the conditions on this planet before life first appeared about three and a half billion years ago, and it involves research designed to reveal the pre-biological chemical processes that may have given rise first to self copying or self-replicating molecules, and eventually to the first living cells.

276 Q. And is that how you have used the term whenever it's employed in your book?

A. I believe it is. It's not something, it's not a question I have thought about in detail, but I believe that's exactly how we used it.

277 Q. And when you have testified using that term, either in response to a question, that is, has been your interpretation of origins of life?

A. Yes, sir, that is absolutely correct, that origins of life refers to in every sense in which I have used it and Joe Levine has used it in our book and I think in my testimony as to the origin of the first self-replicating molecules and the first living cells on this planet.

278 Q. When you use origin of life, you're not talking about origin of man?

A. No, absolutely not, sir. I think I've been very careful to use origin of species in terms of referring to that, and human origins or human evolutionary descent is quite a distinct topic from origin of life.

279 Q. Mr. Muise asked you a fair bit about your personal religious views.

A. Yes, I think he did.

280 Q. And he also asked you about religious and philosophical statements made by other scientists.

A. Yes, he did, and he I think named probably three of them in particular.

281 Q. Professor Dawkins was one?

A. Correct.

282 Q. Are statements, are these scientific statements?

A. No, sir. As I believe I answered for Mr. Muise, none of those statements are scientific in any sense.

283 Q. And do scientists make say religious statements?

A. Of course they do.

Q. And philosophical statements?
A. Yes, sir, they do. They even make statements about baseball, as Steven J. Gould did frequently, and those are not scientific statements.
Q. Just because a scientist said something doesn't make it scientific?
A. Of course not.
Q. And are you obviously have strong religious views you published in "Finding Darwin's God? Are these views published anywhere in your biology textbook?
A. No, sir, of course not.
Q. Are they published in any of your scientific journals?
A. They are not published in any of my scientific papers.
Q. Why not?
A. Because they aren't science. It's very simple.
Q. I want to direct your attention to your testimony in the Sellman case about which Mr. Muise asked you, and I believe that's Defendant's Exhibit 211. And Mr. Muise asked you about your testimony there where you were

asked about the modern usage of creationism.

A. Yes, he did.

290 Q. And as I recall your answer was essentially the definition of what would be called young earth creationism.

A. Yes. In fact, I don't recall Mr. Muise asking me a question. I recall him asking me to read my testimony, and he did not ask me any questions about the nature of that testimony, and he did not ask for any clarifications.

291 Q. It might appear that your testimony in Sellman is inconsistent with what you may have testified yesterday. Can you reconcile the testimony?

A. Yes. It's very easy to reconcile that testimony, and that is that in Sellman I should have been much more specific than I was when I said what is generally meant by creationism. And in particular the definition I give to creationism is one that in this trial in order to distinguish it from intelligent design I gave to scientific creationism or young earth creationism.

Now, my testimony in Sellman I think could probably be construed if one does not appreciate

the sort of general way in which I used the word creationism as to exclude intelligent design as a creationist theory simply because it doesn't make the scientific predictions that young earth creationism does about the geological record and the age of the earth, but in the most general sense it is a form of, it is a form of special creation or special creationism. Again this term was not at issue in the trial in Atlanta, and that's one of the reasons why I did not carefully define that term as I should have in my testimony in Sellman.

292 Q. But, Dr. Miller, in Sellman you were in fact asked about intelligent design, were you not?

A. My recollection is that I was.

293 Q. I'd like you to turn to page 139.

A. This is my testimony in Sellman?

294 Q. Yes. This would be Defendant's Exhibit 211.

A. Sir, I'm going to need a copy of it. Mr. Muise gave me one, but then he took it back.

295 Q. You don't remember it, sir?

A. I've got 138 down pretty well, but 139 I'm having trouble with.

Q. May I approach the witness?

THE COURT: You may.

A. Thank you.

Q. Now, the questions Mr. Muise asked you about your answer to I believe as you put it in the modern usage of creationism was on page 138 --

A. That's correct, sir.

Q. -- of the transcript? So now on page 139 I'd like you to read for the court line 7 through 11, please, beginning with the question there.

A. Sure. Line 7 begins, "Question: When you were writing your material on evolution, did you add any information on intelligent design?" The answer is, "No, I did not, and the reason once again is because we have been unable to find scientific evidence supporting the idea of intelligent design."

Q. Now, let me ask you to turn to the next page and read from line 4 to line 14 on 141, and I'll note that the first question there is by Judge Cooper in that case.

A. Perhaps it would help if I read that part to make clear. So I'll begin on line 4 as you

requested. "THE COURT: Is it religious based?"

300 Q. I'm sorry, excuse me. And did you know what the court was referring to when it says "it" there?

A. Oh, excuse me, let me go back to the context. The court is, the term "it" is referring to intelligent design.

301 Q. Thank you.

A. So with reference to the intelligent design, the transcript begins, "COURT: Is it religious based? WITNESS: The advocates, Your Honor, of intelligent design would argue very strongly that their ideas are not religious based. They would say it is a straightforward conclusion of analysis of information theory and what they regard as the deficiencies of evolutionary theory.

"But I think it's also clear that the people who embrace intelligent design in the United States argue very strongly that they have a religious, argue very strongly that if intelligent design is not included, then their own religious beliefs will suffer. So they certainly in my experience many of them have religious motivations for embracing this

particular idea.

"COURT: How do you see it? WITNESS: Pardon me sir? COURT: How do you see it? WITNESS: How do I see it? I'm a -- if I had to describe myself philosophically, I'd describe myself as a pragmatist, which if it works it's good enough for me. And with respect to intelligent design, I'm still waiting, and I've been waiting for about ten years for intelligent design theory to provide a single testable scientific explanation that holds up under peer review, under scientific analysis, and it simply hasn't.

"To put that in terms that my family in southern Indiana, mostly a farming family, would understand, this dog don't hunt. And in the case of intelligent design, I think that's a very good way to describe it."

302 Q. Could you, I'm sorry, read on through line 14?

A. Yes, sir. "Question by Attorney Michael Minnaeli: Maybe part of what His Honor is asking you about is how you see it in terms of a religion. Intelligent design, positing a designer, a creator Answer: Well, by definition any explanation that requires a creator, an

intelligent designer, is religious on its, is certainly religious on its face, and therefore the very fact that intelligent design presupposes a creator makes it so."

303 Q. I want to shift focus here a little bit. In the passage you just read, near the end you testified that you're still waiting for a single testable scientific explanation about intelligent design. Mr. Muise asked you a number of questions about whether irreducible complexity was scientifically testable, and I believe you testified in fact that it was, that tests have been done. Is irreducible complexity subject to scientific testing?

A. As irreducible, if irreducible complexity is carefully framed the way that Dr. Behe did in his book "Darwin's Black Box," it makes a testable prediction, and that testable prediction is that the parts, the individual components of irreducibly complex machines should have no functions on their own, and that is testable, and as I indicated in my testimony yesterday we can actually carry that test out in many of the systems that Dr. Behe cites, and in every case it fails that test.

Now, the test of irreducible complexity as a scientific statement is not a test of intelligent design, and the reason for that is irreducible complexity by itself makes no argument for design. It makes an argument against evolution. And it's that argument, the argument of evolution not working, that we can subject to a scientific test. But that's not proof of design.

That's not even an argument for design. That is simply a scientific statement made against evolution that is testable. As I indicated it fails that test, but even if it passed the test, that wouldn't be an argument for design.

304 Q. And when you say Dr. Behe and intelligent design have made predictions, would that be the same as hypotheses?

A. Yes. I regard certain of the statements that Dr. Behe has made as hypotheses that make testable predictions. For example, he looked at the blood clotting cascade, drew the inference that all the parts of the cascade had to be present for clotting to occur, and used that as an argument from irreducible complexity that the

cascade could not have evolved. "Pandas" makes exactly the same argument, and that argument can be subjected to a test. And that is if we find organisms in nature that are missing parts of that cascade, if that prediction is right, their blood should not clot.

And I brought into court yesterday two examples, documented examples by science and peer reviewed journals that showed that that prediction was wrong. The blood of whales and dolphins clots, and the blood of the puffer fish clots, and had that prediction been right, neither organism should have been able to clot its blood.

305 Q. So one of the hypotheses that's been advanced to support irreducible complexity both in "Pandas" and by Dr. Behe has been refuted? Is that the appropriate scientific term?

A. I think refuted, falsified, showed to be incorrect, found out to be wrong are all appropriate scientific terms in this case.

306 Q. And would you say the same thing about the prediction that the bacterial flagellum is irreducibly complex?

A. Yes, sir, I would. And the reason for that

once again is the prediction is that all of the parts are necessary for function. In the absence of any of the parts there is no function that can be favored by natural selection. Once we discover that ten of those parts in a different context have a selectable function, in other words they work, they do something else that's useful to the cell, the hypothesis is tested and found to be wanting. It's falsified.

307 Q. And the immune system was another hypotheses used by intelligent design proponents?

A. That's correct, sir.

308 Q. I believe you pointed to ten or eleven peer reviewed scientific papers and studies that have refuted that hypothesis?

A. In the interests in the case of the immune system Dr. Behe made a different prediction. Because the immune system has so many different parts and so many different cells and so many interacting systems that he could not point to a single biochemical cascade like the blood clotting, or a single structure like the flagellum, but instead he pointed to the complexity of the system that shuffles genetic

information, makes it possible for us to make antibodies against just about any foreign invader, and he said that system, because it required multiple parts, could never be explained in evolutionary terms. I think he said something to the effect that Darwinian explanations are doomed to failure, and it turns out that ten years of research have proven that Darwinian explanations of that system have been abundantly successful. So in that case that prediction, too, has not borne out.

309 Q. So the hypotheses advanced by the proponents of your irreducible complexity have been invalidated?

A. They've been invalidated in every case that they've been examined.

310 Q. Now, but I'm trying to distinguish irreducible complexity from intelligent design.

A. Correct.

311 Q. Let's assume that in fact there was support for irreducible complexity. Let's say that all of the scientific studies and literature had come out differently and you had not found an evolutionary pathway. Is that support for intelligent design?

A. No, sir, it is not.

312 Q. Why not?

A. It's not support for intelligent design because intelligent design presupposes a mechanism that exists outside of nature, can't be tested, can't be subjected to natural examination. If irreducible complexity held up, if we couldn't find subsets that were useful, it might mean that these systems had to be assembled by a pathway that was different from the Darwinian pathway, from the evolutionary pathway, and we might then look for another pathway or other evidence in favor of that.

Intelligent design would be a possibility, but intelligent design is always a possibility for everything. It's entirely possible that this universe was intelligently designed ten seconds ago, and each of us was put here with false memories and false childhoods. That's not a testable hypothesis. Is it possible? Yeah, sure. The problem with intelligent design as a scientific explanation is that it can be used to explain in non-scientific terms literally anything, and that's why it is not science.

313 Q. If you could recap, what are, you talked at the very beginning of your testimony you talked about the ground rules of science, what are those ground rules?

A. Well, I have to think very hard, because if I don't replicate my testimony exactly I'm sure Mr. Muise will have something to say about it, but I think the ground rules of science in the most general sense are that science is limited to the natural world. We do science based on what we can see, what we can observe, what we can test. Experiments we can carry out, control, and watch.

We then look at the results of those experiments, we try to make inferences based on them, and we try to formulate testable hypotheses on the basis of that evidence. Then go out in the world and carry out those tests. The explanations that we put forward as testable hypothesis qualifies as science only if they are natural explanations, because if they are not natural explanations they can't be tested, and that would render them outside of science.

And then finally the other ground rules that I'm sure I mentioned in one context or

another is that science and scientific methods have to be open, they have to be made freely available for the criticism of other scientists. We often call that peer review in the formal sense, and they have to be repeatable in the sense that other scientists can carry out the same experiments, the same investigations, make similar observations, and either confirm or deny the results that we have gotten.

314 Q. So taking those ground rules of science and applying them to the inference for design, not the irreducible complexity.

A. Yes, sir.

315 Q. The inference for design, does that inference lead to rules of science?

A. No, sir, not by any sense.

316 Q. And why not?

A. It does not meet it because the idea of design is that forces acting outside of a natural world that we cannot see, cannot replicate, cannot control, and cannot test have produced changes inside the natural world. Now, they may well have. You remember my tongue in cheek explanation of the success of the Red Sox. They may well have, but that explanation

is not testable by science, and therefore it cannot qualify as part of the scientific process or as the scientific theory hypothesis or idea.

317 Q. Does that make it wrong?

A. No, sir, it does not make it wrong. Explanations based on the supernatural could always be corrected, but since they lie outside the mechanisms of science to investigate, they are simply not part of science.

318 Q. Are there any peer reviewed publications, or scientific papers as you put it, on your curriculum vitae to support this inference for design?

A. I have not found a single peer reviewed paper anywhere in the scientific literature that supports the idea of intelligent design.

319 Q. I want to cover one more area that Mr. Muise raised. Unanswered questions, there are unanswered questions in evolution.

A. I certainly hope so. Or evolutionary researchers are out of business as of today.

320 Q. You testified in fact there are unanswered questions in every scientific theory?

A. Yes, sir, there are.

321 Q. Do we know everything there is to know in

other areas of study, let's say history?

A. Certainly not. My daughter, my younger daughter is a history teacher, majored in history, specialized in studying the American Revolution. There are unanswered questions in the history of our own republic. So the answer is yes.

322 Q. Do we know everything there is to know about the battle of Gettysburg?

A. Well, we know who won. At least we're pretty sure who won. And we know where it took place, we know when it took place. We know the generals on both sides. We know some of the troop deployments. But if you were for example to say let's take a particular soldier from a Rhode Island regiment who wrote home to his family on day two of the battle of Gettysburg, we might know something about that, but you know, we might not know where he was or what he was on day one or where he was or what he did on day three.

Now, I dare to say that there are thousands of examples in which we do not know exactly what happened in a particular place on that battlefield at a particular time. Another way

of putting it is that there are gaps in the historical record. But those gaps, they're worth filling, they're interesting, because we'd like to know what every soldier did on both sides in this pivotal battle in American history. So those gaps are unacceptable, and historians try to fill them.

If you discovered the unknown diary of a soldier who had been at Gettysburg, that would be great stuff. Give it to a historian, they'd write papers about it, they'd thank you. But none of this changes the conclusions that we can make from the abundant historical record that already exists as to where, when, and how the battle took place, or what the ultimate outcome was. So we can make accurate and even profound historical conclusions without having a complete historical record.

323 Q. You're talking about history here. Does that analogy apply to science?

A. Of course it does, because natural history is part of scientific investigation. Much of geology is historical in the sense that it tries to understand the processes that made up our earth. Much of cosmology and astronomy is

historical in the sense that it tries to understand what has put together our universe, our solar system, and other things out there in the universe, and a great deal of biology is historical in that paleontology and even through molecular genetics we try to reconstruct what happened in the past.

324 Q. And does the fact that we don't know all the details undermine the soundness of evolutionary theory?

A. No, sir, it certainly does not.

MR. WALCZAK: May I have just one moment, Your Honor?

THE COURT: You may.

MR. WALCZAK: I have no further questions.

THE COURT: We'll give Mr. Muise the last shot. Any recross?

MR. MUISE: No further questions.

THE COURT: You may step down.

MR. MUISE: I have forgot the exhibits.

THE COURT: Do you have an agreement as to the exhibits, the numbers? I can read you the roster of what I have, and you can work along with me as we do this. I have P-11, pages 7, 37, 65, 99, 100, 139, 140, 145, 146, and 150.

Does that pick up everything in P-11?

MR. WALCZAK: I believe it does, Your Honor, but we would move the entire book into evidence.

THE COURT: Any objection?

MR. GILLEN: Not at all, Your Honor.

THE COURT: P-11 is admitted in its entirety. Then we have the following additional exhibits. P-31, P-124, P-127, P-192, P-198, 214, P-214 that is, and P-245. Any objection to those?

MR. GILLEN: No objections, Your Honor.

THE COURT: All right. They're admitted. P-434, I'm not sure what that is. What is 434?

MR. WALCZAK: I'm sorry, Your Honor? 434?

THE COURT: 434 I think is "Darwin's Black Box," I'm not sure.

COURTROOM DEPUTY: Yes, it is.

THE COURT: There are certain pages referred to in that, 39,130, and 139. Is your pleasure to admit the book or the pages?

MR. WALCZAK: We'd move to admit the book.

THE COURT: All right. Any objection?

MR. GILLEN: We have no objection, Your Honor.

THE COURT: All right, that's admitted in

its entirety. P-643, again I'm not sure what P-643 is. That is --

COURTROOM DEPUTY: Excerpt of Nature Magazine, September of 2001.

THE COURT: That is page 69 from Nature Magazine. I'm assuming you probably want to admit the page only, but tell me if I'm incorrect.

MR. WALCZAK: We actually like to admit the article that starts on page 69.

THE COURT: Any objection?

MR. GILLEN: No objection.

THE COURT: All right. The entire article is admitted, that is P-643 in its entirely. 649 was --

COURTROOM DEPUTY: A magazine article in the National Academy of Science.

THE COURT: There were three pages referred to. 27, 5, and 16.

MR. WALCZAK: We propose to admit that entire publication.

MR. GILLEN: No objection, Your Honor.

THE COURT: All right. 649 is admitted, P-649 in its entirety. We also have P-654 and P-665. Any objection to either of those?

MR. GILLEN: No, Your Honor.

THE COURT: All right. They're admitted. Any other plaintiff's exhibits that we have missed, Mr. Walczak?

MR. WALCZAK: Some others, Your Honor.

THE COURT: Because of the abundance of exhibits, should you miss something, and this will, I'll afford the same courtesy obviously to the defense, we'll double back. We're going to do the best we can to get them in, but if you discover for example over the lunch break that we forgot something, we'll take it up. That's all I have.

MR. WALCZAK: Your Honor, 192 is the publication from the National Academy of Sciences.

THE COURT: I recited that, and that's admitted.

MR. WALCZAK: That entire exhibit?

THE COURT: Yes.

MR. WALCZAK: Your Honor, we would also offer for the aid of the court the demonstrative exhibits that Dr. Miller relied on, and it's not necessarily to come in as evidence, but as Your Honor is reviewing the transcript they might be

of assistance to the court.

THE COURT: In particular?

MR. WALCZAK: There were the five demonstrative exhibits with the slides I believe that's on the chimpanzee genome, hemoglobin, the bacterial flagellum, blood clotting cascade, the immune system.

THE COURT: In what form do you want to put those into the record? Do you have them printed?

MR. WALCZAK: Yes, Your Honor, I do believe there are prints of the slides that are already in the exhibit binder.

THE COURT: I was looking at them on the screen, so I didn't look at the binders. They're shaking their heads no, there may not be. If you want to supplement the record inasmuch as they were referred to and see if we can have an agreement, that's one where I'll allow you to double back if you want to, to put them in.

MR. WALCZAK: Your Honor, Mr. Gillen and I have quickly reached agreement that we would agree to produce these slides of both of our respective demonstratives.

THE COURT: The nods of the heads would indicate a meeting of the minds. So however you get them in, and why don't you mark them appropriately and we'll get them in at that time, and that would go for any demonstrative exhibits. Now, on cross examination by Mr. Muise, I have D-233, D-214, D-210, and D-211. Mr. Muise, your pleasure on that. Do you want to wait, or do you want to move to admit them now?

MR. MUISE: We had 214, Your Honor, the biology book, would you mind if we have that admitted at this time?

THE COURT: I couldn't hear you. Say again?

MR. MUISE: The biology book, 214?

THE COURT: You want to admit that?

MR. MUISE: We want to admit that, Your Honor. Exhibit 210.

THE COURT: I have 210.

MR. MUISE: We'd also admit --

MR. WALCZAK: I'm sorry, Your Honor.

THE COURT: 210 is the article. So you want to move 214 and 210. Any objection, Mr. Walczak?

MR. WALCZAK: No, Your Honor.

THE COURT: All right. They are admitted. How about 233 and 211?

MR. MUISE: We'll move for the admission of 233, Your Honor.

THE COURT: Mr. Walczak?

MR. WALCZAK: What is that?

MR. MUISE: The Pennsylvania academic standards.

MR. WALCZAK: No objection to those.

THE COURT: 233 is admitted. And finally 211?

MR. MUISE: We're not going to move for the admission of 211, Your Honor.

THE COURT: So D-233, D-214 and D-210 are admitted. Plaintiffs will be granted leave to submit the demonstrative exhibits in some form, and you can mark those appropriately and we'll take those out of turn at that point. That would seem to cover all the exhibits for that witness. And you may call your next witness. We'll go until about 12:15 I think. So there's certainly time to start the next witness.

MR. HARVEY: Your Honor, the plaintiffs call to the stand plaintiff Tammy Kitzmiller.

(Tammy Kitzmiller was called to testify and

was sworn by the courtroom deputy.)

COURTROOM DEPUTY: Please be seated and state your full name for the record.

THE WITNESS: Tammy Kitzmiller.

DIRECT EXAMINATION BY MR. HARVEY:

325 Q. Please restate your name.

A. Tammy Kitzmiller.

326 Q. You're a plaintiff in this action?

A. Yes, I am.

327 Q. Ms. Kitzmiller, please tell us where you live.

A. 2045 Andover Drive in Dover.

328 Q. And how long have you lived at that address?

A. With the exception of the time period between December 2001 and August 2003 I've lived in the Dover school district since 1993.

329 Q. Do you have children?

A. Yes, I do.

330 Q. How many children do you have?

A. I have two daughters.

331 Q. Please tell us their names, just their first names, and their ages.

A. Megan is 17, and Jessica is 15.

332 Q. Do they attend school?

A. Yes, they do.

333 Q. Please tell us what school they attend and the grades.

A. They're high school. Megan is a senior, and Jessica is a sophomore.

334 Q. So that means that Jessica is in 10th grade right now?

A. Yes.

335 Q. In Dover High School, correct?

A. Correct.

336 Q. And did Jessica take the biology class when she was in 9th grade?

A. Yes, she did.

337 Q. Was that in the 2004-2005 school year?

A. Correct.

338 Q. How long have your daughters been attending public school in Dover?

A. Since kindergarten.

339 Q. Please just tell us where you went to high school.

A. Bermudian Springs.

340 Q. Did you have any formal education past high school?

A. No.

341 Q. And please tell us what you do for a

living?
A. I'm an officer manager for a landscape company.
342 Q. Ms. Kitzmiller, did there come a time when you learned that the Dover area school district board of directors was considering approval of a biology textbook?
A. Yes. That would have been the summer of 2004.
343 Q. Do you remember the month, what month it was?
A. I believe it was June.
344 Q. And can you tell us what -- first of all tell us how you learned about it.
A. Through the newspapers.
345 Q. Do you specifically remember which newspapers?
A. It would either have been the York Dispatch or the York Daily Record.
346 Q. Tell us what you learned.
A. There was a question which biology book the school would approve. I also learned that certain board members had a problem with the biology book. There were statements made that it was laced with Darwinism. They also wanted

to balance the biology curriculum with creationism.

Q. And then did you subsequently learn anything more about the approval of a biology textbook?

A. Yes. From what I can recall I remember the books being approved with the exception that they also wanted a supplemental book, "Of Pandas and People," in the classroom.

MR. GILLEN: Your Honor, just for clarification, I want to make sure that we have preserved our standing objection to the hearsay in the newspaper articles. There's testimony about that based on our motions in limine.

THE COURT: We'll note the objection and the standing objection as it relates to the newspaper article. It may be in a different context with respect to this witness, so feel free if you want to restate it in a different context, but I'll certainly grant that standing objection per your motion in limine.

MR. GILLEN: Thank you, Your Honor.

BY MR. HARVEY:

Q. Ms. Kitzmiller, did there come a time when

you learned that the board of directors of Dover area school district had changed the biology curriculum?

A. Yes.

Q. And when did you learn that?

A. When the resolution was passed in October of 2004.

Q. And what did you learn?

A. I learned that they would be reading a statement to the biology class.

THE COURT: Let me stop you for a second. I think we're going to have trouble hearing you, and I know that's hard, you probably haven't testified before and you don't want to talk any louder. Why don't you move the microphone just a little bit closer? I'm guessing the people can't here. Try that. You don't have to get right on top of the microphone, that should be all right. You may proceed.

MR. HARVEY: Your Honor, may I approach the witness with an exhibit?

THE COURT: You may.

BY MR. HARVEY:

Q. Matt, if you can, please, put it up on the

screen. That's P-127. Ms. Kitzmiller, I've handed you what's been marked as P-127. Have you had a chance to look at it?

A. Yes. I have seen this at home.

352 Q. Can you tell me what it is?

A. Yes. It is a biology curriculum update which was a newsletter that was mailed to residents in the Dover district.

353 Q. Do you know where it was mailed from or who mailed it?

A. From the school district.

354 Q. And did you receive it in the mail?

A. Yes, I did.

355 Q. And can you tell us, your daughter was in the biology class in January of -- excuse me, 2004, when this segment on evolution was introduced, correct?

A. 2005.

356 Q. Thank you very much. And can you tell us your understanding of how the change to the biology curriculum was implemented in the classroom?

A. Yes. The statement that's referenced at the bottom of the curriculum update, an administrator or walked into the classroom --

well, I'm guessing that if there were students that objected or parents that opted their children out, they left the room, and then an administrator walked in and read the statement, leaving no room for questions, answers, and then they left.

357 Q. How do you know what happened?

A. My daughter was in the class. She opted out.

358 Q. And do you know why she opted out?

A. She didn't want to be singled -- well, she didn't feel she should be singled out, but she also did not feel she needed to be in the classroom if her teacher didn't have to be there.

359 Q. Now, I'd like to know if you can tell us whether you feel that you've been harmed by the actions of the Dover area school district board of directors.

A. Absolutely. I feel that they have brought a religious idea into the classroom, and I object to that. I do not think that this is good science. There seems to be no controversy within the scientific community, and I would think the biggest thing for me as a parent, my

14-year-old daughter had to make the choice whether to stay in the classroom and listen to the statement, be confused, not be able to ask any questions, hear any answer, or she had to be singled out, go out of the classroom and face the possible ridicule of her friends and classmates.

MR. ROTHSCHILD: We have no further questions.

THE COURT: Cross examination, Mr. Thompson?

CROSS EXAMINATION BY MR. THOMPSON:

360 Q. Mrs. Kitzmiller, I'm Richard Thompson. I'm representing the defendants in this case. How many school board meetings did you attend in the year 2004?

A. Off the top of my head, I attended in November and December, that probably would have been four.

361 Q. When is the first time you attended a school board meeting in 2004?

A. It would have been in November.

362 Q. In November?

A. Yes.

363 Q. That was after the policy itself was voted on by the school board, is that correct?

A. Correct.

364 Q. And so you really were not involved or did not hear of the debate that was going on in the school board on that particular policy, personally hear that debate, is that correct?

A. I had no personal knowledge, no.

365 Q. You had no personal knowledge of it?

A. No.

366 Q. Now, also most of the information that you just gave your counsel was based upon your reading of accounts in the newspapers, is that correct?

A. That's correct.

367 Q. And so you don't know whether those accounts were accurate or not as they reflected the debate of the school board when they were determining whether to implement the policy or not, is that correct?

A. I would have to say that's correct.

368 Q. Okay. Now, you were referred to a newsletter that you got in February 2005, is that correct?

A. Correct.

369 Q. And did you object to the parents being informed of what the school board was going to

do? Not the exact substance, but being informed what the school board was going to do, were you pleased at least to be notified of what they intending to do?

A. That's a tough question. Obviously the school district has a right to release the information as to what they're going to do. The manner in which it was done I would have questions with.

370 Q. You mentioned about your daughter having to opt out of that particular science class when they read this one minute statement, is that correct?

A. Correct.

371 Q. Now, there are opportunities that the school board gives parents to have their children opt out on many different kinds of subject matter, is that correct?

A. That's correct.

372 Q. They have a very lenient opt out policy, is that correct?

A. I would assume, yes.

373 Q. Yes. Okay. Now, one of the -- or the only book that the school board mentioned by name was "Of Pandas and People," is that correct?

A. That's correct.

374 Q. Do you know whether your daughter has ever read any part of "Pandas and People"?

A. I have no knowledge that she has.

MR. THOMPSON: Okay. No further questions.

THE COURT: Mr. Harvey, any redirect?

MR. HARVEY: No redirect, Your Honor.

THE COURT: You may step down. Thank you. Do you want to take another witness?

MR. HARVEY: Absolutely, Your Honor. Plaintiffs call to the stand Aralene B. Callahan.

(Aralene Callahan was called to testify and was sworn by the courtroom deputy.)

COURTROOM DEPUTY: Please state and spell your full name.

THE WITNESS: My name is Aralene Joan. Callahan. My nickname is Barrie. A-R-A-L-E-N-E, C-A-L-L-A-H-A-N. Barrie is B-A-R-R-I-E.

MR. HARVEY: Your Honor, I have a notebook of exhibits, all of them that are just a complication of some of the exhibits in the binder. I'd like to give it to the witness.

THE COURT: You may, sure.

DIRECT EXAMINATION BY MR. HARVEY:

375 Q. Mrs. Callahan, please tell us where you live.

A. 2030 Skytop Trail. Dover, Pennsylvania 17315.

376 Q. How long have you lived there?

A. About thirty years.

377 Q. Are you married?

A. Yes.

378 Q. Tell us your husband's name, please.

A. Frederick Brian Callahan.

379 Q. Do you have children?

A. Yes.

380 Q. How many children do you have?

A. Three.

381 Q. Please tell us their names and their ages.

A. Arie is 23, Danny's almost 21, and Katie is almost 17.

382 Q. Do any of them attend school in the Dover area school district?

A. Yes.

383 Q. Which child?

A. Katie.

384 Q. And what school does she attend?

A. Dover area high school.

385 Q. What grade is she in?

A. 11th.

386 Q. Please tell us what high school you went to.

A. Lower Marion High School.

387 Q. Do you have any formal education beyond high school?

A. Yes.

388 Q. Please tell us what formal education you have.

A. I have a B.S. from Ursinus College.

389 Q. What do you have a B.S. in?

A. Psychology.

390 Q. And did you at any time serve on the Dover area school district board of directors?

A. Yes.

391 Q. Please tell us what years approximately to the best of your recollection you served on the board of directors.

A. I think it started in `93. I know it ended in 2003.

392 Q. Do you know what month of 2003?

A. November of 2003 would have been my last meeting.

393 Q. During the time that you were on the Dover area school district board of directors did the

board have retreats?

A. Yes.

394 Q. What's the first board retreat that you can remember?

A. The first board retreat using the word retreat was in January of 2002.

395 Q. And can you remember specifically what happened at that retreat?

A. Specifically at that retreat I don't know.

396 Q. What's the next board retreat that you recall after the retreat in January of 2002?

A. That would have been March of 2003.

397 Q. Do you know Allen Bonsell?

A. Yes.

398 Q. Who is Allen Bonsell?

A. Allen Bonsell at that time was a school board member also.

399 Q. And did Mr. Bonsell have at that point in March of 2003, did Mr. Bonsell have any positions with respect to committees on the board?

A. He I believe the entire time that I served on the board with him he was chairman of the curriculum committee. He may have had other committee positions, but I can't recall.

400 Q. Now, do you remember a part of this retreat in March of 2003 where the board members went around the room and expressed issues that were of concern to them?

A. Yes.

401 Q. And tell us what you remember just generally about how that process worked.

A. Each board member had some time to talk about issues that were of concern to them at that time.

402 Q. Do you remember what Allen Bonsell identified for as issues of concern to him at that time?

A. Yes, I do. He expressed that he did not believe in evolution, and he also said that if evolution was part of a biology curriculum, creationism had to be shared 50/50.

403 Q. Did you take notes during that board meeting?

A. Yes.

404 Q. What did you write down generally during that board meeting?

A. Just different notes that people had said. I wrote down a couple of things that were concerns of mine also.

405 Q. When did you take these notes?
A. As I was attending the meeting.
406 Q. And as the people were speaking?
A. Yes.
407 Q. Now, I'd like you to take a look at what's been marked as P-641. It's in the notebook in front of you. Do you recognize P-641?
A. Yes.
408 Q. Tell us what it is.
A. It's the agenda from the board administration -- excuse me, board administrative retreat from March 26th, 2003.
409 Q. And do you know where this document came from?
A. It came from my home.
410 Q. And how was it that, tell us how it came to be in your home.
A. Well, it was in a pile of board information that I still had.
411 Q. And is there anything written on this document about what Allen Bonsell said at that meeting in March of 2003?
A. It has, "Allen - American history, founding fathers." Then "50/50 evolution versus creationism," and then an arrow from evolution,

"Does not believe in evolution."

412 Q. Now, do you remember anything else that Mr. Bonsell said at that meeting?

A. No.

413 Q. I'd like you to look at the second page of what's been marked as P-641. Do you see that?

A. Yes.

414 Q. And what's that?

A. These were the school board members' issues from the previous year.

415 Q. And was it part of the first page of P-641?

A. It was on the back of that document.

416 Q. And do you know who created this?

A. I believe Dr. Nielsen created it.

417 Q. Do you know how he created it?

A. I believe what he did as school board members were talking about their issues, he jotted them down and then kept them and distributed them.

418 Q. And there's a note on there under the name Allen Bonsell?

A. Yes.

419 Q. Do you see that?

A. Yes.

420 Q. Can you please read what it says under

number 1 and 2 under Allen Bonsell?

A. Creationism number 1. Number 2, prayer.

Q. And do you remember him saying that?

A. Not at that time, but I do remember him talking about creationism. I remember him talking about creationism, because that spurred me to go to the high school to go talk to administrators about it.

Q. And tell me the circumstances under which you went to the high school and talked to administrators about that.

A. It was after I heard Allen Bonsell speak about creationism I talked to Bob Hamilton, who at that time was the principal of the high school, and Larry Reading, who was the assistant principal at the high school, and I was expressing my amazement that a school board member would want creationism as part of a biology curriculum.

Q. And if you'd just please turn to the first page of 641 again, those notes that you read?

A. Yes.

Q. Whose handwriting is that?

A. That's mine. I'm not proud of that.

Q. Now, we're going to move off that exhibit

for just a minute now, and I'd like to ask you about a different subject. Did the board approve funds for a biology textbook in 2003?

A. Yes.

426 Q. Were you on the board at the time?

A. Yes.

427 Q. Did this approval for funding cover any other textbooks?

A. Yes.

428 Q. What textbooks did it cover?

A. It covered all the textbooks that were going to be bought that were part of the science curriculum, and also family and consumer sciences.

429 Q. Was there any schedule for buying textbooks?

A. The now superintendent Richard Nielson, who had been when he was the assistant superintendent had established a 7-year curriculum cycle, which was very beneficial in terms of budgeting I thought.

430 Q. What month of 2003 was it that the funding for the science textbooks was approved?

A. June.

431 Q. Now, after that approval for the funding of

the science textbooks did the board approve the purchase of a biology textbook?

A. No.

Q. Did you raise the issue at any time when you were on the board?

A. Yes.

Q. How did you raise it?

A. I repeatedly asked what the status was of purchasing the biology book, and not only the biology book. There were some chemistry books that hadn't been ordered, and there were also some family and consumer science books that hadn't been ordered, and I know at one point, and I believe it was August of that year, I even made this motion myself to approve those books since they had already been approved in the budget, but they died, that motion died for lack of a second.

Q. And did anybody on the board tell you why the approval of the purchase of the textbook was not passing?

A. No.

Q. Did this affect your daughter?

A. Yes.

Q. What grade was your daughter in at the

point?

A. My daughter was in 9th grade September of 2003.

437 Q. How did this affect your daughter?

A. She didn't have a biology book to take home. There were biology books on the shelf, but they were merely used as reference. It was my understanding that they weren't matching the curriculum, and the teachers were hoping to get their new biology books that they had reviewed and had been approved in the budget.

438 Q. Now, your time on the board I believe you testified was over in November of 2003?

A. Yes.

439 Q. Did you raise the issue of the approval of a purchase of a biology textbook after your term on the board expired?

A. Yes.

440 Q. And how did you raise it?

A. I would approach the school board at a public session during public comments and ask the status of the biology books.

441 Q. How many times did you raise that concern?

A. I think altogether when I was on the board and off the board it may have been five or six

times.

Q. And what happened when you raised it with the board in those cases?

A. I would pretty much get a non-answer.

Q. Did you attend a meeting of the Dover area school district board of directors on June the 7th, 2004?

A. Yes, I did.

Q. Why did you go to that meeting?

A. It was still, the major area of concern was these books hadn't been approved. I mean, my daughter had already gone through biology and didn't have a biology book. Well, the chemistry books hadn't been approved yet, and she was going to be taking chemistry. I was really going to be upset if she was going to be in a class that didn't have a chemistry book to take home.

Q. Now, I'd like you to take a look at what's been marked as P-42 in your notebook. Matt, can you please put it on the screen? Take a look at P-42 and tell us what it is.

A. This is the school board planning agenda meeting from June 7th, 2004.

Q. I'd like to focus on the language that I'm

going to have highlights in bold from P-42. Do you see those words "planning meeting"?

A. Yes.

447 Q. What does that mean?

A. That means that it's scheduled as a planning meeting, and what the practice of the school board had been, the first meeting of the month typically was a planning session. I mean, there might be an action item, but that would be if there's for instance like an emergency appointment, typically that was the planning meeting. Then the second meeting of the month was the action meeting.

448 Q. I just got a glass of water and you're actually doing more talking than me. Would you like a glass of water?

A. Please. Thank you.

449 Q. Now, did you see this agenda at or around June 7th, 2004? We're on P-42, ma'am.

A. Yes. Just to make sure, yes.

450 Q. Can you tell us if this agenda shows that the board was scheduled to consider approval of any textbooks?

A. Yes.

451 Q. Which textbooks was it scheduled to

consider approval of?

A. Chemistry, and family and consumer science.

Q. What about approval for biology? Was that --

A. No.

Q. Did you speak at that meeting?

A. Yes.

Q. Tell us what you said at that meeting.

A. As far as I can remember, when I'm looking at the agenda and I see that well, there were science books, chemistry and family and consumer sciences ready to be approved, but there was no biology books. So I felt that I just had to approach the board one more time and ask them why the biology books were not scheduled for approval.

Q. And is that what you said?

A. Yes.

Q. And do you recall what the board said back to you?

A. I do recall that Bill Buckingham said to me, "Well, the biology book is laced with Darwinism."

Q. Who is Bill Buckingham?

A. Bill Buckingham was a school board member

at the time.

458 Q. Did he have responsibility for any particular committee on the board at that time?

A. At the time he would have been chair of the curriculum committee.

459 Q. What did you do after Mr. Buckingham made that comment about laced with Darwinism to you?

A. I said, "So this is about evolution."

460 Q. Did you say anything else?

A. No.

461 Q. And did he say anything else?

A. At that time I don't recall that he said anything else.

462 Q. Tell us what happened next.

A. I sat down, and there might have been some kind of conversation going on, because I sat down, and as I was sitting down a student who had graduated with my son was sitting at that same table, and he was alarmed by what had just happened, and he said to me, "Mrs. Callahan, would it be okay if I got up to address the school board?" And I said, "I would think so. It's still public comment and, you know, go ahead." And he did then approach the school board.

463 Q. And what did he say?
A. He started questioning them, he explained actually that he was a biology major at Penn State, and he started to explain to them how important evolution is to a biology curriculum. And as he was explaining things to them, several of the board members were talking back to him. So it was an exchange.
464 Q. What did they say back to him?
A. They said that, "Well, okay, fine, evolution, but we need to teach creationism." They were pretty much down playing evolution as something that's credible. Bill Buckingham talked about creationism. Allen Bonsell talked about creationism. And as it went back and forth, at one point I thought Max was doing a really good job. He was staying calm and he was just repeatedly trying to explain to them what the meaning of biology was, what the meaning of evolution was, and he was getting this bantering back and forth. So at one point Bill Buckingham seemed to be getting pretty frustrated, and he said, "Well, you're a perfect example of what happens to students when they go to college. They get brainwashed."

Q. Do you remember anything else that was said in that exchange between the board and this student?

A. I also remember Noah Renwick explaining what a scientific theory was, and he explained that a scientific theory becomes a theory by repetition. In other words, if you just keep repeating it and repeating it and repeating it, whatever it is, that's how science becomes a theory.

Q. I'm not sure if I asked you, can you tell us the name of this student?

A. Oh, Max Pell.

Q. When you say he was a student, he was a college student?

A. He was a college student, yes.

Q. What was his demeanor during this exchange?

A. He stayed calm. I was really impressed how he was handling himself. I mean, he was a young man and these were adults kind of theatering him. They were rude at times I thought.

Q. Now, do you recall Mr. Buckingham showing Mr. Pell a picture at any time during that exchange?

A. Yes.

Q. Tell us what you remember.
A. I remember Mr. Buckingham stood up and went over to Allen Bonsell and showed him what appeared to be a picture and whispered something, there was a little exchange between the two of them, and then sat back down and started talking about this picture to Max.
Q. And what did he say?
A. He said something to the effect of, "you Can't expect me to believe that I was ever descended from apes and monkeys."
Q. Do you recall anything else that happened at that board meeting?
A. No.
Q. Do you read a local paper?
A. Yes.
Q. Which paper?
A. We receive the York Dispatch at our home, and any time there's a Dover issue I make sure I get the Daily Record.
Q. Were you in the practice of reading the news, the local papers at that time?
A. Yes.
Q. Now, I'd like to show you what's been marked as P-44. Do you have that in front of

you?

A. Yes.

Q. Can you tell us what it is?

A. It's from the York Dispatch, June 8th. It's an article.

Q. Who's the author?

A. The author is Heidi Bubb.

Q. Have you read that before now?

A. Yes.

Q. When did you read it?

A. I know I read it within the last couple of days.

Q. Did you read it at or around that time?

A. Yes.

Q. Now, I'd like you to look at that and tell us if that helps you remember anything else that happened at the meeting.

A. Well, yes. I mean, then it became apparent that they were still going to be looking at a book that teachers and board members could approve, but it gave me a sense that they were still going to continue looking for a book that had creationism in it.

Q. Does it help you remember anything else that happened at the meeting on June 7th of

2004?

A. Yes, because when Max started talking about the issue that he was concerned that religion was going to be in the biology class, Bill Buckingham made it perfectly clear that he thought the idea of separation of church and state to be mythical.

484 Q. Do you remember anything, does looking at this Exhibit P-44 help you remember anything else that was said at that meeting?

MR. GILLEN: Excuse me, Your Honor. Just to the extent that the witness is testifying from memory, memory is one thing, but reading from the article is another. I'd request that she not read from the article as evidence of --

THE COURT: I think the objection is well founded. What you're being asked to do is look at the article and to see whether or not it refreshes your recollection as to what happened at the meeting, and you can do that. But you shouldn't refer to the article in your answer. That's inappropriate for you to do that. So if you want to take a moment and read the article, we'll give you the opportunity to do that. Or if you want to take a moment as you get asked

the question you can read the article, but you must answer from your own memory. Don't recite something that you're reading from the article.

THE WITNESS: All right.

THE COURT: It's your memory that controls. If it's refreshed it is. If it's not, fair enough.

THE WITNESS: Thank you. But I do remember when Max was showing his concern about religion as part of the biology curriculum that Bill Buckingham, you know, in an exasperated tone did say, "You know, hey, the separation of church and state is just a myth."

MR. HARVEY: Do you remember anything else about that?

MR. GILLEN: Your Honor, I don't want to belabor the process and I want to be fair to both parties, but it's not appropriate when the witness is asked whether she remembers for her to look at that, at the article first. She should first say she doesn't remember, and then if she doesn't and she wants to look, I understand.

MR. HARVEY: Your Honor, I think I've established that the witness doesn't remember

anything else, and I just want her --

THE COURT: Well, I understand Mr. Gillen's objection. It's not an inappropriate objection under the circumstances. How long is the article?

THE WITNESS: I think that was it. I don't remember anything else. The last thing I remembered when I looked at the part of the separation of church and state was when Bill was so exasperated about it at that meeting.

THE COURT: Then I think the answer is no to the question, and Mr. Gillen, no harm, no foul, and we can move on.

MR. GILLEN: Fair enough.

BY MR. HARVEY:

485 Q. Now, I'd like you to turn to what has been marked as P-46, please, and can you tell us what is that?

A. This is a June 9th newspaper article from the York Daily Record.

486 Q. Who's the author?

A. Joseph Maldonado.

487 Q. Did you read this article at or around that time?

A. Yes.

Q. Have you reviewed it more recently?
A. Yes.
Q. And by looking at this article, does this help you remember anything else that happened at the meeting that you aren't already told us about?
(Brief pause.)
A. I don't think so, except that there was an ongoing mention of that it's really important for fairness and balance, therefore creationism needed to be taught along with evolution.
Q. Now, after that meeting, or shortly after that meeting I should say, did you have a conversation with Mr. Bacsa about looking for a textbook?
A. Yes, I did.
Q. Who is Mr. Bacsa?
A. Mr. Bacsa is the assistant superintendent of the Dover area school district.
Q. Tell us what you can recall of that conversation with him.
A. What I can recall, and I was in the administrative office area and I was saying to him, "Well, Allen Bonsell at least has finally said publicly that he's interested in

creationism being part of the school district," and Mr. Bacsa said to me, "Well, I don't think you'll have to worry because they'll never find a book that includes evolution and creationism in it."

493 Q. Did you attend any other -- did you know that there was a school board meeting scheduled for June 14th?

A. Yes.

494 Q. Did you attend that meeting?

A. No.

495 Q. Why not?

A. Because I was out of town.

496 Q. Did you attend any other board meetings that summer?

A. No.

497 Q. Why not?

A. I was out of town.

498 Q. And did you follow issues relating to those biology texts?

A. Yes.

499 Q. How did you do that?

A. My husband would bring the newspapers to me.

500 Q. And did you, in September did you attend

any meetings of the Dover area school district board of directors?

A. Yes.

Q. Do you remember a meeting on September the 7th of 2004?

A. Yes.

Q. And did you attend that meeting?

A. Yes.

Q. Tell us what you remember about happening at that meeting.

A. I remember approaching the school board during public comments, and I spoke briefly about the book "Of Pandas and People," because at that time I had read it and I was very concerned about the book being considered at all as a reference book, and because I was so concerned, and I guess at the time there's certain, there had been a lot of comment about the book, I was encouraging Allen Bonsell to follow past practice of the board, which is to allow public comment or to have a planning meeting the first meeting of the month and an action meeting the second meeting of the month, so whatever action the school board was planning to take on this issue there would be plenty of

time for the faculty and the community and even board members to find out about as much as they could about whatever they were going to decide to do.

504 Q. Why did you raise that issue?

A. Why?

505 Q. Yes.

A. Well, because I was really concerned about this book being part of the biology curriculum.

506 Q. Do you remember anything else that happened at the meeting on September the 7th?

A. On September 7th? Is that what you said?

507 Q. Yes.

A. No, only that I basically didn't get an answer from Allen when I was trying to have him make a commitment that yes, he would strive to follow past practice.

508 Q. Now, I'd like to ask you to look at what's been marked as Plaintiff's Exhibit 679. Can you tell us what that is?

A. It's a news article on September 8th from the York Daily Record.

509 Q. And who's the author?

A. Lori Lebo.

510 Q. Does looking at that article help you

remember anything else that happened at the board meeting on September the 7th, 2004?

(Brief pause.)

A. I mean, I remember saying that to Lori that this is just one more embarrassment for Dover, because I really was appalled by that book "Of Pandas and People."

511 Q. Anything else you recall from that meeting after reviewing that article?

A. No.

512 Q. Do you remember a meeting on September the 13th of 2004?

A. Yes.

513 Q. And did you speak to the board on that occasion?

A. Yes.

514 Q. Do you remember what you said?

A. I remember I wrote out a statement with what I wanted to say, because I really wanted to try to make an impression on the board of how inappropriate I thought the course of action they looked like they were taking was.

515 Q. Did you save your notes on that statement?

A. Yes.

516 Q. Please turn to what's been marked as P-668.

I'm not going to ask you to look at all of this. It's a series of, a collection of handwritten note, and I'd just like to ask you to turn to page 1033 in that document. It's actually the last page of the document.

A. Okay. Thank you.

517 Q. Are you at that page?

A. I am.

518 Q. Can you tell us what that is?

A. These are the notes, or the written statement I brought with me to that September meeting to read to the school board.

519 Q. And looking at that, does that help you remember what you said to the board on September the 13th of 2004?

A. Yes.

520 Q. Please tell us what you said.

A. May I read it, or do you want me to --

MR. GILLEN: No, Your Honor. I mean, she may not read the statement. If she can remember, that's fine. But it is hearsay.

THE COURT: What counsel is attempting to have you do is to have you look at that to refresh your recollection as to what you said. You don't have to recite it verbatim. If it

refreshes your recollection you can, with your recollection refreshed you can paraphrase or summarize if that refreshes your recollection what you said at the school board meeting. But you shouldn't read it from the note.

THE WITNESS: So do you need me to read the entire thing first and then say what I said, or may I look at it and comment --

THE COURT: You certainly may have all the time you need to take a look at it, and if it refreshes your recollection then you can answer the question as to what it is that you said. This is not a test to have you recite it verbatim. If it refreshes your recollection then you can summarize or answer the question, but Mr. Gillen's objection is that you cannot read the note into evidence. That's quite right. So if you do it for that purpose, that's appropriate.

THE WITNESS: Okay. Thank you.

THE COURT: And while she's doing that let me ask counsel, it looks like you're going to be in with this witness for a while.

MR. HARVEY: Yes, Your Honor.

THE COURT: While don't we cover this

question and then we'll break for lunch, or if you have several questions in this area, why don't you finish this area as to what you said at the meeting and then --

MR. HARVEY: I was, I was just going to ask her this question, ask her to tell us what she can remember saying, and I believe, Your Honor, that that does come in as a past recollection recorded, so that she could read the statement. And if she remembers reading the statement I believe she could read it.

MR. GILLEN: Your Honor, she's testified that these are notes of the statement she was going to make. I think that by any reasonable measure that's not recollection recorded. It's something she believes that she took with her to the meeting.

THE COURT: We could debate the finer points of what is past recollection recorded and we might not resolve it, but we're going to get a summary of the statement I suspect after she reads it. So I'll choose not to do that.

MR. GILLEN: And I wouldn't deprive the witness of a recollection.

THE COURT: All right. So we won't go

to the more, to the finer points of past recollection recorded. We'll use the reference.

THE WITNESS: I absolutely remember reading this statement at the school board meeting.

MR. HARVEY: And would you please read it for us? I'm sorry, Your Honor, Mr. Rothschild had spoken to me when you last spoke, and I didn't hear your last comment.

THE COURT: It's always a problem when you have co-counsel.

MR. HARVEY: I know, I know, and I'll talk to him about that over lunch, Your Honor.

THE COURT: Mr. Rothschild goes to the penalty box. You can restate the question.

BY MR. HARVEY:

521 Q. That document that you're looking at that has the Bates number P-01033 on the bottom, can you tell us what that is?

A. This is a document, this is a copy of the papers that I brought with me that I read at the school board meeting.

522 Q. And did you read that verbatim?

A. I read it verbatim.

523 Q. Would you please read that for us?

A. I have --

MR. GILLEN: Your Honor?

THE COURT: No, it's not, we're not going to read the statement in. So that my ruling is clear, I don't view it -- if you want to break here and we want to debate this and you want to give me some time and you want to do it that way, I don't see it as necessarily past recollection recorded for the argument that Mr. Gillen made. However, we can do this two ways.

We can break here, hold the thought, I'll come back and I'll rule, or alternatively you can have it refresh her recollection and she can having had the recollection refreshed testify as to generally what she said. In other words paraphrase or summarize what she said, your choice.

BY MR. HARVEY:

524 Q. I'd be happy for you to summarize what you said at that meeting based on your review of the statement now.

A. The first thing that I did say is that the book was absolutely not appropriate for 9th grade. I then said that the book claimed to refute scientific biological origins, but I

thought it was absolutely religiously based. And the third thing I said was that I urged the school board to really consider this strongly and to remember the oath of offices they took that they were sworn in as school board members, because I thought that this could lead to an expensive and protracted lawsuit and it would be harmful to the students and the district.

525 Q. Do you remember anything else you said? And you can look at it again.

A. Oh, I remember mentioning also that this had absolutely nothing to do with balance and fairness, but that it was merely introducing religion into the biology curriculum, and to pretend otherwise was pretty preposterous.

MR. HARVEY: Thank you, Your Honor. I have no further -- I mean, I have more questions.

THE COURT: For the witness.

MR. HARVEY: But on this line of questioning I'm done, Your Honor.

THE COURT: Okay. That will mark an appropriate time to break for lunch. We will break until approximately 1:45. We'll reconvene at that time for our afternoon session. We'll continue with this witness

at that time.

(End of Volume 1 at 12:23 p.m.)

Kitzmiller, et al. vs. Dover School District

4:04-CV-02688

Civil Bench Trial, Day 2, Volume 1

27 September 2005

I hereby certify that the proceedings and evidence are contained fully and accurately in the notes taken by me on the trial of the above cause, and that this copy is a correct transcript of the same.

s/ Wesley J. Armstrong

_____

Wesley J. Armstrong

Registered Merit Reporter

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