FROM WEDGE STRATEGY TO KITZMILLER:
RHETORICAL ANALYSIS OF THE INTELLIGENT DESIGN ARGUMENT SERIES

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Abstract

Many scientific claims being made today are not based on established scientific principles. They are a result of motivating factors that include media, political influences, legal and social issues, economic pursuits, the experimental procedure itself, peer review, and, central to this thesis, the lack of science education of the public. Intelligent Design, a much discussed potential theory of biological origins is one of these claims. Intelligent Design offers an array of scientific and probabilistic arguments supporting the concept that an intelligent agency better accounts for certain aspects of the natural world. The response and reaction to this theory within the science, political, education and religious communities has been increasingly expressive. Some believe that Intelligent Design is a threat to Darwinian evolution, some argue that teaching ID as an evolutionary theory is "only fair." And all believe the stakes are high—to the victor goes the privilege of teaching their theory as biology in the public school classroom.

This study of Intelligent Design is not an extensive quantitative review of primary materials in the scientific debate, or qualitative reviews of sweeping breadth of religious-based theories. Rather, a quantitative content analysis with selected primary sources was conducted to acquire data to discover which arguments constitutes effective presentation of Intelligent Design, to whom they are presented, and which arguments are promulgated and which are not. The study analyses what rhetorical devices (such as use of selective word choices and framing techniques) are utilized, whether consciously or unconsciously, in the presentation of these arguments.
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Rhetoric matters, we argue, when human beings power as well as when they puzzle

~Heclo 1974

CHAPTER 1. INTRODUCTION

Science literacy for all. Few in education would dispute the importance of teaching scientific literacy to the coming generation of citizens. A 2000 Fordham Foundation report on state science standards noted that “any decent education in science requires that the student come to understand the central role of theory in scientific methodology.”1 This understanding does not emerge instantly; students must develop and grow into the ability to understand the abstractions essential to the methodology at the same time that they accumulate the broad evidentiary basis that describes the organizing discipline of ever-broadening theoretical insights. Scientific knowledge then is not solely about gathering data to prove a favored hypothesis but instead involves the testing of ideas against the totality of real-world observations. Society puts a lot of faith in technology and theories presented from scientific knowledge and through established scientific research principles. Unfortunately many scientific claims being made today are not based on established scientific principles. They are a result of motivating factors that include media, political influences, legal and social issues, economic pursuits, the experimental procedure itself, peer review, and, central to this thesis, the lack of science education of the public. Intelligent Design, a much discussed potential theory of biological origins is one of these claims. An understanding of the motivating arguments for adoption of this theory in the science classroom, and the potential impact on science literacy is the focus of this thesis.

Science literacy plays a monumental role in contemporary society; I believe it may be the modern era’s defining feature. Students in these times run the risk of being powerless if they fail to understand science as more than simply memorizing facts or reproducing experimental methods. Both the National Research Council and the American Association for the Advancement of Science stress the need for integrated, methodological understanding of science. Students must build new understandings on what they already know, modifying their current conceptions when necessary, by engaging in some form of generative scientific inquiry into authentic questions. Someone who is scientifically literate is able to interpret,

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criticize, and evaluate claims that he/she hears. He/she will know how to research relevant data, examine evidence, and draw appropriate conclusions—because theories are judged by their results. ²

Without a strong ability to process relevant information, we as a public will be unable to better process scientific information and understand the influence of culture on the distinction between the world and knowledge of the world: different theories of the world are expected to be proposed, and the different cultural resources that bear on the different theories are also expected. This also means that obtaining this knowledge is politically variable, not in a partisan fashion, but reflects that different interests produce different accounts of the world and attempts to reconcile these accounts. How is particular knowledge framed (and reframed?) How does knowledge happen to embed itself into society, and, at its most influential, become policy?

In contemporary science there exists a foundation of central organizing principles. For classical physics, these principles are centered on Newton’s laws; for modern physics, Newton’s laws are extended into and subsumed by the principles of relativity and quantum mechanics. For chemistry, the central principles are conservation of mass and energy, the periodic law and table of the elements, and the laws of quantum mechanics. For geology, the central principle is the theory of plate tectonics and its underlying mechanisms. And for biology the central principle is biological evolution.

Historically, biological evolution has been a source of tension a number of times, and in many states, as education officials attempt to draft or revise their science curricula.³ Given this history of controversy over and objection to teaching evolution, is the teaching of evolution even important for science literacy? Yes, comprehending the methodology of evolution in the life sciences should be an essential constituent of state science standards.

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This theoretical framework is the basis on which the sciences acquire a structure that is tighter than any other fields of human inquiry except, possibly, for mathematics. Short-changing, distorting, or omitting evolution harms the teaching of the life sciences. Further, it makes it difficult for the student to come to a clear understanding of how science works and can ultimately weaken the scientific literacy of our nation’s students. A study published in *Science* magazine reviewed two decades’ worth of polling on evolution and found that “After 20 years of public debate, the percentage of U.S. adults who were not sure about evolution increased from 7% in 1985 to 21% in 2005.” Using a two-group structural equation model, the researchers identify three relevant factors account for this pattern of American reservations about the concept of evolution: the acceptance of fundamentalist religious beliefs, the politicization of science, and the widespread ignorance of biology. In addition, the Fordham Foundation’s State of Science Standards (2006) identified evolution as a flashpoint in American science classrooms, with “many … standards … fail[ing] to address the fundamental evidence supporting the theory, which explains how life on Earth developed.” “The weak handling of evolution science content is just sister to the general weakness of disciplinary content for all science—despite the active revision of standards in most states since 2000.” Comparing the assessment of science standards in 2000 and 2005, the report states, “For us to have made no progress in establishing sound standards for K-12 education in evolution is very discouraging…”

On the question of general public understanding of science, the National Science Foundation's Division of Science Resources Statistics has consistently studied what the public understands and thinks about science and science-related issues. Their most recent study, the *Science and Engineering Indicators–2002*, shows that although more than 50 percent of survey respondents had some understanding of probability, and more than 40 percent were familiar with how an experiment is conducted, about 70 percent lack a clear understanding of what it means to study something scientifically. On the question of biological evolution, a Gallup poll reported in April 2005 revealed that near equivalent percentages of teenagers (aged 13-17) are of the opinion that Charles Darwin’s theory of evolution is either a scientific theory well supported by evidence (37%); just one of the many

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theories of evolution and one that has not been well supported by evidence (30%); or don’t know enough about it to say (33%). The results of the NSF and Gallup surveys, and the findings reported in *Science* and by the Fordham Foundation demonstrate that many people simply don’t understand the basic workings of science well enough to appreciate scientific arguments.

Further besetting science education, and just about any social domain, are efforts by the left and by the right to bend the domain to advance the enthusiasms, viewpoints, or doctrines of particular groups. Within education, arguments to manipulate standards and curriculum are numerous, and many rise or fall in importance not owing as much to the public understanding the evidence presented, but more to dominant social factors that appeal to the public’s unease with science and weak, or lacking, critical thinking skills necessary to appropriately analyze an argument. One notable, if not the most notable, education argument is over the teaching of evolution in the public classroom. Throughout history, efforts to manipulate the teaching of evolution have ranged from outright prohibition, as in the 1925 Scopes Trial decision, to “watered-down” lessons in origins theory that pose no potentially disruptive explanations, to manipulations that offer reasonable, and even “scientific” evidence, but that may not completely reflect established scientific methodology. It is this type of origins theory that falls in this latter category that is the focus of my thesis; specifically, Intelligent Design Theory.

Generally, Intelligent Design theory posits that life is too complex to have arisen from random mutations and can only be the work of an “Intelligent Designer.” ID offers an array of arguments supporting the concept that an intelligent agency better accounts (than Darwinism) for certain aspects of the natural world. Darwinian Theory is the prevalent thought that all life is related and has descended from a common ancestor. *That an alternate theory to evolution has been proposed does not itself threaten science literacy.*

What threatens science literacy is the compelling presentation of evidence for this theory that cannot yet be examined completely through established scientific methodology, as science. The way in which science is taught in school has a lot to do with students' understanding not only of the content of science but of how science compares with other forms of knowledge. It

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helps to shape their comprehension of science as a social and intellectual endeavor within the larger framework of modern society. The most notable advocates of Intelligent Design include Phillip Johnson, William Dembski and Michael Behe. Johnson is a University of California at Berkeley law professor, now retired, credited with developing the Intelligent Design movement. William Dembski holds doctorate degrees in mathematics and philosophy and is a Senior Fellow at the Discovery Institute; an outspoken proponent of Intelligent Design, William Dembski has “assumed the role of public intellectual as interest in Intelligent Design has grown in the wider culture.” Michael Behe represents the scientific arm of Intelligent Design; as a Professor of Biochemistry at Lehigh University, Behe’s research interests include the evolution of complex biochemical systems. Behe is credited with describing “irreducible complexity,” a feature inherent in Intelligent Design.

Intelligent Design offers an array of scientific and probabilistic arguments supporting the concept that an intelligent agency better accounts for certain aspects of the natural world. The response and reaction to this theory within the science, political, education and religious communities has been increasingly expressive. Some believe that Intelligent Design is a threat to Darwinian evolution, some argue that teaching ID as an evolutionary theory is “only fair.” And all believe the stakes are high—to the victor goes the privilege of teaching their theory as biology in the public school classroom.

1.1 Intelligent Design’s Placement within STS

While Intelligent Design could be analyzed in the context of a science versus religion debate, or as a political campaign, or as science or religious scholarship, the stamina of what I believe is essentially creationism, to be reinvented in the hands of its proponents in an attempt to answer the Ultimate Question: “How Did We Get Here?” is timely, from a policy standpoint, in light of the current debates over science education. The STS community has written considerably on the history of science and of religion, and on the evolution/creationism controversy; and on the public’s understanding of science, largely through qualitative discourse. Intelligent Design is being promulgated by scientists,

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7 Personally, I do not think it is appropriate to identify this as “theory;” however, the Discovery Institute identifies this as the “theory of intelligent design,” in their writings, and so to be accurate I should identify it as such, at least in this initial context.

philosophers, theologians and lawyers, however, who are sophisticated in both scientific and humanistic disciplines, who appreciate the malleability of a rhetorical situation and who can reflexively apply rhetorical models to communicate their ideas to the public. A partisan policy issue such as Intelligent Design is best analyzed through partisan methods, and analysis of Intelligent Design through the methods used in this thesis is a huge opportunity to bring together these veins of study on behalf of science literacy.

Jon Miller, Director of the Center for Biomedical Communications at Northwestern University, has spent three decades studying public understanding of science and technology. To possess what Miller calls civic scientific literacy, one must have the capacity to make sense of competing arguments in a scientific debate. In one study, Miller polled a national panel of adults to track their understanding of the ongoing debate about stem cell research prior to the 2004 elections. On the day prior to elections, over one-third of adult respondents had never heard the term “stem cell,” even though the issue had dominated the headlines. By the eve of the election, only a few more respondents said they had heard about stem cells. How could so many people manage to remain seemingly oblivious to one of the most contentious issues influencing the election?

Many and perhaps most people don't have a cognitive framework for understanding stem cells, Jon Miller explains. “Science happens so fast now that most adults couldn't possibly have learned about stem cells when they were in school.” Without this framework, people are less likely to pay attention to stem cells or any other unfamiliar scientific term. “People tune out things that they think are scientific or complicated,” he says. “If you are science averse and think you couldn't possibly know any science, the minute you hear ‘cell,’ ‘stem cell,’ ‘nanotechnology,’ ‘atomic,’ ‘nuclear,’ you turn the off switch.”

With regard to public acceptance of the concept of evolution, Jon Miller has been asking adults if “human beings, as we know them, developed from earlier species of animals” since the mid 1980’s. The questions purposefully avoided using the word “evolution” in order to determine whether people accept the basics of evolutionary theory. Over the past two decades, the proportion of Americans who reject this concept has declined (from 48% to 39%), as has the proportion who accept it (45% to 40%).

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For stem cells, evolution and many other science-based issues, it is not that Americans are rejecting science *per se*, but “longstanding conflicts between personal religious beliefs and selected life-science issues has been exploited considerably by all sides.”

On the question of Origins, scientists and religious scholars on both sides of the coin have offered “definitive resolution.” Each provides a causal theory whose conceptual shape is the result of knowledge. Intelligent Design advocate Michael Behe says the answer is “irreducible complexity:” the human biochemical processes of vision, and cellular respiration, for example, are comprised of chemical machines so finely calibrated and interdependent (complex) that Darwinian “descent with modification” can not justify.

Kenneth Miller, a Brown University Biology Professor, espouses the difference between evolution and design as corroborated scientific fact and as theory. Drawing from natural sciences such as astronomy and geology, Miller uses known physical properties of the universe to counter the creationist doctrine.

Within STS, while Intelligent Design can be parsed out using a number of sociological tools, my study adds to the body of information on the Origins question from the perspective of linguistic content analysis; specifically, the identification of rhetorical devices used by Intelligent Design proponents to promulgate Intelligent Design in the science classroom, and the implications of this strategy for American science literacy. My study of Intelligent Design is not an extensive quantitative review of primary materials in the scientific debate, or qualitative reviews of sweeping breadth of religious-based theories. Rather, a quantitative content analysis with selected primary sources was conducted to acquire data to discover which arguments constitutes effective presentation of Intelligent Design, to whom they are presented, and which arguments are promulgated and which are not. The study analyses what rhetorical devices (such as use of selective word choices and framing techniques) are utilized, whether consciously or unconsciously, in the presentation of these arguments.

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The term “rhetoric” today is often used as a pejorative term, as in “merely rhetoric” or “only rhetoric,” or even “political rhetoric.”\textsuperscript{13} But the use of “rhetoric” in modern rhetorical studies of science and science policy is the study of argumentation and of persuasion, of “how scientists persuade and dissuade each other and the rest of us about nature.”\textsuperscript{14} For Potter, “rhetoric should be seen as a pervasive feature of the way people interact and arrive at understanding.”\textsuperscript{15} Rhetorical analysis involves the study of the ways in which we attempt to persuade or influence in our discursive and textual practices. This analysis, even the teaching of rhetorics, has a long history going back to Ancient Greece.\textsuperscript{16} However, the growth of modern science from that period, with its emphasis on induction from empirical observation and experiment, resulted in less emphasis being given to the art of rhetorics. The rhetorical and the truth were held to be mutually exclusive and science was concerned with the truth devoid of rhetoric. The persuasiveness of science was held to rest in its truth claims, not in its rhetorical practices. Rhetorical analysis continued as part of the arts and humanities, while science concerned itself with the truth. This continued to be the case with the emergence of the social in addition to the natural sciences –“its [rhetorics] historical attitude towards knowledge production is much more at home with literary criticism than with sociology.”\textsuperscript{17} However, in recent years, this situation has shifted somewhat. “Whether or not one classifies it as part of the postmodern condition of knowledge, or the “linguistic turn” in the social sciences, there has been increased inter-disciplinary research and scholarship and a questioning of the firm boundary between rhetoric and truth.”\textsuperscript{18} “The goal of rhetorics is never to be scientific…or to be able to categorize persuasion for all times and all places. The


power of rhetorical analysis is its immediacy, its ability to talk about the particular and the possible, not the universal and the probable.”

Modern rhetoric of science education policy, while incorporating classical rhetoric (such as ethos, pathos, logos), adds the depth of study of influences and causes (through the use of narrative, metaphor, word choice) to discover which arguments are more influential than others. It examines what constitutes effective presentation of scientific findings to the non-scientifically trained public and which controversial science theories are accepted by the public and which are not. The formation of (public) science education policy concerning the adoption of Intelligent Design in the science classroom is a rich case study for this analysis. Understanding Intelligent Design through its proponents’ use of rhetoric is the first step in understanding society’s comprehension of science as a social, political and intellectual endeavor within the larger framework of contemporary science literacy. Is it a new challenge to the evolution orthodoxy or fancifully worded Creationism? That Intelligent Design may not be so easily framed underscores why perhaps Hamilton, Franklin, Jefferson and their contemporaries have a profound place in history. Our constitution makes no mention of a Creator, and nor does it require that evolution be taught.

Intelligent Design has some roots in the sciences, but should it reach full flower, may branch into nearly every discipline, from theology, philosophy, and the social sciences to history and literature, from morality and law to the arts. Analyzing the Intelligent design argument is relevant to STS because although the creation versus evolution argument has been around for over a century, an examination of the argument may illuminate a deeper genealogy, one that I propose is based not on scientific merit, but on the relationship between how the issue is framed, the rhetorical appeal of language, and the identification and participation of an audience in order to advance Intelligent Design as science education

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20 E. Corbett, Classical Rhetoric for the Modern Student (Oxford: Oxford University Press, 1998.) Briefly, classical rhetoric can be described in three main forms: ethos, the speaker’s/author’s credibility; pathos: the emotional or motivational appeals; and logos, the logic used to support a claim.
policy. In other words, an argument strategy based on political interests rather than on scientific knowledge.

**1.2 Mapping out the Study (Methodology)**

My first step in this research will be to identify the main defining arguments for Intelligent Design. It is generally agreed upon that the Intelligent Design movement began with the works of Charles Thaxton and Phillip Johnson, it is the movement’s second phase, characterized as a “research program” and beginning around 1998 that is the focus of this thesis. To identify these arguments I compiled all writings on Intelligent Design identified by the Discovery Institute as “Scientific Research and Scholarship.” To this collection I included all arguments authored by William Dembski and Phillip Johnson, as well as any referenced supporting information as provided on Access Research Network (ARN). ARN “provides accessible information on science, technology and society from an intelligent design perspective,” and is a copious source of writings by both William Dembski and Johnson and any respective referenced works. From this collection, I chose the specific arguments to analyze formally and considered these sources as primary. My criteria for determination as a primary source were:

- It was published/presented by one of the major actors in the Intelligent Design movement, or
- It was mentioned as being important by one of the major actors in the movement (as identified through the initial literature search), or
- It was quoted from or referred to by a school official in the process of the curriculum debates, or
- It carried articles obviously intended to be influential in the debate.

Next, an examination of the Discovery Institute and National Center for Science Education (NCSE) was conducted to identify a collection of arguments for the adoption of Intelligent Design in the science classroom. Intelligent Design is housed in the Discovery Institute’s Center for Science Culture (CSC), and writings classified within the CSC as “Essential Reading,” or “Scientific Research and Scholarship” were added to the research database. The NCSE is a “clearinghouse for information and advice to keep evolution in the science classroom and “scientific creationism” out. NCSE is the only national organization to

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specialize in this issue.” An examination of the NCSE collections identified few non-editorial articles, the majority being paragraph summaries of recently introduced legislation and news updates on state science standards debates.

The complete list of writings considered is contained in the Appendix.

For each argument identified the following information for analysis was collected:
• The date of publication/presentation (month and year);
• The speaker/author of the material;
• The intended “audience” for the material; 

To assist with description and identification of rhetorical structures, I have utilized Diction 5.0 Software. Diction is a software package first developed in 1984 to describe the verbal tone of a selected passage. The software contains over 30 dictionaries comprised of 10,000 words that represent over 22,000 texts of various sorts written between 1948 and 1998. Submission of a passage to the software generates a variable that is based on word ratios for each of the dictionaries. From these variables a description of the verbal tone of a passage can be generalized. A detailed description of the software appears in the Appendix.

1.3 Structure of the Thesis

A brief history of Intelligent Design and a literature review relevant to this study can be found in Chapter Two. The framework model for promulgating the Intelligent Design argument I describe in Chapter Three. I present in Chapter Four a chronological identification and analysis of the initial Intelligent Design argument and analysis of select arguments for the adoption of Intelligent Design in the science classroom. In Chapter Five I present the implication of my research findings.

24 This data will no doubt be subjective in many instances. When the audience is obvious (e.g. church groups, political leaders, school boards, print media, etc.) that will be indicated; other audiences will be identified as “presumed.”
CHAPTER 2: HISTORY AND LITERATURE REVIEW

2.1 Pre-Intelligent Design.

The idea of a supernatural creator and designer who was responsible for establishing the order of the world was supported by many scientists since the seventeenth century, well before Charles Darwin altered nineteenth century thinking with the publication of *On the Origin of Species (1859)*. The English theologian William Paley (1743-1805) wrote in *Natural Theology, or Evidences of the Existence and Attributes of the Deity collected from the Appearances of Nature* (1802) that if one found a pocket watch lying about, the immediate inference is that it was created not by scattered natural processes but by a designing human intellect. *There must have existed, at some time, and at some place or other, an artificer or artificers who formed it for the purpose which we find it actually to answer; who comprehended its construction, and designed its use.*

Paley then used the great complexity of the world to argue that there must be a Master Designer (who is God.) Other pre-Darwin Creation theories were in the public domain at this time, as well. Paley’s theory, however, was most regarded until Darwin published *On the Origin of Species* in 1859. With its patiently collected information on the geological, paleontological, and biological evidence for the origin of species, *On the Origin of Species* convinced many scientists that natural selection better explained the diversity and complexity of nature than did Paley’s design theory. *On the Origin of Species* did much to advance evolution theory, but it may also have prompted a vigorous response that contributed to the rise of Creation theory, and anti-evolutionism, to rise. Post-Darwin Creation theorists sprang up; but despite their widespread criticism of evolution theory around the turn of the 20th century, there had yet to be established a standard “Creation theory.” Not until after World War I and the growing acceptance of evolution theory within the scientific community, and the subsequent


26 One, attributed often to Carolus Linnaeus, roughly follows Genesis: God had created plants and animals at one time and place and that they had dispersed from that singular center to populate the earth. A second view, by a friend and inspiration (and later, ardent supporter of Darwin’s), Charles Lyell, broke entirely from the biblical construct. It postulated the existence of multiple "centres or foci of Creation," appearing as needed across space and time, from which organisms spread out to fill their ecological niches.
trickle of the theory into the American classroom did the Creation theorists eventually unite against evolution theory.27 Still, their unification was almost solely by their hostility to evolution, though, and not by agreement on the mode of Creation itself.

The 1925 Scopes Trial was an educational clash of two titans: Bible-believing William Jennings Bryan and the agnostic Clarence Darrow.28 On one side stood those who emphasized secularism, science, new ideas and theories, and individual self-expression; on the other side stood religious traditionalism. The battleground for this conflict between new and old ideas was the public school system within which John Scopes taught Darwin's Theory of Evolution, which contradicted the Bible's interpretation of the origins of man. Although by the 1920s Darwin's principles were being taught in most American universities and public schools, the middle of the decade brought a concerted drive by religious fundamentalists to stop the teaching of evolution in the schools. School boards, individual schools, and many states in the South prohibited the teachings in public schools of any theory about the origins of human life that conflicted with the teachings of the Bible.

In brief, the Scopes trial was presided over by Judge John T. Raulston, a conservative Christian who started each day's court proceedings with a prayer, and who did not allow the defense to bring any expert scientific testimony about evolution. As a result, Darrow called prosecuting attorney Bryan, an expert on science and religion, as his only witness, and systematically proceeded to humiliate him. With his probing questions, Darrow led Bryan to declare that Eve was literally created from a piece of Adam's rib and that in 2348 B.C. the world was flooded and fish and animals escaped onto Noah's ark. At the conclusion of the hearings, Darrow asked the jury to return a verdict of guilty in order that the case might be appealed to the Tennessee Supreme Court where, he hoped, the anti-Darwin law would be


overturned. The jury, complying with Darrow's request, returned a verdict of guilty and Judge Raulston fined Scopes $100.\textsuperscript{29}

Bryan’s success was due in part to maintaining that Darwinian evolution was not convincing to the popular mind. The verdict has left a lasting imprint on the state of science education, and, although its presence would not be felt for nearly a half-century, on the sway of popular culture, as well. Shortly after the Scopes decision, Mississippi and Arkansas passed their own anti-evolution bills with nary a fuss; and for nearly thirty years evolution or “Darwinism” was hardly a topic in the American classroom. But a lot can happen to a country in thirty years. At the end of World War II America was renewed, filled with a sense of national pride for what science (and technology) had accomplished. And when Sputnik went up in 1957, it was again to science that America turned.

In the immediate decades surrounding Scopes, to not incorporate God into public activities was simply not done. Prayer at footballs games, for example, was an accepted norm. Throughout the 1950’s and 1960’s, as America engaged in post-war industrial advancements against the backdrop of the Cold War, few noticed that the Establishment Clause had undergone a reinterpretation. A Supreme Court decision in 1947 recognized a constitutional “wall of separation” between religion and government to the states, and in doing so quietly paved the way for the (re)introduction of evolution.\textsuperscript{30} The importance and usefulness of science of science was being re-evaluated as part of educational reforms by the Biological Sciences Curriculum Study\textsuperscript{31}, and so evolution made its return to the American classroom and into the biology textbook.

Evolution was not greeted with great enthusiasm everywhere, however. In the spring of 1965 new evolutionary biology textbooks made their way to Little Rock, Arkansas. These textbooks were in direct conflict with the 1928 Arkansas law that barred teaching “the theory of doctrine that mankind ascended or descended from a lower order of animals.”\textsuperscript{32} The Arkansas Education Association saw an opportunity to legalize evolution in the biology textbook.

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\textsuperscript{29}St. James Encyclopedia of Pop Culture, 1\textsuperscript{st} ed., s.v. “Scopes Trial.”

\textsuperscript{30}Everson v. Board of Education, 330 U.S. 1 (1947). This case reinforced the precedent of government money financing portions of religious, sectarian education by having those funds applied to activities other than direct religious education.


\textsuperscript{32}Ibid, p.98.
classroom with the help of a young schoolteacher named Susan Epperson; in 1968 the United States Supreme Court invalidated the Arkansas statute that prohibited the teaching of evolution. The Court held the statute unconstitutional on the grounds that the First Amendment to the U.S. Constitution does not permit a state to require that teaching and learning must be tailored to the principles or prohibitions of any particular religious sect or doctrine.33

During the 1970s and 1980s, bills to require “balanced treatment” of and “equal time” for Creation science were introduced in more than 20 states.34 Edward Larson’s book, Trial and Error, traces quite thoroughly the legal history of teaching, and attempting to teach, evolution in America’s classrooms. What follows below are summaries of two notable cases that precede the emergence of Intelligent Design.

Arkansas. Arkansas and Louisiana legislatures capitalized on a 1981 California decision that the State Board of Education’s Science Framework as written and as qualified by its anti-dogmatism policy did not prohibit the free exercise of religion. The Science Framework provided that class discussions of origins should emphasize that scientific explanations focus on "how", not "ultimate cause", and that any speculative statements concerning origins, both in texts and in classes, should be presented conditionally, not dogmatically;35, and on growing public opinion that while the wall of separation between church and state should remain, there should be greater effort by public schools to accommodate students’ religious views. Both states enacted “equal time” laws in 1981.

The State of Arkansas Act 590 was intended to further scientific inquiry by providing balanced treatment of alternative theories of origins. In overturning Act 590, in McLean v. Arkansas Board of Education, the federal court held that a "balanced treatment" statute violated the Establishment Clause of the U.S. Constitution.36 The Arkansas statute required public schools to give balanced treatment to "Creation-science" and "Evolution-science". The Arkansas decision also defined the term “science”, and in doing so declared that “Creation

science” was, in fact, not science. The court also found that the statute did not have a secular purpose, noting that the statute used language peculiar to Creationist literature in emphasizing the origins of life as an aspect of the unclear theory of evolution. 37

**Louisiana.** Louisiana’s day in court, again, came in 1987. In that year, in *Edwards v. Aguillard*, the U.S. Supreme Court judged unconstitutional Louisiana’s “Creationism Act of 1926.” This statute prohibited the teaching of evolution in public schools, except when it was accompanied by instruction in “Creation Science.” The Court found that, by advancing the religious belief that a supernatural being created humankind, which is embraced by the term *Creation Science*, the act impermissibly endorses religion. In addition, the Court found that the provision of a comprehensive science education is undermined when equal time is required for evolution and Creation science. Further, teaching a variety of scientific theories about the origins of humankind might be validly done with the clear secular intent of enhancing the effectiveness of science instruction. 38

### 2.2 Intelligent Design.

While there exists no agreed-upon date in which Intelligent Design was first introduced, skilled lawyers know how to look for similarities and differences in legal precedent, and how to ignite a new spark. Enter Phillip Johnson. After reading a case for atheistic evolution, Richard Dawkin’s *The Blind Watchmaker*, Johnson was persuaded that the case for evolution was largely rhetorical. Origins theory lies in the words that are chosen to tell the story. Johnson’s books, *Darwin on Trial* and *Reason in the Balance: The Case against Naturalism in Science, Law and Education* laid out the argument that evolutionary theory was based on assumptions by the scientific community that scientific explanations should not appeal to the supernatural. In the mid-1990s Johnson began collaborations with other critics of evolution theory in forming the Intelligent Design movement, which welcomed God back into science as the Master Designer of the natural world. 39

Johnson’s reasoning became the use of definitions to establish the goals of the Intelligent Design

37 In a precursor case in Arkansas, Judge Overton ruled that Act 590 had allowed religious fundamentals to incorporate religious beliefs in the science classroom. In that decision, as well as repudiating the Arkansas law, the opinion cited a respected British astrophysicist, Chandra N. Wickramasinghe who testified that the mathematical *probability* of chance chemical combinations producing life from non-life was essentially nil. This discussion of probability would not be used for nearly a decade, however.


movement. Biblical fundamentalists and Darwin fundamentalists have cooperated in maintaining the stereotype that Biblical literalism and fully naturalistic evolution are the only possibilities.\(^ {40}\) The key to Intelligent Design, then, is to define the theory such that it is distanced from either Biblical or Darwinist fundamentalism. Johnson’s argument is roughly as follows: if science is defined as the pursuit of materialistic alternatives, evolution may be the best materialistic alternative theory, but evolution is not the only theory imaginable. If science is defined so as to admit that non-natural forces can shape the natural world, then the abrupt appearance of species in the fossil record and the intricate complexity of natural systems should favor Intelligent Design over natural selection, and thus public schools could teach this alternative theory without promoting a particular religious view.\(^ {41}\)

Phillip Johnson’s definitional rhetoric quietly gained support throughout the 1990’s. While the states were busied with debating evolution and drafting science standards, the Intelligent Design community worked to attract a broader audience than that of conservative Creation scientists, and by the end of the 20\(^{th}\) century had attracted a core following of mostly Christian academics from outside the life sciences committed to the Intelligent Design concept.

To recapitulate the genealogy of Intelligent Design from its Creationist roots, in 1968 the United States Supreme Court ruled that a literal interpretation of Genesis is one-sided religion and cannot serve to prohibit the teaching of evolution. In the 1970’s California and Texas asked for equal time for religion: if the religion of secularism (as in evolution) is taught, then equal time must be given to the religion of Creationism. To this the courts said “No.” What about balanced treatment for creation science and evolution, Arkansas asked in 1981? The District Court ruled that creation science is not science, and so there is no balanced treatment. Six years later, Louisiana asked for equal time for creation science and evolution. “Creation,” said the United States Supreme Court, advances a religious belief, but balanced scientific theories could be taught. If creation science, then, were considered a scientific theory like evolution, and since science accepts that non-natural forces may have shaped the world, an alternative scientific theory, like Intelligent Design, could be taught.

\(^{40}\) Larson, \textit{Trial and Error}, 187.

\(^{41}\) \textit{Ibid}, p. 195.
Further, to exclusively teach one alternative theory would be controversial, so both controversial theories must be taught.\(^\text{42}\)

The critical examination of all “alternative” or “controversial” theories,” not just the presentation of evidence both for and against a particular theory, defined Intelligent Design at the start of the twenty-first century. “Alternative,” while not synonymous with “equal” was compellingly different enough to convince six state legislatures so far to consider allowing “equal time” for the teaching of “alternative theories” of evolution. Alabama’s 2004 legislation, the Academic Freedom Act, is the most indeterminate, allowing teachers the freedom to teach any alternative theory they want. Texas and Montana are considering allowing “competing theories” or “generic controversial issues” to be taught in the science classroom. Indiana and West Virginia’s curriculum changes would require the teaching of “alternative theories, including Creation Science.”\(^\text{43}\) Michigan’s proposed legislation states that for science standards at all grade levels “references to 'evolution' and 'natural selection' shall be modified to indicate that these are unproven theories by adding the phrase, 'Describe how life may be the result of the purposeful, intelligent design of a Creator.'”\(^\text{44}\) Finally, Minnesota supports yet another version of curriculum change: “alternative theories should be taught because evolution is controversial.”\(^\text{45}\)

To be certain, “Intelligent Design” is not without its successes; advocates publish a steady flow of articles and books, aimed at popular audiences, audiences that are usually religiously and politically conservative. As a scientific theory of information grounded by empirically detected evidence, however, within the scientific community Intelligent Design is virtually absent from the peer-reviewed scientific research literature. Because Intelligent Design is largely the collective argument of Creationists, natural scientists, political scientists, and Johnson’s own brand of philosophy, Intelligent Design advocates aim to devalue scientific and empirical findings of others but cannot produce their own. Not surprisingly, ID advocates have been stalled by insisting on adding “alternative scientific


\(^{44}\) Ibid, Michigan.

\(^{45}\) Ibid, Minnesota.
theories” like Intelligent Design to science curricula. Instead they call for “teaching the controversy.”

But what is the controversy? Is the controversy a scientific controversy? Intelligent Design submits itself as a fully scientific theory of information grounded by empirically detected evidence. Indeed, Intelligent Design offers a hypothesis for the origin of life—that our origin is intelligently designed—and predicts that irreducible complexity is demonstrative proof for intelligent causation; and beyond that which can be described in empirically detectable molecular and biochemical terms for a living system, the causation is intelligent. Here Intelligent Design theory stumbles as a scientific theory by positing ultimate causation for why the world appears to us as so.

Is the controversy religious? Darwin himself did not reject the notion of a Creator; evolutionary biology, though, aims to empirically study the mechanistic “how” of Nature. Creationists believe God—an “ultimate cause”—created Nature. Intelligent Design fervently endeavors to distance itself from any religious doctrine, maintaining that an Intelligent Agent—an “ultimate cause” best accounts for various aspects of Nature. Like early Creationists, the Intelligent Design theorists are unified almost solely by their hostility to evolution; and, also like Creationists, not by agreement on the mode of Creation itself. To posit that an Intelligent Agent does not evoke a religious doctrine necessitates that there is no religious controversy. To posit that an Intelligent Agent indeed evokes a religious doctrine is adversative to the Intelligent Design argument. The controversy cannot be had both ways.

Intelligent Design arguments are attractive because they employ scientific descriptions and are backed by scientific competence. But, rather than providing positive evidence for their position, Intelligent Design theorists principally emphasize weaknesses in other positions, most notably, evolution theory. The insistence on a logical construct for Intelligent Design does not necessarily increase the probability of Intelligent Design and requires, shall we say, a leap of faith. Nevertheless, “teach the controversy” is effective. How? With their insipid wording, the policies are easy to enact. Who would oppose students learning the strengths and weaknesses of all “scientific” theories?

How influential the arguments in support of Intelligent Design will be will depend upon how their coercive properties play out at any given moment of history. Coercion plays a greater role when great uncertainty is perceived and there is great potential for change.
“Topics that introduce high levels of doubt in volatile times are going to be treated as “hot,”
that there is something “controversial” about them that is rhetorical in a pronounced way.
Society is less dependent on rhetoric when there is a higher degree of certainty. People don't
talk much about what is certain. What's the point?”

Analyzing the content of an argument series, such as Intelligent Design, describes in a
systematic fashion the focus of attention of various groups of people on different subjects. It
is a useful method in investigating the question, “Who sets the agenda and frames the issue?”
The principal elements of framing an issue have been described by William Gamson and
Andre Modigliani. Generally it is agreed that citizens in large numbers can be easily
converted from one side of an issue to the very opposite depending on how the issue is
specifically framed. In turn, the ease with which they can be shifted from one side of an issue
to the other suggests that the positions they take are far from securely anchored in
underlying, enduring principles. Gamson and Modigliani have examined public discourse,
and suggest that citizen participation and acceptance of an argument is comprised of discrete
“interpretive packages,” each containing a main point of the argument, and tied together by
“a central idea. This frame, they posit, contains a rich set of “metaphors, catchphrases, visual
images, moral appeals, and other symbolic devices [that] supplies a readily comprehensible
basis suggesting how to think about the issue at hand.” Understanding the composition of
these individual packages helps to situate an individual’s opinion or acceptance of an
argument in its context without the requirement for critical thought.

Dorothy Nelkin describes another “interpretive package” relevant to science policy
studies—“God talk.” In a posthumous essay, she describes the persistent strength of “God
talk” in contemporary discussions of genetics and evolutionary theory—theories that touch
on the cosmological and essentialist question of the origin of life. Writing that religious faith
enjoys “remarkable strength and persistence in American society,” she notes that a “direct
concern to scientists is the expression of religious sentiments in disputes over scientific

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46 Thomas Lessl (Speech and Communications Professor at the University of Georgia), interview by Paul
Newall, http://www.galilean-library.org
Project” (Paper Presented at the 18th Annual Communications Research Symposium, The University of
Tennessee College of Communications, Knoxville, March 10, 1995).
48 William Gamson and Andre Modigliani, “Media Discourse and Public Opinion on Nuclear Power: A
49 Ibid.
theories and research practices—‘God talk.’” And, “A decade after Aguillard, the creationists again reemerged as an active political force, developing new strategies and arguments that would expand public support for their opposition to the teaching of evolution without violating the First Amendment constraints.”

God talk, Nelkin cautions, may be a way “to minimize the distance between science and religion, to answer the accusations of critics, and to compete for credibility in the public domain…But using such images to buttress the power of science and technology may ultimately pose risks—for the autonomy of science, the role of religion, and the social well-being.”

A recent review of the LEXIS-NEXIS Academic database identified over 130 newspaper and 35 periodical articles on Intelligent Design written within a recent six month period. People are focusing attention on this topic; the use of “central ideas” and “God talk” to influence public opinion, and, ultimately, public policy, thus underscores a critical concern: that knowledge, particularly scientific knowledge, is a crucial resource. “A lack of scientific knowledge does not inhibit citizens from discussing ethical stances of individuals, questions of equity and access, and trust in the regulatory process…The effective citizen draws on numerous sources for her or his moral stances, and sense of political engagement.”

Eugenie Scott at the National Center for Science Education outlines Intelligent Design’s three basic “central ideas” that are the focus of attention: [ID proponents] advance the ideas that “evolution is bad science;” that “evolution is incompatible with faith, so you have to choose a side;” and the “fairness issue,”—that is, Intelligent Design’s seemingly objective goal of simply having both sides of the debate represented. This thesis examines, through the use of rhetorical constructions, these central ideas of Intelligent Design and the use by proponents of these ideas to influence the adoption of Intelligent Design in the public science classroom.

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51 Ibid, p. 150
52 A guided search was conducted for the period January 2006 to July 2006.
CHAPTER 3 FRAMEWORK FOR PROMULGATING THE INTELLIGENT DESIGN ARGUMENT

In rhetorical analyses of public policy, rhetoricians study how groups (here, Intelligent Design scientists, mathematicians, theologians, and lawyers) use devices to persuade the public of the validity (or lack thereof) and importance of scientific findings with the goal of achieving funding to become part of the nation’s science policy. The rhetoric I study in this research is not argumentation among scientists but persuasive rhetoric employed by the Intelligent Design group in the transmittal (and transformation) of information from the scientific arena to the public.

Rhetoric is a subject of importance because its study enables us to better understand the processes of communication that underpin decision making in free societies. How an issue is framed is critical to judgments on matters of public policy, which take their cues from rhetoric, and so an understanding of any society's rhetorical situation will tell us a lot about its ideas, beliefs, laws, customs and assumptions. Rhetoric’s ubiquity might define framing contests as superfluous and even peripheral in that their only effect is to render frame competition inconsequential, yet contestants continue to expend copious resources on these rhetorical efforts. These continued efforts represent power, often legitimized through rhetorical persuasion. The persistence of these seemingly superfluous rhetorical efforts can, as history has shown, be the fulcrum upon which significant issues turn. Although Dembski, Johnson and the other primary ID advocates deploy arguments in the hope that they will eventually persuade, their more immediate task is, through skillful framing, to leave their opponents without access to the rhetorical materials needed to craft a sustainable rebuttal. This strategy is a form of rhetorical coercion: when the claimant’s opponents have been talked into a corner, compelled to endorse a stance they would otherwise reject. Intelligent Design arguments are written by scientists and philosophers of science, whose shared academic goal is a deep investigation of our origins to uncover every aspect of its complexity. Although the theoretical approaches of each proponent differs slightly, and ranges from discovery (e.g. Behe’s bacterial flagellum) to contemplation of complexity

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(e.g. Dembski’s Theory of Information)\textsuperscript{56}, these arguments represent a rhetorical structure whose epistemic function strives to redefine the barrier between justification and discovery, an enthymeme. An enthymeme is an informal method of reasoning that contains an unstated assumption which must be true for the premises to lead to the conclusion. In an enthymeme, part of the argument is missing because it is assumed.\textsuperscript{57} A common teaching example posits the statement, “Socrates must be mortal because he is human.” The conclusion is that Socrates is mortal, and to support that statement it is added that Socrates is human. But the fact that Socrates is human does not prove that he is mortal unless all humans are mortal, which must be stated as a premise to give the argument full expression.

Enthymemes lack the necessary premises to create a formal and logical argument. According to Ray Sorenson, since an enthymeme is an abbreviated formulation of an argument, the enthymematic ploy gives the author plenty of room to maneuver.\textsuperscript{58} In this way, thought experiments can be viewed as enthymemes that rely on the active participation of speaker and audience to effect rhetorical persuasion through an appeal to the creative, or untrained, imagination of the hearers. This premise makes both rhetoric and audience important factors in scientific argumentation.

John Zaller, a political scientist at the University of California, Los Angeles, has examined how the public, and the individuals comprising the collective, use the interpretive packages described above by Gamson and Modigliani, in forming opinion, and concludes that neither individuals nor the public collectively have what he defines as substantial attitudes. If an individual lacks a preconsolidated opinion about an issue in their local mainstream, then maintaining that opinion should happen easily. And if an individual lacks a preconsolidated opinion and in fact has little relevant information in memory, or lacks the capacity to collect relevant information with which to construct an opinion, they are more likely to shortcut the decision process (e.g. for example, by agreeing with statements made by trusted political, religious, or other civic leaders), and will presumably be more easily

\textsuperscript{57} The Stanford Encyclopedia of Philosophy, \url{http://plato.stanford.edu}, s.v. “enthymeme.”
moved to one side of an issue to another. With Intelligent Design appearing nearly every day in written and spoken media, the influence of statements by civic and other notable leaders on either side of the issue thus becomes more significant.

3.1 Jackson and Krebs Model for Rhetorical Coercion

To counter the significant criticism over the lack of evidence of intelligent causation and simultaneously advance their position, Intelligent Design proponents have employed a special rhetorical element that serves to shift the decision process. Patrick Jackson and Ronald Krebs describe this as a model of rhetorical coercion. Rhetorical coercion seeks to effect change in some policy or ongoing course of action. In their model, a claimant (C) directs an argument toward the opposition (O) in view of a public (P). For the purposes of the model, it does not matter whether O has exclusive control over the actions at issue (if O is, for example, the government) or whether C and O share responsibility (if they are, for example, political parties in a legislative assembly). All that matters is that O’s accession or resistance is critical to the outcome.

Any argument that C puts forward contains two analytically separable parts: a frame (or set of terms) that characterizes the issue at hand and a set of implications (or set of actions) that C suggests follows from that frame. For example, C might be a group of students protesting a war; their argument, advanced against the national government O through speeches and signs at a rally (the Public, P), portrays the war both to O and to P as unjust and unnecessary (frame) and calls for the end of hostilities and the withdrawal of troops (implications). In responding to C, O may accept or reject either or both the frame and the implications of C’s argument.

Seating an argument within this framework yields four different potential outcomes for rhetorical contestation. In case 1, O accepts both the frame and the implications of C’s argument, and policy changes accordingly. For C, this outcome represents an unmitigated triumph. Case 2 is more mixed. In this case, O accepts the proposed implications and changes

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61 Ibid.
the policy, but it rejects C’s reasoning. An example would be if the student group (C) claimed a war was unjust and urged the government (O) to call for the end of hostilities, and the government agreed to end the hostilities but justified the policy shift in economic terms. Though the student group would have won the substantive battle, it would have lost the rhetorical war and thus its victory could be perceived as less than complete; in the future the government might resume hostile actions on economic grounds as easily as it had earlier ended them on that very basis. It is possible that the students’ rhetorical tactics drove the government’s concessions, but determining that would require access to the governments’ true motives—something that may or may not be ascertained with certainty. Both Case 1 and Case 2 are considered temporary and necessarily unstable terminuses; contestation might resume at a later stage, but these cases represent relatively stable outcomes in the short term. In contrast, Cases 3 and 4 are not stable terminuses. In Case 3, O accepts the terms of C’s arguments, but rejects the implications that C draws. Again, using our student example, the students (C) may argue that war costs are an unfair burden on the citizenry and paying for the war should be reduced through an across-the-board reduction in tax rates; the government (O) may agree that high taxes are problematic but suggest instead targeted tax cuts. This case sets up a very narrow debate window leading to an implication contest. Whilst the general context of the argument is agreed to by both sides, the questions of consequences and applicability are still up for grabs. In Case 4, the two parties disagree about the very terms of debate as well as the policies that follow, and their rhetorical efforts consequently focus on advancing their preferred issue frame with its concomitant implications.62

Let us apply Jackson and Krebs model to the Intelligent Design argument. As first articulated, Intelligent Design advocates argued that Intelligent Design is a scientific theory of origins, (the frame), the implication of which is that naturalism must be rejected (the implication). Table 3.1 maps Dembski’s initial Intelligent Design argument according to this model.

62 Ibid.
Table 3.1: Intelligent Design Argument Framed as Scientific Origins Theory

<table>
<thead>
<tr>
<th>Implication: Accept “naturalism must be rejected”</th>
<th>Frame: Accept “Intelligent Design is a biological theory of origins”</th>
<th>Frame: Reject “Intelligent Design is a biological theory of origins”</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Policy Change: Naturalism is rejected and Intelligent Design is taught.</td>
<td>1. Policy Change: Naturalism is rejected and Intelligent Design is taught.</td>
<td>2. Policy Change: Naturalism is rejected and a theory other than ID is taught.</td>
</tr>
<tr>
<td>Implication: Reject “naturalism must be rejected”</td>
<td>3. Implication Contest: Intelligent Design as a biological theory of origins is accepted, but how to apply this context is a continuing subject for debate.</td>
<td>4. Framing Contest: Neither Intelligent Design as a biological theory of origins, or the resulting implication that naturalism must be rejected, are accepted by the Education Board.</td>
</tr>
</tbody>
</table>

In Case 1, Intelligent Design advocates have an unconditional victory. Their position, that Intelligent Design is a scientific theory of origins, has been accepted with the concomitant implication that future science policy will reject naturalism through the exclusive teaching of Intelligent Design. In Alternative 2, the education board agrees that naturalism must be rejected, but does not support the teaching of Intelligent Design as scientific theory of origins as the means by which to reject naturalism. Here the rhetorical component of the Intelligent Design argument does not succeed. This is the position accepted by many creationists, and is an extremely difficult victory for ID to claim and still be true to their position that *Intelligent Design is not an apologetic ploy to cajole people into God's Kingdom*. In Case 3 ID advocates gain a foot in the door. Although the education board agrees that Intelligent Design is a scientific theory of origins, the board does not agree that all naturalism must be rejected. The rhetorical mission has been accomplished, but ID proponents must stay the course in the war. In Case 4, the education board disagrees with proponents that Intelligent Design is a scientific theory of origins and the implication that naturalism must be rejected. This is the least desirable outcome for ID proponents. Lacking acceptance of the frame of the argument, ID advocates have to focus their rhetorical efforts on reframing their argument in the hope that their opponents will accept it (ultimately along with the concomitant implications.) It is here in the argument’s evolution that Phillip Johnson seized the opportunity to “challenge the domination of naturalism in the mind.”

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Johnson’s book, *Darwin on Trial*, reestablished the goals of the Intelligent Design movement. Asserting that Biblical fundamentalists and Darwin fundamentalists have cooperated in maintaining the stereotype that Biblical literalism and fully naturalistic evolution are the only possibilities for origins theory, Johnson identified a strategic key to Intelligent Design: to define the theory such that it is distanced from either Biblical or Darwinist fundamentalism.\(^65\) Johnson’s argument roughly proceeds as follows: if science is defined as the pursuit of materialistic alternatives, evolution may be the best materialistic alternative theory, but *evolution is not the only theory* imaginable. If science is defined so as to admit that non-natural forces can shape the natural world, then the abrupt appearance of species in the fossil record and the intricate complexity of natural systems should favor Intelligent Design over natural selection, and thus public schools could teach this *alternative theory* without promoting a particular religious view.\(^66\) With this linguistic manipulation, Johnson reframed the Intelligent Design argument away from a *scientific* to that of an *alternative* theory of origins. Using Johnson and Krebs’s matrix, Intelligent Design’s rejected argument for replacement of evolution becomes a new argument for inclusion of alternative theories—and in doing so, Phillip Johnson seeks to draw attention away from a framing contest, the least desirable outcome, as well as to make an implication contest more acceptable.

### Table 3.2: Intelligent Design Argument Reframed as Alternative Origins Theory

<table>
<thead>
<tr>
<th>Implication: Accept “Teach Intelligent Design as an <em>alternative</em> theory of origins”</th>
<th>Frame: Accept “Evolution is not the only origins theory”</th>
<th>Frame: Reject “Evolution is not the only origins theory”</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Policy Change: The alternative origins theory Intelligent Design is taught.</td>
<td>2. Policy Change: Alternative origins theories other than ID are taught.</td>
<td></td>
</tr>
<tr>
<td>Implication: Reject “Teach Intelligent Design as an <em>alternative</em> theory of origins”</td>
<td>3. Implication Contest: Evolution as not the only origins theory is accepted, but how and what alternative theories to teach is the continuing debate.</td>
<td>4. Framing Contest: Alternative theories to evolution cannot be taught.</td>
</tr>
</tbody>
</table>

Phillip Johnson’s definitional rhetoric, described in Chapter Four, quietly gained support as Intelligent Design advocates engaged in framing and implication contests nationwide throughout the late 1990s and into the early years of this century. Victory


through rhetorical coercion requires more than a Claimant and an Opponent for sustainability, however. For the outcome of the debate to have an external impact participation of the public, the “P” in Jackson and Krebs model is required. The public may not have to have a well-thought out position, but rather, perhaps owing to poor basic science literacy skills, or to being strongly tied to a belief system, is open to interpretations of science that may shortcut their decision-making process. This continual competition for public legitimization of Intelligent Design ensures that the public is a permanent player in this debate.

As each rhetorical contest progresses, the initial argument—that Intelligent Design is a scientific theory of origins—moves further to the background. Taking its place, instead are tactics of persuasion designed to influence the attitudes or the behavior of the Public. One such tactic is to present the public with threatening consequences resulting from refusal to accept a suggested attitude or behavior. For example, people who smoke are warned of the possibility of serious disease and even death with continued smoking. This tactic, **fear appeal**, is a common rhetorical strategy in the political context. Some empirical studies in the field of communication have demonstrated that a high level of persuasion can be attained through the use of such appeals. 67 This is precisely because the rhetoric of a compelling speaker carries weight and believability, especially for audience members who do not cognitively consider the matter to be a central issue for their own existence, or have not given the issue much consideration until this point. They will rely upon such cues and speaker ethos to decide as to the veracity of the argument. 68

### 3.2. Action Implicative Discourse

Action Implicative Discourse, or AID, is a methodology for discourse analysis developed by Karen Tracy to analyze fear appeal. The major aim of AID is to identify the interactional problems orators experience during a given form of discourse and the discursive strategies applied to manipulate these rhetorical contests. The methodology is comprised of three parts: (a) identifying the rhetorical situation facing the actor who is attempting to

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manipulate fear appeal, (b) identifying the discursive strategies used to cope with these difficulties, and (c) projecting the findings of (a) and (b) onto a philosophical-theoretical level that generalizes the findings beyond the specific context.\textsuperscript{69}

Phase I of the Wedge Strategy, for example, describes scientific research as “the essential component of everything that comes afterward. Without [this] solid scholarship, research and argument, the project would be just another attempt to indoctrinate instead of persuade.”\textsuperscript{70} Barbara Forrest and Paul Gross, however, have critically noted the lack of peer-reviewed scientific publications on Intelligent Design in their book \textit{Creationism’s Trojan Horse}.\textsuperscript{71} Reacting to this (and other) criticism, Dembski issued his rejoinder:

In the current intellectual climate it is impossible to get a paper published in the peer-reviewed biological literature that explicitly affirms Intelligent Design or explicitly denies Darwinian and other forms of naturalistic evolution. Doubting Darwinian orthodoxy is comparable to opposing the party line of a Stalinist regime. What would you do if you were in Stalin’s Russia and wanted to argue that Lysenko was wrong? You might point to paradoxes and tensions in Lysenko’s theory of genetics, but you could not say that Lysenko was fundamentally wrong or offer an alternative that clearly contradicted Lysenko. That’s the situation we’re in. To get published in the peer-reviewed literature, design theorists have to tread cautiously and can’t be too up front about where their work is leading. Indeed, that’s why I was able to get The Design Inference published with Cambridge University Press but not No Free Lunch, which was much more explicit in its biological implications.\textsuperscript{72}

Applying Tracy’s methodology to Dembski’s statement, one finds that William Dembski’s position satisfies the criteria: a) Dembski identifies the problem he is attempting to manipulate: affirmation of Intelligent Design or explicit denial of Darwinism and naturalistic evolution and links this difficulty to the Lysenko affair (Lines 1—5); (b) Lines 7—9 explain the strategy used to cope with the difficulty of not having peer-reviewed publications; and (c) by self-identifying a publisher for \textit{Design Inference}, Dembski transforms an insinuated lack of empirical quality to one of being just a general matter of finding the appropriate climate. The fear, Dembski and other ID advocates stress, is not that there is anything wrong with Intelligent Design as a scientific research program, but rather requires caution in identifying the appropriate publishing climate.

\textsuperscript{72} William Dembski, \textit{The Design Revolution: Answering the Toughest Questions about Intelligent Design} (Downer’s Grove: InterVarsity Press, 2004), 304.
What is the rationale for using this strategy? To a Public lacking substantial science literacy, this type of strategy can empower because others are to blame for the dearth of Intelligent Design articles published in peer-reviewed journals. It’s not the science of Intelligent Design, it’s the scientists. Fear appeal is effective because it shows both the frightening metaphorical consequences (the comparison to a Stalin-era regime) of certain negative behavior conducted by the self-identified outsiders (the peer-reviewed science community). This rhetorical appeal goes a long way to persuade the public to support the strategies of the Intelligent Design advocates, and, ultimately, supporting the argument, without insulting the Public’s science literacy.

Efforts and decisions to adopt the teaching of Intelligent Design demonstrate how its proponents can succeed in rhetorically coercing local schools and state education boards. The Appendix contains a database of these efforts from 2000-2006, collected from the National Center for Science Education. Highlights from some of the bills appear below:

- Montana House Bill 588 was introduced in the state legislature in February 2001, and referred to the State Administration Committee. On February 19 it was heard in committee, and tabled by a 14–4 vote. The bill would have required, among other things, the teaching of "competing theories of origin" rather than "the exclusive teaching of the theory of evolution"; a "reasonably balanced presentation" of evidence "supporting and disproving each major theory of origin"; and the appointment of a volunteer citizen panel, with "supporters and nonsupporters of Darwin's theory of evolution" equally represented, to recommend instructional materials "that comply with the intent" of the bill.73

- Louisiana House Concurrent Resolution 50, introduced in 2003, states that “in the effort to encourage the development of students’ critical thinking skills, city, parish, and other local public school systems should refrain from purchasing textbooks that do not present a balanced view of the various theories relative to the origin of life but rather refer to one theory as proven fact.” (emphasis added.)74 The resolution was referred to the Education Committee and died in committee.

- A 2004 Oklahoma House Bill (HB 2194) was amended to remove a disclaimer that “Evolution is a theory, not a fact.” The author of the bill told the APS, "I'm angry ... that this evolution disclaimer won't get a hearing out here. We have the government taking away the rights of these children to know they were created by a God, and I think that's wrong." He added, "If you tell kids that they're not any different than animals, pretty soon they're going to start acting like that, and that's what we're having in our society today."75 (emphasis added.)

- On September 29, 2005, Michigan House Bill 5251 was introduced and referred to the House Committee on Education. If enacted, HB 5251 would require the state board of education to revise the state science standards to ensure that students will be able to "(a) use the scientific method to critically evaluate  

scientific theories including, but not limited to, the theories of global warming and evolution [and] (b) Use relevant scientific data to assess the validity of those theories and to formulate arguments for or against those theories.\textsuperscript{76}

o In 2006, a new Oklahoma House Bill (HB 2107) finds that "existing law does not expressly protect the right of teachers identified by the United States Supreme Court in Edwards v. Aguillard to present scientific critiques of prevailing scientific theories" and encourages the presentation of "the full range of scientific views" with regard to "biological or chemical origins of life." Proponents expressed support for the bill by saying, "Do you think you come from a monkeyman? ... Did we come from slimy algae 4.5 billion years ago or are we a unique creation of God? I think it's going to be exciting for students to discuss these issues." HB 2107 is one of four antievolution bills to be introduced in the Oklahoma legislature in 2006. The other three are HCR 1043 (encouraging the state board of education and local school boards to ensure that students are able to "critically evaluate scientific theories including, but not limited to, the theory of evolution" with regard to "biological or chemical origins of life"), HB 2526 (authorizing school districts to teach "intelligent design"), and SB 1959 (encouraging the presentation of "the full range of scientific views"). (emphasis added)\textsuperscript{77}

ID’s main goal is not to mount a challenge to science. Instead, the goal is to peddle this way of thinking into the educational system, and in particular, the science classroom. Most advocates of Intelligent Design “seek to increase the scope of religious discourse, raising its social status compared to that of scientific discourse, especially by including it in the curricula of public schools.”\textsuperscript{78} Intelligent Design does not ask that we accept this or that deity. Instead, Intelligent Design admonishes us to stop asking questions in a critical and empirical way of the biological world. The Intelligent Design movement understands that one cannot simply point to a gap and put God into it, but that one must also attempt to rhetorically close off the need to investigate the gap more closely. Indeed, in none of the examples above is evidence offered to support the teaching of Intelligent Design in the science classroom, but attempts to close off the need for investigation are veiled in the calls for teaching “competing theories” and “balanced view of the various theories [of origins].” Directly-targeted statements ask, “Did we come from slimy algae…or are we a unique creation of God?” when arguing for “the full range of scientific views.” In short, the Intelligent Design arguments “win” not because their grounds are “valid” in the sense of satisfying the demands of reason or because they accord with the public’s prior normative

\textsuperscript{76} National Center for Science Education, “News Room (Michigan),” National Center for Science Education, http://www.natcenscied.org
\textsuperscript{77} National Center for Science Education, “News Room (Oklahoma),” National Center for Science Education, http://www.natcenscied.org
commitments or material interests, but because its basis is *socially* sustainable—because the audience deems certain rhetorical deployments acceptable and others impermissible. The wording of the arguments in support of Intelligent Design is more influential than the content of the argument. In other words, the argument wins because it was well framed.

In Chapter Four I analyze the tone of arguments in support of Intelligent Design as science education policy, from 1998 to just prior to the 2005 decision in the *Dover v. Kitzmiller* decision, and discuss the shifting framework of Intelligent Design proponents in order to maintain ID’s social sustainability.
CHAPTER 4: IDENTIFICATION OF THE INTELLIGENT DESIGN ARGUMENT AND ANALYSIS OF ARGUMENT TONE

4.1 Identification of the First Intelligent Design Argument

My first research questions concern identification of the initial Intelligent Design argument and its driving force. Although the origin of the phrase “Intelligent Design” can be traced to the 1840s, the popular attention recently given the recreated term is more often linked to a presentation given by Of Pandas and People editor Charles Thaxton at a 1988 conference sponsored by the Discovery Center. Then, in 1991 Phillip Johnson promoted the term in his book, Darwin on Trial, and thus he is considered the contemporary “father” of Intelligent Design. At about the same time, the mathematician William Dembski was conducting doctoral research on the randomness of design. In 1998, William Dembski posited the first argument for Intelligent Design as a scientific research program, published in Perspectives on Science and Christian Faith and Cosmic Pursuit (Cosmic Pursuit). Cosmic Pursuit is a quarterly magazine of “latest scientific findings that bear on matters of faith.”

William Dembski wrote, in part (paragraph numbers added for reference):

[5] Intelligent Design begins with the observation that intelligent causes can do things which undirected natural causes cannot. Undirected natural causes can place Scrabble pieces on a board, but cannot arrange the pieces as meaningful words or sentences. To obtain a meaningful arrangement requires an intelligent cause. This intuition, that there is a fundamental distinction between undirected natural causes on the one hand and intelligent causes on the other, has underlain the design arguments of past centuries.

[10] What has emerged is a new program for scientific research known as Intelligent Design. Within biology, Intelligent Design is a theory of biological origins and development. Its fundamental claim is that intelligent causes are necessary to explain the complex, information-rich structures of biology, and that these causes are empirically detectable.

[11] To say intelligent causes are empirically detectable is to say there exist well-defined methods that, on the basis of observational features of the world, are capable of reliably distinguishing intelligent causes from undirected natural causes. Many special sciences have already developed

79 Perceval Davis and Dean Kenyon, Of Pandas and People: The Central Question of Biological Origins., ed. Charles Thaxton (Richardson, Texas: Foundation for Thought and Ethics, 1993). Of Pandas and People is considered the first modern Intelligent Design book.
such methods for drawing this distinction—notably forensic science, cryptography, archeology, and the search for extraterrestrial intelligence (as in the movie *Contact*).

[12] Whenever these methods detect intelligent causation, the underlying entity they uncover is information. **Intelligent Design properly formulated is a theory of information.** Within such a theory, information becomes a reliable indicator of intelligent causation as well as a proper object for scientific investigation. **Intelligent Design thereby becomes a theory for detecting and measuring information, explaining its origin, and tracing its flow.** Intelligent Design is therefore not the study of intelligent causes per se, but of informational pathways induced by intelligent causes.

[13] As a result, Intelligent Design presupposes neither a creator nor miracles. Intelligent Design is theologically minimalist. **It detects intelligence without speculating about the nature of the intelligence.** It is the empirical detectability of intelligent causes that renders Intelligent Design a fully scientific theory, **and distinguishes it from the design arguments of philosophers, or what has traditionally been called “natural theology.”** The world contains events, objects, and structures which exhaust the explanatory resources of undirected natural causes, and which can be adequately explained only by recourse to intelligent causes. Scientists are now in a position to demonstrate this rigorously. Thus what has been a long-standing philosophical intuition is now being cashed out as a scientific research program.

[15] **Intelligent Design entails that naturalism in all forms be rejected.** Metaphysical naturalism, the view that undirected natural causes wholly govern the world, is to be rejected because it is false. Methodological naturalism, the view that for the sake of science, scientific explanation ought never exceed undirected natural causes, is to be rejected because it stifles inquiry. **Nothing is gained by pretending science can get along without intelligent causes.** Rather, because intelligent causes are empirically detectable, science must ever remain open to evidence of their activity.

[16] Where does this leave special creation and theistic evolution? Logically speaking, Intelligent Design is compatible with everything from the starkest creationism (i.e., God intervening at every point to create new species) to the most subtle and far-ranging evolution (i.e., God seamlessly melding all organisms together in a great tree of life). For **Intelligent Design the first question is not how organisms came to be** (though this is a research question that needs to be addressed), but whether they **demonstrate clear, empirically detectable marks of being intelligently caused.** In principle, an evolutionary process can exhibit such “marks of intelligence” as much as any act of special creation.

[17] If you're a Christian, what is the theological payoff of Intelligent Design? It is important to realize that Intelligent Design is not an apologetic ploy to cajole people into God's Kingdom. **Intelligent Design is a scientific research program.** (emphasis added)

Analysis of William Dembski's argument above reveals techniques of confusion, popular appeals and certainty, all of which help to create rhetorical situations that are discussed in greater detail below.
Table 4.1: Elements of Rhetoric in William Dembski’s Intelligent Design Argument

<table>
<thead>
<tr>
<th>Element of Rhetoric</th>
<th>Contribution to Rhetorical Situation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confusion</td>
<td>In Paragraph 5, Dembski associates the observation of undirected natural causes to the foundation of the design argument the assumption that the undirected natural causes are meaningful.</td>
</tr>
<tr>
<td>Commonality/Certainty</td>
<td>Front and center (Paragraph 5) is an <em>ad populum</em> appeal. Intelligent Design is as simple to understand as the arrangement of pieces on a Scrabble board; there is no need to provide potentially complicated scientific evidence.</td>
</tr>
<tr>
<td>Confusion/Commonality/Certainty</td>
<td>Dembski describes Intelligent Design as a <em>new</em> scientific research program at the start of Paragraph 10; in the following paragraph he describes the methodology of the “special science” as akin to those used in forensics, cryptography</td>
</tr>
<tr>
<td>Confusion, Omission</td>
<td>In Paragraph 12 Dembski describes ID not as the study of intelligent causes, but of the <em>informational pathways</em> induced by ID. The confusing presumption is that intelligent causes are known. What the information (expected or otherwise known) is is omitted.</td>
</tr>
<tr>
<td>Confusion</td>
<td>The statement misleads one into thinking that methodological naturalism has exhausted its ability to explain undirected natural causes. The necessary clarification that naturalism has exhausted its <em>known</em> resources is omitted.</td>
</tr>
<tr>
<td>Confusion, Diversion</td>
<td>The last sentence in Paragraph 13 states that ID is a <em>scientific research program</em>. The next paragraph demands the rejection of science because it does not consider intelligent causes. This is not buttressed with scientific evidence, a logical following, instead the reader is diverted to reject naturalism.</td>
</tr>
<tr>
<td>Optimism/<em>Ad populum</em> appeals/Certainty</td>
<td>Dembski describes in Paragraph 16 this new scientific research program that is compatible with everything from God…to God. The final, paragraph appeals to both Christians and non, assuring Christians that ID is a scientific research program that aligns with God's wonders; and by assuring non-Christians that ID is not a apologetic ploy to cajole people into God's kingdom. (Paragraph 17)</td>
</tr>
<tr>
<td>Repetition/Certainty</td>
<td>Dembski sprinkles the argument with the statement that ID is a scientific research program to refocus the reader’s attention.</td>
</tr>
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</table>

**4.1.1 Wedge as Driving Force**

Gamson and Modigliani describe the rhetorical situation of persuasive activity as the “frame” that explains the purpose to which the actor or orator’s material power is put. Persuasive rhetoric advances “a central organizing idea or story line that provides meaning to
an unfolding strip of events, weaving a connection among them.”82 It is within this
classification that discussion of both Wedge Strategy and Intelligent Design argument lie.

The Wedge Document is an internal writing from the Discovery Institute, believed to
have been written in approximately 1999, that describes a strategy to “defeat scientific
materialism” and “reverse the stifling dominance of the materialist worldview, and to replace
it with a science consonant with Christian and theistic convictions.”83 The point of view DI
brings to its work includes a belief in God-given reason and the permanency of human
nature; the principles of representative democracy and public service expounded by the
American Founders; free market economics domestically and internationally; the social
requirement to balance personal liberty with responsibility; the spirit of voluntarism crucial
to civil society; the continuing validity of American international leadership; and the
potential of science and technology to promote an improved future for individuals, families
and communities.”84 Within the Discovery Institute is the Center for Science and Culture
(CSC), home to Intelligent Design proponents Phillip Johnson and William Dembski, among
others. The stated programs of the CSC include:

• supporting research by scientists and other scholars challenging various aspects of neo-Darwinian theory;
• supporting research by scientists and other scholars developing the scientific theory known as intelligent
design;
• supporting research by scientists and scholars in the social sciences and humanities exploring the impact of
scientific materialism on culture.
• encouraging schools to improve science education by teaching students more fully about the theory of
evolution, including the theory's scientific weaknesses as well as its strengths.85

Whether intentionally leaked to the public or not, the document has generated significant
discussion across disciplines and communities. The Wedge includes a five-year strategic
plan, beginning with Phase I: “Scientific Research, Writing & Publicity,” “the essential
component of everything that comes afterward. Without [this] solid scholarship, research
and argument, the project would be just another attempt to indoctrinate instead of

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82 William Gamson and Andre Modigliani, “Media Discourse and Public Opinion on Nuclear Power: A
line 71.
persuade.”86 Phases II—“Publicity & Opinion-making” and III—“Cultural Confrontation & Renewal” describe the public relations plan, “to “popularize” our ideas in the broader culture through direct confrontation with the advocates of materialist science through challenge conferences in significant academic settings.”87

The strength of the Wedge Strategy lies in its rhetoric. Replete with metaphors, even to the casual reader the Wedge preamble resembles a call to arms. At the onset, the Wedge faults the “discoveries of modern science” for the “wholesale attack” on the “cardinal principle” that God made man. Modern science is described as consisting of “unbending forces…of biology, chemistry and physics” that “[infect] virtually every area of our culture.”88 Continuing, the Wedge intimates conspiratorial behavior between science and government. “[This materialism has] spawned a virulent strain of utopianism” promulgated through “coercive government programs.” The final rallying call is the Discovery Institute’s promise to “overthrow materialism and its cultural legacies.”89 “The attention, publicity, and influence of design theory should draw scientific materialists into open debate with design theorists, and we will be ready.”90 In response to the criticism of the document, ID advocates issued “The Wedge—So What?,” a document ten times the length of the Wedge, setting “the record straight.” Dembski staunchly defended the document, stating, “Who doesn't try to persuade others with their ideas? Certainly, any group that contends for a point of view in the public square—whether the Darwin-only lobby at the National Center for Science Education, the American Civil Liberties Union, the American Association for the Advancement of Science or the New Orleans Secular Humanist Association—wants to see its ideas influence others. And such groups have plans about how they want to achieve such influence.”91

As a first salvo in the contemporary Great Debate, the Wedge forward-propelled the Intelligent Design argument. 92 Whereas the Wedge relies on its composition for persuasiveness, Dembski’s explanation of Intelligent Design unwittingly confuses the less

87 Ibid., lines 114, 117-120.
88 Ibid., lines 14-16.
89 Ibid., line 33.
90 Ibid., lines 120-122
scientifically literate reader. His eloquent rhetoric is delivered with an air of certainty so as to skip over probability and go right to impossible. (*Methodological naturalism has exhausted its ability to explain natural causes.*) This rhetoric is also used to make spurious accusations that inspire support for Intelligent Design. (*Nothing is to be gained by pretending science can get along without intelligent causes.*) The inflammatory emotional rhetoric of the final paragraph serves to reinforce attitudes against the opponent, and subtly justifies bending the rules to—in the spirit of the Wedge Strategy—fight against the evil doer, science: “If you’re a Christian, what is the theological payoff of Intelligent Design? It is important to realize that Intelligent Design is not an apologetic ploy to cajole people into God’s Kingdom. Intelligent Design is a scientific research program.”

Statements that *Intelligent Design is a scientific research program* are sprinkled throughout Dembski’s argument to refocus the reader’s attention away from subconscious questions that arise naturally in critical thinking. Finally, Dembski employs inverse probability arguments to further confuse the reader. This is another classic form of invalid interpretation of facts that is at the heart of the debates over teaching Intelligent Design in the science classroom. William Dembski’s argument states that undirected natural causes can place Scrabble pieces on a board, but cannot arrange the pieces as meaningful words or sentences. To obtain a meaningful arrangement requires an intelligent cause. Dembski is careful to distinguish this argument from the watchmaker argument posited by William Paley. In his 2001 book, *No Free Lunch*, Dembski elaborates:

The theory of design I envision is not an atavistic return to the design arguments of William Paley and the Bridgewater Treatises. William Paley was in no position to formulate the conceptual framework for design that I shall be developing in this book. This new framework depends on advances in probability theory, computer science, the concept of information, molecular biology, and the philosophy of science — to name but a few. Within this framework design promises to become an effective conceptual tool for investigating and understanding the world.

Increased philosophical and scientific sophistication, however, is not alone in separating my approach to design from Paley’s. Paley’s approach was closely linked to his prior religious and metaphysical commitments. Mine is not. Paley’s designer was nothing short of the triune God of Christianity, a transcendent, personal, moral being with all the perfections commonly attributed to this God. On the other

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94 These arguments are akin to logical fallacies, and are beyond the scope of this project.
hand, the designer that emerges from a theory of intelligent design is an intelligence capable of originating the complexity and specificity that we find throughout the cosmos and especially in biological systems. 95

Dembski’s argument is invalid because the absence of meaning through undirected natural causes is not evidence for intelligent causation, yet to readers with limited critical thinking skills this argument is creatively attractive because it is well-framed. Kenneth Miller critiqued Dembski’s argument in No Free Lunch and reached a similar conclusion:

Dembski makes the assertion that living organisms contain what he calls “complex specified information” (CSI), and claims to have shown that the evolutionary mechanism of natural selection cannot produce CSI. Therefore, any instance of CSI in a living organism must be the result of intelligent design. And living organisms, according to Dembski, are chock-full of CSI.

Dembski then offers his readers a calculation showing that the flagellum could not have possibly have evolved. [He] tells us that an irreducibly complex system, like the flagellum, is a “discrete combinatorial object.” What this means, as he explains, is that the probability of assembling such an object can be calculated by determining the probabilities that each of its components might have originated by chance, that they might have been localized to the same region of the cell, and that they would be assembled in precisely the right order.

By treating the flagellum as a discrete combinatorial object he has assumed in his calculation that no subset of the 30 or so proteins of the flagellum could have biological activity. As we have already seen, this is wrong. A calculation that ignores that fact has no scientific validity.

More importantly, Dembski’s willingness to ignore TTSS [a subset protein of the flagellum which does have biological activity] lays bare the underlying assumption of his entire approach towards the calculation of probabilities and the detection of “design.” He assumes what he is trying to prove. [emphasis in original]96

4.2. Intelligent Design: 1998 Debut to the Kansas Decision

Scientific creationism debates of the 1970s and 1980s were largely ignored by scientists — except when they tried to legislate for equal time in various states. But Intelligent Design is not being ignored. Advances in science and technology are demanding decisions from civic leaders, legislators, lawyers and judges, teachers, executives, religious institutions and citizens. We are living in a time when so many scientific questions are

transformed into public relations campaigns, with the political, social, religious and academic
influences of the Intelligent Design movement forcing science into a battle for public favor.
“The attention, publicity, and influence of design theory should draw scientific materialists
into open debate with design theorists, and we will be ready.”

And ready with rhetoric is what ID advocates are. To identify common characteristics
and rhetorical patterns of the Intelligent Design arguments, my research utilized Diction 5.0,
a software-based text analysis program designed specifically for analyzing textual data.
Analytical tools that employ qualitative protocols can strengthen the qualitative discussion of
the text being examined. This quantitative content analysis buttresses the theoretical
foundations of the narrative through analysis based on a variety of communication
characteristics, including commonality, activity, certainty and realism. This analysis is
usually computer and database driven, and allows for empirical determination of the verbal
tone of a selected work. A full statistical analysis of the verbal tone of my research is beyond
the scope of this thesis; the following discussion focuses instead on chronological trends in
overall verbal tone of this Intelligent Design argument series.

To orient the reader to the graph in this chapter the following explanatory information
is provided:

**Categories of Verbal Tone.** A more complete description of the types of words associated
with a particular category is contained in the User’s Manual and is incorporated within this
discussion by reference. 

- **Activity:** Language in this category features movement, change, the implementation
  of ideas and the avoidance of inertia.
- **Certainty:** Language in this category highlights resoluteness, inflexibility and
  completeness.
- **Commonality:** Language in this category includes cooperativeness, indigenous
  language, and generally agreed-upon ideas that are easily acknowledged and
  understood across a group or groups.
- **Optimism:** Language that endorses positive entailment.
- **Realism:** Language that identifies tangible, immediate matters and includes scientific
  and technical terminology.

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98 [Diction 5.0 User’s Manual](http://www.dictionsoftware.com/files/dictionmanual.pdf)
A. Axes. The vertical axis describes the calculated value for each verbal category, based on the algorithm described in the Methodology section of Chapter Two. The outlined range of values represents the calculated profile across the combined 22,000 analyzed texts and is considered for the purpose of this thesis to be the normative profile. Values for texts that fall above this profile are considered to exhibit an increase in a particular tone; likewise, values for texts that fall below this profile are considered to exhibit less of a particular tone. The horizontal axis is the timeline. The year markers represent half-year units: for example, 1998/1 represents the first half of 1998, 1998/2 represents the second half of 1998, and so forth.

Legend. The arrows indicate specific events or moments relevant to the Intelligent Design argument series discussed in this thesis:

Descriptions of Intelligent Design:

C. Average tone of the supporting articles.
E. Kansas State Board of Education’s reinstatement of evolution into the science curriculum.
H. The *Kitzmiller v. Dover* decision.

4.2.1 Verbal Tone of Intelligent Design Arguments

The figure below shows the trends in verbal tone for Dembski’s descriptions of Intelligent Design, from the initial 1998 publication in *Cosmic Pursuit* to testimony provided at the Texas State Department of Education textbook hearing in 2003.
Dembski’s initial argument (A) described Intelligent Design as being as easy to comprehend as recognizing that Scrabble tiles could not by themselves form a recognizable word. The example is commonly understandable and, stripped of technical origin and meaning, lacks relationship to science. Publication of Wedge Strategy (B) shortly after the Cosmic Pursuit publication seemed to be a driving force for William Dembski and Intelligent Design; in 2000, during the height of debate over Kansas’ reconsideration of evolution in the state science curriculum\textsuperscript{99}, William Dembski published a well-structured, well-timed and targeted defense of Intelligent Design (D). Whereas the debut statement in Cosmic Pursuit in 1998 was highly optimistic, as shown in Table 4.1, describing Intelligent Design as a scientific research program compatible with everything, Dembski’s late 2000 essay by contrast, entitled “Intelligent Design Coming Clean,” stressed that “our culture’s

\textsuperscript{99} In 1999, the Kansas State Board of Education voted to delete the teaching of evolution from the state's science curriculum. The decision sparked a statewide (and nationwide) controversy that did not dissipate in Kansas when challengers in the Republican primary who made opposition to the anti-evolution standards their focus were voted onto the Board in the following year.
guardians…have nothing to fear from intelligent design” (paragraph numbers added for reference):

[1] In the movie Dream Team starring Michael Keaton, Keaton plays a psychiatric patient who must feign sanity to save his psychiatrist from being murdered. In protesting his sanity, Keaton informs two New York City policemen that he doesn’t wear women’s clothing, that he’s never danced around Times Square naked, and that he doesn’t talk to Elvis. The two police officers are much relieved. Likewise, I hope with this essay to reassure our culture’s guardians of scientific correctness that they have nothing to fear from intelligent design. I expect to be just as successful as Keaton.

[5] I’ll come back to what it means for design in nature to have empirical content, but I want for the moment to stay with the worry that intelligent design is but a disguised form of creationism. Ask any leader in the design movement whether intelligent design is stealth creationism, and they’ll deny it. All of us agree that intelligent design is a much broader scientific program and intellectual project.

[21] Why then are so many of us in the intelligent design movement Christians? I don’t think it is because intelligent design is intrinsically Christian or even theistic. Rather, I think it has to do with the Christian evangelical community for now providing the safest haven for intelligent design—which is not to say that the haven is particularly safe by any absolute standard. Anyone who has followed the recent events of Baylor’s Michael Polanyi Center, the first intelligent design think-tank at a research university, will realize just how intense the opposition to intelligent design is even among Christians.

[23] To sum up, intelligent design faces tremendous opposition from our culture’s elite, who in many instances are desperate to discredit it. What’s more, within the United States the Christian evangelical world has thus far been the most hospitable place for intelligent design (and this despite opposition like at Baylor). Also relevant is that Christianity remains the majority worldview for Americans. Thus on purely statistical grounds one would expect most proponents of intelligent design to be Christians. But not all of them. David Berlinski is a notable counterexample. I could name other counterexamples, but to spare them from harassment by opponents of design, I won’t. (By the way, if you think I’m being paranoid, please pick up a copy of the November issue of the American Spectator, which has an article about Baylor’s Michael Polanyi Center and my then imminent removal as its director; I think you’ll find that my suspicions are justified and that it’s the dogmatic opponents of design who are paranoid.)…Yet regardless how things fall out with my codification of design inferences, the question whether design is discernible in nature is now squarely on the table for discussion. At the heart of my codification of design inferences is the notion of specified complexity, which is a statistical and complexity-theoretic concept. Provided this concept is well-defined and can effectively be applied in practice, the next question is whether specified complexity is exhibited in actual physical systems where no evolved, reified, or embodied intelligence was involved…. I expect this work to be published in the next two years. I am withholding name(s) of the researcher(s) for their own protection.

[24] Because intelligent design is a fledgling science, it is still growing and developing and thus cannot be characterized in complete detail. Nonetheless, its broad outlines are clear enough. Concerted criticism of Darwinism within the growing community of design theorists was therefore only the first step. To be sure, it was a necessary first step since
confidence in Darwinism and especially the power of natural selection needed first to be undermined before people could take seriously the need for an alternative theory (this is entirely in line with Thomas Kuhn’s stages in a scientific revolution). Once that confidence was undermined, the next step was to develop a positive scientific research program as an alternative to Darwinism and more generally to naturalistic approaches to the origin and subsequent development of life.

My most obnoxious critics have been Internet stalkers (e.g., Wesley Elsberry and Richard Wein), who seem to monitor my every move and as a service to the Internet community make sure that every aspect of my work receives their bad housekeeping seal of disapproval.\(^\text{100}\)

The table below compares the rhetorical styles identified in William Dembski’s 1998 and 2000 essays:

<table>
<thead>
<tr>
<th>Element of Rhetoric</th>
<th>1998</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Confusion</strong></td>
<td>[5] In the opening paragraph of the argument, William Dembski associates the observation of undirected natural causes to the foundation of the design argument the <em>assumption</em> being that the undirected natural causes are meaningful.</td>
<td>[1] “I hope with this essay to reassure our culture’s guardians of scientific correctness that they have nothing to fear from intelligent design.”</td>
</tr>
<tr>
<td><strong>Confusion</strong></td>
<td>[10,11] Intelligent Design is described as a <em>new</em> science, a <em>special</em> science, and a “<em>scientific research program</em>.”</td>
<td>[24] Because intelligent design is a fledgling science, it is still growing and cannot be characterized in complete detail.</td>
</tr>
<tr>
<td><strong>Confusion</strong></td>
<td>[15] This paragraph demands the rejection of science because it does not consider intelligent causes. This is not buttressed with scientific evidence, a logical following; instead the reader is diverted to reject naturalism.</td>
<td>[24] Criticism of Darwinism is a necessary first step and especially the power of natural selection needed first to be undermined before people could take seriously the need for an alternative theory.</td>
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<td><strong>Confusion</strong></td>
<td>[12] Dembski describes ID not as the study of intelligent causes, but of the <em>informational pathways</em> induced by ID. The confusing presumption is that intelligent causes are known. What the <em>information</em> (expected or otherwise known) is is omitted.</td>
<td></td>
</tr>
<tr>
<td><strong>Certainty</strong></td>
<td>[5] Intelligent Design is as simple to understand as the arrangement of pieces on a Scrabble board; there is no need to provide potentially complicated scientific evidence.</td>
<td>[23] &quot;Yet regardless how things fall out with my codification of design inferences, the question whether design is discernible in nature is now squarely on the table for discussion.&quot;</td>
</tr>
<tr>
<td><strong>Optimism</strong></td>
<td>[5] Intelligent Design is as simple to understand as the arrangement of pieces on a Scrabble board; there is no need to provide potentially complicated scientific evidence.</td>
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</tbody>
</table>

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<thead>
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</tr>
<tr>
<td>Targeted appeals</td>
<td>[23] I expect [codification of design inferences] to be published in the next two years. I am withholding name(s) of researcher(s) for their own protection.</td>
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<tr>
<td>Targeted appeals</td>
<td>[23] Intelligent design faces tremendous opposition from our culture’s elite. I could name counterexamples, but to spare them from harassment by opponents of design, I won’t.</td>
</tr>
<tr>
<td>Targeted appeals</td>
<td>[30] My most obnoxious critics have been Internet stalkers who seem to monitor my every move.</td>
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</tbody>
</table>

Whereas the approach in the 1998 essay was friendly and appealing (ID is a new scientific research program compatible with everything from God…to God, and is as easy to understand as the placement of tiles on a Scrabble board), the tone two years later is targeted and hostile (I am withholding name(s) of researcher(s) for their own protection…there is nothing to fear from Intelligent Design.) Dembski directly aims at influencing the opinions of people, rather than impartially providing information. The question of what Intelligent Design is (a fledgling science that cannot be characterized completely) is now secondary in importance to protecting Intelligent Design researchers and sparing them from harassment. This rhetorical approach—transferring the discussion away Intelligent Design, is described as a type of propaganda, “a technique of transferring good or bad feelings the propagandist might have towards a person, place or thing to another person, place or thing.” ¹⁰¹ Dembski does exactly that in the 2000 essay: in projecting negative qualities onto critics of Intelligent Design he seeks to influence the acceptability of the theory.

Articles written to persuade policy makers to adopt Intelligent Design in the science classroom during this time employed a similar strategy. Subsequent to Dembski’s initial arguments were nearly a dozen primary articles, most written by Discovery Institute Fellows,

supporting the teaching of Intelligent Design as a science education policy. These articles appeared in publications ranging from Discovery Institute press releases to national and local newspapers. Two arguments appeared in *Touchstone*, a self-described “Christian Journal, conservative in doctrine,” and *Jubilee*, a periodical for imprisoned worshippers. Only one article appeared in either a science or policy-related publication, the *Chronicle of Higher Education*. The complete research database appears in the Appendix.

In *The Spokesman Review*, a Spokane, Washington newspaper, Discovery Institute Director Stephen Meyer discussed a denied petition to teach “creation-based” science in an Idaho classroom, saying:

“…if board members do their homework, they will discover considerable latitude under existing law to address parental concerns about the present selective—and ideological—presentation of scientific evidence. …consider another example. Many biology texts tell about the famous finches in the Galapagos Islands whose beaks have varied in shape and length over time. They also recall how moth populations in England darkened and then lightened in response to varying levels of industrial pollution. Such episodes are presented as conclusive evidence for evolution. And indeed they are, depending on how one defines evolution.

…In one section, Behe examines the intricate workings of an acid-powered rotary engine. What does this have to do with biology? Curiously this engine does not power a lawnmower or an automobile, but the propeller-like tails of certain bacteria. Behe shows that the intricate machinery in this molecular motor-including the equivalent of a rotor, a stator, O-rings, bushings and a drive shaft—requires the coordinated interaction of some fifty complex protein parts. Yet the absence of almost any one of these proteins would result in the complete loss of motor function. To believe this engine emerged gradually in Darwinian fashion strains credulity. Natural selection only selects functionally advantageous systems. Yet motor function only ensues after the necessary parts have independently self-assembled—an *astronomically improbable event*. Behe concludes that a designing intelligence must have played a role.”  

Meyer’s outlook is optimistic: assuaging parental concerns over “the present selective and ideological presentation of scientific evidence” is as easy as redefining evolution. Much like unarranged (and inanimate) Scrabble tiles, the formation of (inanimate) motor mechanisms are the work of a designing intelligence, and this intelligence is applicable to the observed changes in Galapagos finches and English moths, depending on how one defines evolution. An analysis of the verbal tone indicates, however, Meyer is not certain in his argument: phrases such as considerable latitude and astronomically improbable, and the

conclusion that intelligence must have played a role in design, rather than does play a role, contradicts the simple task of redefining evolution to accommodate a designing intelligence. But to a targeted Public lacking critical thinking skills, this argument is very appealing, and therefore, acceptable.

Nancy Pearcey, a Discovery Institute Fellow uses a more straightforward and generally popular approach to the question of whether to teach Intelligent Design. In her article published in Touchstone Magazine, the answer is black-and-white: Evolution is a fairy tale, and Intelligent Design is a full-fledged scientific research program that makes sense to ordinary people—it does not require mastering scientific information because it has popular appeal.

(Evolution) is a delightful, fairy-tale introduction into naturalistic evolution for children, and once a child’s imagination is populated with bright, colorful images, it becomes ever more difficult for a parent to dislodge them and teach the child to think critically.

The second reason design is a winner is that it is a full-fledged scientific research program, not a narrowly conceived ideological position… This is particularly important in selling design to the public, for the average person is put off by internal bickering and just wants help in meeting the larger challenge of naturalism, which has become not just an overarching philosophy but also a surrogate religion.

Finally, design is a winner with the public because it is a scientific research program that actually makes sense to ordinary people. In the past, one of the most discouraging aspects of the creation/evolution controversy was the sheer number of scientific facts one had to master even to begin to make sense of the issues—genes, mutations, fossils, and how chemicals would react in a primeval “soup.” It was simply too much for the average person to take in, and no matter how many facts you mastered, new findings were always turning up.

Design is a concept that is simple, easy to explain, and based solidly on experience. It has tremendous popular appeal because it answers the public’s most pressing concerns.

Touchstone is a self-described journal of “mere Christianity,” and Pearcey utilizes the largely Christian reader demographics to appeal to their fear of surrogate religions:

Today (Carl Sagan’s) religion is taught everywhere in the public square—even in the books a child checks out of the public library. Among the most popular picture book characters for small children are the Berenstain Bears. In The Berenstain Bears’ Nature Guide, we are invited to accompany the Berenstain family on a nature walk. After a few pages, we suddenly encounter in capital letters sprawled across a sunrise, glazed with light rays, those familiar words: Nature is “all that IS, or WAS, or EVER WILL BE!” It is Sagan’s liturgy to the Cosmos, repackaged for tots. And to drive the point home, the
authors have drawn a bear pointing directly at the reader—the impressionable young child—and saying, “Nature is you! Nature is me!” (emphasis added)

Recalling Tracy’s model of fear appeal, one finds that Pearcey has clearly identified the situation of concern to the Christian reader—Carl Sagan’s religion…taught everywhere,[it is] Sagan’s liturgy to the Cosmos repackaged for tots. Naturalistic evolution is presented as an omnipresent religion and rife with internal bickering, and Pearcey offers Design as a concept for ordinary persons who just want help meeting the larger challenge of naturalism. The need for critical thinking has been removed—one of the most discouraging aspects of the creation/evolution controversy was the sheer number of scientific facts…simply too much for the average person.

Linguistic framing like that used by Meyer and Pearcey is a powerful tool; the right words, at the right time and in the right place can be an effective method of manipulating the thoughts of others and, ultimately, the policies tendered by others. As Anthony Pratkanis and Elliot Aronson point out, “every day we are bombarded with one persuasive communication after another. These appeals persuade not through the give-and-take of argument and debate, but through the manipulation of symbols and of our most basic human emotions.”

Tongtao Zheng of the University of Tasmania describes the language of framing as “a weapon and a powerful tool in winning public support, especially during the current information revolution period…it is also a powerful weapon in the struggle of community against community, worldview against worldview.” Andrew Cline, Professor of Journalism at Missouri State University writes: “The power to define, and make it stick, is arguably the premier political power. To control the definitions of terms is to control the debate by bracketing how the audience may think about an issue.”

With an obvious eye on the debate in Kansas, just prior to that decision William Dembski published in Metanexus this (partial) exposition, entitled “Intelligent Design as a Theory of Technological Evolution.” (Paragraph numbers added for reference.)

The central issue in the debate over biological evolution can therefore be put as follows: **Is nature complete in the sense of possessing all the resources necessary to bring about the biological structures we see around us or does nature also require some contribution of design to bring about those structures?** A typical reaction to this question is simply to observe that biological systems are natural objects and then to pose the following counter-question: **What besides nature could conceivably have played an essential role in the formation of biological systems?** Although there has been no dearth of answers to this counter-question (special creation, vitalism, and orthogenesis come to mind), the answers given to date no longer inspire confidence within much of the scientific community.

It is therefore important to understand that intelligent design (or ID as it is increasingly being abbreviated) is not yet another answer to this counter-question. To ask what besides nature could conceivably have played an essential role in the formation of biological systems is to ask for an entity with causal powers to produce objects that nature unassisted could not produce. The problem is that any such entities are not open to direct empirical investigation. Our knowledge of them can be at best indirect, dependent on phenomena mediated through nature. But a designing intelligence that mediates its action through nature has since the time of Darwin seemed largely dispensable—certainly from science and now increasingly from common life.

The strength of intelligent design as an intellectual project consists not in presupposing a prepackaged conception of a designer and then determining how the facts of science square with that conception. Rather, intelligent design’s strength consists in starting with nature, exploring nature’s limitations, and therewith determining where design fits in the scheme of nature. **Aristotle** claimed that the art of ship-building is not in the wood that constitutes the ship. Likewise intelligent design claims that the art of life-building is not in the physical stuff that constitutes life. But intelligent design does not stop there. Rather, the very methods that establish nature’s limitations also establish that design is operating in nature. Nor does intelligent design commit a god-of-the-gaps fallacy. **Intelligent design locates discontinuities in the causal structure of nature that are inherently unbridgeable by natural causes.** Such gaps are ontological rather than epistemic, and thus offer no promise of being removed by closer investigation of natural causes. (emphasis added)

It is useful at this point to compare the three descriptions offered by William Dembski since 1998 to define Intelligent Design, as provided below.

**Table 4.3. Comparison of 1998, 2000 and 2001 Descriptions of Intelligent Design**

<table>
<thead>
<tr>
<th>Year</th>
<th>Description of Intelligent Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>[Intelligent Design] is a new program for scientific research. Within biology, Intelligent Design is a theory of biological origins and development. Its fundamental claim is that intelligent causes are necessary to explain the complex, information-rich structures of biology, and that these causes are <strong>empirically detectable.</strong> To say intelligent causes are empirically detectable is to say there exist well-defined methods that, on the basis of observational features of the world, are capable of reliably distinguishing intelligent causes from undirected natural causes.</td>
</tr>
<tr>
<td>2000</td>
<td>Because intelligent design is a fledgling science, it is still growing and developing and thus cannot be characterized in complete detail.</td>
</tr>
<tr>
<td>2001</td>
<td>What besides nature could conceivably have played an essential role in the formation of biological systems?</td>
</tr>
</tbody>
</table>

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biological systems? It is therefore important to understand that intelligent design (or ID as it is increasingly being abbreviated) is not yet another answer to this counter-question.

Intelligent design’s strength [as an intellectual project] consists in starting with nature, exploring nature’s limitations, and therewith determining where design fits in the scheme of nature.

Unlike the 1998 argument, the verbal tone of this 2001 argument is not as optimistic, and nor does it have common, popular appeal—there are no Scrabble-board analogies describing the simplicity of Intelligent Design. William Dembski describes Intelligent Design this time as an “intellectual project,” in sharp contrast to the fully scientific research program that characterized the initial argument. Nevertheless, if the power to define, as Andrew Cline writes, is a premier political power, then how Intelligent Design is defined should influence the political success of the theory, including its consideration as science curricula, by state and local boards of education. In the three-year period since Intelligent Design was first posited by William Dembski, it was defined first as a theory of biological origins and development. Dembski’s next essay portrayed Intelligent Design as a fledgling science that could not be characterized in complete detail; and in the third essay the description of Intelligent Design became even more formless and contradicted the original assertion. William Dembski described Intelligent Design as an intellectual project that was not yet another answer to the question of the formation of biological systems.

As to the question of the power of the definition in controlling the debate over adoption of Intelligent Design in the science classroom, the Kansas State Board of Education answered with a 7-3 vote to reinstate evolution in the Kansas science curriculum.108

4.3 Intelligent Design: Post-Kansas to Pre-Dover

By the end of 2001, the “continuing debate” seemed to be over or at least in need of a new framework. Shortly after the Kansas State Board of Education decision to reinstate evolution into the science curriculum, William Dembski was dismissed from the Polanyi Center at Baylor University, the first institution within a science department to research Intelligent Design, owing to disparaging collegial behavior.

The reader is asked to recall Jackson and Krebs matrix of Intelligent Design reframed as an *alternative* theory. From 1998 until the Kansas decision to reinstate evolution, Intelligent Design proponents seemed to be heading toward an unconditional victory, Case 1 in the matrix below: the teaching of Intelligent Design in the science classroom.

**Table 4.4: Intelligent Design Argument Reframed as Alternative Origins Theory**

<table>
<thead>
<tr>
<th>Implication: Accept “Teach Intelligent Design as an alternative theory of origins”</th>
<th>Frame: Accept “Evolution is not the only origins theory”</th>
<th>Frame: Reject “Evolution is not the only origins theory”</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Policy Change: The alternative origins theory Intelligent Design is taught.</td>
<td>2. Policy Change: Alternative origins theories other than ID are taught.</td>
<td></td>
</tr>
</tbody>
</table>

| Implication: Reject “Teach Intelligent Design as an alternative theory of origins” | Implication Contest: Evolution as not the only origins theory is accepted, but how and what alternative theories to teach is the continuing debate. | 4. Framing Contest: Alternative theories to evolution cannot be taught. |

The Kansas decision, however, forced the Intelligent Design community back into a Framing Contest. In response, the ID community published many editorials, stopping short of calling for the teaching of “Intelligent Design” or “alternative theories,” and instead reframing the issue by urging the continued “critical teaching of evolution.” Diction analysis of the verbal tone of the editorials written between 2002 and 2004 reveals that Intelligent Design proponents continue to use popular language, and the writings lack a realistic tone and continue the propagandist strategy of projecting the negative qualities of Darwinism in an attempt to make Intelligent Design appear positive. Writing for *Breakpoint.org*, a program of prison fellowship whose stated mission “is to develop and communicate Christian worldview messages that offer a critique of contemporary culture and encourage and equip the church to think and live Christianly”¹⁰⁹, Phillip Johnson explains to readers the controversy of evolution and the ultimate fear of Darwinists, freedom:

Evolution is especially controversial because many prominent Darwinists such as Richard Dawkins and Edward O. Wilson have frequently proclaimed evolution as a kind of materialist religion that substitutes biochemical processes and natural selection for God as our creator and draws agnostic religious conclusions from that premise. **That a solid majority of Americans either doubts or flatly disbelieves the ambitious claims of Darwinism is a fact regularly reported in newspapers and confirmed by opinion polls.**

The theory of evolution is controversial because a majority of Americans suspect what is in fact the case. When the theory is extended to macro-evolution, it is not derived from data, nor is it testable.

The public can be sure that we in the intelligent design movement are right, and the Darwinists are wrong, just by thinking about why the Darwinists are afraid to allow the real issues to be discussed even in the controlled environment of a science classroom. If the Darwinists had the evidence on their side, they would not be so fearful of what will happen if students learn to distinguish philosophical claims that are made in the name of science from testable theories. They would not fear allowing students to ask questions and become informed participants in public discussions regarding the theory of evolution. The party that has the evidence to back its case is never afraid of a fair hearing. That is why the Darwinists are afraid of freedom, and we are not.\(^\text{110}\)

Phillip Johnson confuses the “majority” disbelief and doubt about Darwinism by equating “beliefs,” “suspicions,” and “opinions” with “facts regularly reported in newspapers and confirmed by opinion polls,” another propagandist strategy. In doing so, the new framework shifts the criticism away from Intelligent Design and onto Darwin and Darwinian evolution. Intelligent Design as a fully scientific research program is no longer a relevant framework for acceptance of Intelligent Design as an alternative theory; the critical consideration of evolution has become the medium in this framing contest. Johnson’s strong and certain language in assuring the public that the Intelligent Design movement is right, and is not afraid of freedom, works to create the impression that the assertions (about Darwinists) are true.

Benjamin Wiker, another Discovery Institute Fellow, promulgates this new framework. Writing for worldnetdaily.com, a self-described “free press for a free people,” Wiker cites a Zogby International poll finding that 65 percent of Ohioans believe "Biology teachers should teach Darwin's theory of evolution, but also the scientific evidence against it." Only 19 percent favored biology teachers teaching just Darwin's theory and only that evidence which supports it.” He then asks, and answers, the question, “What do these numbers mean?”

The truth of the matter is that the 65 percent of Ohioans who want both Darwin's theory of evolution and the scientific evidence against it taught to our students are not subverting science through a misuse of democracy. They are using democracy to try to save science education from a peculiar kind of tyranny of the majority.\(^\text{111}\)

Wiker diverts the criticism away from Intelligent Design by reframing the “truth” as a simple matter of democracy in action: to not consider scientific evidence against Darwin’s

\(^{110}\) Ibid.

theory is being undemocratic, and those who do are thus undemocratic tyrants. Again,
Intelligent Design as a fully scientific research program is no longer relevant; democracy and
“saving science education from tyrants is.”

The net effect of the Kansas decision and of urgings by the ID community to continue
the critical examination of evolution, though, was that over the next year, fewer than ten
states drafted legislation for teaching “alternative theories,” and only one state, Ohio,
considered a bill that would “encourage that all competing theories be presented and
instruction on why certain theories are controversial.” 112

Dembski’s popular and finely-tuned 2000 argument—providing the momentum for
nineteen states to consider adopting Intelligent Design in the science curriculum—had now
become a targeted appeal that seemed to appeal to few, except for education policy makers in
Texas. In 2003, the Texas State Board of Education held a public hearing allowing the
public to comment on a set of eleven biology textbooks proposed for adoption. Nearly all of
the three dozen speakers defended the teaching of evolution against a report that disputed the
accuracy of the treatment of evolution in the eleven biology texts. The report had been
submitted by the Discovery Institute, and was based largely on *Icons of Evolution.* 113
William Dembski provided the testimony in opposition to the textbook adoption, in the
propagandist language typical of the Intelligent Design movement in the early years of this
century:

[1] My name is William Dembski. I’m an associate research professor in the conceptual foundations
of science at Baylor University. As a mathematician, I study the probabilistic underpinnings of
neo-Darwinian evolution.

[2] In his testimony to you on July 9th, UT biology professor David Hillis claimed, “There is no
debate about the existence of evolution in scientific circles.” That may be, depending on how you
define evolution. But there is considerable debate in scientific circles about the mechanism of
evolution, namely, how it happened. Cambridge paleontologist Simon Conway Morris, writing for
the premier biology journal Cell, remarks: “When discussing organic evolution the only point of
agreement seems to be: ‘It happened.’ Thereafter, there is little consensus....” (Jan. 7, 2000)

[3] Despite that, the illusion of consensus is all we get in the textbooks. What’s more, pro-
Darwinian lobbyists, like Eugenie Scott, strive to maintain that illusion. In an interview with Salon
(May 4, 2001), Scott tells us why. According to her, for textbooks to admit the lack of consensus

112 National Center for Science Education, “News Room (Ohio),” National Center for Science Education,
http://www.natcenscied.org
113 *Icons of Evolution* is a book written by Discovery Institute Fellow Jonathan Wells. In *Icons* Wells identifies
ten common evolution teaching examples (“icons”) and brands them as false, out-of-date and misleading. The
report submitted included four of these examples.
over how evolution happened will “confuse kids about the soundness of evolution as a science.”

[4] Whatever happened to science education nurturing the capacity of young minds for critical thought? Whatever happened to exposing students to as much information as required to form balanced scientific judgments? All the textbooks under consideration grossly exaggerate the evidence for neo-Darwinian evolution, pretending that its mechanism of natural selection acting on random genetic change is a slam-dunk. Not so.

[5] As a probability theorist, I, and many other mathematically-trained scientists, regard claims for the creative power of natural selection as implausible in the extreme. To see why, MIT’s Murray Eden asks us to imagine a library evolving from a single phrase: “Begin with a meaningful phrase, retype it with a few mistakes, make it longer by adding letters, and rearrange subsequences in the string of letters; then examine the result to see if the new phrase is meaningful. Repeat until the library is complete.” (Wistar Symposium, p. 110) From the standpoint of probability, neo-Darwinism is even more absurd.

[8] In his July testimony David Hillis implored you to “ignore the push to take the science out of our school science textbooks.” Hillis missed the point entirely. The point is to put more science into our textbooks by including not only the strengths but also the weaknesses of neo-Darwinian evolutionary theory. Don’t believe for one moment that all meaningful debate about biological evolution has ceased. If that were the case, none of us would be here today.114

William Dembski’s 2003 argument is more uncertain than the previous essay and fails again to describe Intelligent Design in a tangible and realistic tone. Dembski does not use the phrase “Intelligent Design” at all in his testimony, nor does he refer to ID as the “fully scientific research program” that characterized the early arguments. Dembski describes himself as a mathematician who studies the “probabilistic underpinnings of neo-Darwinian evolution,” not an Intelligent Design researcher. He relies on the central idea that, in the fairness of liberal education, both the strengths and weaknesses of neo-Darwinian evolution must be taught. The textbooks are an “illusion of consensus,” and that Darwinian evolution through natural selection is, not a “slam dunk.”

From an investigatory perspective, here the science classroom, rhetorical devices can function as sometimes counterfactual hypotheses to spark new ideas and lead to further investigations. From the perspective of a critic who wishes to judge the truth or falsity of a proposed theory, they can act as forms of indirect proof. In the matter of Intelligent Design Dembski’s proof, however, is not a logical proof. It is a new frame that draws on both the audience’s literacy and imagination to cooperate in the construction of the proof.

And in 2004 for a Dover, Pennsylvania school board, that Darwinian evolution through natural selection is not a “slam dunk” was enough proof to vote to include Intelligent Design in the district's science curriculum. In October 2004, the Dover Area School Board revised the science curriculum to include the following:

*Students will be made aware of gaps/problems in Darwin's Theory and of other theories of evolution including, but not limited to, intelligent design. Note: Origins of life will not be taught.*

With this decision it would appear that Intelligent Design proponents, not unlike William Jennings Bryan, had been successful in maintaining that Darwinian evolution was not convincing to the popular mind. However, I posited at the start of this thesis the question of whether Intelligent Design was a new challenge to the evolution orthodoxy or fancifully worded Creationism. The December 2005 ruling in the *Kitzmiller v. Dover* case contributed one answer to this question by disqualifying Intelligent Design as science:

> After a searching review of the record and applicable caselaw, we find that while ID arguments may be true, a proposition on which the Court takes no position, ID is not science. We find that ID fails on three different levels, any one of which is sufficient to preclude a determination that ID is science. They are: (1) ID violates the centuries-old ground rules of science by invoking and permitting supernatural causation; (2) the argument of irreducible complexity, central to ID, employs the same flawed and illogical contrived dualism that doomed creation science in the 1980's; and (3) ID's negative attacks on evolution have been refuted by the scientific community.

Another answer, and one that I propose, is that Intelligent Design is both. Intelligent Design is indeed a new challenge facing the science classroom, one that threatens to transform the culture from one wherein the students are “[empowered] to determine for themselves whether they have received an acceptable explanation” which is supported by their evidence and through their inquiry, to one where the explanation comes from an intelligent authority. And, with its fanciful wording and common appeal, the teaching of Intelligent Design is poised to expose the failure of schools to properly instruct each

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generation in the most significant ideas that have shaped civilization, including scientific ideas.
CHAPTER 5. IMPLICATIONS OF RESEARCH

Through the use of text-mining software and theoretical underpinning I have demonstrated the rhetorical artistry of the Intelligent Design argument series, beginning with William Dembski’s 1998 argument that Intelligent Design was a “fully scientific research program…compatible with everything from God…to God” and as “easy to understand as the placement of tiles on a Scrabble board.” This fine-grain analysis supports that the Intelligent Design movement, above all, is a popular and highly optimistic religious-based appeal with little basis in realism; a marketing strategy to distort science with theologically influenced information in order to advance the interests of its proponents.

With its fanciful wording and common appeal, Intelligent Design has exposed the failure of schools to properly instruct each generation in the most significant ideas that have shaped civilization, including scientific ideas. Accepting evolution neither proves nor disproves the existence of a Designer. Society may not have to have a well-thought out position on Intelligent Design, but rather, perhaps owing to poor basic science literacy skills, or to being strongly tied to a belief system, or relying on “common sense” intuition, is open to interpretations of science, including Intelligent Design. “This constant, unanswered assault on evolution is harmful to science and science education…Teaching our students that phenomena can not be explained by natural, reproducible, testable forces disables the very critical thinking” essential for science literacy.118 Equally, or perhaps more disturbing is that one-third of all science teachers in America, according to a survey conducted by The National Science Teachers Association, feel pressured to include creationism in their classrooms.119

The science and science education communities are right to be concerned: a 2005 Gallup poll found that 34% of Americans believe that Darwinian theory is false, and that 31% favored Intelligent Design as an explanation for the development of species. Put another way, only one out three people accept a common, religious appeal as a better

explanation for the development of species than a theory consistent with multiple lines of converging genetic, physiological and paleontological evidence. For Intelligent Design proponents, the remaining two persons ensure that the continual competition for public legitimization of Intelligent Design in the science classroom is but a new framework away.
APPENDIX A: Local, State and Federal Anti-Evolution Efforts
(Efforts in blue are discussed in the thesis)

<table>
<thead>
<tr>
<th>State</th>
<th>Action by State (unless indicated otherwise)</th>
<th>Effort</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kansas</td>
<td>State Board</td>
<td>Removed evolution from science curriculum</td>
<td>Reinstated in 2001</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>State Board</td>
<td>Present scientific critiques of prevailing theories</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Alabama</td>
<td>State Board</td>
<td>Disclaimer (Evolution is &quot;controversial&quot;)</td>
<td>Adopted. Removed in 2005.</td>
</tr>
<tr>
<td>Arkansas</td>
<td>HB 2548</td>
<td>Evolution is &quot;just a theory&quot;</td>
<td>Did not advance</td>
</tr>
<tr>
<td>California</td>
<td>School District</td>
<td>Alternative Theories</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Connecticut</td>
<td>School District</td>
<td>Equal Time</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Georgia</td>
<td>HB 391</td>
<td>Present scientific critiques of prevailing theories</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Hawaii</td>
<td>State Board</td>
<td>Include Creationism in science curriculum</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Indiana</td>
<td>HB 1323</td>
<td>Alternative Theories</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Louisiana</td>
<td>HB 1286</td>
<td>Prohibits knowingly providing &quot;false instruction&quot; regarding scientific theories.</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Louisiana</td>
<td>HCR 74</td>
<td>Darwin's teaching promote racism.</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Michigan</td>
<td>HB 4382</td>
<td>Students should be taught &quot;... the theory that life is the result of the purposeful, intelligent design of a creator.&quot;</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Michigan</td>
<td>HB 4705</td>
<td>Equal Time</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Minnesota</td>
<td>Legal</td>
<td>Teacher sues state to allow teaching &quot;evidence against evolution.&quot;</td>
<td>Appeal denied by Supreme Court</td>
</tr>
<tr>
<td>Montana</td>
<td>HB 588</td>
<td>Equal Time</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Ohio</td>
<td>HB 679</td>
<td>Present scientific critiques of prevailing theories</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Washington</td>
<td>SB 6058</td>
<td>Disclaimer (Evolution is &quot;controversial&quot;)</td>
<td>Did not advance</td>
</tr>
<tr>
<td>West Virginia</td>
<td>HB 2554</td>
<td>Equal Time</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Colorado</td>
<td>School District</td>
<td>Include Creationism in science curriculum</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Georgia</td>
<td>School District</td>
<td>Revise Policy on &quot;Theories of Origin,&quot; (To be consistent with family teachings.)</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Georgia</td>
<td>HB 1563</td>
<td>Present scientific critiques of prevailing theories</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Georgia</td>
<td>School District</td>
<td>Disclaimer (Evolution is &quot;just a theory&quot;)</td>
<td>Adopted. Removed in 2006</td>
</tr>
<tr>
<td>Indiana</td>
<td>School District</td>
<td>Include Creationism in science curriculum</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Mississippi</td>
<td>HB 888, HB 1101</td>
<td>Evolution is &quot;just a theory&quot;</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Ohio</td>
<td>HB 481</td>
<td>Allow teaching of evolution as &quot;controversial&quot;</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Washington</td>
<td>SB 6500</td>
<td>Disclaimer (Evolution is &quot;repugnant&quot; to the Declaration of Independence</td>
<td>Did not advance</td>
</tr>
<tr>
<td>Year</td>
<td>State</td>
<td>Action by State (unless indicated otherwise)</td>
<td>Effort</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>---------------------------------------------</td>
<td>---------------------------------------------------------</td>
</tr>
<tr>
<td>2003</td>
<td>California</td>
<td>School District</td>
<td>Present scientific critiques of prevailing theories</td>
</tr>
<tr>
<td>2003</td>
<td>Kansas</td>
<td>SB 168</td>
<td>Present scientific critiques of prevailing theories</td>
</tr>
<tr>
<td>2003</td>
<td>Louisiana</td>
<td>Concurrent Resolution 50</td>
<td>Reject textbooks that do not provide &quot;balanced view.&quot;</td>
</tr>
<tr>
<td>2003</td>
<td>Michigan</td>
<td>HB 4946</td>
<td>Include &quot;Intelligent Design&quot; in science curriculum</td>
</tr>
<tr>
<td>2003</td>
<td>Michigan</td>
<td>HB 5005</td>
<td>Include &quot;Design Hypothesis&quot; in science curriculum</td>
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<tr>
<td>2003</td>
<td>Minnesota</td>
<td>State Board</td>
<td>Science standards cast doubt on evolution</td>
</tr>
<tr>
<td>2003</td>
<td>Mississippi</td>
<td>HB 1397</td>
<td>Disclaimer (Evolution is &quot;just a theory&quot;)</td>
</tr>
<tr>
<td>2003</td>
<td>Oklahoma</td>
<td>HB 1504</td>
<td>Disclaimer (Evolution is &quot;controversial&quot;)</td>
</tr>
<tr>
<td>2003</td>
<td>South Carolina</td>
<td>SB 153</td>
<td>Disclaimer ('The cause or causes of life are not scientifically verifiable. Therefore, empirical science cannot provide data about the beginning of life.')</td>
</tr>
<tr>
<td>2003</td>
<td>Texas</td>
<td>HB 1447</td>
<td>Gives total control of textbook selection to BOE so as to reduce &quot;viewpoint discrimination&quot; and &quot;factual errors.&quot;</td>
</tr>
<tr>
<td>2003</td>
<td>Texas</td>
<td>HB 1172</td>
<td>Equal Time</td>
</tr>
<tr>
<td>2003</td>
<td>Wyoming</td>
<td>School District</td>
<td>Change Biology policy to include that evolution &quot;is just a theory, not fact.&quot;</td>
</tr>
<tr>
<td>2004</td>
<td>Alabama</td>
<td>HB 391</td>
<td>Alternative Theories</td>
</tr>
<tr>
<td>2004</td>
<td>Alabama</td>
<td>SB336</td>
<td>Alternative Theories</td>
</tr>
<tr>
<td>2004</td>
<td>Georgia</td>
<td>State Board</td>
<td>Revises Draft Science Standards (Replaces evolution with &quot;changes over time;&quot; drops natural selection.)</td>
</tr>
<tr>
<td>2004</td>
<td>Minnesota</td>
<td>HB 2003, SB 1714</td>
<td>Allow teaching of evolution as &quot;controversial&quot;</td>
</tr>
<tr>
<td>2004</td>
<td>Mississippi</td>
<td>HB1288</td>
<td>Disclaimer (Evolution is &quot;controversial&quot;)</td>
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<tr>
<td>2004</td>
<td>Missouri</td>
<td>HB 911, HB 1722</td>
<td>Equal Time</td>
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<tr>
<td>2004</td>
<td>Montana</td>
<td>State Board</td>
<td>Proposal to include &quot;objective origins&quot;</td>
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<tr>
<td>2004</td>
<td>Ohio</td>
<td>State Board</td>
<td>Critical analysis of evolution lesson added to science curriculum</td>
</tr>
<tr>
<td>2004</td>
<td>Oklahoma</td>
<td>HB 2194</td>
<td>Disclaimer (Evolution is &quot;controversial&quot;)</td>
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<tr>
<td>2004</td>
<td>Wisconsin</td>
<td>School District</td>
<td>Present scientific critiques of prevailing theories. Specifically prohibits the teaching of intelligent design.</td>
</tr>
<tr>
<td>Year</td>
<td>State</td>
<td>Action by State (unless indicated otherwise)</td>
<td>Effort</td>
</tr>
<tr>
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<td>-------------------------------------------------</td>
</tr>
<tr>
<td>2005</td>
<td>Alabama</td>
<td>HB 352, HB 716 and SB 240</td>
<td>Present scientific critiques of prevailing theories</td>
</tr>
<tr>
<td></td>
<td>Arkansas</td>
<td>HB 2607</td>
<td>Include &quot;Intelligent Design&quot; in science curriculum</td>
</tr>
<tr>
<td></td>
<td>Florida</td>
<td>HB 837</td>
<td>Would permit firing of teacher who stated &quot;Evolution is a fact. I don't want to hear about Intelligent Design.&quot;</td>
</tr>
<tr>
<td></td>
<td>Georgia</td>
<td>HB 179</td>
<td>Equal Time</td>
</tr>
<tr>
<td></td>
<td>Kansas</td>
<td>State Board</td>
<td>Antievolution Resolution Proposed</td>
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<td>2005</td>
<td>Michigan</td>
<td>HB 5251</td>
<td>Present scientific critiques of prevailing theories</td>
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<td></td>
<td>Mississippi</td>
<td>SB 2286</td>
<td>Equal Time</td>
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<tr>
<td></td>
<td>Missouri</td>
<td>HB 35</td>
<td>Present scientific critiques of prevailing theories</td>
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<td></td>
<td>Montana</td>
<td>LC 1199</td>
<td>Equal Time</td>
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<td>Equal Time</td>
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<td>Pennsylvania</td>
<td>HB 1007</td>
<td>Include Intelligent Design in science curriculum</td>
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<td></td>
<td>South Carolina</td>
<td>SB 114</td>
<td>Alternative Theories</td>
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<td></td>
<td>South Carolina</td>
<td>SB 909</td>
<td>Teach the Controversy</td>
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<td></td>
<td>Tennessee</td>
<td>School District</td>
<td>Disclaimer (Evolution is not the only theory)</td>
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<td>2005</td>
<td>Utah</td>
<td>Assembly Proposal</td>
<td>Introduce &quot;Divine Design&quot; curriculum</td>
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<td>2006</td>
<td>Oklahoma</td>
<td>HB 2107</td>
<td>Express the full range of scientific views.</td>
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<tr>
<td>Publication Date</td>
<td>Title</td>
<td>Author</td>
<td>Media Type</td>
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<td>29-Mar-98</td>
<td>Let Schools Provide Full Disclosure</td>
<td>Meyer</td>
<td>Newspaper</td>
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<td>01-May-99</td>
<td>Is intelligent design a dumb idea?</td>
<td>Collins</td>
<td>Website</td>
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<td>16-Aug-99</td>
<td>The Church of Darwin</td>
<td>Johnson</td>
<td>Newspaper</td>
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<td>01-Sep-99</td>
<td>The Sky is Not Falling</td>
<td>Pearcey</td>
<td>Periodical</td>
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<tr>
<td>14-Oct-99</td>
<td>Ridiculing Kansas school board easy, but it's not good journalism</td>
<td>Wells</td>
<td>Newspaper</td>
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<td>12-Nov-99</td>
<td>The Religious Implications of Teaching Evolution</td>
<td>Johnson</td>
<td>Newspaper</td>
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<tr>
<td>22-Nov-99</td>
<td>All forms of science designed for discussion</td>
<td>Wells</td>
<td>Newspaper</td>
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<td>01-Dec-99</td>
<td>Darwin's Hostages</td>
<td>Behe</td>
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<td>Author</td>
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<td>Scopes in reverse</td>
<td>Pearcey</td>
<td>Newspaper</td>
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<td>26-Aug-00</td>
<td>Scopes trial symbolism holds today</td>
<td>Chapman</td>
<td>Newspaper</td>
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<td>08-Oct-00</td>
<td>Natural selection found in report on science education</td>
<td>Wells</td>
<td>Newspaper</td>
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<td>20-Mar-02</td>
<td>Fifty-two Ohio Scientists Call for Academic Freedom on Darwin's Theory</td>
<td>Sjogren</td>
<td>Press Release</td>
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<td>19-Apr-02</td>
<td>Biologist Ken Miller Flunks Political Science on Santorum</td>
<td>Staff</td>
<td>Press Release</td>
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<td>01-Jun-02</td>
<td>Is Science Democratic?</td>
<td>Wiker</td>
<td>Website</td>
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<td>10-Jun-02</td>
<td>Darwin Would Love This Debate</td>
<td>Chapman</td>
<td>Newspaper</td>
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<td>01-Jul-02</td>
<td>Catch-23</td>
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<td>Newspaper</td>
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<td>Author</td>
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<td>Cobb County (Georgia) School Board Promotes Academic Freedom, Not Religion</td>
<td>Staff</td>
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<td>30-Sep-02</td>
<td>The Peppered Myth</td>
<td>Wells</td>
<td>Magazine</td>
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<td>26-Sep-02</td>
<td>Cobb County (Georgia) School Board Promotes Academic Freedom, Not Religion</td>
<td>Staff</td>
<td>Press Release</td>
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<td>30-Sep-02</td>
<td>The Peppered Myth</td>
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<td>Magazine</td>
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<td>30-Sep-02</td>
<td>Evolution Coverage Missed Real Story</td>
<td>West</td>
<td>Website</td>
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<td>Author</td>
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<td>09-May-03</td>
<td>Intelligent Design, Freedom, &amp; Education</td>
<td>Johnson</td>
<td>Website</td>
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<td>19-Sep-03</td>
<td>Textbook Debate</td>
<td>Meyer</td>
<td>Newspaper</td>
</tr>
<tr>
<td>21-Sep-03</td>
<td>How Should Schools Teach Evolution?</td>
<td>Chapman</td>
<td>Newspaper</td>
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<tr>
<td>07-Nov-03</td>
<td>Board gives final approval to biology books</td>
<td>Castro</td>
<td>Newspaper</td>
</tr>
<tr>
<td>10-Nov-03</td>
<td>In textbook battle over evolution, 'errors' debated, corrected</td>
<td>Walker</td>
<td>Newspaper</td>
</tr>
<tr>
<td>Publication Date</td>
<td>Title</td>
<td>Author</td>
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<td>10-Nov-03</td>
<td>ELIMINATING ERRORS: Evolution becomes topic of concern for voters</td>
<td>Bell</td>
<td>Newspaper</td>
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<td>13-Nov-03</td>
<td>The Educational Debate Over Darwinism</td>
<td>Campbell</td>
<td>Journal</td>
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<tr>
<td>30-Nov-03</td>
<td>Standards should treat evolution honestly</td>
<td>Thomas</td>
<td>Newspaper</td>
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<td>01-Jan-04</td>
<td>Face-Off: Should both sides of the Debate on Evolution be Included in Textbooks?</td>
<td>Cooper</td>
<td>Newspaper</td>
</tr>
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<td>02-Feb-04</td>
<td>Darwinists Eager to Avoid Debate</td>
<td>Taylor</td>
<td>Newspaper</td>
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<tr>
<td>15-Feb-04</td>
<td>Incorporate Controversy into the Curriculum</td>
<td>Meyer</td>
<td>Newspaper</td>
</tr>
<tr>
<td>07-Mar-04</td>
<td>Don't Let Dogma Censor Teaching</td>
<td>Wiker</td>
<td>Newspaper</td>
</tr>
</tbody>
</table>
APPENDIX C: DICTION 5.0

DICTION 5.0 counts words based on 33 separate dictionaries (such as familiarity, human interest, tenacity, and self-reference) and two sets of variables and creates numerical frequencies and standard scores for these lists of words. Included with the dictionary scores are scores for five master variables and four calculated variables. The calculated variables, which are based on word ratios, include: (1) **insistence**, a measure of “code-restriction” that indicates a “preference for a limited, ordered world”; (2) **embellishment**, a measure of the ratio of adjectives to verbs; (3) **variety**, a measure of conformity to, or avoidance of, a limited set of expressions (different words/total words); and (4) **complexity**, a measure of word size based on the Flesch method. The master variables, which the program assumes best capture the major tonal features of a text, are derived from calculations using the scores from the 33 dictionaries and include: (1) **certainty**, a measure of language “indicating resoluteness, inflexibility, and completeness and a tendency to speak ex cathedra”; (2) **activity**, a measure of “movement, change, [and] the implementation of ideas and the avoidance of inertia”; (3) **optimism**, a measure of “language endorsing some person, group, concept or event or highlighting their positive entailments”; (4) **realism**, a measure of language “describing tangible, immediate, recognizable matters that affect people’s everyday lives”; and (5) **commonality**, a measure of language “highlighting the agreed-upon values of a group and rejecting idiosyncratic modes of engagement.”

One of the strengths of DICTION 5.0 is that it can compare texts to several sets of norms based on Hart's research over the past 17 years. The norms are based on the analysis of 22,027 texts of various sorts written between 1948 and 1998.

The data produced by DICTION 5.0 includes scores compared to a "normal range" and standard scores that indicate standard deviations from the norm. Hart's use of the term "normal range" is somewhat idiosyncratic. It does not refer to the range of plus or minus two standard deviations from the mean, encompassing 95 percent of the data, as the term is typically used in statistical analysis. Instead, Hart uses the term to indicate the range of plus or minus one standard deviation. This normal range encompasses 68 percent of the data. Any score outside the normal range is considered statistically significant in DICTION 5.0. The standard score of an observation is the number of standard deviation units it is above or below the mean; the larger the standard score, the farther it is from the mean.

**Formulas for the Master Variables**


Optimism = [Praise + Satis. + Inspir.] - [Blame + Hard. + Denial]


**Descriptions of the Dictionaries and Scores**

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**Ambivalence:** Words expressing hesitation or uncertainty, implying a speaker's inability or unwillingness to commit to the verbalization being made. Included are hedges (allegedly, perhaps, might), statements of inexactness (almost, approximate, vague, somewhere) and confusion (baffled, puzzling, hesitate). Also included are words of restrained possibility (could, would, he'd) and mystery (dilemma, guess, suppose, seems).

**Blame:** Terms designating social inappropriateness (mean, naive, sloppy, stupid) as well as downright evil (fascist, blood-thirsty, repugnant, malicious) compose this dictionary. In addition, adjectives describing unfortunate circumstances (bankrupt, rash, morbid, embarrassing) or unplanned vicissitudes (weary, nervous, painful, detrimental) are included. The dictionary also contains outright denigrations: cruel, illegitimate, offensive, miserly.

**Centrality:** Terms denoting institutional regularities and/or substantive agreement on core values. Included are indigenous terms (native, basic, innate) and designations of legitimacy (orthodox, decorum, constitutional, ratified), systematicity (paradigm, bureaucratic, ritualistic), and typicality (standardized, matter-of-fact, regularity). Also included are terms of congruence (conformity, mandate, unanimous), predictability (expected, continuity, reliable), and universality (womankind, perennial, landmarks).

**Cognitive Terms:** Words referring to cerebral processes, both functional and imaginative. Included are modes of discovery (learn, deliberate, consider, compare) and domains of study (biology, psychology, logic, economics). The dictionary includes mental challenges (question, forget, re-examine, paradoxes), institutional learning practices (graduation, teaching, classrooms), as well as three forms of intellection: intuitive (invent, perceive, speculate, interpret), rationalistic (estimate, examine, reasonable, strategies), and calculative (diagnose, analyze, software, fact-finding).

**Collectives:** Singular nouns connoting plurality that function to decrease specificity. These words reflect a dependence on categorical modes of thought. Included are social groupings (crowd, choir, team, humanity), task groups (army, congress, legislature, staff) and geographical entities (county, world, kingdom, republic).

**Communication:** Terms referring to social interaction, both face-to-face (listen, interview, read, speak) and mediated (film, videotape, telephone, e-mail). The dictionary includes both modes of intercourse (translate, quote, scripts, broadcast) and moods of intercourse (chat, declare, flatter, demand). Other terms refer to social actors (reporter, spokesperson, advocates, preacher) and a variety of social purposes (hint, rebuke, respond, persuade).

**Complexity:** A simple measure of the average number of characters-per-word in a given input file. Borrows Rudolph Flesch's (1951) notion that convoluted phrasings make a text's ideas abstract and its implications unclear.

**Concreteness:** A large dictionary possessing no thematic unity other than tangibility and materiality. Included are sociological units (peasants, African-Americans, Catholics), occupational groups (carpenter, manufacturer, policewoman), and political alignments (Communists, congressman, Europeans). Also incorporated are physical structures (courthouse, temple, store), forms of diversion (television, football, CD-ROM), terms of accountancy (mortgage, wages, finances), and modes of transportation (airplane, ship, bicycle). In addition, the dictionary includes body parts (stomach, eyes, lips), articles of clothing (slacks, pants, shirt), household animals (cat, insects, horse) and foodstuffs (wine, grain, sugar), and general elements of nature (oil, silk, sand).
Cooperation: Terms designating behavioral interactions among people that often result in a group product. Included are designations of formal work relations (unions, schoolmates, caucus) and informal associations (chum, partner, cronies) to more intimate interactions (sisterhood, friendship, comrade). Also included are neutral interactions (consolidate, mediate, alignment), job-related tasks (network, détente, exchange), personal involvement (teamwork, sharing, contribute), and self-denial (public-spirited, care-taking, self-sacrifice).

Denial: A dictionary consisting of standard negative contractions (aren't, shouldn't, don't), negative functions words (nor, not, nay), and terms designating null sets (nothing, nobody, none).

Diversity: Words describing individuals or groups of individuals differing from the norm. Such distinctiveness may be comparatively neutral (inconsistent, contrasting, non-conformist) but it can also be positive (exceptional, unique, individualistic) and negative (illegitimate, rabble-rouser, extremist). Functionally, heterogeneity may be an asset (far-flung, dispersed, diffuse) or a liability (factionalism, deviancy, quirky) as can its characterizations: rare vs. queer, variety vs. jumble, distinctive vs. disobedient.

Exclusion: A dictionary describing the sources and effects of social isolation. Such seclusion can be phrased passively (displaced, sequestered) as well as positively (self-contained, self-sufficient) and negatively (outlaws, repudiated). Moreover, it can result from voluntary forces (secede, privacy) and involuntary forces (ostracize, forsake, discriminate) and from both personality factors (small-mindedness, loneliness) and political factors (right-wingers, nihilism). Exclusion is often a dialectical concept: hermit vs. derelict, refugee vs. pariah, discard vs. spurn).

Familiarity: Consists of a selected number of C.K. Ogden's (1968) "operation" words which he calculates to be the most common words in the English language. Included are common prepositions (across, over, through), demonstrative pronouns (this, that) and interrogative pronouns (who, what), and a variety of particles, conjunctions and connectives (a, for, so).

Hardship: This dictionary contains natural disasters (earthquake, starvation, tornado, pollution), hostile actions (killers, bankruptcy, enemies, vices) and censurable human behavior (infidelity, despots, betrayal). It also includes unsavory political outcomes (injustice, slavery, exploitation, rebellion) as well as normal human fears (grief, unemployment, died, apprehension) and incapacities (error, cop-outs, weakness).

Human Interest: An adaptation of Rudolf Flesch's notion that concentrating on people and their activities gives discourse a life-like quality. Included are standard personal pronouns (he, his, ourselves, them), family members and relations (cousin, wife, grandchild, uncle), and generic terms (friend, baby, human, persons).

Inspiration: Abstract virtues deserving of universal respect. Most of the terms in this dictionary are nouns isolating desirable moral qualities (faith, honesty, self-sacrifice, virtue) as well as attractive personal qualities (courage, dedication, wisdom, mercy). Social and political ideals are also included: patriotism, success, education, justice.

Leveling: Words used to ignore individual differences and to build a sense of completeness and assurance. Included are totalizing terms (everybody, anyone, each, fully), adverbs of permanence (always, completely, inevitably, consistently), and resolute adjectives (unconditional, consummate, absolute, open-and-shut).
**Liberation**: Terms describing the maximizing of individual choice (autonomous, open-minded, options) and the rejection of social conventions (unencumbered, radical, released). Liberation is motivated by both personality factors (eccentric, impetuous, flighty) and political forces (suffrage, liberty, freedom, emancipation) and may produce dramatic outcomes (exodus, riotous, deliverance) or subdued effects (loosen, disentangle, outpouring). Liberatory terms also admit to rival characterizations: exemption vs. loophole, elope vs. abscond, uninhibited vs. outlandish.

**Motion**: Terms connoting human movement (bustle, job, lurch, leap), physical processes (circulate, momentum, revolve, twist), journeys (barnstorm, jaunt, wandering, travels), speed (lickety-split, nimble, zip, whistle-stop), and modes of transit (ride, fly, glide, swim).

**Numerical Terms**: Any sum, date, or product specifying the facts in a given case. This dictionary treats each isolated integer as a single "word" and each separate group of integers as a single word. In addition, the dictionary contains common numbers in lexical format (one, tenfold, hundred, zero) as well as terms indicating numerical operations (subtract, divide, multiply, percentage) and quantitative topics (digitize, tally, mathematics). The presumption is that Numerical Terms hyper-specify a claim, thus detracting from its universality.

**Passivity**: Words ranging from neutrality to inactivity. Includes terms of compliance (allow, tame, appeasement), docility (submit, contented, sluggish), and cessation (arrested, capitulate, refrain, yielding). Also contains tokens of inertness (backward, immobile, silence, inhibit) and disinterest (unconcerned, nonchalant, stoic), as well as tranquillity (quietly, sleepy, vacation).

**Present Concern**: A selective list of present-tense verbs extrapolated from C.K. Ogden's list of "general" and "picturable" terms, all of which occur with great frequency in standard American English. The dictionary is not topic-specific but points instead to general physical activity (cough, taste, sing, take), social operations (canvass, touch, govern, meet), and task-performance (make, cook, print, paint).

**Past Concern**: The past-tense forms of the verbs contained in the Present Concern dictionary.

**Praise**: Affirmations of some person, group, or abstract entity. Included are terms isolating important social qualities (dear, delightful, witty), physical qualities (mighty, handsome, beautiful), intellectual qualities (shrewd, bright, vigilant, reasonable), entrepreneurial qualities (successful, conscientious, renowned), and moral qualities (faithful, good, noble). All terms in this dictionary are adjectives.

**Rapport**: This dictionary describes attitudinal similarities among groups of people. Included are terms of affinity (congenial, camaraderie, companion), assent (approve, vouched, warrants), deference (tolerant, willing, permission), and identity (equivalent, resemble, consensus).

**Satisfaction**: Terms associated with positive affective states (cheerful, passionate, happiness), with moments of undiminished joy (thanks, smile, welcome) and pleasurable diversion (excited, fun, lucky), or with moments of triumph (celebrating, pride, auspicious). Also included are words of nurturance: healing, encourage, secure, relieved.

**Self-Reference**: All first-person references, including I, I'd, I'll, I'm, I've, me, mine, my, myself. Self-references are treated as acts of "indexing" whereby the locus of action appears to reside in the speaker and not in the world at large (thereby implicitly acknowledging the speaker's limited vision).

**Spatial Awareness**: Terms referring to geographical entities, physical distances, and modes of measurement. Included are general geographical terms (abroad, elbow-room, locale, outdoors) as well
as specific ones (Ceylon, Kuwait, Poland). Also included are politically defined locations (county, fatherland, municipality, ward), points on the compass (east, southwest) and the globe (latitude, coastal, border, snowbelt), as well as terms of scale (kilometer, map, spacious), quality (vacant, out-of-the-way, disoriented) and change (pilgrimage, migrated, frontier.)

**Temporal Awareness:** Terms that fix a person, idea, or event within a specific time-interval, thereby signaling a concern for concrete and practical matters. The dictionary designates literal time (century, instant, mid-morning) as well as metaphorical designations (lingering, seniority, nowadays). Also included are calendrical terms (autumn, year-round, weekend), elliptical terms (spontaneously, postpone, transitional), and judgmental terms (premature, obsolete, punctual).

**Tenacity:** All uses of the verb "to be" (is, am, will, shall), three definitive verb forms (has, must, do) and their variants, as well as all associated contractions (he'll, they've, ain't). These verbs connote confidence and totality.
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