In the matter of Berkeley v. Berkeley

by Michelangelo D'Agostino

Stepping into the Valley Life Sciences Building can be like taking a walk back in geological time. *Archaeopteryx*—one of the pit stops on the evolutionary road from birds to dinosaurs—greets the visitor from a large glass case, its death throes immortalized in a limestone block. Further on, *Pteranodon* swoops in low over *T. Rex*, majestically holding sway over the entrance to the UC Museum of Paleontology.

A quick trip up three flights of stairs and a more familiar realm again emerges: long, austere hallways filled with offices and labs and research posters. But while the evolutionary trip from the Jurassic to the present day may have been just as quick and easy from the perspective of Mother Nature, it only takes a glance at the clippings on the office door of Kevin Padian, Professor of Integrative Biology and Curator of the Museum of Paleontology, for a reminder that, from the human perspective, the journey has been littered with endless controversy, politicking, and rancor. Articles on the "merits" of teaching different viewpoints in science. A Bruce Springsteen quote from the pages of *Esquire*: "Dover, PA—they're not sure about evolution. Here in New Jersey, we're countin' on it."

And perhaps most significant, a small sticker with a drawing of Charles Darwin that reads "Charles Darwin, 5'11", 163 lb., has a posse." Padian, a staunch defender of evolution and president of the National Center for Science Education (NCSE), a public interest group that supports the teaching of evolution in public schools, is surely part of that posse. It was in this capacity that he testified as one of the two scientific expert witnesses for the plaintiffs in the landmark trial over the teaching of intelligent design that took place this past autumn in Dover, Pennsylvania.

In October 2004, the Dover Area School Board voted to have ninth-grade biology teachers read their students a now infamous one-minute statement. Its intent was to make students "aware of gaps/problems in Darwin's theory and of other theories of evolution, including, but not limited to, intelligent design." "Intelligent design," the students would be told, "is an explanation of the origins of life that differs from Darwin's view. The reference book *Of Pandas and People* is available in the library along with other resources for students who might be interested in gaining an understanding of what Intelligent Design actually involves."

That December, eleven Dover parents filed a lawsuit in federal court against the school board, alleging that the statement amounted to an unconstitutional state sanctioning of religion. For six weeks last fall, Judge John E. Jones III patiently presided over the scientific, philosophical, and legal arguments in what came to be known as *Kitzmiller et al. v. Dover Area School District*.

But while quiet Dover is several time-zones and several states of mind away from "ultra-liberal" Berkeley, the case hit much closer to home than many would have expected. Padian wasn't the only Berkeley figure in the trial. Arrayed on the other side were an emeritus Professor of Law and a former Lawrence Berkeley Laboratory post-doctoral researcher. Though not physically present in Dover or formally involved in the trial, their words and actions cast long shadows in its transcripts. In the cultural landscape of intelligent design, the fault lines run through some unexpected places. Like Escher's drawing of a hand sketching a second hand which, in turn, reaches around and sketches the first, Berkeley both shapes the culture around it and is a reflection of that same culture.

Darwin's Golden Bear

Padian is tall and lanky and, from a distance, where his shock of grayish hair is less visible, easily mistakable for a graduate student half his age. Soft-spoken and deliberate, he weighs his words carefully. Perhaps he's learned from experience. He points to countless examples of the anti-evolutionist strategy of "quote-mining": using the out-of-context words of scientists against them. This soft-spokenness, though, masks an intensity about science and how it's presented in the public sphere.

Padian found himself traveling to Dover at the invitation of the plaintiffs' lawyers. The NCSE and the legal team, consisting of representatives from Philadelphia firm Pepper Hamilton and the American

Photo by Charlie Emrich

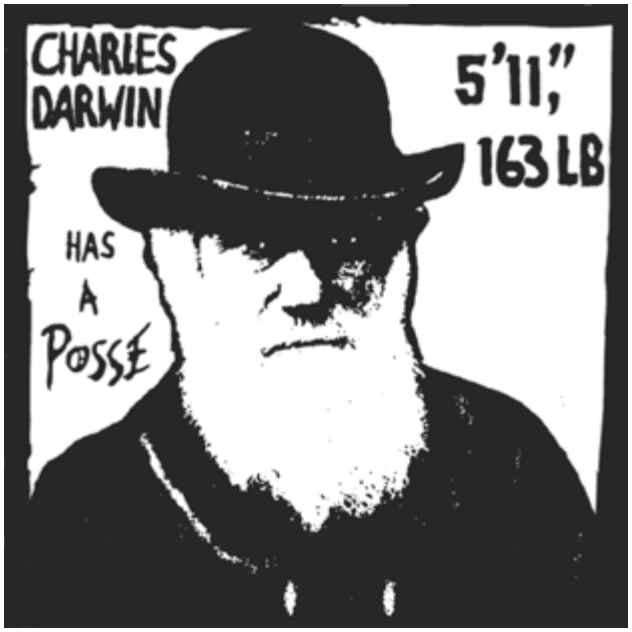

Illustration by Colin Purrington

Civil Liberties Union, crafted a two-pronged legal strategy. First, they set out to show that the Dover school board, specifically, and the intelligent design movement, in general, acted with a particular religious intent in mind: in speaking of a "designer," they were really speaking of the Christian God. Second, they wanted to show that the theory of intelligent design has no standing at all within the scientific community. As a paleontologist specializing in major adaptations in the history of vertebrates, including the origins of flight and the evolution of birds from dinosaurs, Padian was well-placed to show the successes of Darwinian evolution.

Far from being the dry and clinical expert, Padian peppered his day-long testimony with affectionate references to "critters" and "guys" and "Paleozoic roadkill." All kidding aside, much of Padian's testimony was dedicated to a detailed, point-by-point criticism of *Of Pandas and People*, the intelligent design textbook that was to be made available to Dover students. He attacked its notion of "adaptational packages"—that species appear abruptly and intact in the fossil record, fish with fins and scales and birds with wings and beaks—by showing that complex features can arise in a step-by-step fashion. And he pointed to examples from the fossil record where such transitions from one form to the other can actually be observed. Overall, the effect of *Pandas* would be to mislead students, he told the court. "What is a kid supposed to think when you tell him you can't get from Point A to Point B and then evidence is uncovered that shows that, well, in fact, it looks pretty conceivable that you can?"

Padian ended his testimony with an impassioned plea. Asked why, as a scientist, he has a problem with reading the one-minute statement to students, he replied:

> I think it makes people stupid. I think essentially it makes them ignorant. It confuses them unnecessarily about things that are well understood in science, about which there is no controversy…I can do paleontology with people in Morocco, in Zimbabwe, in South Africa, in China, in India, any place around the world…We don't all share the same religious faith. We don't share the same philosophical outlook, but one thing is clear, and that is when we sit down at the table and do science, we put the rest of the stuff behind. [see page 34 for more of the *BSR*'s interview with Padian]

" I think it makes people stupid."

Exapt or Die

One of the most powerful scientific weapons in the arsenal of evolutionary biologists is the concept of "exaptation." As Padian explains in his trial brief, exaptation is the idea that "a structure that initially is developed in the service of one function may be modified to serve a completely different function." So it is that the bones which held the upper and lower jaws together in reptiles were later used to transmit sound in the mammalian middle ear. Feathers insulated certain small theropod dinosaurs and shaded their eggs before they became vital for the flight of the birds that evolved from them. In this way, many of the features that the proponents of intelligent design claim are "irreducibly complex" can be shown to have evolved in a step-by-step fashion.

Of Pandas and Professors

Ironically enough, Padian wouldn't have been called upon to deliver impassioned defenses of evolution on a national stage without the work of another Berkeleyan—Philip Johnson, Professor of Law Emeritus at Boalt Hall and the widely recognized father of the intelligent design movement. Professor Johnson also serves as an advisor to the Discovery Institute, the Seattle based think-tank that has been the driving force behind intelligent design.

Johnson's publication of the 1991 book *Darwin on Trial* is as close to a birthday as the intelligent design cause has. "I approach the creation-evolution dispute not as a scientist but as a professor of law," he writes in its first chapter, "which means among other things that I know something about the ways that words are used in arguments." Johnson's intent was to bring his lawyerly skills to bear on the task of analyzing the logic of and the assumptions behind Darwinism. The essence of his argument was that the logical structure of the evolution debate is framed in such a way as to favor evolution from the outset; scientists "have to rely on a definition of science that does not permit an alternative to naturalistic evolution." Furthermore, he maintained that the evidence for the creative power of the Darwinian mechanism is scant at best.

Two years later, Johnson organized a meeting at Pajaro Dunes near Monterey to bring like-minded thinkers together. Its participants would become the major public figures in intelligent design: Scott Minnich and Michael Behe, who would testify on behalf of ID in Dover, Steven Meyer, who would direct the Discovery Institute's Center for Science and Culture, and Jonathan Wells, who pursued a PhD in molecular and cell biology at Berkeley after becoming convinced that he "should devote [his] life to destroying Darwinism."

Pandas, too, had its origins much closer to home. Dean Kenyon, one of its two authors and another fellow at the Discovery Institute (and a Pajaro Dunes participant), spent his career as a Professor of Biology at San Francisco State University. His pedigree includes a stint on this side of the Bay as well, though. After receiving his PhD in biophysics from Stanford, Kenyon worked as an NSF post-doctoral fellow under Melvin Calvin at the Lawrence Radiation Lab (as Lawrence Berkeley National Laboratory was known in its early days). Calvin, one of Berkeley's most renowned chemistry professors, was awarded the 1961 Nobel in chemistry for his work elucidating the chemical processes involved in photosynthesis.

So while evolution was being taught to introductory biology classes and was guiding the research of countless professors in diverse departments around campus, up the hill at Boalt and across the Bay, the intelligent design movement was taking shape.

Survival of the Litigious

The university finds itself embroiled in legal battles over evolution and intelligent design on its own turf as well. In August, the Association of Christian Schools International and the Calvary Chapel Christian School in Murrieta, California filed suit against the UC, alleging religious bias in its high school course certification policies. All public and private schools in the state must apply to the UC for certification in order to have their courses counted as college-prep credits in the admissions process. While 43 courses from Calvary were approved, a handful were rejected because of their content or text book selection. The UC says it will not certify science classes that use overtly religious texts such as those from Bob Jones University Press. The introduction of one such biology text states that "the people who have prepared this book have tried consistently to put the Word of God first and science second." The University is fighting the suit, maintaining that it has a right to set such standards and that the standards apply to everyone equally.

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In October, a California couple brought another suit against the UC over "Understanding Evolution" (evolution.berkeley.edu), a web site meant to serve as a resource for high school biology teachers on the topic of evolution. Jeanne and Larry Caldwell maintained that the site violates the separation of church and state by making the statement that religion and science are very different things and that one need not make a "choice" between the two (the site features a cartoon of a labcoat-clad, fossil-hugging scientist shaking hands with a Bible-toting priest). By linking to an NCSE site that features quotes from particular religions that state that evolution is not incompatible with religion, the public UC is also using federal money to promote these particular religious views over others. The suit was dismissed in March when a federal judge ruled that the couple lacked legal standing to sue in federal court.

Boalt From Above

Nothing about Johnson's white hair and grandfatherly demeanor suggest that he would spark a national controversy. He sits in his third-floor Boalt Hall office surrounded by books and papers, the very picture of a welcoming, open-minded intellectual. A stuffed gorilla wearing a suit and smoking a cigar sits on his desk (a gift from some students, he laughs). He smiles and quips that he wouldn't mind being related to gorillas; after all, a handful of dust is not necessarily a more noble beginning.

"I considered [Dover] a loser from the start," Johnson begins. "Where you have a board writing a statement and telling the teachers to repeat it to the class, I thought that was a very bad idea." The jaw drops further when he continues:

> I also don't think that there is really a theory of intelligent design at the present time to propose as a comparable alternative to the Darwinian theory, which is, whatever errors it might contain, a fully worked out scheme. There is no intelligent design theory that's comparable. Working out a positive theory is the job of the scientific people that we have affiliated with the movement. Some of them are quite convinced that it's doable, but that's for them to prove…No product is ready for competition in the educational world.

Throughout the interview, Johnson maintains that his interest in Darwinism is purely intellectual rather than political: "The key question to me is not what happens in a particular federal district court, but whether or not that claim is correct." Politics only hurts this search for the truth. When President Bush came out in favor of teaching both sides of the debate, Johnson had mixed feelings. "I'm glad to see the idea that there's something to discuss here get further off the ground, but the fact that it was Bush who said it put the issue into the red state blue state political mix…I was more dismayed than elated to see the thing surface in the context of our political divide." [see page 34 for more of the BSR's interview with Johnson]

It's difficult to tell if Johnson is being completely forthright about wanting to stay out of politics and the public schools. In the past, Johnson has certainly put considerable effort towards injecting intelligent design into the public realm. In 2002, he told the *Berkeley Science Review* that "where controversial subjects like biological evolution are taught, educators should teach the controversy, preparing students to be informed participants in public debates." As an example, he pointed to the Santorum Amendment, a "teach the controversy" amendment to No Child Left Behind proposed by Republican Senator Rick Santorum of Pennsylvania but ultimately dropped in the final bill. Johnson told the Washington Times that he himself "helped frame the language" of that

While supernatural explanations may be important, and have merit, they are not a part of science.

amendment. In addition, Johnson was one of the main architects of the Discovery Institute's Wedge Document. In that document, he outlined a strategy that would act as a wedge to split the tree of cultural and scientific materialism.

Perhaps he's had a change of heart, and his position truly has evolved in a more apolitical direction. It's clear that Johnson genuinely believes what he writes and espouses. And it's hard to doubt that he has a burning intellectual interest in the fundamentals of evolution and design. But it's also hard to doubt that he's helped to further intelligent design in the public realm, whether through his writing, his organizational skills, or his work with the Discovery Institute. His attitude has the flavor of the old Billy Joel tune: "We didn't start the fire. It was always burning since the world's been turning." But surely Philip Johnson helped to start the fire.

Photo by Charlie Emrich

It Ain't Over 'Til...

And so the stage was set for Dover. After six weeks of deliberation, Judge Jones delivered a strongly-worded decision, ruling for the plaintiffs and holding that the Board's actions had clearly violated the separation of church and state. Padian's testimony featured prominently in the decision, as did the words and actions of Johnson and Kenyon,

The BSR Sits Down With Philip Johnson and Kevin Padian

Professor of Integrative Biology Kevin Padian testified in defense of evolution in Dover. Philip Johnson, Professor of Law Emeritus at Boalt Hall, is the widely-recognized father of intelligent design. In the aftermath of the Dover decision, they both sat down to talk with the Berkeley Science Review.

Berkeley Science Review: What was your reaction to the Dover decision?

Philip Johnson: The key question to me is not what happens in a particular federal district court, but whether or not that claim is correct. So, if it's not correct, if random mutations and differential survival really can take a bacterium through all the changes that are necessary upward through the tree of life to end in you and me, then we certainly…ought to vanish from the scene. But what really convinced me that there's something here was the need that the Darwinist's have to rely on a definition of science that does not permit an alternative to naturalistic evolution. That seems to me a very unsatisfactory way of resolving the issue.

My own contribution to the movement, seminal though it may have been, in *Darwin on Trial,* was simply to argue that the Darwinian mechanism has no demonstrable creative power, much less the creative power needed to do all the innovation that has appeared in the history of life. So that's my position.

BSR: So you think that Dover was the wrong battle to try to fight?

PJ: Oh yes it was. And my friends and I argued that they shouldn't have done that, and that having done that, they should have withdrawn the policy to moot the case.

Berkeley Science Review: After the Dover decision, do you think there will still be momentum for changing curricula to "teach the controversy" without insisting on a particular alternative, as the Dover school board tried to do?

Illustrations by Rachel Eachus

Kevin Padian: Yes. That will continue to be well-funded, whether it's through the Discovery Institute's "Center for Science and Culture," or whatever they're calling it this week. There will always be money around to fund people like this. There will always be a place for it in the fundamentalist community. But their influence on mainstream culture is done.

BSR: Do you think in the past that the mainstream media has had a role in the success the intelligent design movement had, that they took their claims more seriously than they should have been taken?

KP: Yes and no. In this country when someone talks about fairness, we all put down our guns and listen. Because to the American people fairness is one of the cardinal virtues, and we do think that people have a right to their opinions. We do believe very strongly in religious freedom. But there are times when certain people take advantage of this by warping what is actually going on.

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though they were not physically present in the courtroom. "The evidence at trial demonstrates that ID is nothing less than the progeny of creationism," Judge Jones wrote. But he went even further. Asked by both sides to address the fundamental question of whether or not intelligent design is science, he wrote:

> While supernatural explanations may be important and have merit, they are not part of science…While we take no position on whether such forces exist, they are simply not testable by scientific means and therefore cannot qualify as part of the scientific process or as a scientific theory…ID is not science and cannot be judged a valid, accepted scientific theory as it has failed to publish in peer-reviewed journals, engage in research and testing, and gain acceptance in the scientific community. ID, as noted, is grounded in theology, not science.
>
> Science cannot be defined differently for Dover students than it is defined in the scientific community as an affirmative action program…for a view that has been unable to gain a foothold in the scientific establishment.
>
> Both Defendants and many of the leading proponents of ID make a bedrock assumption which is utterly false. Their presupposition is that evolutionary theory is antithetical to a belief in the existence of a supreme being and to religion in general.

For Padian, the decision represents an incredible victory: "Not a single sentence of the judge's decision would give comfort to the ID crowd. We don't see how it could have been any better." "The judge's decision made a lot of things easier for the American public," he continues. "He drew the line that scholars and educators asked him to draw. He didn't muddy the line like the fundamentalists asked him to do. For Phil Johnson and the Discovery Institute, the fat lady has sung…No one who can fog a mirror intellectually can have any more illusions that this drivel should be taken seriously as science, or even as social studies."

For his part, Johnson agrees: "I think the fat lady has sung for any efforts to change the approach in the public schools…the courts are just not going to allow it. They never have. The efforts to change things in the public schools generate more powerful opposition than accomplish anything…I don't think that means the end of the issue at all."

"In some respects," he later goes on, "I'm almost relieved, and glad. I think the issue is properly settled. It's clear to me now that the public schools are not going to change their line in my lifetime. That isn't to me where the action really is and ought to be."

Whether Dover really was the swan song of intelligent design remains to be seen. Either way, the decision has dealt a serious blow to the cause. The movement that Phil Johnson started may just have run aground on the rocks of Padian's testimony. Or rather on the fossils in the rocks of Padian's testimony.

Michelangelo D'Agostino *is a graduate student in physics.*

Johnson interview cont'd:

BSR: Where do you think things will go from here?

PJ: I think that the issue will continue to be debated in the public forum. In the United States, it's no secret that the overwhelming majority of people are unconvinced by the Darwinian claims. Only about 10 percent of the American pubic is convinced of the fundamental Darwinian claim that mankind and all other living things on the earth were produced by a process of random mutation and natural selection as the textbooks say in which God played no part, the creator played no part. The other 90 percent would be divided between outright creationists…and then those who say there was a process of evolution…which was God-guided.

BSR: What do you think about the organizations and think tanks that are pushing this as a political issue rather than as an intellectual issue? Do you think the debate should just stay within universities and the academe?

PJ:: Well that's always the way I had thought of it. Now, I have to confess to some guilt here myself, because I have talked about the moral consequences or cultural consequences of Darwinism, and I mean that as a reason for saying, well this is important, so we have to really be sure that what we're saying is science is really backed by powerful evidence. And I would say that the claims for the creative powers of mutation and selection are not backed by powerful evidence.

BSR: Do you think Judge Jones overstepped his judicial role?

PJ:: I would say so, yes. I wouldn't say that that necessarily means the judgement's going to be reversed. It probably doesn't. He plainly decided to join the cultural war, the cultural battle, and say, "I'm gonna settle this thing." There were specific things in the record…that convinced me that it was a loser and that made it quite easy for him to give judgment for the plaintiffs. I'm not at all complaining that he did that. When you have members of the school board saying things like we ought to stand up for Jesus because he died for us, that's really asking for it. Even so, the thing is not what anybody's motive is, but how good the evidence is. The issue over Darwinism in the public and university world does not hinge on what the motives are for anybody proposing or opposing the claims of the Darwinian mechanism.

BSR: Do you think that you scientists and philosophers are going to keep trying to work on this issue?

PJ: Yes. They do. In fact, I get email every week from graduate students.

BSR: Would you say that Berkeley has been an open and hospitable place in your experience?

PJ:: They put up with me all these years. I would say Berkeley has been open in my experience, as a whole. Some people at Berkeley are not. People whose livelihood is all mixed up in conventional evolution or biology tend to get quite angry and don't want anything heard about it. I would say the Berkeley campus on the whole…it would surprise many people how open it is and has been. Even people who are quite conventional in their Darwinist beliefs themselves will often think that it's a good idea for the students to hear something that contradicts the official story. So yes, I'm quite approving of Berkeley on the whole.

When you have members of the school board saying things like we ought to stand up for Jesus because he died for us, that's really asking for it. - Johnson

Padian interview cont'd:

And these guys are warping their presentation of science in both the evidence and the methods and the philosophy of science…
And this is something that it takes ordinary people a while to find out, and for good reason, because science is a world of jargon and very arcane and abstruse knowledge that scientists make very little attempt to make palatable and interesting to ordinary people. We could do it, we just don't place a premium on it, and that's our fault.

BSR: Why do you think it is that evolution gets such a visceral reaction from people? A lot of things about cosmology and astrophysics seem like they could similarly shake people's worldviews.

KP: Because they don't understand it. They don't understand the first thing about relativity. If you tell them that the universe is 15 billion years old they go "Oh" and they don't have to deal with it anymore. And in fact there are a lot of physicists who as you know are very much engaged in cosmological metaphysical questions, many of which have completely non-scientific dimensions that they take very seriously. But the problem here is that once we start talking about how life changes through time it's getting closer to everybody's backyard. And people don't want to hear that they are animals, that they are mammals. They don't want to hear what they share with a gorilla.

BSR: What does it say about us as a country that ID has made this headway?

KP: That's a good question. I think it's made this headway because it was carefully crafted as a sociopolitical movement. A cultural movement that wanted to get a materialist view of life replaced by a particular Christian theistic worldview. This is exactly what the Discovery Institute says in its wedge document, its mission statement.

BSR: But in some sense there must have been fertile ground for it…

KP: Well, you never go broke in this country asking people to think more about God and less about materialism, as long as they don't actually have to give anything up. You can always demonize someone who is not you, and that's exactly what the Discovery Institute people have done. They've demonized scientists, they've demonized the practice of science, they've deliberately tried to create a big tent of people who disagree with each other on nearly everything, the other creationists, older creationists, fundamentalists, moderate evangelicals.

BSR: What's your personal opinion on the co-existence of science and religion in general? It seems like there must be another group of religious people in this country who wouldn't call themselves fundamentalists who don't have a problem with science…

KP Fundamentalists can't co-exist with anyone. I mean that's just it. They can't coexist with anyone. Particularly not other fundamentalists. To them, everyone is an enemy.

BSR: It seems like on both sides there's a little bit of demonizing of the other side. Do you think scientists share some of the blame at all?

KP: Well, scientists really don't go out in the world talking about how stupid religion is. It isn't that they couldn't, it's just that they don't. When pressed, you'll get people like Richard Dawkins, who'll say that it's just superstition and all of the claims it makes for its good works and uplifting effects are just balderdash, and he can point to evidence for this. This is nothing new. And no, I don't think it's the scientists' fault about that. I think the scientists are at fault for not explaining our disciplines more clearly to the public so that they can't be misconstrued. If our level of scientific literacy were higher in this country we might not have this problem. But you see, these people have been working for 85 years so that we don't even get to teach this.