

A sepia-toned portrait of Thomas Woodward, an older man with a full white beard and mustache, wearing a dark bowler hat. The portrait is the background for the top half of the book cover.

DARWIN STRIKES BACK

Defending the Science of **INTELLIGENT DESIGN**

THOMAS WOODWARD

FROM THE AUTHOR OF *DOUBTS ABOUT DARWIN*

FOREWORD BY WILLIAM DEMBSKI

"In *Darwin Strikes Back* Tom Woodward chronicles the recent acrimonious history of ID and its antagonists. Woodward is an insider who tells an engaging story that will clarify both the nature and the source of current sharp debate surrounding this issue."

Kenneth Petzinger, professor of physics, College of William and Mary

"In *Darwin Strikes Back*, Woodward presents a clear, accurate, and intriguing account of Intelligent Design, its history, the arguments in its favor, the counterarguments by the Darwinists, and the responses by the ID theorists. This is an important book for anyone who wants a clear picture of the ID/evolution debate."

Russell W. Carlson, professor of biochemistry and molecular biology;
executive technical director of the complex carbohydrate research center,
University of Georgia

"This is an important book. It brings us up to date on the latest round of skirmishing in the ever-continuing debate over our origins, and helps set the stage for the next round. Better yet, it makes clear to those who may not have followed recent events that the real scientific debate began well but was cut short early, and for the most part still remains unresolved."

David Keller, professor of chemistry, University of New Mexico

"Dr. Woodward has done a favor to both the sympathizers and detractors of the ID movement. Although Tom is clearly an ID proponent, he retains the ability to step back and allow the anti-ID critics to present their case. This is quickly followed by the rebuttals of the leading ID figures. He covers all the leading criticisms: 'ID is not science,' 'ID is religious,' 'Irreducible complexity has been refuted,' and even the more imaginative 'ID will be the end of science.' No one has a better grasp of the ID movement and its detractors than Tom Woodward."

Ralph Seelke, professor of biology and earth science,
University of Wisconsin-Superior

"A brilliant and exhaustive sequel to *Doubts about Darwin*, critiquing the challenges to ID from 1996 to 2006 and documenting a pattern in these responses that is surprisingly long on rhetoric and short on science, by one of the leading proponents of Intelligent Design."

Walter Bradley, distinguished professor of mechanical engineering, Baylor University

"In *Darwin Strikes Back*, Tom Woodward has done the ID community an invaluable service. The progress of the ID Movement can be monitored most clearly by the increasing attacks from the evolutionary community. Those outside the battle may be tempted to think ID has been tripped up and is in retreat. Woodward's lucid prose and detailed research shows just the opposite. Read and be encouraged!"

Raymond G. Bohlin, lecturer in evolution; president, Probe Ministries

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Foreword

Like a spy in a John Le Carré novel who has attended every crucial event in the Cold War, Tom Woodward has been ubiquitous in the unfolding culture war over intelligent design. He is the insiders' insider. With *Doubts about Darwin*, he established himself as the historian of the Intelligent Design Movement. Now, with *Darwin Strikes Back*, he also assumes the role of a gifted war correspondent, moving up and down the lines of engagement, tracing streams of intense and often ferocious rhetoric as they are poured out upon design theorists by panic-stricken Darwinists.

I first met Tom in 1990 while I was a postdoctoral fellow in computer science at Princeton University. As an alumnus of Princeton, he began working closely with a group of Princeton faculty members in 1988, with the goal of developing an annual lecture series at the university on a variety of academic topics. Together with these professors, he organized lectures by Alvin Plantinga at Princeton in the fall of 1990. I met Tom at one of these lectures, and in the coming years we experienced such a "university campus rendezvous" in many other places, especially as he played a key role in bringing Darwinian scholars and design theorists together in frank exchange and mutual critique.

It is fitting that we met at a lecture by Alvin Plantinga, since Plantinga is not just one of the most highly regarded philosophers of our era; he is also one who has written sympathetically about the intellectual project of Intelligent Design. In this context, he can be viewed as a symbol of the spiraling rhetorical nightmare faced by neo-Darwinism in the high university world. The nightmare is not simply the result of political pressure that Darwinists are experiencing. Rather, it is that the Darwinian account of evolution on which they are pinning their hopes is imploding.

Arguments for design are based on empirically identifiable patterns in the universe and demonstrate that intelligence is an essential aspect of the known causal structure of the universe (see the “can do premise” in the chapters that follow). In consequence, design inferences cannot be easily dismissed with furious bluster, or an ad hominem “wave of the hand,” or even theological invocations of “poor design.” In fact, as Woodward points out in this volume, the counter-rhetoric of Darwin’s defenders is lurching into a mode so strident and vitriolic as to provoke more curiosity about the psychological causes of Darwinists’ emotional states than about the “evil motives” of ID advocates. Historians of science regularly help us to understand this sort of personal subtext of scientific argument, but as a rhetorical historian, Woodward has done even more: he has explored this side of the debate with special care, cataloguing with vivid and unforgettable detail the labyrinth where logic and empirical evidence meet emotion and personal narrative.

Woodward’s previous work—*Doubts about Darwin*—received the high regard of numerous scholars not at all associated with the ID Movement (see the “unexpected allies” in chapter 11 of this book). Likewise, in *Darwin Strikes Back*, his narratives and insights as a rhetorician of science should prove just as indispensable for the defenders of Darwinian orthodoxy as they are for the challengers. I predict this will especially be the case in his analysis of the debate swirling around Michael Behe and the flagellum (chapter 5), as well as his coverage of the origin of life stalemate (chapters 8 and 9) and the self-maiming explosives of the atheologians (chapter 11).

It’s been said that cultural and intellectual movements go through three stages: first, they are ridiculed; second, they are violently opposed; and third, they are accepted as second nature so that people can’t even imagine what the fuss was all about. In this book, Woodward shows how the ID movement has now entered the second stage, and then he assesses how we are doing. Stage two is the critical stage. It’s at this stage that the future of a movement is decided—whether it has what it takes to weather the withering criticisms that are brought against it or whether it will bite the dust.

Woodward is optimistic, as am I, about the ultimate outcome of the controversy over ID, and he concludes his careful analysis with some pretty daring predictions. If he is right, we may look forward to a third volume from his hand, one to complete a trilogy on the ID movement that started with *Doubts about Darwin* and now has issued in *Darwin Strikes Back*. If he is right, this third volume could appropriately be called *The Triumph of Design*. But since “Darwin” figures in the titles of previous volumes in the trilogy, he may want to go with something like *Darwin’s Doddering Idea* or *Darwinism—The Senescent Years*.

William A. Dembski

Preface

The Big Picture

On the first of August 2005, reporters at the White House asked President Bush his opinion about the new Intelligent Design theory that had appeared with increasing frequency in the news. Specifically: Should it be taught in schools? The President revealed that he thought it would be a good idea for students to be exposed to the new ideas. His brief comments, made offhandedly in a wide-ranging conversation with reporters, were seized by the media and turned into a top news story. *Time*, which had been working on a story on Intelligent Design, suddenly rushed to complete its research and made the article its cover story the following week.¹ Authorities across the spectrum weighed in. Many bemoaned the scientific ignorance of the President, while others applauded his spirit of promoting free speech. Bush's comments set off a fresh explosion of public chattering and media debate on the pros and cons of teaching Intelligent Design in public school classrooms.

Lost in the shuffle was one crucial fact. The Discovery Institute, the central coordinating and funding agency for research on Intelligent Design (ID for short), had urged schools *not to require the insertion of ID into public school curriculum* because the theory is in its adolescence and any "teach-ID requirement" inevitably turns the question of design in nature into a political football. Rather, Discovery's scholars urged schools to revamp their teaching about the dominant theory, Darwinian evolution, so that negative evidence is no longer systematically excluded. In other words, *teach more about Darwinism than ever before*: teach the theory as is currently done, but also point out where it struggles with conflicting lines of evidence.

The day after reporters pried the brief comments out of the President and triggered the media frenzy, one of the leading opponents of ID, Paul Gross, appeared on the *O'Reilly Factor* television program. He said, "Intelligent design is a complex, highly proliferated body of action, literature, mostly PR, the purpose of which is to teach, or at least suggest, that there is a big body of scientific evidence showing that standard evolutionary biology is wrong, *that so-called Darwinism has collapsed*. That is all false."²

In mentioning the "big body of scientific evidence" that some perceive to have led to the collapse of Darwinism, Gross surfaces a key issue that generates a number of questions: Is Darwinism done for? Is it slowly spiraling downward into an unprecedented spectacle of global scientific collapse? Have its scientific and philosophical foundations truly cracked and crumbled beyond repair, as is argued vigorously by the scientists working within the Intelligent Design Movement? Is a new Intelligent Design paradigm emerging that retains Darwinian ideas only at the modest level of microevolution—variation of existing structures?

Or is it the other way around? Is Darwinism, subjected to powerful critiques from Intelligent Design theorists, emerging stronger than ever? In the wake of the rhetorical bombing and strafing that ID endured from scientists and the media over the past decade, is it ID, not Darwinism, that is collapsing under the weight of scientific criticism and "overwhelming evidence" of Darwinian evolution?

This double burst of questions captures the spirit of a great scientific clash that has broken into public view in recent years. This conflict is different from earlier versions of the endless debate over origins. *Now, the book of Genesis is not the issue.*

I am aware that Judge John E. Jones's decision in the *Kitzmiller v. Dover School Board* trial in December 2005 declared ID to be "not science" but rather a religious offspring of biblical creationism. This controversial decision, celebrated as a "2005 Christmas present" by Darwinists, has begun to boomerang on the Darwinist camp because of Judge Jones's egregious factual errors and his silence about the days of scientific testimony that quietly savaged the earlier testimony by Darwinian witnesses. Lehigh University biologist Michael Behe's published response alone pinpointed twenty serious errors—just in the science section of Judge Jones's opinion.³

I see the Dover decision as a fascinating footnote to a radically transformed debate about origins. Now there is laser focus on a specific set of scientific discoveries that are driving the new movement. Simply put, some researchers are arguing that as new layers of complexity are revealed in living systems, these hypercomplex, information-rich systems are straining faith in

the Darwinian model beyond the breaking point. A typical two-paragraph summary of ID might sound like this:

Scientific tests now show a shockingly severe limitation on the ability of random mutation to evolve new functional genes.⁴ Also, the more we learn about the threadlike DNA molecule, which in human cells has 20,000 genes—digital files embedded on the cell’s DNA hard drive—the more we realize that this DNA information is structurally identical to the ordinary coded information in human communication (books, digitized DVDs) and artifacts. To pin down what kind of cause “wrote the DNA files,” we are able to apply a powerful reasoning approach that scientists now use called “inference to the best explanation.” Since DNA (with RNA and proteins) have a mathematical structure called “specified complexity” (even one gene displays an astoundingly low probability, while its letters are highly specified), that enables us to ask a key question. In the real world, the world of scientific testing and experience, do we ever observe natural processes producing this kind of complexity? In fact, we have never recorded an instance where nature crafted this kind of complexity. *Yet, in the cause-effect structure seen in our world today, intelligent causes easily produce this kind of specified complexity. So the inference to design for DNA is based on our experience of the observed structures of the real world, not an imagined one.*⁵

One finds equally compelling evidence for design in the bacterial flagellum, whose rotary motor drives certain bacteria through liquid like a submarine with an outboard motor. The flagellum, as biologists Michael Behe and Scott Minnich have shown, has a machinelike *irreducible complexity*, which is an empirical marker of design because it rules out step-by-step evolution through selection. Take one part away from the flagellum, and its rotary system won’t work. Darwinian accounts of the evolution of the flagellum are (at best) sketchy “Just So Stories.” Its forty parts, all of them precisely shaped proteins, are prima facie evidence of an intelligence behind life, and the flagellum is just the tip of the iceberg. The cell is chock full of such complex, multipart systems that continue to defy a step-by-step Darwinian explanation.

Of course, if a strong Darwinist (one familiar with the ID debate) read this paragraph, he or she surely would be loudly objecting at this point: “What about Kenneth Miller’s critique of irreducible complexity? How can anyone buy ID’s pathetic ‘argument from incredulity’? How do Design theorists account for poorly designed systems like the human spine—or especially the human eye? How would a wise creator produce stumbling products like those?”

I know that if I were in the Darwinist’s shoes, my mind would be popping with thoughts like these. My imagined cluster of responses reveals the *highly scientific adversarial nature* of the epic struggle between ID and Darwinism.

We have moved light-years beyond the stereotyped *Inherit the Wind* clash between dogmatic religion and enlightened science, which etched a fictional rendering of the Scopes trial onto our consciousness. Now, it's no longer William Jennings Bryan against Clarence Darrow—it's no longer religion versus science. Today it is ID biochemist Michael Behe of Lehigh University versus Kenneth Miller, Darwinian biologist at Brown University. Now it is ID theorist Scott Minnich, who teaches microbiology at the University of Idaho and publishes his research on the flagellum, engaged in intense discussion with Robert Pennock, a Darwinian philosophy professor who teaches at Michigan State University and has published critiques of ID. Whether anyone likes it or not, it is no longer science versus religion; *it is now science versus science.*

A Global Phenomenon?

Another sign that the ID controversy is not just a replay of the Scopes trial is the brute fact that this debate is spreading rapidly across the globe. Newspapers in Europe are now reporting the “dangerous” new ID concepts emanating from the U.S., and they are warning their people to be braced for this invasion. The penetration of Europe was symbolized by “Darwin and Design: A Challenge for Twenty-first Century Science,” a conference held in Prague, Czech Republic, in October 2005. I was privileged to attend this gathering—the first major ID conference ever held in Europe. It drew seven hundred participants from eighteen different countries to hear pioneers such as Stephen Meyer, Jonathan Wells, and Charles Thaxton. Yet many commented on the participation of key speakers from Europe: John Lennox, a mathematician from Green College, Oxford University, who gave the final lecture; Dalibor Krupa, a leading physicist from the Slovak Republic; Cees Dekker, a world-renowned biophysicist who has pioneered biological nanotechnology at the University of Delft in the Netherlands; and David Berlinski, a philosopher of mathematics and science from Paris whose only religion is to “have a good time all the time.” In my view, these four European participants gave presentations that totally obliterate the charge that ID is just “religion posing as science.”

The Prague conference did not just have a strong scientific tang; it also had a distinct European flavor. Thus, what we are seeing today is not just a U.S. debate, mired in its own hypersensitized environment, which assumes that every questioner of macroevolution has religious motives. This new debate has leaped international walls; it is going global. It is also cross-disciplinary, and it is intensely empirical and mathematical, driven by the newest dis-

coveries about the complexity and informational richness of nature. Several questions arise when confronting this global ID phenomenon: How strong are the arguments and evidences on each side? Who are the key players on each side, and what progress have they made in this fierce engagement with each other? What are the steps or stages through which the debate is developing, and where does it seem to be heading in the future?

This book is an attempt to answer these questions and more. The reader is invited to join me as I trace the current struggle between these two scientific perspectives—Darwinism (technically called neo-Darwinism since the 1940s)⁶ and Intelligent Design theory. I shall be scrutinizing their intense clash in the 1990s and in the first decade of the new millennium. This saga—a complex and proliferating struggle of scientific persuasion—has now generated a high level of interest among scientists and within the general public. Beyond all of the basic factual questions mentioned above, we all want to probe deeper issues. What ultimate conclusions can we draw about our origins, based on the scientific evidence and on sound scientific reasoning? What is science, and what modes of scientific reasoning make sense?

In choosing the title *Darwin Strikes Back*, the focus is not so much on the early stages of the rise of ID as an idea and a movement nor on the opening stages of making the case for ID. That fascinating story is found in my earlier book, *Doubts about Darwin*, and in other books and articles.⁷ This book is a deliberate sequel to my earlier work. It recounts how Darwin, incarnated in his modern heirs and defenders, has struck back furiously at the early inroads made by ID. It surveys the proliferating efforts by today's Darwinists to “crush the rebellion” (to echo the emperor's words from the *Star Wars* movies). It also highlights the energetic responses and counter-critiques coming from ID theorists, as they use Darwinists' attacks to vindicate their own arguments.

A Personal Word

I probably should say a few words about my own bias as a historian of ID, working in the field of the “rhetoric of science.”⁸ I can relate to those who have ferociously attacked ID. My first encounter with anyone claiming “scientific problems with evolution” was an emotionally intense discussion at dinner in the fall of my freshman year at Princeton in 1968. To picture my mind-set that night, let me explain that as a teen I had declined in theistic belief from a vague deism during my youth to hard-core agnosticism by the time I was a senior in high school. I still attended church with my family, but it meant very little. My *God substitute* at that time, something

I could absolutely trust in, was *science*. I was an astronomy nut (I still am) and had written a term paper on the *big bang*, which wowed a high school science teacher. I was utterly convinced that—whether God existed or was a myth—one thing is undeniably true: we and all life-forms have evolved from a common ancestor. In high school biology, I was captivated by the concept of natural selection, which I took to be the most important law of nature ever discovered. In it, the inexorable creative power of nature is seen as it ceaselessly selects better life-forms. When I awoke to natural selection's power to create, it was an epiphany. I was just as Darwinian (and as committed to scientific naturalism) as Richard Dawkins, and I was not prepared for what I heard while eating supper with my Princeton friend John Donahue. He mentioned a study on origins he was attending, and I perked up my ears when I heard *evolution*. I asked about the study, thinking I might want to attend. John said that the teacher was presenting scientific evidence against evolution.

Donahue's words triggered shock and anger. "Evidence against evolution? There isn't any!" I blurted out. "Everyone knows that all the evidence supports evolution. Who is teaching this garbage?"

Shaken a bit, John told me that the study was presented by a Princeton alumnus from the class of 1913. I promptly pointed out that this gentleman would have entered Princeton when Woodrow Wilson was president of the university. This alumnus's problem was simple—he didn't know twentieth-century science! (As Richard Dawkins said: "If you meet anyone who doesn't believe in evolution, that person is ignorant, stupid, or insane.")⁹

I determined that night to meet and politely refute the ignorant alumnus. I met him at a public lecture on campus. We engaged in intense discussion that night for three hours and again at his apartment the next day. We entered into a quiet stalemate, and that led to other conversations with other Princeton students and alumni on the topic of God and origins. After six months of these discussions, including a series of weekly meetings with one young alumnus, I concluded two things: (1) I was not budged one inch from my belief in evolution, yet (2) my agnostic worldview was based more on hearsay and ignorance than careful research into the relevant evidence. By late May of 1969 I became persuaded about what C. S. Lewis called "mere Christianity," but my belief in evolution held firm—much as Lewis's acceptance of evolution was unshaken during most of his teaching career at Oxford and Cambridge.¹⁰ In short, I was unmoved from my scientific beliefs by anything I had heard.

As a theist, I made it clear that I still found evidence of Darwinian evolution decisive. For some time, my position was one of a convinced Christian Darwinist. (By the way, evolutionists not only tolerate Christian

Darwinists—they are practically celebrated as trump cards in the debate with ID!)

It was only after many months (and years) of restudying the evidence, without my prior naturalistic bias, that I began to notice an anomaly here, an unanswered question there. The deeper I probed, the more I encountered implausibility upon implausibility in the story of macroevolution driven by nature alone. I was shocked to find out how weak the fossil evidence is supporting macroevolution of the phyla. By the time I received my degree from Princeton, I was convinced that microevolution (survival of the fittest) is solidly factual, but macroevolution (arrival of the fittest) was far less established on the foundation of fact.

During those years I was persuaded not by religious arguments but by scientific data. This same pattern of persuasion holds true for Michael Behe, Phillip Johnson, and virtually every leading light of the Intelligent Design Movement. *All were convinced by clear scientific arguments, based on empirical evidence.* When agnostic geneticist Michael Denton released his crucial 1985 book, *Evolution: A Theory in Crisis*,¹¹ I was further persuaded that evolution by natural selection was indeed a “paradigm in crisis,” and that the unintelligent causes we find in nature can tweak existing structures but they cannot generate the complex motors or the vast genetic databases at the root of cellular life.

When ID began to emerge in the mid-1980s with the writings of Michael Denton and others, I felt I finally had found a scientific home—an intellectually satisfying approach to origins. Several things attracted me. One was the commitment to the highest standards of scientific quality. A second was ID’s attempt to lower the heat in the tone of rhetoric—to avoid the bashing mode of discourse. A third was its central concept, which logically separated the *inference to design* from the separate task of *identifying the designer*. Here is how I explained it in a recent debate with Darwinist Michael Ruse: There is no “Made by Yahweh” engraved on the side of the bacterial rotary motor—the *flagellum*. In order to find out what or who its designer is, one must go outside of the narrow discipline of biology. Cross-disciplinary dialogue must begin with the fields of philosophy, sociology, history, anthropology, and theology. Design itself, however, is a direct scientific inference; it does not depend on a single religious premise for its conclusions. As I shall explain in the pages that follow, this conclusion seems compelling, unless one erects a rule excluding the design possibility as off-limits for consideration. If there is no such rule forbidding the consideration of design, it remains a live option. At that point, what matters is evidence and logic, not a preferred philosophy.

I certainly acknowledge that I have a personal bias, as does Richard Dawkins and everyone else who writes on this topic. I am a Christian theist, and that's all that matters in identifying my own bias. I am also convinced that naturalism (the belief that "nature is all there is") is much more problematic a bias than theism. Why? Simply stated, the question, "Did we and all life-forms arise through a long, gradual process driven by nature?" is *quickly settled at the level of one's worldview* if one simply accepts naturalism's prime catechism, "Matter gave rise to mind." If it is true that a *preexisting intelligence* is inherently mythical and not even possibly factual, then Darwinism (or something like it) wins automatically, no matter how weak the evidence. On the other hand, if various mind-first perspectives (including theism or deism) are *possible working frameworks of thought*, then the question "Did we evolve?" can no longer be simply settled at the level of one's worldview. At that point, one has to go further, wading into the evidence itself. And that's where we are headed: Where does the evidence lead us?

Una Mar de Gracias

I want to recall a lovely phrase I learned from my beloved high school Spanish teacher, Ruth Ferguson: "¡Una mar de gracias!" meaning, "A sea of thanks!" My indebtedness goes beyond a sea; I want to express an ocean of thanks to those who made this book possible. First to my wife, Normandy, who was steadily patient while I buried my nose in books or holed up with my laptop. Second, to the ID scientists who shared their thoughts and experiences, including Michael Behe, Walter Bradley, William Dembski, Cees Dekker, Robert Disilvestro, Robert Kaita, Dalibor Krupa, John Lennox, Jed Macosco, Stephen Meyer, Scott Minnich, Glen Needham, Paul Nelson, Ed Peltzer, Jay Richards, Charles Thaxton, Jonathan Wells, and Mark Whalon. Third, I'm also grateful for the interactions with scientists outside of ID, especially Richard Sternberg, an evolutionary scientist who suffered greatly for following normal procedures in allowing an article to be considered for publication (see sidebar on p. 27). I tried to interact with as many Darwinists as possible. I won't be naming them—lest they be charged with helping the ideological enemy! Yet I am grateful for their help. Fourth, I thank our wonderful friends Ron and Janet Vasquez, Loyd and Leslie Cunningham, Jerry and Ruth Swift, the board and friends of the C. S. Lewis Society, and others who helped quietly behind the scenes with their encouragement. I appreciate Bradley Jones's steady encouragement and helpful suggestions. Lastly, I thank my colleague Rich Akin who helped me with early drafts, and Chad Allen, my faithful editor. "Una mar de gracias para todos!"

Finally, this book is dedicated to my four children—Daniel, Stephen, Joy, and Karyn, along with their spouses and children. These are the rising generation who will grapple with Darwinism and ID and who will decide which of these theoretical models has proved itself the most fruitful explanatory paradigm for the future. May they come to love science for the wonderful, unfettered adventure that it is. May they think clearly and dare to question relentlessly, until they achieve answers that can withstand the closest scrutiny. Confident that they will do so, I can see science's greatest days ahead.

1

The Explosion of Design

“The Sky Is Falling!”

It was a surreal window in time. Beginning in August 2004, and stretching out over a year to the fall of 2005, the insidious threat spread across the globe. Month by month one could hear in the American media the staccato of increasingly shrill warnings. Editorial writers thundered across the land; journalists were scolded for inadequately reporting the danger on the horizon. Images of an impending catastrophe were conjured.

Then Oxford University Press joined the chorus, releasing two books that pinpointed the individuals who were linked to the new international threat. Cultural devastation, said the Oxford Press authors, was now lurking as a real possibility in the West. This was no small-scale matter—at stake was nothing less than our democratic values inherited from the Enlightenment. *Scientists and ordinary citizens needed to wake up and combat the menace; the health of our modern civilization was at risk.*¹

This scenario sounds highly fictional—like a novel in which unspeakable terrorist plots against major cities are rumored and finally brought to light. One is reminded of the hype of a movie screenplay in which an approaching comet or asteroid is found to be on a collision course with planet Earth. Yet this *year of alarm* was not fiction. It was painfully real,² and when the seething controversy exploded in August 2005—triggered by an offhand comment at the White House—millions of Americans shook their heads,

either in disbelief or in anger, as it was discussed in headline news and network newscasts.³

Blamed for the growing crisis was an unlikely group of troublemakers, most with Ph.D.s listed after their names. This scattered group in recent years had grown into a network of several hundred scientists and other scholars, many of whom were quietly toiling away in college classrooms and university science labs. Though cheered on by many in America and around the world, they suddenly found fingers of accusation pointed at them by leading spokespersons in academia and the media. In case you hadn't guessed it, the group bore a name: *the Intelligent Design Movement*.

These researchers were astonished to find themselves—and their unorthodox hypothesis of the design of certain features of the universe—thrown into the glare of public scrutiny. The topic was discussed on *Larry King Live* and in television specials, and it was analyzed in a *Time* cover story and a *USA Today* spread. In a more substantial vein, the theory was pummeled in a stream of hundreds of hostile articles and editorials and a dozen critical books. Criticism of their ideas was only to be expected, but several aspects of this flow of words shocked members of the Intelligent Design Movement. First was the high level of *contempt and hostility* directed at their point of view. Second, and equally astonishing, was the pattern of *crude distortion of their message and their motives*—with the worst often coming from fellow academicians. Advocates of ID could hardly believe their ears as they beheld their published critiques of Darwinism twisted beyond recognition, over and over, then dismissed with condescension as “nonscience.” Worst of all, they found themselves *accused of spreading dangerous misinformation and endangering the health of science and even our very civilization*. An MSNBC writer, Ker Than, voicing the apprehension of Cornell historian of science William Provine, said that if ID successfully penetrates schools and universities, it will “become the death of science.”⁴ Those who worked under the banner of Intelligent Design found themselves thrust abruptly onto stage center of the cultural and scientific history of the new century. But they were treated not as scientific revolutionaries or respected dissenters but as public villains.

Two central questions arose quickly during the awakening of America to the Intelligent Design controversy: (1) *Who exactly were these controversial scholars?* and (2) *What led them to question the scientific creation story of life on Earth?* Many of the leaders in ID were tenured professors, and a number were considered pioneers or leading figures in their respective fields of research.⁵ Some taught science or engineering at elite private universities such as Princeton, Yale, Oxford, Cambridge, and Dartmouth, while others labored in biology or chemistry labs at large state universities, including Michigan State

University, the University of Wisconsin, and the University of New Mexico. Scientists abroad had even added their weight to ID, including Dalibor Krupa, a physicist and member of the Slovak Academy of Science, and Lev Belousov and Vladimir Voeikov, Russian biologists from Moscow State University. Belousov, an embryologist, and Voeikov, a professor of bio-organic chemistry, are both members of the Russian Academy of Natural Sciences.

As to their motives, I focused on this question in *Doubts about Darwin* (2003), in which the early history of the Intelligent Design Movement was traced from the early murmurs of the 1960s to key developments at the dawn of the twenty-first century. One thing became clear from that review of the historical facts. Contrary to widespread allegations, *ID was not driven by a conservative Christian religious agenda*. In fact, the Ad Hoc Origins Committee (a forerunner to ID), far from being a gaggle of fundamentalists, was a very diverse group that was drawn together first by their skepticism of Darwinian doctrine but also by a general dissatisfaction with the approach of scientific creationism with its constructing of scientific arguments to support a literal reading of Genesis. Most of the members of the Ad Hoc group were not Genesis literalists, and some in fact were openly agnostic.

Denton and His Successors

What *was* crucial in the birth of Intelligent Design was a pair of conceptual bombshells—two key books that burst into public view in the mid-1980s, detailing the implausibility of evolutionary creation stories. These books began to build a shared structure of skepticism across the globe. They galvanized the forerunners of ID and shaped the emerging movement. The more explosive of the pair was *Evolution: A Theory in Crisis*, a 360-page manifesto by molecular biologist Michael Denton. When the book was published, in England first (1985) then the U.S. (1986), Denton was an agnostic geneticist, born and trained in England but working at a hospital lab in Australia. His book strives to amass sufficient data in every field of biology to crush the credibility of large-scale evolution. That is, while affirming microevolution, Denton contends that *macroevolution was certainly not a well understood process, and there was no evidence that it was driven along by mutations and natural selection*. While he emphatically rejects any return to a Genesis-based cosmology, he ends his book with a shocking assessment of the scant evidence for evolution: “Darwinian evolution is no more nor less than the cosmogenic myth of the twentieth century.”⁶ Whatever the true explanation may be, says Denton, *it certainly is not in our possession now. We need to go out and discover it*.

It was the reading of Denton's book that instantly bulldozed the mild Darwinian beliefs of Michael Behe (a Lehigh biologist) and Phillip Johnson (a senior law professor at UC Berkeley), not to mention its impact on many other academicians who would join the ID Movement. Their reading of *Evolution: A Theory in Crisis* was the turning point. It led directly to their launching of their own research programs into Darwinism. Johnson's scrutiny of evolution began in his sabbatical in England in 1987, when he read simultaneously Denton's shocking critique and Richard Dawkins's vigorous defense of Darwinism, *The Blind Watchmaker*. After four years of research and writing, and after submitting his work to scores of biologists and other scholars for critical review, his efforts eventually yielded *Darwin on Trial* in 1991. Johnson added an epilogue in a 1993 revised edition, to respond to the firestorm of criticism he endured from many quarters, including a lengthy attack published by Harvard evolutionist Stephen Jay Gould. He has since added five other books on Darwinism or its naturalistic foundations.⁷

In 1996 Michael Behe practically eclipsed Johnson with his bestselling *Darwin's Black Box*, an investigation of many complex molecular machines that, he argued, defy any plausible explanation as to how natural selection had assembled them, step-by-Darwinian-step. These many machine parts (tiny, precisely shaped proteins) were all needed to achieve the existing function; take one away, and the function shuts down. Thus, the story of their gradual production over time seemed to rest on a leap of faith rather than realistic scientific testing. By the late 1990s it became clear that Behe's work, and its notion of *irreducible complexity*, had become the scientific center post of the ID Movement.

If Denton's book was the main catalyst of early ID skepticism, it worked in tandem with another bombshell, *The Mystery of Life's Origin*.⁸ *Mystery* contained a fairly technical critique of then-current theories of the chemical evolution of the first cell. Published in 1984, it tracked (and helped accelerate) the abandonment of the chance hypothesis of life's origins, which was envisioned as unfolding in an ancient chemical soup-like mixture contained in an evaporating pond or an oceanic environment. *Mystery* was in sharp contrast with anything in the genre of scientific creationism—to the point that two well-known evolutionists, chemist Robert Shapiro and physicist Robert Jastrow, contributed blurbs for the cover. James Jekel, a professor at Yale University's medical school, said in the *Yale Journal of Biology and Medicine*: "The volume as a whole is devastating to the relaxed acceptance of current theories of abiogenesis [chemical evolution]." Within a few years of its publication, two of *Mystery's* three authors—Walter Bradley and Charles Thaxton—along with the writer of their foreword, former chemical evolutionist Dean Kenyon, were all three working together, building a scientific

alternative to the prevailing notion that some “undirected process in nature” had produced life.

To sum up, what glued the diverse group of Intelligent Design advocates together was not a common religious crusade, although most were probably Christian or Jewish theists. Instead, the essential core of ID has been a *shared profound skepticism of the received wisdom of biology—a skepticism that grew year by year as they interacted with evolutionists*. In a brief survey of ID leaders in 2000, I was surprised how many reported that after their encounter with evolution’s evidentiary problems (as brought out in the two books or later in Johnson’s critiques), they experienced a “scientific conversion” and felt the Darwinian explanations had collapsed; they were simply no longer tenable. Thus ID was born out of intense discussion of the empirical problems of current scientific theory. The focus of early discussions of the Ad Hoc Origins Committee rarely, if ever, turned to the cultural implications of a Darwinian worldview. Rather, conversations pivoted on the empirical data, and secondly, how to frame new rules of reasoning that would permit a *responsible and rigorous inference to design*.

To persuade scientists to consider the possibility of an intelligent cause was a major task—and yet after the rise to prominence of Phillip Johnson in 1991, it became a closely related project of ID. Design theorists confronted a key roadblock to this new “unfettered” science: *the prevailing philosophy of naturalism (or materialism)*, which assumed that only natural or material forces and entities can be considered as possible causes in the history of the origins of the universe and life. On this point, ID viewed science as badly contaminated with a distinctly *theological* point of view: philosophical naturalism, which guaranteed to investigators that matter preceded mind rather than mind preceding matter and the complex, specified arrangements of matter. If anybody doubted that Darwinian science truly operated on such a religious assumption (the assured noninvolvement of mind in creating or shaping matter), Harvard geneticist Richard Lewontin helped lay such doubts to rest with his 1997 essay reviewing Carl Sagan’s book *Demon-Haunted World*. Lewontin writes passionately about the “struggle between science and the supernatural,” and when he uses the word *science*, he clearly means “matter-before-mind science” or “materialistic-naturalistic science.” Lewontin says, “We take the side of science in spite of the patent absurdity of some of its constructs, . . . in spite of the toleration of the scientific community for unsubstantiated ‘just so’ stories, because we have a prior commitment, a commitment to materialism.” Lewontin even acknowledges that “we are forced by our a priori adherence to material causes to create an apparatus of investigation and a set of concepts that will produce material explanations, no matter how counter-intuitive.” Are there any exceptions,

any limits to this material mind-set? Not according to Lewontin. He closes this section, “*Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door.*”⁹

Johnson and his colleagues argue that Lewontin’s statement reveals a philosophical dogma—what I call a “built-in catechism”—which functions as a new type of Genesis-faith that simply decrees, “Matter preceded mind.” If Darwinian science was built on such a philosophical or even theological construct (as seemed clear), then this construct deserved the most thorough and skeptical questioning. Nevertheless, to ID’s opponents, this skeptical cast of mind was in itself a cause for instant suspicion and alarm. The matters of *common ancestry* and the *natural selection mechanism* were believed to have been long settled—why would anyone question established fact? And how can any scientist jettison naturalism—if it goes, couldn’t any phenomenon be viewed as potentially “an act of God”? Yet far more dangerous in the sight of these critics was the second stage that ID theorists entered after 1996. They had gone beyond their doubts about Darwin and naturalism. They now said they were developing and testing a new theory, one claimed to possess greater plausibility in accounting for life’s complexity. This theory was supremely controversial, of course, entailing either one of the most important advances in the history of science or one of the worst betrayals that science has ever faced. It was a theory that was not just open to the consideration of intelligent causes—it was a theory that laid down principles and procedures for the reliable detection of design in physical structures. The work of mathematician William Dembski was devoted almost entirely to the construction of a new detection system, a logical-statistical procedure crafted to detect where an intelligence had been involved in any physical object, phenomenon, or event.

Critics of ID were increasingly vocal in a point-by-point critique of these new ideas, but they scoffed even louder at the claim of design theorists that Darwinism was enmeshed in a paradigm crisis, as Denton had explicitly hinted in the title of his book and in the name of his final chapter, “The Priority of the Paradigm.” The late philosopher Thomas Kuhn used the phrase “paradigm crisis” to describe an early, troubled stage in a genuine scientific revolution, leading finally to a “paradigm shift.” These ideas were set forth in *The Structure of Scientific Revolutions* (1962),¹⁰ one of the most influential academic books of the twentieth century. Some design theorists appropriated Kuhn’s ideas and said that they were laying the groundwork for a new competing paradigm in biology.

To the critics of ID, the openness to *intelligent causes* combined with the attack on naturalism were little more than a subterfuge. An intelligent cause loomed as a not-so-subtle substitute for God. Furthermore, the reigning

paradigm, neo-Darwinism, was said to be brimming with health.¹¹ In fact, the existing paradigm was seen as stronger than ever, supported by new evidence from fossils, molecular biology, and other fields. In the teeth of these developments, ID's moves were seen as plainly deceptive, slyly importing religion into science.

Most of all, the idea that design theorists were at the cutting edge of a paradigm shift was both infuriating to Darwinists and literally unthinkable. This appalling rhetorical invasion into their territory had to be stopped. Urgent action—*rhetorical action of the strongest sort*—was called for. It was time to awaken the scientific establishment to the real threat to “science as we know it.” This call to arms could be heard in a gradual crescendo after 1997, but the trumpets blared loudly in a rare 2005 letter from Bruce Alberts, president of the National Academy of Sciences, to all the NAS membership, warning them of the encroaching danger: “I write to you now because of a growing threat to the teaching of science through the inclusion of non-scientifically based ‘alternatives’ in science courses throughout the country.”¹²

This program of counterpersuasion by ID's critics was aimed at several key groups. At the top of the list were high school biology teachers and biology professors, scientists in other fields, and leaders in the media and politics. Yet the response to ID also was packaged for the general educated public in the U.S. and in other countries, where the virus seemed to be spreading. The goal was to convince those who were unfamiliar with Intelligent Design that the movement was simply based on religion, not science, and was not to be considered a *serious scientific alternative*. Far more hot and dramatic was the imaginative rhetoric of ID critics. A series of nightmares was painted, in which ID threatened the educational and scientific future of modern societies. Rhetoricians have a name for these imaginative constructions, mixtures of fact and faith: *fantasy-themes*. Normally, fantasy-themes function as collages of images and concepts; at the center are interwoven plot elements, usually including heroes and villains. In my earlier work, I proposed *projection themes* as a more congenial and accurate term, since such projections aren't complete fantasies. (I now use both terms interchangeably.)

The dark projection themes of Darwinists (e.g., “Science will die!”) are among the most amazing and fascinating responses to ID. But more commonly the rhetoric aimed at ID took the form of sound bites and talking points on television interviews and in short editorials and opinion pieces. The thrust of these jabs at design was a series of poison-tipped generalizations:

There is no evidence for ID's arguments.

There is overwhelming evidence for evolution.

The newest findings are confirming Darwinian theory each month.

ID is not testable.

Alternately, ID has been tested, and it utterly fails.

ID is a sham; it survives only as a political or religious movement.

ID is pseudoscience; it never publishes findings in peer-reviewed journals.

Some of these sound bites began to lose their force, especially when articles supporting ID began to appear in peer-reviewed journals in 2004. Most prominent among a flurry of such peer-reviewed articles was Stephen Meyer's August 4, 2005, review essay, "The Origin of Biological Information and the Higher Taxonomic Categories." It was published in a journal loosely connected to the Smithsonian, *The Proceedings of the Biological Society of Washington* (vol. 117, no. 2). (For NPR's coverage of the Smithsonian's shabby treatment of the journal's editor, see the sidebar "The Sternberg Affair" on page 27.)

Nevertheless, ID critics went beyond editorials and jabs and addressed the issues of scientific evidence and arguments for design in a more head-on manner in extended articles or even book-length reviews. Such books were sporadic in the late 1990s, but after 2000 there was a steady flow, which built to a crescendo during 2004 when four books were published that blasted ID. The typical message of most of the book-length attacks was simple: "The arguments of Michael Behe, William Dembski, and other ID theorists have fallen flat. They have collapsed under the weight of criticisms and refutations of all their key points." Authors trumpeted findings in molecular biology that were seen as tests and refutations of irreducible complexity. Michael Behe sat permanently in their crosshairs, and scientists argued that his complex machines and systems can be, and have been, evolved. Case closed.

Behe and the other ID theorists wasted no time replying to the major critics—in print and in web-published replies. Occasionally, as in William Dembski's *The Design Revolution* (2004), a book-length reply to critics was unleashed. Design theorists argued that the attacks on their work, far from refuting their arguments, *actually strengthened and vindicated the case for Intelligent Design*. Behe published several articles and book chapters in which he replied, point-by-point, to his critics and sought to turn the attacks into powerful confirmation of his own theory.¹³ Perhaps more than anyone, Jonathan Wells found the "rave reviews" of his work (negative raving) as constituting a massive vindication of his *Icons of Evolution*. The seesaw battle of words, arguments, and evidences slung back and forth with increasing vehemence after 1997 was the most spectacular rhetorical clash to emerge in the twenty-year conceptual war over Darwinism and design.

The Sternberg Affair

On November 10, 2005, National Public Radio's Barbara Hagerty covered on *All Things Considered* the lingering brouhaha over Richard Sternberg, the editor of "an obscure scientific journal loosely affiliated with the Smithsonian Institution, where he is also a research associate." She pointed out that "he published in the journal a peer-reviewed article by Stephen Meyer, a proponent of intelligent design," and then fleshed out the motives and misery of Sternberg:

"Why publish it?" Sternberg says. "Because evolutionary biologists are thinking about this. So I thought that by putting this on the table, there could be some reasoned discourse. That's what I thought, and I was dead wrong."

At first he heard rumblings of discontent but thought it would blow over. Sternberg says his colleagues and supervisors at the Smithsonian were furious. He says—and an independent report backs him up—that colleagues accused him of fraud, saying they did not believe the Meyer article was really peer-reviewed. It was.

Eventually, Sternberg filed a complaint with the U.S. Office of Special Counsel, which protects federal employees from reprisals. The office launched an investigation. Ultimately, it could not take action because Sternberg is not an employee of the Smithsonian. But Sternberg says before closing the case, the special counsel, James McVay, called him with an update. "As he related to me, 'The Smithsonian Institution's reaction to your publishing the Meyer article was far worse than you imagined.'"

McVay declined an interview. But in a letter to Sternberg, he wrote that officials at the Smithsonian worked with the National Center for Science Education . . . and outlined "a strategy to have you investigated and discredited." Retaliation came in many forms, the letter said. They took away his master key and access to research materials. They spread rumors that Sternberg was not really a scientist. He has two Ph.D.s in biology—from Binghamton University and Florida International University. In short, McVay found a hostile work environment based on religious and political discrimination.

After repeated calls and emails to the Smithsonian, a spokesman told NPR, "We have no public comment, and we won't have one in the future."

This fast and furious campaign of attack by the critics of Intelligent Design, with the vigorous counterattacks by ID's defenders, is the primary focus of this book. I want to tell the story of this intense period and, in the process, to

separate and trace the battle over each of the main arguments. Some are scientific, some are philosophical, and others hover at a popular level, in culture and educational issues. The key to understanding the rhetorical action is to tease apart the main threads, grasp the central points, sift the crucial evidence, but not get lost in minutiae. That is my goal.

In this survey I want to track the clashes over ID *after 1997*, as the movement ballooned and spread across the university world and grew into a major intellectual and cultural issue within the general public. Because I already focused in *Doubts about Darwin* upon the responses received by Phillip Johnson's critique, the spotlight will shift in this book to Michael Behe and William Dembski, the leading theorists of "design detection," and to Jonathan Wells, the critic of "textbook proofs" of Darwinism (such as the peppered moth story and the comparison of embryos). Chapters 5, 6, and 10 will be devoted to their work, the counterattacks they faced, and their replies to the detractors. Chapters 8 and 9 will discuss one of ID's strongest criticisms of current textbook orthodoxy—the proliferating chemical evolution (origin of life) scenarios.

The fossil evidence—both for and against Darwinism—comprises a major battlefield in the war of rhetoric. The clash over fossils will be dealt with in chapter 7. Since the parallel arguments to design from the fine-tuning of the universe continued to play an important and increasing role in buttressing the case for design in biology, I will also devote chapter 11 to discussing the struggle over these arguments and evidences in physics and astronomy, along with the curious use of theological arguments to shore up Darwinism. Finally, in a concluding chapter, I will seek to understand this moment in time and to project some likely changes and pathways to be followed in the coming years.

To trace the story of how Darwinism struck back at ID and opened a new phase of the debate, it would be wise to devote three brief introductory chapters to a historical overview of this period before entering the argumentative clashes. I will first focus on the basic conflict between the two theories and ask: How did the relatively modest claims of ID (compared to creationism) generate such intense hostility? What was truly at stake, and what exactly was the perceived threat from design? Then, during two historical survey chapters on the 1990s and on the period after 2000, I will retell this exciting clash between design theorists and defenders of the fortress of Darwinism. We now turn to those introductory stories and questions.

2

The Real Issue

Nature's Symphony of Macroevolution

The controversy over Intelligent Design places before us a central puzzle. On the one hand, ID theorists have made seemingly *minimal claims* (compared to the much more extensive claims from creation science, which include a global flood and recent creation). At its core, ID simply says that “certain features of the universe and of living things are best explained by an intelligent cause, not an undirected process such as natural selection.”¹ On the other hand, by 2005 the central concepts of ID and the professors who articulated them were increasingly seen—and *portrayed*—as a dire threat to science and even to the health of modern societies. How could these minimal arguments become the trigger for such unprecedented alarm in science?

To solve this puzzle, one must realize first that these minimal claims were viewed tactically as much more dangerous than traditional creationism in three ways:

1. They seemed more likely to penetrate science, since they were promoted by credentialed scientists, many of them “intellectuals at respected universities.”²
2. The claims themselves (with no hint of a literal Genesis) were often linked with those scientific fields already busy with the detection of intelligence. Thus the claims posed a greater threat of penetration.